SAINT LOUIS UNIVERSITY | PARKS COLLEGE of ENGINEERING, AVIATION AND TECHNOLOGY

23

3

To
The Principal
KL University,
Green Fields, Vaddeswaram,
Guntur- 522502
Andhra Pradesh,
India

Dear Principal,
I am visiting Vijayawada next week on Wednesday. I would like to visit your school and if possible, discuss a potential opportunity with you and your students. The opportunity is around a summer experience to work on a research project for two weeks. I attached the flyer describing the project. Please let me know if it is possible to visit your institution.

If you have any questions, please do not hesitate to contact you.

Thanks,

C. S. Condoor

Dr. Sridhar Condoor
Chair & Professor
Department of Aerospace & Mechanical Engineering

Saint Louis University - Summer Experience

Sridhar Condoor <condoor@slu.edu>

Thu 08-10-2015 05:39

To: Dr. Kishore Babu M <kishore@kluniversity.in>;

2 attachments (1 MB)

KLU.docx; 8.5 x 11 flyer v6.pdf;

Dear Kishore,

I am visiting Vijayawada next week on Wednesday. I would like to visit your school and if possible, discuss a potential opportunity with you and your students. The opportunity is around a summer experience to work on a research project for two weeks. I attached the flyer describing the project. Please let me know if it is possible to visit your institution.

If you have any questions, please do not hesitate to contact you.

Thanks,

--

Dr. Sridhar S. Condoor

Professor and Chair - Aerospace & Mechanical Engineering Department
Saint Louis University
Saint Louis, MO 63103

314-977-8444w/314-698-8615c

Editor - Journal of Engineering Entrepreneurship
www.jeenonline.org

https://twitter.com/sridhar_condoor

From: Dr. Kishore Babu M [kishore@kluniversity.in]
Sent: Sunday, April 19, 2015 3:52 AM
To: Ramakrishna Janaswamy
Cc: SUSRUTHA BABU; SUPARSHYA BABU
Subject: Greetings from K L University, India- Request for admission in to Ph.D program

Dear Prof Rama Krishna Janaswamy

Greetings to you from K L University. After long time writing this mail to you. Hope you are doing well. I recall your visit to K L University and also your great help to Mrs Kavya to completing her Ph.D succesfully.

Sir, I take this opportunity to place a request for seeking admission for Two faculty members 1. Mr. Susrutha Babu Sukhavasi M.Tech.,M.I.S.T.E.,M.IAENG., working as ASSISTANT PROFESSOR, in Department of ECE. and 2. Mr Suprashya Babu, Both are very keen in research & Hardworking too. Their area of interest is Embeded Systems

They wish to do his Ph.D under your supervisorship with possible financial assistance. I herewith keep them in loop for further communication.

Kindly their request may be considered with a positive note and with your blessings.

Note Request: Mr Sushruth & Mr Suprasha please attach your profiles for reference.

Thank you in anticipation.

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 863 2399 999 ext 1119

Mobile: +91 80080 66060 or 9966006063
web: www.kluniversity.in

FW: Prof. Prasad KDV Yarlagadda visit to K L University on 8th Oct 2012- Request for permision

24

4

kishore <kishore@kluniversity.in>

Thu 04-10-2012 15:36

To:Registrar's Office <registraroffice@kluniversity.in>;

Cc:Prof. BVA Rao <bvarao@kluniversity.in>; Vice Chancellor <vc@kluniversity.in>;

Respected Sir

Good afternoon. I am here with forwarding a mail from Dr Prof. Prasad K D V Yarlagadda, Ph.D FIE Aust., FIE(India), Fellow AMME, C.Eng., C.P.Eng., Professor in Smart Systems, **Project Director: Airports of the Future**, Queensland University of Technology, to your kind perusal.

Sir In obedience to directions of our honorable Vice-Chancellor, Dr Prof. Prasad KDV Yarlagadda is invited to our campus on 8th Oct 2012.

Kindly grant permission to avail Chairman's conference hall on 8th Oct 2012 from 10.30 am to 11.30 am.

I humbly request you to issue circular to all Deans & Directors and HoDs of CSE, IT, CIVIL, Mechanical, Electrical & ECE to join the meeting and also the concern people.

Thank you sir

Sincerely

M Kishore Babu
Director
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 192

From: Prasad Yarlagadda [y.prasad@qut.edu.au]
Sent: 04 October 2012 15:18:21
To: kishore
Subject: Re: Cordial invitation to visit K L University on 8th Oct 2012

Kishore

Thank you for your email. I think It is a good idea to give a presentation on a multi-displinary research project, which I am heading as a project Director. This project involves engineers from all disciplines such as electrical, computer science, civil, architecture, production, mechanical,Information Technology, mathematics, business process modelling and Human systems.

This project is relevant all aspects of engineering and IT, hence I suggest that I will give a presentation on this topic, hence I request you to coordainate all the staff and students of engineering, Business and IT disciplines for this seminar. If you want to know more about the project, please look at the website http://www.Airportsofthefuture.qut.edu.au
I might present for 30-40 minutes (with 6 minute video that has been covered on Australian TV channels about this project) followed by 15 minute discussion. I shall prepare and bring the presentation on my USB

As proposed by you, I am happy to meet up with all Deans and Directors and engage discussion on collaboration as well and also will brief possible opportunities for your students and staff in Australia.

Best regards,

prasad

Prof. Prasad KDV Yarlagadda
Ph.D FIE Aust., FIE(India), Fellow AMME, C.Eng., C.P.Eng.
Professor in Smart Systems
Project Director: Airports of the Future
School of Chemistry, Physics and Mechanical Engineering
Science and Engineering Faculty
Queensland University of Technology
2, George Stret, Brisbane Qld 4001, Australia
http://eprints.qut.edu.au/view/person/Yarlagadda,_Prasad.html
http://www.Airportsofthefuture.qut.edu.au
Homepage:http://staff.qut.edu.au/staff/prasady/

From: kishore <kishore@kluniversity.in>
Date: Thu, 4 Oct 2012 19:34:19 +1000
To: Prasad Yarlagadda <y.prasad@qut.edu.au>
Cc: "Prof. BVA Rao" <bvarao@kluniversity.in>, Registrar's Office <registraroffice@kluniversity.in>, Vice Chancellor <vc@kluniversity.in>, PRESIDENT-KLEF <president@kluniversity.in>
Subject: RE: Cordial invitation to visit K L University on 8th Oct 2012

Dear Dr Prasad KDV Yarlagadda garu

Thank you for your quick & detailed mail. Well your visit may comprise of meeting with Deans & Directors to explore the possibilities for collaboration and followed by an Interface with Mechanical Engineering Staff.

We will be delighted if you could address the students of Mechanical Engg. as well. Kindly let me know the topic that your good selves would like to speak on.

Thank you sir,

Sincerely

M Kishore Babu
Director
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 192

From: Prasad Yarlagadda [y.prasad@qut.edu.au]
Sent: 04 October 2012 14:42:41
To: kishore
Subject: Re: Cordial invitation to visit K L University on 8th Oct 2012

Dr.Kishore

Thank you for your invitation and also your phone call this morning. I will be staying at my mother's place in Ayappa nagar (behind SIRIS company). I will send exact address once I reach vijaaywada and may send you a sms to your mobile number given below your signature below

I also appreciate if you can kindly let me know what you expect me to do during this visit. If you want me to do a presentation, then I may need touring my note book computer. If you want me to give a presentation, what will be targeted audians. Alternatively, I am happy to have a brief discussion with various academic staff from

different groups. You can find out my research acrivirteis and administrative roles from my home pages given at the bottom of my signature files

Regards,

Prasad

Prof. Prasad KDV Yarlagadda
Ph.D FIE Aust., FIE(India), Fellow AMME, C.Eng., C.P.Eng.
Professor in Smart Systems
Project Director: Airports of the Future
School of Chemistry, Physics and Mechanical Engineering
Science and Engineering Faculty
Queensland University of Technology
2, George Stret, Brisbane Qld 4001, Australia
http://eprints.qut.edu.au/view/person/Yarlagadda,_Prasad.html
http://www.Airportsofthefuture.qut.edu.au
Homepage:http://staff.qut.edu.au/staff/prasady/

From: kishore <kishore@kluniversity.in>
Date: Thu, 4 Oct 2012 18:57:50 +1000
To: Prasad Yarlagadda <y.prasad@qut.edu.au>
Cc: "yvhr_me@klce.ac.in" <yvhr_me@klce.ac.in>, Vice Chancellor <vc@kluniversity.in>, Registrar's Office <registraroffice@kluniversity.in>, "Dr. A Srinath" <srinath@kluniversity.in>, Principal - Engg <principal_engg@kluniversity.in>, Dean - Academics <drkrk@kluniversity.in>, "Prof. BVA Rao" <bvarao@kluniversity.in>, Raja H Koneru <krh@kluniversity.in>, "gldatta_05@yahoo.co.in" <gldatta_05@yahoo.co.in>, PRESIDENT-KLEF <president@kluniversity.in>
Subject: Cordial invitation to visit K L University on 8th Oct 2012

Dear Dr Prasad KDV Yarlagadda

Greetings to you. We cordially welcomes you to visit K L University on Monday, the 8th October 2012. Sir we will pick you up at 10 am in Vijayawada. Please give us the details of your place of stay in Vijayawada.

Thank you

M Kishore Babu
Director
International Relations
K L University, Andhra Pradesh, India
Phone: +91.8645 246 948 ext 192

Phone: +91 80080 66060

Sucala, Ion <I.Sucala@exeter.ac.uk>

26

Fri 12-02-2016 15:05

6

To: Dr. Kishore Babu M <kishore@kluniversity.in>;

Hi dr. Kishore,

The package arrived only today (see below) at my office. So probably next week I'll write and send the evaluation.

Best regards,

Ion

Ion Voicu Sucala, PhD
Senior Lecturer in Engineering Management
College of Engineering, Mathematics and Physical Sciences
University of Exeter

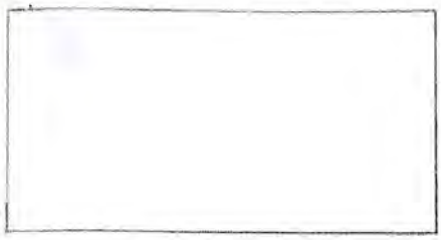
From: Redshaw, Steve
Sent: 12 February 2016 09:00
To: Sucala, Ion
Subject: Package

Hi Ion,

I have a package for you from India. The Stores will be open until 1600hrs today should you wish to collect.

Kind Regards

Steve Redshaw
Stores Technician (Harrison Building)
University of Exeter
01392 723723
www.exeter.ac.uk

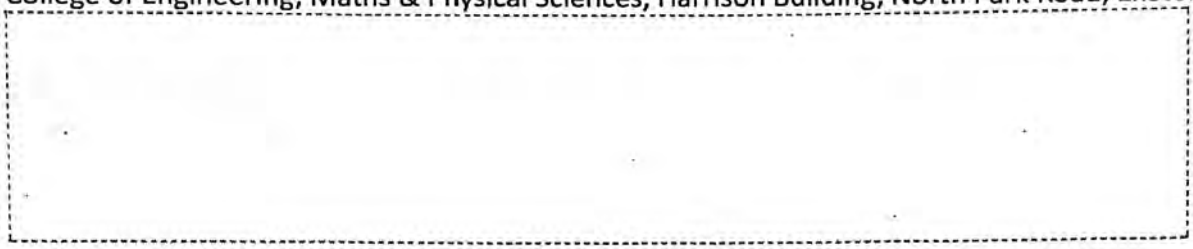


University of Exeter, UK

www.exeter.ac.uk

The University of Exeter in Exeter, Devon, and Falmouth, Cornwall, UK, offers research and study in sciences, social sciences, business, humanities and arts.

College of Engineering, Maths & Physical Sciences, Harrison Building, North Park Road, Exeter, Devon, EX4 4QF



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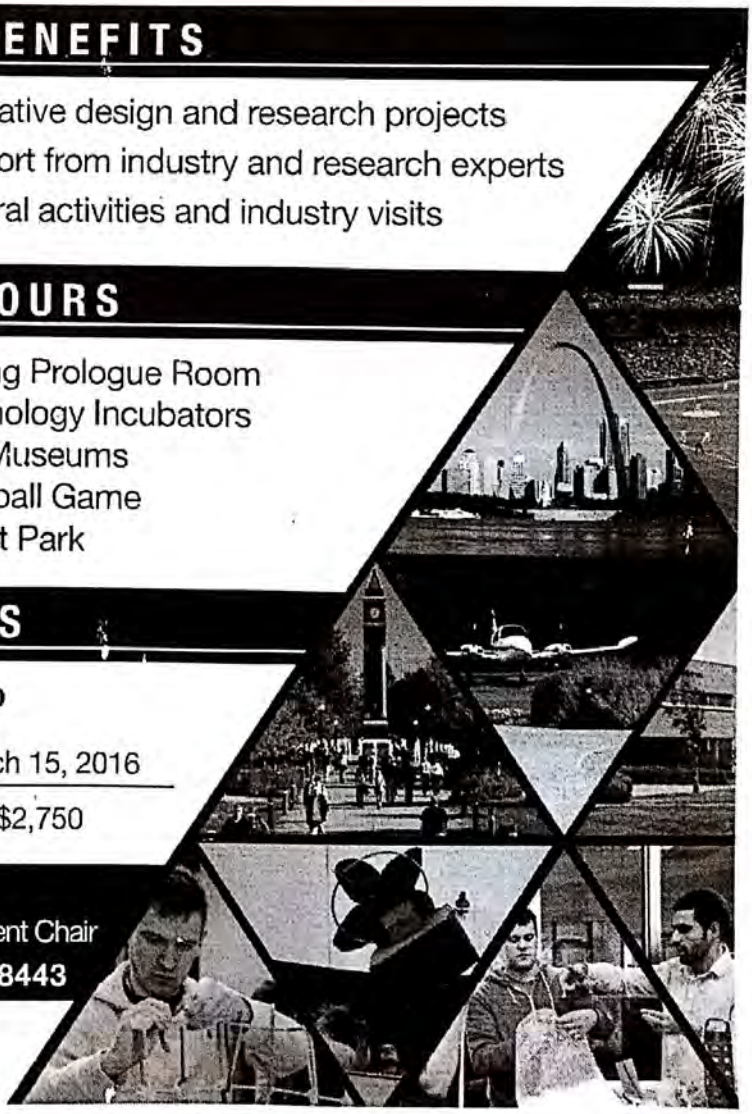

APPLICATION & FEES

Apply online at **parks.slu.edu/srtp**

Application Received By	January 15, 2016	March 15, 2016
Tuition	$2,500	$2,750

CONTACT: **Dr. Sridhar Condoor**
Aerospace & Mechanical Engineering Department Chair
parksevents@slu.edu or **314.977.8443**

SAINT LOUIS UNIVERSITY | PARKS COLLEGE of ENGINEERING, AVIATION AND TECHNOLOGY

Re: KL team visit at TUC-N

voicu sucala <voicu.sucala@mis.utcluj.ro>

Wed 03-09-2014 00:17

To: Dr. Kishore Babu M <kishore@kluniversity.in>;

Dear dr. Kishore,

I don't think there are available fund for such a visit, but I'll ask about in the following days.

I'll keep you updated about it.

Best regards,

voicu

Voicu Sucală
PhD, Assoc. Prof.

Technical University of Cluj-Napoca
Department of Management and Economic Engineering

Joint Office Fraunhofer IAO - Technical University of Cluj-Napoca
Centre of Russian, Central and East European Studies - University of Glasgow

Tel: +40 (264) 401-600
Mobil: +40 (741) 055-050
Voicu.Sucala@mis.utcluj.ro
i.sucala.1@research.gla.ac.uk

On 30 Aug 2014, at 13:40, Dr. Kishore Babu M <kishore@kluniversity.in> wrote:

> Dear Dr. Sucala,
>
> Greetings. Is there any possibility to meet the expenses of Air-fare (Hyderabad to Romania) of Team from K L University?
>
> Warm regards,
>
> Sincerely,
>
> **Dr M. Kishore Babu Ph.D**
> **Director,**
> **International Relations**
> K L University, Andhra Pradesh, India
> Phone: +91 8645 246 948 ext 1119
>
> Mobile: +91 **80080 66060** or 9966006063
> web: www.kluniversity.in

From: voicu sucala <voicu.sucala@mis.utcluj.ro>
Sent: 30 August 2014 10:01
To: Dr. Kishore Babu M
Cc: KLU Int. Relations
Subject: KL team visit at TUC-N

Greetings from Romania,

Our academic year will begin on Monday. Please let me know about KLU management decision regarding the visit in Romania.

I would like to start the invitation procedure as soon as possible. According to the MOU, TUC-N will take care about all local costs - accommodation, meals and transportation.

All the best,

voicu

Voicu Sucală
PhD, Assoc. Prof.

Technical University of Cluj-Napoca
Department of Management and Economic Engineering

Joint Office Fraunhofer IAO - Technical University of Cluj-Napoca
Centre of Russian, Central and East European Studies - University of Glasgow

Tel: +40 (264) 401-600
Mobil: +40 (741) 055-050
Voicu.Sucala@mis.utcluj.ro
i.sucala.1@research.gla.ac.uk

Re: time schedules for next 6 working days till 14th Aug 2014

Ion Voicu Sucala <voicu.sucala@mis.utcluj.ro>

Wed 06-08-2014 21:40

To Dr. Kishore Babu M <kishore@kluniversity.in>;

Ok, thanks

Best regards,

Voicu

Technical University of Cluj-Napoca, Romania
University of Glasgow, UK

Pe 06.08.2014, la 20:39, "Dr. Kishore Babu M" <kishore@kluniversity.in> a scris:

PS: Small change tomorrow your class i.e on 7th Aug will commence at 9.00 am

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 1119

Mobile: +91 **80080 66060** or 9966006063
web: www.kluniversity.in

From: Dr. Kishore Babu M
Sent: 06 August 2014 20:38
To: voicu sucala
Cc: KLU Int. Relations; Anil Chanumolu- Manager-International Relations.; Srinivasa Rao; Dr. V V Madhav; Madhusudhana Rao Kota
Subject: RE: time schedules for next 6 working days till 14th Aug 2014

Dear Dr Sucala,

Good evening. here is the detailed day wise Time schedule:

KL UNIVERSITY BUSINESS SCHOOL										
Dr.AVS Kamesh: Course Coordinator for LSCM Mr VasuDevareddy: Course Coordinator for OB										
TIMETABLE										
Date	DAY	9.00-10.00	10.00-11.00	11.00-11.20	11.20-12.20	12.20-1.20	1.20-2.15	2.15-3.10	3.10-3.20	3.20-4.15	4.15.-5.10
7th Aug	THU		OB		OB		LSCM-LL			LSCM	
8th Aug	FRI		OB		LSCM		LSCM				
9th Aug	SAT	RESEARCH MEETING at 11.00 noon									
10th Aug	SUN	REST DAY									
11th Aug	MON		OB	TEA BREAK	LSCM	LUNCH	LSCM		BREAK		
12th Aug	TUE		OB		LSCM						
13th Aug	WED		OB		LSCM						
14th Aug	THU		OB		OB		LSCM-LL			LSCM	

Mr Prasad will come pick you up at Hotel at 8.30 am tomorrow.

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 1119

Mobile: +91 **80080 66060** or 9966006063
web: www.kluniversity.in

From: voicu sucala <voicu.sucala@mis.utcluj.ro>
Sent: 06 August 2014 18:41
To: Dr. Kishore Babu M
Subject: Re: time schedules for next 6 working days till 14th Aug 2014

Dear Dr. Kishore,

Thank you for the time schedule. However it is not very clear the programme for tomorrow.

And according to my calculations, there are 6 working days (from Thursday to next Thursday) and only 5 days in the time schedule.

Please clarify this when possible.

Best regards,

voicu

Voicu Sucală
PhD, Assoc. Prof.

Technical University of Cluj-Napoca
Department of Management and Economic Engineering

Joint Office Fraunhofer IAO - Technical University of Cluj-Napoca
Centre of Russian, Central and East European Studies - University of Glasgow

Tel: +40 (264) 401-600
Mobil: +40 (741) 055-050
Voicu.Sucala@mis.utcluj.ro
i.sucala.1@research.gla.ac.uk

On 06 Aug 2014, at 17:04, Dr. Kishore Babu M <kishore@kluniversity.in> wrote:

Dear Dr Sucala,

Here is your time schedules for next 6 working days till 14th Aug. (Except Saturday i.e.)

KL UNIVERSITY BUSINESS SCHOOL									
Dr.AVS Kamesh: Course Coordinator for LSCM MBA II year					Mr VasuDevareddy: Course Coordinator for OB- BBA III				
TIMETABLE									
DAY	9.00-10.00	10.00-11.00	11.00-11.20	11.20-12.20	12.20-1.20	1.20-2.15	2.15-3.10	3.10-3.20	3.20-4.15	4.15.-5.10
MON		OB	TEA BREAK	LSCM	LUNCH	LSCM		BREAK		
TUE		OB	TEA BREAK	LSCM						
WED		OB	TEA BREAK	LSCM						
THU	OB		TEA BREAK	OB		LSCM-LL			LSCM	
FRI		OB	TEA BREAK	LSCM		LSCM				
SAT										

Re: Meeting No:3 on Horizon 2020 with RPAC Chairmen & Dean R&D is scheduled at 3.00 pm in Conference Hall F008 in FED building.

voicu sucala <voicu.sucala@mis.utcluj.ro>

Fri 08-08-2014 17:01

To: Dr. Kishore Babu M <kishore@kluniversity.in>;

Cc: Dr. K L Narayana <drkln@kluniversity.in>; RPAC Chairmen <allrpac@kluniversity.in>; ALL HODS <hods@kluniversity.in>; Dr. Subrahmanyam <smkodukula@kluniversity.in>;

Dear Dr. Kishore,

Thank you, I will prepare few information for the meeting.

Best regards,

voicu

Voicu Sucală
PhD, Assoc. Prof.

Technical University of Cluj-Napoca
Department of Management and Economic Engineering

Joint Office Fraunhofer IAO - Technical University of Cluj-Napoca
Centre of Russian, Central and East European Studies - University of Glasgow

Tel: +40 (264) 401-600
Mobil: +40 (741) 055-050
Voicu.Sucala@mis.utcluj.ro
i.sucala.1@research.gla.ac.uk

On 08 Aug 2014, at 16:57, Dr. Kishore Babu M <kishore@kluniversity.in> wrote:

> Dear Dr Sucala,
>
> Greetings to you. Tomorrow meeting No:3 on Horizon 2020 with RPAC Chairmen & Dean R&D is scheduled at 3.00 pm in Conference Hall F 008 in FED building.
>
> Mr. Prasad will receive you at Hotel.
>
> Warm regards,
>
> Sincerely,
>
> **Dr M. Kishore Babu Ph.D**
> **Director,**
> **International Relations**
> K L University, Andhra Pradesh, India
> Phone: +91 8645 246 948 ext 1119

Re: voicu sucala <voicu.sucala@mis.utcluj.ro>;

Livia 27

7

Dr. Kishore Babu M

Fri 10-10-2014 15:04

To: Livia Anastasiu <anastasiu.livia@yahoo.com>;

Cc: Ion Voicu Sucala <voicu.sucala@mis.utcluj.ro>;

Bcc: Dr. LSS Reddy <drlssreddy@kluniversity.in>; Anil Chanumolu- Manager-International Relations. <anilchanumolu@kluniversity.in>; KLU Int. Relations <internationalrelations@kluniversity.in>;

Dear Dr Livia

Dear Dr Livia

Greetings to you. Thank you so much for sending Invitations.

If possible please forward these invitations & inform the Embassy about our Visit. So that there will not be any delay to seek VISA.

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 1119

Mobile: +91 **80080 66060** or 9966006063
web: www.kluniversity.in

From: Livia Anastasiu <anastasiu.livia@yahoo.com>
Sent: 10 October 2014 14:56
To: Anil Chanumolu- Manager-International Relations.; KLU Int. Relations; Dr. Kishore Babu M
Cc: Ion Voicu Sucala
Subject: Re: voicu sucala <voicu.sucala@mis.utcluj.ro>;

Greetings from Romania.
I sent you the invitations.
Please send me an email confirmation.
Best regards,
Livia Anastasiu

Re: flight reservation - suggest you to please book your tickets on 18th January 2015 & you can reach Vijayawada on 19th Jan 2015

Livia Anastasiu <anastasiu.livia@yahoo.com>

Tue 20-01-2015 00:49

To: Dr. Kishore Babu M <kishore@kluniversity.in>; Anil Chanumolu- Manager-International Relations. <anilchanumolu@kluniversity.in>;

2 attachments (174 KB)

Itinerary HYD vIJ 25.01.2015 NF7901040940433.Eticket.pdf; Ticket for Cluj - Hyderabad return flight 25.01.2015 -- Trip ID 15011628220.docx;

Greetings from Romania.
Here are my tickets.
I will be in Vijayawada on Sunday, 25 ian 2015, at 12.25.
Will someone wait for me there?
Thank you again
Livia Anastasiu

On Tuesday, January 13, 2015 7:42 AM, Dr. Kishore Babu M <kishore@kluniversity.in> wrote:

Dear Dr Livia,

Greetings to you. The scheduled dates seems alright.

You can book the Economy class Flight ticket. We will reimburse on your arrival. Please book the ticket at the earliest otherwise prices will go up.

But let me know the price of Ticket.

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 1119

Mobile: +91 **80080 66060** or 9966006063
web: www.kluniversity.in

From: Livia Anastasiu <anastasiu.livia@yahoo.com>
Sent: 13 January 2015 03:51
To: Dr. Kishore Babu M; Anil Chanumolu- Manager-International Relations.; Voicu Sucala

Subject: Re: flight reservation - suggest you to please book your tickets on 18th January 2015 & you can reach Vijayawada on 19th Jan 2015

Hello,
I called the Embassy, I have the visa.
I cannot make the booking for the flight because they ask for the person who will make the payment (account, credit card, etc).
I will tell you my option:
- From Cluj to Vjayawada:
  - 23.01.2015 Cluj-Napoca (09.30) - Bucharest (10.40) TAROM company
  - 24.01.2015 Bucharest (07.30) - Hyderabad (8.40) TAROM company (via Munchen, Dubai)
  - 25.01.2015 Hyderabad (9.40) - Vijayawada (10.30) Air India
- From Vijayawada to Cluj:
  - 11.02.2015 Vijayawada (17.10) - Hyderabad (18.00) Air India
  - 11.02.2015 Hyderabad (21.15) - Bombay (22.45) Air India
  - 12.02.2015 Bombay (01.25) - Cluj-Napoca (11.45) Lufthansa (via Munchen)

This is my option, but if you can find other variants, it`s OK for me (as long as they are no more than 20-22 flight hours).
I think you have my passport. If not, I will send it to you.
Thank you
Livia Anastasiu

On Sunday, January 4, 2015 10:33 AM, Livia Anastasiu <anastasiu.livia@yahoo.com> wrote:

Hello,
I just said that they scheduled me to go to the Ambasy and take the visa on 12th, and only then I will see if it starts with 12 or with 25, as in the invitation you sent me. That`s why for now I don`t know if I can come on 19. But I will book my flight for 18 (arrive to Vijayawada on 19) and if the visa begins with 25, I will cancel and make a new one. Is it OK?

On Sunday, January 4, 2015 8:59 AM, Dr. Kishore Babu M <kishore@kluniversity.in> wrote:

Dear Dr. Livia

Greetings to you. Please let me know your proposed schedule. On which date you wish to arrive?

We are not asking for advancing of your visit. You suggested in your previous mail that you are planning to come 12th Jan 2014.

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 1119

Mobile: +91 **80080 66060** or 9966006063
web: www.kluniversity.in

From: Livia Anastasiu <anastasiu.livia@yahoo.com>
Sent: 02 January 2015 21:11
To: Dr. Kishore Babu M
Subject: Re: flight reservation - suggest you to please book your tickets on 18th January 2015 & you can reach Vijayawada on 19th Jan 2015

Dear Sir,
Thank you for answering so quickly.
I don't know if it's possible for me to come earlier, because I asked for visa beginning with 24th of January. Only on the 12th I will be aware of the date in the passport. I can make the booking on 19th of January and maybe canceling later.
Shall I do so?

On Friday, January 2, 2015 3:42 PM, Dr. Kishore Babu M <kishore@kluniversity.in> wrote:

Dear Dr Livia,

Greetings to you from K L University. I wish you very happy new year. Thank you for accepting our request to visit K L University.

I wish to inform you that from K L University will be on short vacation from 12 to 16th January 2015 and followed by sessional examination on 17th to 19th Jan 2015.

Hence I would **suggest you to please come on 19th January 2015** and can start taking classes from 20th Jan 2015 on wards for civil & mechanical engineering students.

Note: Please book your tickets accordingly. Please make it at the earliest before price escalate (increase)

Request: K L University team wish to visit your university as a part of **Horizon 2020** European Council Research Project during February 2015.

I will send the details of persons after taking approval from our honorable authorities. Then you can issue invitations accordingly.

Thank you,

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 1119

Mobile: +91 **80080 66060** or 9966006063

web: www.kluniversity.in

From: Livia Anastasiu <anastasiu.livia@yahoo.com>
Sent: 02 January 2015 15:00
To: Dr. Kishore Babu M; Voicu Sucala
Subject: flight reservation

Greetings from Romania and Happy New Year!
I have applied for the visa, it will be for one year and I will take it on 12th of January.
Regarding the flight, I have two choices: Cluj-Munich-Mumbai-Hyderabad or Cluj-Heathrow-Hyderabad, but the first one is more convenient (20 hours instead of 27 and I won`t need accomodation in Hyderabad).
Which one shall.I choose?
Do you want me to bring something from Romania?
Thanks for the support,
Best regards
Livia Anastasiu

FW: Brochure of STC

Putcha, Chandrasekhar <cputcha@Exchange.FULLERTON.EDU>

Mon 01-05-2017 06:56

28

To: Dr. Kishore Babu M <kishore@kluniversity.in>;

Cc: hanumantharao.chappidi@gmail.com <hanumantharao.chappidi@gmail.com>;

12

1 attachments (657 KB)

QIP_STC_KKPathak.pdf;

Dear Dr. Kishore Babu garu:

I have just been told that GIAN approved my 1-week course in the optimization area (The course was submitted for approval in the beginning of 2016).

So, I will be teaching this GIAN approved 1-week optimization course at IIT/Indore from July 17-21.

This is in addition to the Reliability course at IIT/BHU (funded by IIT/BHU - see my email below for details and the attached brochure) from May 29-June 9, which I believe is believe is being offered s a QIP course.

That takes care of both of my main research areas (Reliability/Risk Analysis and optimization).

I don't know if private schools faculty can attend QIP/GIAN courses.

In any case, I just wanted to inform you people.

I will be coming to India on May 25 and will be leaving back to USA on July 24.

Best regards,

Dr. Chandrasekhar Putcha
Professor

From: Putcha, Chandrasekhar
Sent: Thursday, March 02, 2017 1:38 PM
To: Dr. Kishore Babu M
Subject: FW: Brochure of STC

Did you get it?

From: Putcha, Chandrasekhar
Sent: Wednesday, March 01, 2017 1:23 PM
To: 'Dr. Kishore Babu M'
Subject: Brochure of STC

Dear Dr. Kishore Babu garu:

How are you?

Please see the attached brochure for a short course on Reliability and Risk Analysis (taught by me) being conducted at IIT/BHU this summer (May 29- June 9, 2017).

Since this is an interdisciplinary course, it might be of interest to different disciplines in addition to of course, various branches of Engineering.

You and/or your colleagues at K.L. university may want to attend it as it is a very useful course in my opinion.

Please let me know after you get this e-mail.

Thank you.

Dr. Chandrasekhar Putcha

Professor

Department of civil and Environmental Engineering

California State University, Fullerton

Fullerton, CA 92834

USA

From: Dr. Krishna Kant Pathak, Professor, Dept. of Civil Engg., IIT (BHU) [kkpathak.civ@itbhu.ac.in]
Sent: Saturday, February 25, 2017 10:47 PM
To: Putcha, Chandrasekhar
Subject: Fwd: Brochure of STC
Dear sir,
Please find attached the final brochure of our course. You may also send it to some of your known people.
I am in Bhopal and will reach Varanasi on 2nd March.
with regards,
KKPathak
---------- Forwarded message ----------
From: Dr. Krishna Kant Pathak, Professor, Dept. of Civil Engg., IIT (BHU)
<kkpathak.civ@itbhu.ac.in<mailto:kkpathak.civ@itbhu.ac.in>>
Date: Thu, Feb 23, 2017 at 12:31 PM
Subject: Brochure of STC
To: "Head, Department of Civil Engg., I.I.T.(B.H.U.), Varanasi (INDIA)" <head.civ@itbhu.ac.in<mailto:head.civ@itbhu.ac.in>>
Dear sir,
Finally I have prepared the Brochure of proposed STC on Reliability Engg. which is attached herewith. It has been approved by QIP center.
You are requested to send it officially to Prof.Rajiv Shrivastava, Dept.CSE for uploading on our website.
with regards,
KKPathak

--

Dr.K.K.Pathak
Professor
Department of Civil Engineering
Indian Institute of Technology (BHU)
Varanasi- 221005 INDIA
Cell : 09450546541, 09425303685

--

Dr.K.K.Pathak
Professor
Department of Civil Engineering
Indian Institute of Technology (BHU)
Varanasi- 221005 INDIA
Cell : 09450546541, 09425303685

RE: Request to make K L University faculty as partner in Joint Research Projects- reg...

Putcha, Chandrasekhar <cputcha@Exchange.FULLERTON.EDU>

Thu 28-01-2016 03:58

To:Dr. Kishore Babu M <kishore@kluniversity.in>;

Cc:Dr. Ch. Hanumantha Rao <hrao_ce@kluniversity.in>;

Dear Dr. Kishore Babu:

How are you?

I hope everything is going on fine with you.

I just wanted to give you an update on my retirement in continuation of my previous e-mail in this regard (see below).

I have submitted all the necessary papers for my retirement to be effective from May 29, 2016 after 35 years of service at California State University, Fullerton and more than 40 years in academia since my Ph.D. in 1975 from IIT/Kanpur.

After that, I will be working at California State University, Fullerton like an Emeritus Professor for 5 years with everything ending in December, 2020.

I will be coming to India this summer to teach a full 1-semester course in 1 month at a leading and prestigious private school in India (May 23-June 23) and then I will be returning back to USA by around July 1 as I have to work on a Navy research project.

Dr. Chandrasekhar Putcha
Professor

-----Original Message-----
From: Dr. Kishore Babu M [mailto:kishore@kluniversity.in]
Sent: Saturday, January 31, 2015 8:06 PM
To: Putcha, Chandrasekhar
Cc: Dr. Ch. Hanumantha Rao
Subject: Re: Request to make K L University faculty as partner in Joint Research Projects- reg...

Dear Dr Chandra sekhar,

Greetings to you. Thank you for your mail & update on your retirement . Happy to know that you have postponed your retirement to Fall 2016 at California State University. I believe it is an inviting decision.

Very glad to that you will be Keynote speaker at 3rd International Interdisciplinary Business-Economics Advancement Conference (IIBA 2015) to be held in Florida from March 28-April 2, 2015. We wish the conference be a great success. I am pretty sure that you will enlighten the participants with your knowledge base.

We at K L University intended to go for ABET accreditation soon. Past few years K L University has been striving hard to excel in R&D.

I may be permitted to request you to make our K L University faculty as a part of Joint Research projects that you will be taking up in future.

I look forward to your support & blessings.

Warm regards,

Sincerely,

Dr M. Kishore Babu Ph.D
Director,
International Relations
K L University, Andhra Pradesh, India
Phone: +91 8645 246 948 ext 1119

Mobile: +91 80080 66060 or 9966006063
web: www.kluniversity.in

From: Putcha, Chandrasekhar <cputcha@Exchange.FULLERTON.EDU>
Sent: 01 February 2015 02:48
To: Dr. Kishore Babu M
Cc: skguptanz@gmail.com; Shashi Gupta HOD-CE; Dr. Ch. Hanumantha Rao
Subject: Invitation as a keynote speaker at a Business-Economics conference

Dear Dr. Kishore Babu garu:

How are you?

How are things going at your university?

I have decided to postpone my retirement to Fall 2016.

I have been invited to be a keynote speaker at the upcoming 3rd International Interdisciplinary Business-Economics Advancement Conference (IIBA 2015) to be held in Florida from March 28-April 2, 2015. Actually the whole conference is on a 5-day cruise.

If you go to IIBA 2015 conference website and click on keynote speaker, you will find information about me.

Best regards,

Chandrasekhar Putcha

(1-19), 46

16-35

EXPRESSION OF INTEREST
K L UNIVERSITY,
VADDESWARAM, GUNTUR, A.P, INDIA

LETTER OF INTENT

AIESEC in **Vijayawada** is honored to join the hands to form an association with **KL University, Vijayawada**.This association between **KL University&AIESEC, Vijayawada**, pertaining to AIESEC Vijayawada's **University Partnership**.

As a part of association KL University shall extend following:

- Information Seminars for aspiring students who wish to enroll in to AIESEC.
- Providing college endorsement for AIESEC internships.
- Promote AIESEC internships on the campus.
- Allowing AIESEC to promote their activities during theselect events of the college

As a part of association, AIESEC shall extend following:

- Workshop/ Information session by an identified resource person to speak on Leadership and Entrepreneurship.
- Team building session to promote togetherness & harmony
- Youth Empowerment sessions twice in an academic year
- Promoting KL University as Educational Partner in all the events AIESEC at Vijayawada.

In this regard the details of joint activities; utilization of resources and results stemming from collaborative projects, and arrangements for specific visits, exchanges, and all other forms of cooperation will be negotiated in each specific case and will depend upon availability of specified resources. Further to this letter of Intent a Memorandum of Understanding may be initiated later for making this alliance very productive.

Signed for and on behalf of
KL University

Dr.M.KishoreBabu
Director
International Relations
KLUniversity

Dr. M. KISHORE BABU MBA, PhD,PhD
Director, Intl. Relations
K L University

Signed for and on behalf of
AIESEC in Vijayawada

30/1/15

Sri Ramakrishna Tummalapalli
Team Leader – Marketing
AIESEC in Vjjayawada

AIESEC

The international platform for young people to explore and develop their leadership potential

1-19, 46

LETTER OF INTENT

AIESEC in Vijayawada is honored to join the hands to form an association with **KL University, Vijayawada.**This association between **KL University&AIESEC, Vijayawada,** pertaining to AIESEC Vijayawada's **University Partnership.**

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In this regard the details of joint activities; utilization of resources and results stemming from collaborative projects; and arrangements for specific visits, exchanges, and all other forms of cooperation will be negotiated in each specific case and will depend upon availability of specified resources. Further to this letter of Intent a Memorandum of Understanding may be initiated later for making this alliance very productive.

Signed for and on behalf of
KL University

30/JAN/2015

Dr.M.KishoreBabuDirector
International Relations
KLUniversity

Dr. M. KISHORE BABU MBA,M.Phil,Ph.D
Director, Intl. Relations
K L University, Guntur 522 5

Signed for and on behalf of
AIESEC in Vijayawada

30/1/15

Sri Ramakrishna Tummalapalli
Team Leader – Marketing
AIESEC in Vjjayawada

Date :07.01.2015

To
The Director, Intl. Relations
K L University
Vaddeswaram

From
T. Sri Rama Krishna,
Team Leader- Marketing, AIESEC

PROPOSAL

Dear Sir,

Sub: Internship aboard – Study tour through AIESEC- for 1 month – proposal - reg....

Further to our discussions for internship abroad, I herewith present an estimate of expenditure towards making arrangements of VISA, Travel, Accommodation etc at Malaysia / Taiwan/ Singapore, to your perusal for approval

Target Group: MBA, BBA & B.Com

S No	Particulars	Remarks	Amount
1	Accommodation per month	Approximate	5000.00
2	Air fare* up& down	May vary	15000.00
3	Food (may vary as per the preferences)	Approximate	20000.00
4	Local Travel	65 X 15	8000.00
5	Phone / mail etc cost	Fuel to vehicle	1000.00
6	VISA.	Aprox	6200.00
7	**Proposed countries**	Malaysia, Taiwan, Singapore, China, Indonesia, Malta, Philippines, Vietnam, Poland, Srilanka, Nepal, Egypt	
	TOTAL		**55200.00**

Note: Total price may vary based on the country chosen by the student & Airfare

AIESEC will take care of following:

- ✓ VISA processing
- ✓ Accommodation, Food
- ✓ Flight booking & Local Travel
- ✓ Projects in identified countries

Thank you Sir,

Sincerely

T Rama Krishna
AIESEC

2016

36

NAFSA

42

NAFSA: Association of International Educators

1307 New York Avenue NW
Eighth Floor
Washington, DC 20005-4701
Telephone: 1.202.737.3699
Fax: 1.202.737.3657
E-mail: inbox@nafsa.org
http://www.nafsa.org

MARIVINA KISHORE BABU
Passport Number: L6526442
K L UNIVERSITY
K L UNIVERSITY, VADESWRAM, GUNTUR

Dear MARIVINA KISHORE BABU,

This letter serves as your invitation to attend the 2016 Annual Conference & Expo of NAFSA: Association of International Educators, which will take place May 29 – June 3, 2016 in Denver, Colorado. The theme for this year's conference is *Building Capacity for Global Learning.* More than 9,000 international educators from the United States and more than 90 countries are expected to attend the conference.

Please be aware that in order to visit the United States, you will need to obtain a visa to attend the 2016 NAFSA Annual Conference & Expo. We encourage you to contact the Consular Section of the Embassy or Consulate near your location to determine how to apply, and the likely time required for the process of visa issuance to be accomplished. NAFSA has no influence over the issue of a visa. We suggest that you arrange your travel and secure appropriate documents as soon as possible to avoid disappointment. For information on travel to the United States, please visit http://travel.state.gov/visa/

For the latest information, please visit NAFSA's website at www.nafsa.org/annualconference. Conference registration and official hotel reservation information will be made available beginning March 1, 2016.

We look forward to welcoming you to the conference.

Sincerely,

Marlene Johnson

Marlene M. Johnson
Executive Director and CEO

2016

37

41

NAFSA

NAFSA: Association of International Educators

1307 New York Avenue NW
Eighth Floor
Washington, DC 20005-4701
Telephone: 1.202.737.3699
Fax: 1.202.737.3657
E-mail: inbox@nafsa.org
http://www.nafsa.org

LAKKAM SHIVA SHANKER REDDY
Passport Number: K7662552
K L UNIVERSITY
K L UNIVERSITY, VADESWRAM, GUNTUR

Dear LAKKAM SHIVA SHANKER REDDY,

This letter serves as your invitation to attend the 2016 Annual Conference & Expo of NAFSA: Association of International Educators, which will take place May 29 – June 3, 2016 in Denver, Colorado. The theme for this year's conference is *Building Capacity for Global Learning.* More than 9,000 international educators from the United States and more than 90 countries are expected to attend the conference.

Please be aware that in order to visit the United States, you will need to obtain a visa to attend the 2016 NAFSA Annual Conference & Expo. We encourage you to contact the Consular Section of the Embassy or Consulate near your location to determine how to apply, and the likely time required for the process of visa issuance to be accomplished. NAFSA has no influence over the issue of a visa. We suggest that you arrange your travel and secure appropriate documents as soon as possible to avoid disappointment. For information on travel to the United States, please visit http://travel.state.gov/visa/

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We look forward to welcoming you to the conference.

Sincerely,

Marlene Johnson

Marlene M. Johnson
Executive Director and CEO

BUSINESS COOPERATION AGREEMENT (PROPOSED)

45

38

To,
Mr.Habib Mohammed Tuferu,
TN Education and Immigration Lawyers
C/O PL Forex Bureau,
Last Chance.
Gdewolu, Accra, Ghana

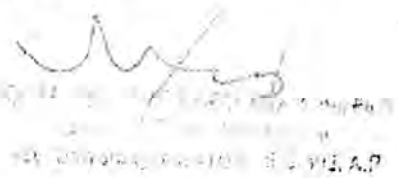
Sub: Proposal Appointment of Counseling cum Admission consultant at Ghana and other African Countries for K L University, India

Dear Sir,

With reference to the mail correspondence between your esteemed selves and us about a mutual desire to promote further cooperation between K L University, Vaddeswaram, Guntur, A.P., India and the TN Education and Immigration Lawyers, Ghana a leading, renowned education consultant in Ghana, find it mutually beneficial to seriously explore academic programs promotion at Ghana & other African Countries.

In this regard we are glad to associate with your office and appoint as Counseling cum Admission consultant at Ghana for K L University, India on the following terms & conditions:

1. TN Education and Immigration Lawyers will work as Counseling cum Admission consulting office in Accra, Ghana for K L University, India.
2. TN Education and Immigration Lawyers, shall promote the programs like B. Tech, BBA, B.Com, BHM, BHMCT, B.Sc (Visual Communications) at undergraduate level and MBA, MA, and M. Tech at Post-graduate level.
3. TN Education and Immigration Lawyers, office executives shall counsel the prospective students of Ghana to enroll in to academic programs of K L University and upon satisfactory academic credentials of the students, they will be referred to K L University International Relations, along with application form and the requisite fee to issue admission letter.
4. The Fee payment by the students shall be made in the form of Demand Draft or Electronic Transfer/ RTGS along with required supporting academic documents in line to K L University regulations. DD or RTGS/ Electronic transfer Payment receipt shall be presented at the time of Admission along with original education qualification certificates.
5. The fee structure of K L University is available in our website http://www.kluniversity.in/ir/fee.aspx and same is acceptable to you.
6. The students shall report to K L University campus, Vaddeswaram, A.P., India to pursue their studies of interest by registering in respective programs.
7. The admissions processed by TN Education and Immigration Lawyers, will be governed by the rules and regulations of K L University as applicable from time to time. Available at http://www.kluniversity.in/ir/admproc.aspx
8. **The students of Ghana are entitled for 30% of scholarship on the total fee as indicated for foreign students for the academic year 2014-15 onwards in all Academic programs except Ph.D programs.**



9. For each admission generated, *and after receiving first semester fee* from the student of respective program, you will be paid honorarium as follows:
    a) B. Tech - USD 500
    b) Under Graduate Programs (Other than B.Tech) - USD 400
    c) M.A (English)/ Diploma in English - USD 300
    d) MBA/ M.Tech - USD 400
10. No payment shall be received by you in your name or any other name towards admissions of K L University academic programs under any circumstances referring the name of K L University. However registration fee allowed as per TN Education and Immigration Lawyers norms.
11. You can appoint your sub-agents with prior information to K L University authorities. You should not indulge any illegal activities in the name of K L University. K L University will not use name of TN Education and Immigration Lawyers, Illegally.
12. While promoting the academic programs of K L University through advertisements, pamphlets, banners, hoardings, Radio, F.M, T.V. and website etc. you shall inform to K L University authorities to avoid false claims that will deteriorate the image of K L University.
13. TN Education and Immigration Lawyers, shall take the responsibility of students' reporting at K L University at the time of admission. If parents come along with students K L University will extend accommodation for two days to the parents of Ghana & Other Africa students.
14. K L University shall organize classes to all newly admitted Ghana Students to understand the modalities & regulations of Academic Programs of K L University.
15. K L University reserve the right to appoint the other admission consultant anywhere in Ghana and other African Countries
16. Either party can terminate this agreement/ offer by giving three months advance notice.
17. TN Education and Immigration Lawyers, shall keep K L University authorities informed the status of admissions from time to time.
18. Both parties agree that K L University, Vijayawada, A.P. India and TN Education and Immigration Lawyers, Accra, Ghana are independent entity. Nothing herein shall contained shall constitute the K L University and TN Education and Immigration Lawyers, legal representative, partner, affiliate,, subsidiary or joint venture etc.
19. Arbitration: All disputes and differences of whatsoever nature arising out of this agreement, whether during its term or after expiry thereof or prior termination shall be referred to sole arbitration of person nominated by President, K L University whose decision shall be final on every matter arising here under. The venue of arbitration shall only be Vijayawada, Andhra Pradesh, India. To the possible extent both parties shall resolve the conflicts through negotiation without indulging in legal issues.

If you agree to above terms & conditions, please sign as a token of acceptance

Accepted:

Dr M Kishore Babu
Director, International Relations
K L University, India
Date:

Dr. M. KISHORE BABU MBA,M.Phil,Ph.D
Director, Intl. Relations
K.L. University, GUNTUR - 522 502, A.P.

Accepted

Mr.Habib Mohammed Tuferu
TN Education and Immigration Lawyers
Accra,Ghana
Date:

41

38

NAFSA

Connecting People. Changing the World.

Koneru Surya Havish
Vice President, K L University
Green Fields, Vaddeswaram
Guntur Distt, Andhra Pradesh 522502
India

Dear Koneru Surya Havish,

This letter serves to confirm your registration and invite you to attend the 2017 Annual Conference & Expo of NAFSA: Association of International Educators, which will take place May 28 – June 2, 2017 in Los Angeles, California. The theme for this year's conference is *Expanding Community Strengthening Connections.* More than 9,000 international educators from the United States and more than 90 countries are expected to attend the conference.

If you must obtain a visa for this purpose, we encourage you to contact the Consular Section of the Embassy or Consulate near your location to determine how to apply, and the likely time required for the visa to be issued. NAFSA has no influence over the issue of a visa. We suggest that you arrange your travel and secure appropriate documents as soon as possible to avoid disappointment. For information on travel to the United States, please visit http://travel.state.gov/visa/

For the latest information, please visit NAFSA's website at www.nafsa.org/annualconference. Conference registration and official hotel reservation information will be made available beginning March 1, 2017.

We look forward to welcoming you to the conference.

Sincerely,

Dr. Esther D. Brimmer
Executive Director and CEO

42

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39

NAFSA
Connecting People Changing the World

Nidumolu Venkatram
K L University
Green Fields, Vaddeswaram
Guntur Distt, Andhra Pradesh 522502
India

Dear Nidumolu Venkatram,

This letter serves to confirm your registration and invite you to attend the 2017 Annual Conference & Expo of NAFSA: Association of International Educators, which will take place May 28 – June 2, 2017 in Los Angeles, California. The theme for this year's conference is *Expanding Community Strengthening Connections.* More than 9,000 international educators from the United States and more than 90 countries are expected to attend the conference.

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We look forward to welcoming you to the conference.

Sincerely,

Dr. Esther D. Brimmer
Executive Director and CEO

NAFSA: Association of International Educators
1307 New York Avenue NW Eighth Floor Washington DC 20005-4701 USA • Telephone [illegible] • Fax [illegible] • Email [illegible] • Web www.nafsa.org

2017

43

40

NAFSA
Connecting People Changing the World

Marivina Kishore Babu
Director, International Relations, K L University
Green Fields, Vaddeswaram
Guntur Distt, Andhra Pradesh 522502
India

Dear Marivina Kishore Babu,

This letter serves to confirm your registration and invite you to attend the 2017 Annual Conference & Expo of NAFSA: Association of International Educators, which will take place May 28 – June 2, 2017 in Los Angeles, California. The theme for this year's conference is *Expanding Community Strengthening Connections.* More than 9,000 international educators from the United States and more than 90 countries are expected to attend the conference.

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We look forward to welcoming you to the conference.

Sincerely,

Dr. Esther D. Brimmer
Executive Director and CEO

Re: K L University- UT Dallas Internship & Summer plans

44

46

Dr. Kishore Babu M

Sun 29-10-2017 16:28

To: Ravi Lothumalla <ravilothumalla@yahoo.com>;

Cc: Dr. LSS Reddy <drlssreddy@kluniversity.in>;

PRESIDENT-KLEF <president@kluniversity.in>; Havish <havish@kluniversity.in>, N Venkat Ram <venkatram@kluniversity.in>, Dr Jagadeesh Anne <drjagadeesh@kluniversity.in>

To
Sri Ravi Lothumalla,

Dear Sir,,

Greetings to you. Hope you are doing great. Further to our telecon few weeks back over phone for possible collaborations with University of Texas, Dallas, K L university is very keen to partner with UTD to promote for offering **Internship in USA, Joint Executive Programs, Certificate Programs, Degree Programs** at possible levels.

Please connect us with UTD or you can initiate the dialogue with officials of UTD for concluding this proposal.

We wish to invite faculty from UTD to teach select courses during January - March 2018 for a period of two weeks (preferably). K L university will pay the travel and honorarium.

We are open to further discussions.

Note to share:

- K L University ranked No: 2 for its clean & green campus in India
- K L University four students have been declared as University Innovation Fellows (UIF) which is a global program organized by D school of Stanford University.

I look forward to your positive response in this regard.

Warm regards,

Cordially,

Dr M. Kishore Babu Ph.D
Head, KLU Business School

Principal, College of Management

& Director, International Relations
K L University, Andhra Pradesh, India
Phone: +91 863 2399 999 ext 1119

Mobile: +91 **80080 66060** or 9966006063
web: www.kluniversity.in

From: Ravi Lothumalla <ravilothumalla@yahoo.com>
Sent: 16 February 2017 11:29
To: Dr. Kishore Babu M; Dr. LSS Reddy
Cc: Vice Chancellor - KLU; Raja H Koneru
Subject: Fw: [india-colleges] UT Dallas Internship & Summer plans

Kishore Sir:
Here is an Internships offer (J1) for students studying in KL University. Our talks have been cold storage. Please let me know how to activate our discussions and move forward sir.

Please feel free to reach me on **(917) 670-2021**
Thank you,

Ravi Lothumalla
Educational Consultant and Advisor
US Admissions | 1-800-Internships | Veracitians
US:

e: K L University- UT Dallas Internship & Summer plans

Dr. Kishore Babu M

Sun 29-10-2017 16:28

To: Ravi Lothumalla <ravilothumalla@yahoo.com>;

Cc: Dr. LSS Reddy <drlssreddy@kluniversity.in>;

Bcc: PRESIDENT-KLEF <president@kluniversity.in>; Havish <havish@kluniversity.in>; N Venkat Ram <venkatram@kluniversity.in>; Dr Jagadeesh Anne <drjagadeesh@kluniversity.in>;

To
Sri Ravi Lothumalla,

Dear Sir,,

Greetings to you. Hope you are doing great. Further to our telecon few weeks back over phone for possible collaborations with University of Texas, Dallas, K L university is very keen to partner with UTD to promote for offering **Internship in USA, Joint Executive Programs, Certificate Programs, Degree Programs** at possible levels.

Please connect us with UTD or you can initiate the dialogue with officials of UTD for concluding this proposal.

We wish to invite faculty from UTD to teach select courses during January - March 2018 for a period of two weeks (preferably). K L university will pay the travel and honorarium.

We are open to further discussions.

Note to share:

- K L University ranked No: 2 for its clean & green campus in India
- K L University four students have been declared as University Innovation Fellows (UIF) which is a global program organized by D school of Stanford University.

I look forward to your positive response in this regard.

Warm regards,

Cordially,

Dr M. Kishore Babu Ph.D
Head, KLU Business School

Principal, College of Management

& Director, International Relations
K L University, Andhra Pradesh, India
Phone: +91 863 2399 999 ext 1119

Mobile: +91 **80080 66060** or 9966006063
web: www.kluniversity.in

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Ravi Lothumalla
Educational Consultant and Advisor
US Admissions | 1-800-Internships | Veracitians
US:

Admissions", 12439 Orchid Dr,Frisco, TX 75035. C: (917) 670-2021 || F: 888-712-3843
DIA:
US Admissions", Suite: 405, Usha Kiran Arcade, 2-2-5 Osmania Univ Rd, Vidyanagar, Hyderabad, Telangana. India. Zip Code: 500 044
Rambabu: 91000-87716 || Devi: 91000-87717 || Devi: 91000-87718
Office: 040-6451 6464
SKYPE: Ravi.Lothumalla

On Wednesday, February 15, 2017 1:00 PM, Jey Veerasamy <jeyv@utdallas.edu> wrote:

Hello Indian College contacts,

We have completed processing the first round of applicants for one-month internship (whole month of June 2017) @ UT Dallas. We can accommodate a few more applications (from current 3rd year CSE/IT/ECE students studying in Indian Engg Colleges). Goal of this internship program is to introduce the interns to state-of-the-art technologies in CSE and also to expose them to US university environment & US culture. See the details regarding the program and the cost @ utdallas.box.com/v/intern2017 and the application materials are @ http://www.utdallas.edu/isso/j-intern. Once the registration limit is reached, UTDallas ISSO office will stop processing the applications. So, if your students are thinking about it, ask them to apply soon!

J-1 Student Interns - International Student Services - The ...
www.utdallas.edu

J-1 Student Intern Program. The J-1 Student Intern Program at UT Dallas is available to currently enrolled international students who are pursuing a degree at a ...

My next India trip is not finalized yet, but I do expect to be there from May 29 to June 9 or so. I understand, most students may be in vacation during that time, which makes it a great time for faculty development workshops! Details @ utdallas.edu/k12/india.htm I hope to expand my workshops to include Big Data and Cloud Computing using Amazon Web Services.

I also encourage you to take advantage of Indian Engg students who are currently studying in UTDallas & visiting India in Summer. They can give lectures on latest technology & conduct hands-on workshops as well. Please let me know if your college is interested to host such students.

Dr. Jey Veerasamy
Director, Center for Computer Science Education & Outreach
Teaching Faculty, Department of Computer Science
Office hours: Monday-Thursday 10-11am
972-883-4241 ECSS 3.231 jeyv@utdallas.edu
The University of Texas at Dallas

University of Madras

Guindy Campus, Chennai

Central Instrumentation & Service Laboratory

Date: 19-12-2016

TO WHOMSOEVER IT MAY CONCERN

For Kind Attention to: Addanki Satish, Dept. of ECE, K L University

In response to your request in the fabrication of optical sensors we agree to support you with the facilities available in our Research and Development Center at our campus. We will provide basic characterization and functional verification facilities and support you in the Joint Research Publication in connection with the project *Fabrication of ozone sensors on porous glass substrates using gold and silver thin films nanoislands.*

With Regards

(Dr. Nedumaran. D)

CIS Laboratory, University of Madras

University of Madras

Guindy Campus, Chennai

Central Instrumentation & Service Laboratory

Date: 19-12-2016

TO WHOMSOEVER IT MAY CONCERN

In response to your request in the fabrication of optical sensors our management agreed to support you with the facilities available in our Research and Development Center in reference to the Sanction No: C2/Res. Pro/NSNT/Proj.No.26/2011/184, by University of Madras. We will provide basic characterization and functional verification facilities and support you in the Joint Research Publication in connection with the project Fabrication and characterization of optical sensors using metallic core-shell.

Nedumaran. D.

(Dr. Nedumaran. D)

CIS Laboratory, University of Madras

جامعة الملك سعود
King Saud University

Dt: 28-11-2012

TO WHOM SO EVER IT MAY CONCERN

Dear Sir,

This is to inform you that the facility that is requested by you from our institute to carryout your research work by Department of Chemistry of K L University for the funded project (***Sanction No: RG-1436-032, DSR, KFU***) in collaboration with Deanship of Scientific Research, King Faisal University, will be provided in time. In support of your progressive work for ***Synthesizing Nanocomposite Catalyst,*** we provide our services to facilitate the compounds or Mixed Zinc/manganese and graphene oxide.

Best Wishes & Regards

M.R.H. Siddiqui

(Dr. M.R.H. Siddiqui)

Dept. of Chemistry, College of Science,
King Saud University

DAYANANDA SAGAR

ACADEMY OF TECHNOLOGY & MANAGEMENT

Date: 07-04-2017

To

N. Maragani,

Department of Physics,

K L University

In response to your request for the support to our work *'Structural and ionic conductivity studies on plasticized pan-sodium Flouride polymer electrolytes for electrochemical cell applications'*, our management agreed to work with you and the facilities available in our Research Center can be provided for synthesizing the polymer electrolytes.

Regards

(Dr. K. Vijaya Kumar)

Department of Physics, DSATM

SPACE APPLICATIONS CENTRE

Date: 27-12-2016

TO WHOM SO EVER IT MAY CONCERN

Dear Sir,

I, Sunda, S on behalf of AAI write to you to inform you that our organization has decided to accept your collaborative research activity with Department of Science and Technology, Government of Kerala; UGC, University Grants Commission; DST (***Vide Sanction No: RA201416GEANP5585 & SR/FST/ESI-130/2013***). On behalf of AAI, we can provide the ***Ionospheric vertical gradients for the Indian territory***.

Regards

(Dr. Surendra Sunda)

Jodhpur Tekra, Ambawadi Vistar, Ahmedabad, Gujarat 380015

國立中央大學 National Central University

National Central University

No. 300, Zhongda Rd., Zhongli District, Taoyuan City 32001, Taiwan (R.O.C.)
Tel: +886-3-4227151 Fax: +886-3-4226062

Dt: 19-12-2013

From:

G. Uma
Professor,
Institute of Space Science,
National Central University, Taiwan

TO WHOM SO EVER IT MAY CONCERN

Dear Sir,

I, G. Uma on behalf of NCU write to you to inform you that our university has decided to accept your collaborative research activity (*Vide Sanction No: NSC-101-2811-M-008-012, NSC, National Science Council Taiwan*) with the service we can provide from our institute for the research work comparative study between plasma bubble and blob distributions at different altitudes over the Indian sector. We will extend our support in this work with basic comparison and satellite related observations.

With Regards

G. Uma

(Dr. G. Uma)

Yeungnam University

School of Mechanical Engineering, 214-1 Dae-dong, South Korea

Dt: 15-11-2014

TO WHOM SO EVER IT MAY CONCERN

For Kind Attention of: G. Srinivas, Dept of Physics, K L University

We would like to inform you that our institution has agreed to work with you for a part of your research work with sanctioned MEST, Ministry of Education, Science and Technology; 2012R1A1A2009392, NRF. We can render our services towards the ***"Analysis nanoparticles and their thermal-magnetic properties"***

With Regards

(Dr. Prabhakar VSV)

MANIPAL UNIVERSITY

Tiger Circle Road, Madhav Nagar, Manipal, Karnataka 576104

Dt: 22-02-2014

To

Dr.B. Mahendran,

Professor,

Department of Bio-Technology,

K L University

It gives me an immense pleasure to collaborate with your research activity sanctioned by UGC with the service we can provide from our institute in Ketorolac Salt DDX3 inhibitor characterization.

We will extend our support in this work with basic synthesis in the material characterization meeting the financial requirements as per the policy of the institution.

BEST REGARDS

(Dr. S. K. Samal)

Yeungnam University

School of Mechanical Engineering, 214-1 Dae-dong, South Korea

Dt: 15-11-2014

To

B. Narendra,

Dept of Physics,

K L University.

Dear Mr.Narendra,

We are likely to inform you that our institution has agreed to work with your department of physics for a part of your research work with sanctioned MEST, Ministry of Education, Science and Technology; 2012R1A1A2009392, NRF. We can render our services towards the research work related to "***Calcination temperature on cobalt substituted cadmium ferrite nanoparticles***".

With Regards

C. V Reddy

(Dr. C. Venkata Reddy)

Professor, Dept. of ME

Murdoch UNIVERSITY

School of Engineering and
Information Technology
Perth campus
90 South Street, Murdoch
Western Australia 6150

Date: 23-10-2014

From:
Dr. M. Minakshi,
School of Engineering and Information Technology,
Murdoch University, Australia
Email: *minakshi@murdoch.edu.au*

To
Dr. Subbaiah. T,
Professor,
Department of Chemistry,
K L University,
Vaddeswaram-Guntur

Sub: Research Collaboration with K L University and Invitation - Reg.

This is to inform you that the facility that is requested by you from our institute to carry-out your research work will be provided in time as per our discussion via telephone. We will provide the sources to work out the research study on *Pathway of Sucrose Oxidation in Manganese (Pyrolusite)* to support your advanced and progressive research work.

This letter may also be considered as an invitation for your visit to our University for carrying out the research collaborative activities.

Best Regards

Min. Ksc. M.

(Dr. M. Minakshi)

University of Delhi

Benito Juarez Rd, South Campus, South Moti Bagh, New Delhi, Delhi 110021

Department of Chemistry

Date: 25-01-2015

TO WHOM SO EVER IT MAY CONCERN

We are pleased to intimating you that our university has agreed to work with you for a part of your research work with sanctioned by University Grants Commission, India (**Ref. No: 41-202/2012**). We can provide help for the research work entitled ***Insights into activity enhancement of 4-aminoquinoline-based hybrids using atom-based and field-based QSAR studies*** and can be contribute our effort for joint research publication.

With Regards

D. Rawat

(Prof. D.S. Rawat)

SANTA CLARA UNIVERSITY

500 El Camino Real, Santa Clara, CA 95053, USA

Dt: 03-08-2015

To

Dr.B.T.P.Madhav,

Department of ECE,

KL University,

ANDHRA PRADESH

INDIA.

Respected Sir,

I am interested to collaborate with your institution in regard to my research work related to antenna design in particular *Dual band notched planar printed antenna.* I will be grateful if you can support for the simulations, prototype development and measurements of the above-mentioned research work.

I will come to your laboratory and spend fruitful time during my visit to India, if you can permit me to complete the research work through your funded project File number: DST-FST-SR/FST/EIT-316/2012.

Yours Truly

K.V.L. Bhavani

(K.V.L. Bhavani)

Electrical Engineering Department
Santa Clara University

عبـــــدالعزيز الملـــك عةجام
KING ABDULAZIZ UNIVERSITY

From:
Shiak, N.A
Department of Genetic Medicine,
Faculty of Medicine,
King Abdulaziz University.

Date: 23-09-2016

TO WHOM SOEVER IT MAY CONCERN

Dear Sir,

I, Sheik N A on behalf of KAU write to you to inform you that our university has decided to accept your collaborative research activity with the service we can provide from our institute for the research work for the computational analysis of breast cancer GWAS Loci identification. We will extend our support in this work with variety of genes.

With Regards

Sheik N.A
(Dr. Sheik N. A)

Academy of Scientific and Innovative Research
CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT)
Acharya Vihar, Doordarshan Colony, Gajapati Nagar, Bhubaneswar, Odisha 751013

Date: 06-01-2013

For the Kind Attention to:

Dr. T Subbaiah,

Department of Petroleum,

K L University

TO WHOMSOEVER IT MAY CONCERN

Dear Sir,

We are likely to inform you that our institution has agreed to work with you for a part of your research work with joint research publication in standard journals. We can render our services towards the synthesis temperature on the growth and Surface morphology of Co_3O_4 nanocubes.

For any queries from the department, you may contact me on my email:barsha.dash@gmail.com

With Regards

Dash B.

(Dr. B. Dash)
Academy of Scientific and Innovative Research,
(CSIR-IMMT)

भारत सरकार
अन्तरिक्ष विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बालानगर, हैदराबाद -500 037, आं.प्र. भारत
टेलिफोन : +040-23879572-76
+040-23879261-65
फैक्स :+040-23878648

सत्यमेव जयते

Government of India
Department of Space
National Remote Sensing Centre
Balanagar, Hyderabad-500 037, A.P. India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Date 13-11-2016

To

Dr.D.V.Ratnam/Mr.D. J.R.K.Kumar,

Dept. of ECE

K L University

Dear **Dr.Ratnam,**

Kind atten: Mr. Kumar, Dept of ECE

In response to your request in Performance evaluation of linear time-series ionospheric **Total Electron Content model over low latitude** Indian GPS stations, we are pleased to support you with the facilities available in our Research Center. We will provide basic testing facilities and support you in the **Joint Publication** as per our discussions.

With Regards

Dr.M.Pradeep

Scientist-C

NRSC

भारत सरकार
अन्तरिक्ष विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
बालानगर, हैदराबाद-500 625, आं.प्र, भारत
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Government of India
Department of Space
National Remote Sensing Centre
Balanagar, Hyderabad - 500 625, A P, India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

Hyderabad,
17.05.2017.

From
G.Umadevi,
Group Director,
Satellite Data Systems Group,
NRSC, Balanagar,
Hyderabad, Telangana.

To
Dr. K. Sarat Kumar,
DEAN (Planning & Development),
KLUniversity, Green Fields,
Vaddeswram, Guntur (Dt.),
Andhrapradesh.

Sub: Ka – band Studies and link investigation – Reg.

Dear Sir,

NRSC has initiated the process of establishment of S/Ka- band Data Reception System (DRS) for Remote Sensing Satellites in Low earth Orbit (LEO).In view of Ka band data reception from the upcoming Satellites, Studies regarding Link margin, Propagation impairments encountered by the Ka band signal being transmitted from the satellite have been taken up. Rain attenuation in Ka- band is crucial for overall link margin and hence NRSC is interested in getting collaborated with KL University for modeling the impairments/study of Ka- band signal transmitted from Satellites in LEO by involving the students of KL University and providing necessary guidance for complete realization of the project.

A team from NRSC is interested in visiting your campus to assess the on going projects in Ka- band.

Warm Regards,

18/05/2017
(G.Umadevi)

CC: K.V.Ratna Kumar,
DD, SDR & ISA.

GH, PPEG

Shri V.V. Nageswara Rao, (Training Division)

DIRECTOR SDR & ISA OFFICE
Date 17/5/17
Time 1156

भारत सरकार
अन्तरिक्ष विभाग
राष्ट्रीय सुदूर संवेदन केन्द्र
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सत्यमेव जयते

Government of India
Department of Space
National Remote Sensing Centre
Balanagar, Hyderabad-500 037, A.P. India
Telephone : +040-23879572-76
+040-23879261-65
Fax : +040-23878648

D.Vijayan
Head
Training & Education Division / RSA

Telephones: 040-2388 4249/2388 4248
Fax: 040 – 2387 8816

SPEED POST /FAX:

NRSC:RSA-T&ED:6-Days/2017

Date:07.03.2017

Dr. K. Sarath Kumar,
DEAN, Planning & Development
K L University, Green Fields,
Vaddeswaram – 522502
Guntur Dt. Andra Pradesh

Dear Sir,

Sub: - **6 – Days Special Course on "Remote Sensing Ground Segment Systems" during 20 to 25 March, 2017.**

Please refer to your e-Mail dated 27.02.2017 wherein nominated **B. John Philip Bhimavarapu, Research Scholar** for participating in 6 – Days Special Course on " Remote Sensing Ground Segment Systems" during 20 to 25 March, 2017. Thank you for nominating your official.

We hereby confirm the admission of your nominee in the said course. ***You are requested to advise your Nominee to strictly adhere the NRSC security rules and regulations while he/she is in NRSC Campus. Laptop, Digital Cameras, electronics storage devices are strictly not permitted inside the campus. Personal Mobile phone is permitted.***

Kindly Send Original Certificate of Sponsorship along with Course Fee Demand Daft.

Thanking you for nominating your official.

Yours sincerely

(D. VIJAYAN)

CC: **B. John Philip Bhimavarapu, Research Scholar** Please find enclosed herewith copy of **"Hellow Trainee Officer"** which provides the details of organization and facilities available, logistics and instructions. You are requested to go through the details and follow the same.

THE HINDU COLLEGE

Estd: 1928 | A Grant-in-Aid College Approved by Govt. of AP

Affiliated to Krishna University

Machilipatnam – Krishna District – Andhra Pradesh - India

Dt: 12-08-2012

To

Dr. V G K M Pisipati,

Professor, Department of ECE,

LCRC R&D,

K L University,

Vaddeswaram

Dear Sir,

We are very happy to inform you that the facility that is requested by you from our institute to carry-out your research work (Vide Sanction No: DST-SR/S2/CP-0071/2008 & SR/WOS-A/PS-005/2010) will be provided meeting the financial aspects involved being met form the project funds. We will provide the characterization and nano-dispersion in the Liquid Crystalline Compounds to support your work for your scholars Mr.B.T.P. Madhav and Ms.M.Madhavi Latha on time bound basis with prior appointment.

Regards

P. V. Datta Prasad

(Dr. P. V. Datta Prasad)

Professor, Department of Physics

Hindu College, Machilipatnam

VIGNAN'S FOUNDATION
FOR SCIENCE, TECHNOLOGY AND RESEARCH

Dt: 28-11-2012

To

Dr.K. Sarat Kumar,

Department of ECE,

K L University

Dear Sir,

We are highly obliged to facilitate your requested research work for the funded project (F.No: AICTE-8023/RID/RPS-32/PVT (II Policy)/2011-12 & DST-SR/FTP/ETA-079/2009) under research collaboration. We will provide the inputs required for the Coaxial fed antennas stacking of patch antennas to support your work.

With Regards

(Dr. B. Anjaneyulu)

Associate Professor

Department of ECE

Vadlamudi - 522 213, Guntur Dist, A.P. India
Tel : (+91) 863-2534645, 2534646 Fax : (+91) 863-2534468

Dt: 28-11-2012

To

Dr. K. Sarat Kumar,

Department of ECE,

K L University

Dear Sir,

We are very happy to inform you that the facility that is requested by you from our institute to carry-out your research work for the funded project (F.No: AICTE-8023/RID/RPS-32/PVT (II Policy)/2011-12 & DST-SR/FTP/ETA-079/2009) will be provided in time. We will provide the Study of the Coaxial feeding method for the rotated stacking of patch antennas to support your work.

With Regards

(Dr. B. Anjaneyulu)

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Dt: 19-06-2013

To

Mr. Ch Ramakrishna,

Department of ECE,

K L University

Dear Sir,

In response to your request in the performance evaluation of Physical and spectroscopic investigations of zinc borate glasses doped with Cr3+ mixed alkali ions, our management agreed to support you with the facilities available in our Research Center in reference to the F.No AICTE-8023/RID/RPS-32/PVT (II Policy)/2011-12. We will provide basic testing facilities and support you in the Joint Publication.

T. Raghavendra Rao

(Dr. T. Raghavendra Rao)

Assoc Professor

Department of Physics,

Acharya Nagarjuna University,

Nagarjuna Nagar, Guntur Dt.

INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
Department of EEE, IIT Guwahati, Guwahati-781039, INDIA.

Date 15-09-2016

TO WHOM SO EVER IT MAY CONCERN

Dear Sir,

We are very happy to inform you that the facility that is requested by you from our institute to carry out your research work will be provided in time. We will provide the support to your work in Edge reflection type SAW resonators on silicon substrate using ZnO thin films. You are requested to fill the laboratory proforma in order to utilize the facility as requested upon a time bound basis.

With Regards

(Dr. Harshal B. Nemade)
EEE Department, IIT Guwahati,
Guwahati-781039, INDIA.
Phone: +91-361-2582509 (O)
Fax: +91-361-2582542, 2690762
Email: harshal@iitg.ernet.in

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Dt: 23-10-2013

To

Dr. S. Lakshminarayana,

Professor,

Department of Electronics & Communication Engineering,

K L University,

Vaddeswaram-Guntur

Dear Sir,

We are very happy to inform you that the facility that is requested by you from our institute to carry-out your research work will be provided in time. We will provide the image analysis for the electro-optic parameters to support your advanced and progressive research work.

Best Regards

Yours truly

(Dr. S. S. Sastry)

Department of Physics, ANU

UNIVERSITÉ DE NANTES

Université de Nantes

Laboratoire CEISAM

Date 12-02-2017

To

Mr. Harikrishna Erothu

K L University

TO WHOM SO EVER IT MAY CONCERN

Dear Erothu,

In response to your request in the performance evaluation of copolymer based on main-chain fullerene repeating units is used in organic photovoltaic devices for the first time. As the work seems to very attractive, our management agreed to support you with the facilities available in our Research Center. We will provide basic testing facilities and support you in the Joint Publication.

N. Raissi

(Dr. Raissi. M)

CEISAM

Université de Nantes

JNT UNIVERSITY: KAKINADA

Date -20-10-2016

To

Dr. S. Koteswara Rao

Dept of ECE

K L University

TO WHOM SO EVER IT MAY BE CONCERN

Dear Sir,

It gives me an immense pleasure to collaborate with your research activity. Integrated novel multi-phase level sets with modified marker-controlled watershed for segmentation of breast cancer histopathological images helps to find out cancer detection in humans. As you had asked data sets are available will be provided to you. We will extend our support in this work with basic analysis and algorithm development.

Dr. R. Uppada

JNT University,
Kakinada

KAKATIYA INSTITUTE OF TECHNOLOGY & SCIENCE

Warangal - 506 015, Telangana, INDIA

(An Autonomous Institute under Kakatiya University, Warangal)

Date:20-10-2016

To

Dr. T. Mallikarjun

Department of Chemistry,

K L University, Green Fields,

Vaddeswaram,

Guntur, AP,

India

Dear Sir,

It gives me an immense pleasure to collaborate with your research activity with the service we can provide from our institute in spectral characterization of antimicrobial activity of the binuclear co(II), Ni(II), Cu(II) and Zn(II) complexes of a novel macrocyclic biphenyl bridged schiff base Ligand. We will extend our support in this work with basic synthesis in the material characterization.

D. Chary.

Dr. Chary, D.P.,
Department of Physical Sciences,
Kakatiya Institute of Technology & Science,
Warangal

KRISHNA UNIVERSITY

Dr. M.V.Basaveswara Rao
Professor,
Department of Chemistry
Krishna University

Dt: 15-09-2013

To

Mr.D. Rambabu,

Department of Chemistry,

K L University,

Vaddeswaram,

Guntur District.

Dear Mr.Rambabu,

It gives me an immense pleasure to facilitate your research activity with the facilities available in our Department of Chemistry, Krishna University for the synthesis of macrocyclic tetra-amides. I will extend the support to your work which may be qualitatively published in reputed journals with the results of material characterization and preparation of a variety of macrocyclic tetra-amides.

Best Wishes

M.V.B. Rao

(Dr. M.V.B. Rao)

Department of Chemistry,

Krishna University

MANIPAL UNIVERSITY

Tiger Circle Road, Madhav Nagar, Manipal, Karnataka 576104

Dt: 22-02-2014

To

Dr.B. Mahendran,

Department of Bio-Technology,

K L University

Dear Sir,

It gives me an immense pleasure to collaborate with your research activity sanctioned by UGC with the service you can provide for our institute in Ketorolac Salt DDX3 inhibitor characterization. I assure atleast one good publication in this work with basic synthesis in the material characterization.

Thanks & Regards

(S. K. Samal)
Research Scholar,
Institute of Life Sciences,
Bhubaneswar,
Manipal University,
Manipal, Karnataka

ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES
Autonomous status accorded by UGC and Andhra University
Approved by AICTE, Permanently Affiliated to Andhra University
Accredited by NBA (IT,CSE,EEE,ECE, and Mech) & accredited by NAAC with "A" Grade
Sangivalasa - 531162, Bheemunipatnam (Mandal) Visakhapatnam (Dist.)
Phone: 08933 - 225083, 225084, 226131, Fax: 08933-226395
Email: principal@anits.edu.in
PRAGNANAM BRAHMA
ANITS
COLLEGE CODE - ANIL

Dt: 06-01-2013

For the Kind Attention to:

Mr.S. Mohan Krishna,

Department of IT, KLU

Dear Sir,

We are likely to inform you that our institution has agreed to work with you for a part of your research work with joint publication. We can render our services towards the implementation of the Teaching and Learning Based Optimization for benchmark functions in simulation and execution.

Yours Truly

S. C. Satapathy.

(Dr. Suresh Chandra Satapathy)

VIGNAN'S LARA
INSTITUTE OF TECHNOLOGY & SCIENCE

Dt: 05-08-2013

To

Mr. Madhav B T P,

Department of ECE,

K L University,

Dear Sir,

We are very happy for accepting our request to use the research facility to carry-out our research work that is available at Liquid crystals lab, KL University. We assure quality outcomes from the collaborated work related to designing the serrated spike antenna from your support.

Yours Sincerely

K. Vijay Vardhan

(Dr. K. Vijaya Vardhan)

MARRI LAXMAN REDDY GROUP OF INSTITUTIONS

MLR INSTITUTE OF PHARMACY

(Approved by AICTE & PCI, New Delhi and Affiliated to JNTUH, Hyderabad)
Dundigal, Quthbullapur Mandal, Hyderabad 500043, R.R. Dist.

Dt: 20-12-2014

To

Mr. Madhav B T P

Dept of ECE,

K L University

Sub: Research work continuation in your laboratory - Reg

Dear Sir,

I am grateful to you for accepting my request to work with you in your Liquid Crystals laboratory and render my services towards the design and equivalent substrate material development for the circularly polarized antenna.

Thanking you Sir,

Yours truly

K. Mounika

(K Mounika)

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Dt: 05-10-2015

To

Dr. B.T.P Madhav,

Professor,

K L University,

Vaddeswaram

Dear Sir,

It gives me an immense pleasure to collaborate with your research activity with the service we can provide from our institute in the Influence of Fe3O4nanoparticles dispersed in liquid crystalline compounds – spectroscopic characterization (w.r.f to file number: 42-784/2013, UGC), University Grants Commission. We will extend our support in this work with basic synthesis in the material characterization.

Giridhar. G.

Dr. G. Giridhar,

Department of Nanotechnology,

Acharya Nagarjuna University,

Guntur, India

Dr. PINNAMANENI SIDDHARTHA
INSTITUTE OF MEDICAL SCIENCES & RESEARCH FOUNDATION
Chinna Avutapalli, Vijayawada - 521 286
Affiliated to Dr.NTR University of Health Sciences, Vijayawada, A.P.

Dt: 22-02-2016

From

Dr. Eswar Ganti

Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation,

Department of General Medicine, Vijayawada, India

TO WHOMSOEVER IT MAY CONCERN

Dear Sir/Madam,

It gives me an immense pleasure to collaborate with your research activity along with King Abdulaziz University. We are very thankful to provide the research facilities from the Department of Biotechnology of K L University. We can provide from our institute in synthesis of CYP2CX type amino acid substitution alleles. We will extend our support for the protein phenotype study.

G. Eshwar

Dr. Eswar Ganti

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Dt: 17-11-2016

To

Mr. G. Srinivas,

Department of ECE,

K L University

Dear Sir,

In response to your request in the performance evaluation of spectroscopic investigations of Dy3+ doped MgO-LiF-CdO-P2O5 glasses, our management agreed to support you with the facilities available in our Research Center in reference to the F.No 42-832/2013, UGC, University Grants Commission; UGC, University Grants Commission dated 22-03-2013,. We will provide basic testing facilities and support you in the Joint Publication.

Giridhar.G.

Dr. G. Giridhar

Department of Nanotechnology,

Acharya Nagarjuna University,

Guntur, India

भाकृअनुप -केन्द्रीय आलू अनुसंधान स्थान,शिमला

ICAR-Central Potato Research Institute,Shimla

Dt: 22-02-2014

For the Kind Attention to:

Sri M.S.R Krishna,

Dept. of Biotechnology,

K L University

From

Dr. Sridhar. J

Division of Plant Protection,

ICAR-Central Potato Research Institute, India

Dear Sir,

We are very happy to inform you that the facility that is requested by you from our institute to carry-out your research work will be provided in time. We will contribute to the study of population of genetic structure of cotton pink bollworm and corresponding analysis of gene sequences from India.

Sridhar

(Dr. J. Sridhar)

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Dt: 2-11-2016

To

Dr. Ganduri VSRK,

Department of ECE,

K L University

Dear Sir,

We are very happy to work in a UGC sponsored project and willing to inform you that the facility that is requested by you from our institute to carry-out your research work for isolation, production and optimization of culture conditions using RSM will be provided in time. We will provide the Study of the streptomyces labedae VSM-6 modules to support your work.

Usha Kiranmayi. M.

Dr. U. Mangamuri

Department of Botany and Microbiology,

Acharya Nagarjuna University,

Guntur, India

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Date 20-08-2016

To

Dr. Srinivas. G.

K L University

Dear Sir,

It gives me an immense pleasure to collaborate with your research activity with the service we can provide from our institute in Spectroscopic properties of Dy^{3+} doped MgO-LiF-CdO-P_2O_5 glasses. Their characteristic bands were observed in optical absorption spectra from ground state $^6H_{15/2}$ to different excited states. By using Judd–Ofelt (J–O) intensity parameters Ω_λ (λ=2,4 and 6) various spectroscopic parameters have been evaluated to characterize the absorption and luminescence spectra of these glasses. We will extend our support in this work with basic synthesis and characterization.

Dr. Giridhar. G
Department of Nanotechnology
Acharya Nagarjuna University
Guntur, India

BALAJI INSTITUTE OF PHARMACEUTICAL SCIENCES
(Approved by AICTE & PCI, Under Section 12, New Delhi and Affliated to kakathiya University, Wgl)
Laknepally (V) Narsampet (M) Warangal Rural (Dist) Telangana State 506331
Contact : +91 9866050044 (Office), +91 9866652412 (Principal), +91 8718-230521 (Fax)

Date 13-10-2016

To

Dr. Kakarla Lavanya

K L University

Sub: Research collaboration with K L University-reg.

Dear Madam,

It gives me an immense pleasure to collaborate with your research activity with the service we can provide from our institute. We are very grateful for your support to using your laboratory facilities for the characterisation of molecular interaction of Rosuvastatin Calcium (RST) salt with DDX3 by Molecular docking. We will extend our support in this work with basic synthesis in the drug characterization for the contribution towards the sanctioned project RA-2012-14-GE-ANP-2088, UGC, & BASF Corporation BT/PR6743/NNT/28/614/2012.

Dr. Bheemanapally. K

Balaji Institute of Pharmaceutical Sciences

CHIRALA ENGINEERING COLLEGE

Approved by All India Council for Technical Education (AICTE)
ISO:9001:2000 certification
Affiliated to the JNTU Kakinada and recognised as the Jawahar Knowledge Centre (JKC) by the government of A.P.

Dt: 09-10-2012

To

Dr. Ghali V Subba Rao,

Department of ECE,

K L University,

Dear Sir,

Sub: Research Collaboration with K L University -reg.

It gives me an immense pleasure to collaborate with your research activity for a sanctioned project with the service we can provide from our institute for the depth resolution related studies for the application of non-stationary thermal wave imaging. We will extend our support in this work for the study and application of the Chirp-z transform to the relevant work. We are thankful to the Department of ECE of K L University for the provision of laboratory facilities.

(Dr. A. Vijayalakshmi)

Dept. of ECE

Chirala Engg. College

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Dt: 19-06-2013

To

N. Purnachand,

Department of ECE,

K L University

Dear Sir,

We are happy to intimate you that the facility that is requested by you from our institution to carry-out your research work will be provided in time. Also, we would like to take part in your research work granted by Chongqing University of Posts and Tele-communications. In response to your request, for your novel work entitled 'Influence of Bi^{3+} ions on the amplification of 1.3 μm emission of Pr^{3+} ions in lead silicate glasses for the applications in second telecom window communications', our management agreed to support you with the facilities available in our R&D Center. We offer the synthesis of the materials and characterisation through the instruments.

M. S. Reddy

(Dr. M.S.Reddy)

Associate Professor,

Department of Physics, ANU

ACHARYA NAGARJUNA UNIVERSITY
UNIVERSITY COLLEGE
NAGARJUNA NAGAR - 522 510, A.P., India.

Dt: 08-06-2015

To
Prof. K. Ravindhranath,
Dept of Chemistry,
K L University.

Dear Professor,

We are pleased to inform you that our institution has agreed to work with you on your research work as part of Collaborative Research Program with the support of UGC, University Grants Commission. We can provide our support, facility and services for the research work on Removal of Aluminium (III) from waste waters using bio-sorbents pertaining to Withania somnifera plant.

(Dr. A.A. Kumari)
Department of Chemistry,
Acharya Nagarjuna University

G. Narayanamma Institute of Technology and Science
Ambedkar Nagar, Shaikpet, Hyderabad, Telangana 500104
Phone: 040 2356 5648

Dt: 31-08-2015

To

D.V. Ratnam

Dept of Electrical and Computer Engineering,

K L University,

Vaddeswaram

Dear Sir,

I would like to inform you that it is a great pleasure collaborating with you in the research work that you requested for as part of the sponsored project by UGC, University Grants Commission.

We are ready to provide you support in this regard in the area of Ionospheric Spatial Gradient Detector Based on GLRT Using GNSS Observations while collaborating with you in terms of data analysis of the observed data and any other related work that is required for the success of the research work.

(Dr. S. Raghunath)

Department of Electrical and Computer Engineering

PVP Siddhartha Institute of Technology,

Kanuru, Vijayawada, AP, India - 520007

Phone: 0866-2581699

Dt: 24-08-2015

To

Ms. B. Jyothi,

Department of EEE,

K L University, Guntur (dist),

AP, India.

Kind atten: Mr. Somlal.J, Dept. of EEE

Dear Sir/Madam,

This is in response to your request regarding providing our research support to your institute, as per SB/EMEQ-320/2014, SERB, Science and Engineering Research Board. We are happy to extend support and facility in this area of Performance of five phase induction motor using specially connected transformer.

M. Venu Gopal

(Dr. M. Venu Gopala Rao)

Professor, Dept of EEE

BAPATLA ENGINEERING COLLEGE
(Autonomous)
Bapatla-522101,
Guntur(Dt) – Andhra Pradesh - India

Dt: 05-10-2015

To
Mr.B T P Madhav,
Associate Professor,
Department of ECE,
K L University.

Dear Madhav,

This is in response to your request regarding providing support for the research work to your institute, on antennas, specifically Compact UWB MIMO slot antenna with defected ground structure. We will be able to provide the appropriate facility and also assume that your financial requirements will be borne by yourself (as discussed earlier) from the funds available in DST-FST-SR/FST/EIT-316/2012 sanctioned project at KL University.

Best Wishes

N.V.Rao

(Dr N.V Rao)
Dept of ECE.

G. Narayanamma Institute of Technology and Science
Ambedkar Nagar, Shaikpet, Hyderabad, Telangana 500104
Phone: 040 2356 5648

Dt: 31-08-2015

To
D.V. Ratnam
Dept of ECE,
K L University,
Vaddeswaram

Dear Sir,

I would like to inform you that it is a great pleasure collaborating with you in the research work that you requested for as part of the sponsored project by UGC, University Grants Commission.

We are ready to provide you support in this regard in the area of Ionospheric Spatial Gradient Detector Based on GLRT Using GNSS Observations while collaborating with you in terms of data analysis of the observed data and any other related work that is required for the success of the research work.

S. Raghunath

(Dr. S. Raghunath)
Department of Electrical and Computer Engineering

SRKR ENGINEERING COLLEGE

(Autonomous)

Recognised as Scientific and Industrial Research Organisation

ESTD:1980

Dt: 23-07-2015

To whom it may concern

We are very pleased to collaborate with your research activity and we are willing to provide from our institute in the antenna design of Compact serrated notch band MIMO antenna for UWB applications. We understand that this is part of the sanctioned project (File No: DST-FST-SR/FST/EIT-316/2012) to K L University and we will extend our support in this research work along with simulation and developing of prototype.

Mohan Reddy. S.S

(Dr. S.S. Mohan Reddy)

Dept of ECE

ST. Mary's Group of Institutions
(Approved by AICTE & Affiliated to JNTU, OU, MGU, ANU & WBUT)

Date 20-11-2016

To

Dr. Madhav B.T.P.

Dept of ECE,

K L University.

Dear Madhav Sir,

It gives me an immense pleasure to collaborate with your research activity and I sincerely thank you for accepting our initiative. We request you for the support in the designing novel antennas and provide the testing environment. We also expect you to extend your support through this work with basic and mutual concern of publications.

Dr.J. Lakshmi Narayana

Dept of ECE

8-3-229, Near Yousufguda Check Post, Yousufguda, Hyderabad, Telangana, INDIA - 500045
Phone: 91-40-23544300, 23545642, 23543557, Email: info@stmaryscollege.in

VIGNAN'S FOUNDATION
FOR SCIENCE, TECHNOLOGY AND RESEARCH

Dt: 28-11-2012

To

Dr.K. Sarat Kumar,

Department of ECE,

K L University

Dear Sir,

We are highly obliged to facilitate your requested research work for the funded project (F.No: AICTE-8023/RID/RPS-32/PVT (II Policy)/2011-12 & DST-SR/FTP/ETA-079/2009) under research collaboration. We will provide the inputs required for the Coaxial fed antennas stacking of patch antennas to support your work.

With Regards

(Dr. B. Anjaneyulu)

Associate Professor

Department of ECE

Vadlamudi - 522 213, Guntur Dist, A.P. India
Tel : (+91) 863-2534645, 2534646 Fax : (+91) 863-2534468

Document details

Solid State Phenomena
Volume 181-182, 2012, Pages 289-292
2nd International Symposium on Liquid Crystals: Science and Technology, LCST2011; Changzhou; China; 17 July 2011 through 19 July 2011; Code 87516

Planar dipole antenna on liquid crystal polymer substrate at 2.4 GHz (Conference Paper)

Madhav, B.T.P.[a], Pisipati, V.G.K.M.[a], Madhavi Latha, D.[a], Dattaprasad, P.V.[b]

[a]LCRC-R and D, Department of ECE, K L University, Vaddeswaram, Guntur D.T, A.P, India
[b]Department of Physics, Hindu College, Machilipatnam, AP, India

Abstract

View references (8)

Liquid crystal polymers are the low cost, flexible structured and low weight substrate materials for making antennas. Liquid crystal polymers are excellent dielectric materials having good electrical, mechanical properties which suites in the application of microstrip patch antennas. In this paper liquid crystal polymer with dielectric constant 3.16 is used as substrate material for planar dipole antenna designed to operate at 2.4 GHz. Ansoft-HFSS software is used to simulate the proposed model and obtained the return loss, input impedance, 3D-gain, 2D-gain total, radiation patterns in E and H planes, E-field and H-field distribution results. © (2012) Trans Tech Publications, Switzerland.

Author keywords

LCP substrate | Planar dipole antenna

Indexed keywords

Engineering controlled terms: Crystals | Dielectric materials | Electric properties | Liquid crystal polymers | Liquids | Mechanical properties | Microstrip antennas | Substrates | Three dimensional | Dielectric materials | Directional patterns (antenna) | Liquid crystal polymers | Liquid crystals | Liquids | Microstrip antennas | Microwave antennas | Slot antennas | Substrates

Compendex keywords: Crystal polymer substrates | E-field | H-planes | Input impedance | Low costs | Low weight | Micro-strip patch antennas | Return loss | Substrate material | Ansoft HFSS | Field distribution

Engineering main heading: Dipole antennas | Dipole antennas

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Publisher: Trans Tech Publications Ltd

References (8)

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1 Edward, Brian, Rees, Daniel
BROADBAND PRINTED DIPOLE WITH INTEGRATED BALUN.
(1987) *Microwave journal*, 30 (5), pp. 339-340, 342, 344. Cited 143 times.

2 Michishita, N., Arai, H.
A polarization diversity antenna by printed dipole and patch with a hole
(2001) *IEEE Antennas and Propagation Society, AP-S International Symposium (Digest)*, 3, pp. 368-371. Cited 6 times.
View at Publisher

3 Zou, G., Gronqvist, H., Starski, J.P., Liu, J.
(2002) *IEEE Transactions on Advanced Packaging*

4 Wolter, J.
Solution of Maxwell's Equations for Log-Periodic Dipole Antennas
(1970) *IEEE Transactions on Antennas and Propagation*, AP-18 (6), pp. 734-741. Cited 14 times.
doi: 10.1109/TAP.1970.1139796
View at Publisher

5 Wakabayashi, R., Shimada, K., Kawakami, H., Sato, G.
Circularly polarized log-periodic dipole antenna for EMI measurements
(1999) *IEEE Transactions on Electromagnetic Compatibility*, 41 (2), pp. 93-99. Cited 13 times.
doi: 10.1109/15.765096
View at Publisher

6 Harrington, R.F.
(1993) *Field Computation by Moment Methods*. Cited 5974 times.
IEEE Press

7 Balanis, C.A.
(1997) *Antenna Theory*. Cited 1759 times.
Wiley, New York

8 Stutzman, W.L., Thiele, G.A.
(1981) *Antenna Theory and Design*. Cited 2754 times.
Wiley, New York

Madhav, B.T.P.; LCRC-R and D, Department of ECE, K L University, India

and wireless communication systems

Chuang, H.-R. , Kuo, L.-C. , Lin, C.-C.
(2002) IEEE Antennas and Propagation Society, AP-S International Symposium (Digest)

A 2.4 GHz polarization-diversity planar printed dipole antenna for WLAN and wireless communication applications

Chuang, H.-R. , Kuo, L.-C. , Lin, C.-C.
(2002) Microwave Journal

A dual-polarized planar antenna for radar and communication systems

Ellis, T.J. , Robertson, R.L. , Katehi, L.P.B.
(1998) 1998 28th European Microwave Conference, EuMC 1998

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Document details

Journal of Thermal Analysis and Calorimetry
Volume 111, Issue 2, February 2013, Pages 1483-1490

Phase transition studies in symmetric dimeric liquid crystals: A density study (Article)

Pardhasaradhi, P.[a], Madhavi Latha, D.[b], Datta Prasad, P.V.[a], Padmaja Rani, G.[c], Alapati, P.R.[d], Pisipati, V.G.K.M.[b]

[a]Department of Physics, Hindu College, Machilipatnam 521 001, India
[b]Liquid Crystal Research Centre (LCRC), ECE Department, K. L. University, Vaddeswaram 522 502, India
[c]Department of Physics, JNTU, Kakinada, India

View additional affiliations

Abstract

View references (21)

As a part of the systematic studies on symmetric liquid crystal dimer homologous series, α,ω-bis-(4-n-alkylaniline benzylidene-4′- oxy) alkanes, (referred to as m.OnO.m with m = 3, 4, and 5; and n = 8, 9, and 10), we present in this article the nature of phase transitions across isotropic-nematic and nematic-smectic-A (N-SmA) phases exhibited by the just mentioned compounds. The methods employed are differential scanning calorimetry and dilatometry. The compounds studied were 3.O8O.3, 4.O8O.4, and 5.O8O.5; and 3.O9.03, 5.O9O.5, 3.O10O.3, 4.O10O.4, and 5.O10O.5. Different from the case of their corresponding monomers, all these compounds exhibit a nematic phase only with the exception of 5.O8O.5 which exhibits a SA phase in addition to the nematic phase. The phase transitions viz., isotropic-nematic transitions studied in all these compounds were confirmed to be of first-order nature, whereas the N-SmA transition exhibited by the compound 5.O8O.5 only was found to be of second-order nature. We also report in this article the calculated density jumps, thermal expansion coefficient maxima, and pressure dependence of transition temperatures which are analyzed in the light of the available literature data. © 2012 Akadémiai Kiadó, Budapest, Hungary.

Author keywords

Density measurements | Differential scanning calorimetry | Isotropic-nematic transition | Nematic-SmA transition | Symmetric dimer

Indexed keywords

Compendex keywords: Density jumps | Dilatometry | Dimeric liquid crystals | First-order | Homologous series | Isotropic-nematic transitions | Liquid crystal dimer | Literature data | Nematic phase | Nematic-SmA transition | Pressure dependence | Second orders | Systematic study | Thermal expansion coefficients

Engineering controlled terms: Density measurement (specific gravity) | Dimers | Paraffins | Smectic liquid crystals

Engineering main heading: Differential scanning calorimetry

Funding details

Funding number	Funding sponsor	Acronym	Funding opportunities

Funding number	Funding sponsor	Acronym	Funding opportunities
SR/S2/CMP-0071/2008	Department of Science and Technology, Government of Kerala		
	Council for Scientific and Industrial Research	CSIR	
522			
No.SR/WOS-A/PS-05/2010			

Funding text

Acknowledgements P. Pardhasaradhi and P. V. Datta Prasad thank the Management and the Principal of The Hindu College, Machil-ipatnam for providing facilities to carry out the measurements. D.Madhavi Latha and Dr. V.G.K.M. Pisipati express their thanks to the management of K.L.University, Vaddeswaram 522 502, India for providing facilities. This study is supported by the Department of Science and Technology (Grant No: SR/S2/CMP-0071/2008). D. Madhavi Latha also acknowledges the financial support of DST-WOS-A through grant No.SR/WOS-A/PS-05/2010. P. R. Alapati is thankful to CSIR, New Delhi for their financial support.

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DOI: 10.1007/s10973-012-2504-2
Document Type: Article

References (21)

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1 Date, R.W., Imrie, C.T., Luckhurst, G.R., Seddon, J.M.
Smectogenic dimeric liquid crystals: The preparation and properties of the α,ω-bis(4-n-alkylanilinebenzylidine-4′-oxy)alkanes
(1992) *Liquid Crystals*, 12 (2), pp. 203-238. Cited 223 times.
doi: 10.1080/02678299208030393
View at Publisher

2 Heeks, S.K., Luckhurst, G.R.
On the molecular organisation within the nematic phase of liquid crystal dimers
(1993) *Journal of the Chemical Society, Faraday Transactions*, 89 (17), pp. 3289-3296. Cited 21 times.
doi: 10.1039/FT9938903289
View at Publisher

3 Attard, G.S., Date, R.W., Imrie, C.T., Luckhurst, G.R., Roskilly, S.J., Seddon, J.M., Taylor, L.
Non-symmetric dimeric liquid crystals: The preparation and properties of the α-(4-cyanobiphenyl-4′-yloxy)-ω-(4-n-alkylanilinebenzylidene-4′-oxy)alkanes
(1994) *Liquid Crystals*, 16 (4), pp. 529-581. Cited 215 times.
doi: 10.1080/02678299408036531
View at Publisher

4 Date, R.W., Luckhurst, G.R., Schuman, M., Seddon, J.M.
Novel modulated hexatic phases in symmetric liquid crystal dimmers
(1995) *J de Phys II*, 5, pp. 587-605. Cited 33 times.
10.1051/jp2:1995151 1:CAS:528:DyaK2MXkvFCjt7g%3D

Bhuyan, D. , Pardhasaradhi, P. , Gogoi, B.
(2011) Molecular Crystals and Liquid Crystals

Phase transitions from density and order parameter from polarisabilities in symmetric dimeric liquid crystals

Murthy, C.S.V.S. , Pardhasaradhi, P. , Pisipati, V.G.K.M.
(2016) Liquid Crystals Today

X-ray scattering from smectic a phase

Tan, H.T.
(1974) Physics Letters A

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5 Ajeetha, N., Pisipati, V.G.K.M., Nanchara Rao, M.R., Prasad, P.V.D.
Synthesis, characterization, and dilatometric studies on N-(p-n-alkoxybenzylidene)-p-n-pentyloxyanilines compounds

(2006) *Molecular Crystals and Liquid Crystals*, 457 (1), pp. 3-25. Cited 29 times.
doi: 10.1080/15421400500447108

View at Publisher

6 Gogoi, B., Bhattacharjee, A., Alapati, P.R., Verma, A.L.
Laser Raman studies on compounds 7.O4O.7 and 7.O5O.7

(2003) *Liquid Crystals*, 30 (8), pp. 931-938. Cited 10 times.
doi: 10.1080/0267829031000136066

View at Publisher

7 Alapati, P.R., Potukuchi, D.M., Rao, N.V.S., Pisipati, V.G.K.M., Paranjpe, A.S., Rao, U.R.K.
Phase transition and structural investigations in 5O.5, 5O.6 and 5O.7

(1988) *Liquid Crystals*, 3 (11), pp. 1461-1479. Cited 51 times.
doi: 10.1080/02678298808086688

View at Publisher

8 Gogoi, B., Ghosh, T.K., Alapati, P.R.
Experimental investigation of phase transitions exhibited by symmetric liquid crystal dimers

(2005) *Crystal Research and Technology*, 40 (7), pp. 709-712. Cited 15 times.
doi: 10.1002/crat.200410413

View at Publisher

9 Bhuyan, D., Pardhasaradhi, P., Singh, K.N., Madhavi Latha, D., Datta Prasad, P.V., Parameswara Rao Alapati, V.G.K., Pisipati, M.
Study of molecular polarizabilities and orientational order parameter in the nematic phase of 6.O12O.6 and 7.O12O.7
(2011) *World J Condens Matter Phys*, 1, pp. 167-174. Cited 11 times.
10.4236/wjcmp.2011.14025 1:CAS:528:DC%2BC38XktlOgur0%3D

10 Pisipati, V.G.K.M.
Polymesomorphism in N-(p-n-Alkoxybenzylidene)-p-n-Alkylanilines (nO.m) Compounds

(2003) *Zeitschrift fur Naturforschung - Section A Journal of Physical Sciences*, 58 (11), pp. 661-663. Cited 29 times.

View at Publisher

11 Bhuyan, D., Pardhasaradhi, P., Gogoi, B., Datta Prasad, P.V., Alapati, P.R., Pisipati, V.G.K.M.
Phase transition studies of 6.O12O.6 and 7.O6O.7 using density measurements

(2011) *Molecular Crystals and Liquid Crystals*, 540, pp. 205-212. Cited 7 times.
doi: 10.1080/15421406.2011.568882

View at Publisher

12 Gogoi, B., Alapati, P.R., Verma, A.L.
Phase transition studies in mesogenic dimers

(2002) *Crystal Research and Technology*, 37 (12), pp. 1331-1337. Cited 14 times.
doi: 10.1002/crat.200290010

View at Publisher

13 Pisipati, V.G.K.M., Rao, N.V.S., Datta Prasad, P.V., Alapati, P.R.

Density, Refractive Index and Ultrasonic Velocity Studies Involving N-(p-n-Pentyloxybenzylidene)-p-n-octylaniline

(1985) *Zeitschrift fur Naturforschung - Section A Journal of Physical Sciences*, 40 (5), pp. 472-475. Cited 19 times.
doi: 10.1515/zna-1985-0509

View at Publisher

14 McMillan, W.L.

Simple molecular model for the smectic A phase of liquid crystals

(1971) *Physical Review A*, 4 (3), pp. 1238-1246. Cited 726 times.
doi: 10.1103/PhysRevA.4.1238

View at Publisher

15 McMillan, W.L.

X-ray scattering from liquid crystals. I. Cholesteryl nonanoate and myristate

(1972) *Physical Review A*, 6 (3), pp. 936-947. Cited 331 times.
doi: 10.1103/PhysRevA.6.936

View at Publisher

16 Lee, F.T., Tan, H.T., Shih, Y.M., Woo, C.-W.

Phase Diagram for Liquid Crystals

(1973) *Physical Review Letters*, 31 (18), pp. 1117-1120. Cited 72 times.
doi: 10.1103/PhysRevLett.31.1117

View at Publisher

17 Kventsel, G.F., Luckhurst, G.R., Zewdie, H.B.

A molecular field theory of smectic a liquid crystals a simpler alternative to the McMillan theory

(1985) *Molecular Physics*, 56 (3), pp. 589-610. Cited 38 times.
doi: 10.1080/00268978500102541

View at Publisher

18 Thoen, J., Marynissen, H., Van Dael, W.

Nematic-smectic - A tricritical point in alkylcyanobiphenyl liquid crystals

(1984) *Physical Review Letters*, 52 (3), pp. 204-207. Cited 180 times.
doi: 10.1103/PhysRevLett.52.204

View at Publisher

19 Pisipati, V.G.K.M., Rananavare, S.B., Freed, J.H.

DSC characterization of nematic-smectic and smectic-smectic phase transitions in N(p-n-alkoxy benzilidene)-p-n-alkylanilines (n O. m)*

(1987) *Molecular Crystals and Liquid Crystals Letters*, 4 (6), pp. 181-187. Cited 13 times.
doi: 10.1080/01406566.1987.10766896

View at Publisher

20 Pisipati, V.G.M., Latha, D.M., Madhav, B.T.P., Datta Prasad, P.V.

Nematic/Smectic-A Transition (NSA), Location of Tri Critical Point (TCP) in nO.m Series - A Birefringence Study

(2010) *Zeitschrift fur Naturforschung - Section A Journal of Physical Sciences*, 65 (4), pp. 335-341. Cited 6 times.
http://www.znaturforsch.com/s65a/s65a0335.pdf

21 Alapati, P.R., Saran, D.

An Investigation of Smectic A—Nematic and Nematic—Isotropic Phase Transitions

(1991) *physica status solidi (b)*, 168 (1), pp. 39-47. Cited 7 times.
doi: 10.1002/pssb.2221680103

View at Publisher

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Document details

International Journal of Applied Engineering Research
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Coaxial fed rotated stacked patch antenna (Article)

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Abstract

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A novel circularly polarized coaxial fed rotated stacked patch antenna is proposed and its performance characteristics are presented in the current work. The antenna consisting of four parasitic patches, each one being rotated by 300 relative to its adjacent patches. The proposed antenna is giving return loss less than-10 dB with VSWR<2 and bandwidth 700 MHz (5.8 to 6.5 GHz) with axial ratio less than 3dB. The analysis of the antenna is explained through parametric study and HFSS simulation results are presented in the current work. © Research India Publications.

Author keywords

Coaxial feeding rotated stacked patch | Performance characteristics

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References (14)

View in search results format

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1 Pan, M.-C., Wong, K.-L.
Broadband circularly polarized microstrip antenna with a dual-perpendicular feed
(2000) *Microwave and Optical Technology Letters*, 24 (6), pp. 420-422. Cited 7 times.
doi: 10.1002/(SICI)1098-2760(20000320)24:6<420::AID-MOP18>3.0.CO;2-H
View at Publisher

2 Sze, J.-Y., Hsu, C.-I.G., Chen, Z.-W., Chang, C.-C.
Broadband CPW-fed circularly polarized square slot antenna with lightening-shaped feedline and inverted-L grounded strips
(2010) *IEEE Transactions on Antennas and Propagation*, 58 (3), art. no. 5371942, pp. 973-977. Cited 109 times.
doi: 10.1109/TAP.2009.2039335
View at Publisher

3 Madhav, B.T.P., Pisipati, V., Bhavani, K.V.L., Sreekanth, P., Kumar, P.R.
Rectangular microstrip patch antenna on liquid crystal polymer substrate
(2010) *Journal of Theoretical and Applied Information Technology*, 18 (1), pp. 62-66. Cited 22 times.
http://www.jatit.org/volumes/research-papers/Vol18No1/9Vol18No1.pdf

4 Madhav, B.T.P., Ujwala, D., Khan, H., Tejaswani, A.L., Guntupalli, S., Bala, A.
Substrate permittivity effects on the performance of slotted aperture stacked patch antenna

(2013) *International Journal of Applied Engineering Research*, 8 (8), pp. 909-916. Cited 39 times.
http://www.ripublication.com/ijaerv6/ijaerv8n8_04.pdf

5 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, P.D.
Shorting plate planar inverted folded antenna on LC substrate for bluetooth application

(2012) *Journal of Engineering Science and Technology Review*, 5 (2), pp. 42-45. Cited 10 times.
http://www.jestr.org/downloads/Volume5Issue2/fulltext08050212.pdf

6 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Praveen Kumar, K., Bhavani, K.V.L., Ravi Kumar, M.
Liquid crystal Bow-Tie microstrip antenna for wireless communication applications

(2011) *Journal of Engineering Science and Technology Review*, 4 (2), pp. 131-134. Cited 34 times.
http://www.jestr.org/downloads/issue2/fulltext222011.pdf

7 Madhav, B.T.P., Pisipati, V.G.K.M., Ramesh, N.V.K., Khan, H., Datta Prasad, P.V.
Planar inverted-F antenna on liquid crystal polymer substrate for PCS, UMTS, WIBRO applications

(2011) *ARPN Journal of Engineering and Applied Sciences*, 6 (4), pp. 98-103. Cited 13 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2011/jeas_0411_487.pdf

8 Nakamura, T., Fukusako, T.
Broadband design of circularly polarized microstrip patch antenna using artificial ground structure with rectangular unit cells

(2011) *IEEE Transactions on Antennas and Propagation*, 59 (6 PART 2), art. no. 5751643, pp. 2103-2110. Cited 64 times.
doi: 10.1109/TAP.2011.2143656

View at Publisher

9 Nasimuddin, Esselle, K.P., Verma, A.K.
Wideband circularly polarized stacked microstrip antennas

(2007) *IEEE Antennas and Wireless Propagation Letters*, 6, pp. 21-24. Cited 77 times.
doi: 10.1109/LAWP.2006.890749

View at Publisher

10 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Murty, K.S.N.
Ultra wide band liquid crystal polymer microstrip elliptical patch antenna

(2010) *Journal of Theoretical and Applied Information Technology*, 20 (2), pp. 105-109. Cited 15 times.
http://www.jatit.org/volumes/research-papers/Vol20No2/6Vol20No2.pdf

11 Rakesh, D., Rakesh Kumar, P., Khan, H., Sri Kavya, K.C.H., Madhav, B.T.P., Prabhu Kumar, K., Bala Durga Prasad, S.
Performance evaluation of microstrip square patch antenna on different substrate materials

(2011) *Journal of Theoretical and Applied Information Technology*, 26 (2), pp. 97-106. Cited 24 times.
http://www.jatit.org/volumes/research-papers/Vol26No2/5Vol26No2.pdf

Madhav, B.T.P. , Kandepi, M. , Kanapala, S.
(2014) International Journal of Applied Engineering Research

Analysis of CPW fed step serrated ultra wide band antenna on Rogers RT/duroid substrates

Madhav, B.T.P. , Kumar, K.V.V. , Manjusha, A.V.
(2014) International Journal of Applied Engineering Research

CPW fed serrated antenna performance based on substrate permittivity

Madhav, B.T.P. , Khan, H. , Ujwala, D.
(2013) International Journal of Applied Engineering Research

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12 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Praveen Kumar, K., Bhavani, K.V.L., Datta Prasad, P.V.

Microstrip 2 × 2 square patch array antenna on K15 liquid crystal substrate

(2011) *International Journal of Applied Engineering Research*, 6 (9), pp. 1099-1104. Cited 25 times.
http://www.ripublication.com/ijaerv6/ijaerv6n9s_1.pdf

13 Madhav, B.T.P., Mohan Reddy, S.S., Sanjay, B., Ujwala, D.

Trident shaped ultra wideband antenna analysis based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1355-1361. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_02.pdf

14 Madhav, B.T.P., Khan, H., Ujwala, D., Bhavani Sankar, Y., Kandepi, M., Nagendra Reddy, A.S., Nagajyothi, D.

CPW fed serrated antenna performance based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1349-1354. Cited 25 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_01.pdf

Document details

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Characterization of Cr^{3+} doped mixed alkali ions effect in zinc borate glasses - Physical and spectroscopic investigations (Conference Paper)

Rama Sundari, G.[a], Pushpa Manjari, V.[a], Raghavendra Rao, T.[a], Satish, D.V.[a], Rama Krishna, Ch.[ab], Venkata Reddy, Ch.[ab], Ravikumar, R.V.S.S.N.[a]

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Abstract

View references (54)

The physical and structural properties of Cr^{3+} doped 19.9 ZnO + xLi_2O + (30 - x) Na_2O + 50B_2O_3 (5 ≤ x ≤ 25) (ZLNB) glasses have been studied. Powder X-ray diffraction patterns indicated the amorphous nature of the glass samples. The physical parameters of all the glasses were also evaluated with respect to the composition. They exhibit the non-linearity providing the evidence for mixed alkali ions effect. The infrared spectra of the glasses in the range 400-4000 cm^{-1} showed the presence of BO_3 and BO_4 local structures in all the glass systems. No boroxol ring formation was observed in the structure of these glasses. Optical absorption and electron paramagnetic resonance studies were carried out at room temperature. From the optical absorption data various optical parameters such as optical band gap, Urbach energy were evaluated. Crystal field and Racah parameters are evaluated from optical absorption spectra. The EPR spectra of Cr^{3+} doped ZLNB glasses exhibited resonance signals at g = 4.066 and g = 1.9779 characteristic of Cr^{3+} ions. The evaluated bonding parameters suggest the covalent nature.

Author keywords

Crystal field parameters | Electron paramagnetic resonance | Fourier transformed-infra red studies | Mixed alkali ions effect | Optical absorption | Urbach energy

Indexed keywords

Engineering controlled terms: Beryllium compounds | Electron resonance | Electron spin resonance spectroscopy | Light absorption | Paramagnetic resonance | Paramagnetism | X ray diffraction

Compendex keywords: Bonding parameters | Crystal field parameter | Fourier | Mixed alkali | Physical parameters | Powder X ray diffraction | Spectroscopic investigations | Urbach energy

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Publisher: Elsevier

References (54)

View in search results format >

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1 Kaur, A., Khanna, A., Pesquera, C., González, F., Sathe, V.
Preparation and characterization of lead and zinc tellurite glasses
(2010) *Journal of Non-Crystalline Solids*, 356 (18-19), pp. 864-872. Cited 39 times.
doi: 10.1016/j.jnoncrysol.2010.01.005
View at Publisher

2 Kaczmarek, S.M
Li2B4O7 glasses doped with Cr, Co, Eu and Dy
(2002) *Optical Materials*, 19 (1), pp. 189-194. Cited 83 times.
doi: 10.1016/S0925-3467(01)00218-X
View at Publisher

3 Schoo, U., Mehrer, H.
Diffusion of ^{22}Na in sodium borate glasses
(2000) *Solid State Ionics*, 130 (3-4), pp. 243-258. Cited 24 times.
View at Publisher

4 Mohan, S., Thind, K.S., Sharma, G., Gerward, L.
Spectroscopic investigations of Nd^{3+} doped flouro- and chloro-borate glasses
(2008) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 70 (5), pp. 1173-1179. Cited 36 times.
doi: 10.1016/j.saa.2007.10.038
View at Publisher

5 Briscoe, J., Warren, B.E.
(1938) *J. Am. Ceram. Soc.*, 21, pp. 230-287.

6 Imre, A.W., Divinski, S.V., Voss, S., Berkemeier, F., Mehrer, H.
A revised view on the mixed-alkali effect in alkali borate glasses
(2006) *Journal of Non-Crystalline Solids*, 352 (8), pp. 783-788. Cited 26 times.
doi: 10.1016/j.jnoncrysol.2006.02.008
View at Publisher

7 Nazabal, V., Fargin, E., Ferreira, B., Le Flem, G., Desbat, B., Buffeteau, T., Couzi, M., (...), Sarger, L.
Thermally poled new borate glasses for second harmonic generation
(2001) *Journal of Non-Crystalline Solids*, 290 (1), pp. 73-85. Cited 18 times.
doi: 10.1016/S0022-3093(01)00726-8
View at Publisher

25) glasses: Observation of mixed alkali effect
Krishna Kumari, G. , Muntaz Begum, S. , Rama Krishna, C.
(2012) Materials Research Bulletin

Characterization of Fe^{3+}doped mixed alkali zinc borate glasses - Physical and spectroscopic investigations
Sundari, G.R. , Sathish, D.V. , Rao, T.R.
(2013) Journal of Non-Crystalline Solids

Mixed alkali effect in Mn^{2+}doped 20ZnO + xLi2O + (30 - X)K2O + 50B2O3(5 ≤ x ≤ 25) glasses
Krishna Kumari, G. , Rama Krishna, C. , Muntaz Begum, S.
(2013) Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy

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8 Rao, T.R., Krishna, C.R., Thampy, U.S.U., Reddy, C.V., Reddy, Y.P., Rao, P.S., Ravikumar, R.V.S.S.N.

Physical and Spectral Investigations of Cu^{2+}-Doped Alkali Zinc Borate Glasses

(2011) *Applied Magnetic Resonance*, 40 (3), pp. 339-350. Cited 14 times.
doi: 10.1007/s00723-011-0208-6

View at Publisher

9 Raghavendra Rao, T., Rama Krishna, C., Udayachandran Thampy, U.S., Venkata Reddy, C., Reddy, Y.P., Sambasiva Rao, P., Ravikumar, R.V.S.S.N.

Effect of Li_2O content on physical and structural properties of vanadyl doped alkali zinc borate glasses

(2011) *Physica B: Condensed Matter*, 406 (11), pp. 2132-2137. Cited 21 times.
doi: 10.1016/j.physb.2011.03.012

View at Publisher

10 Rao, T.R., Krishna, C.R., Reddy, C.V., Thampy, U.S.U., Reddy, Y.P., Rao, P.S., Ravikumar, R.V.S.S.N.

Mixed alkali effect and optical properties of Ni $^{2+}$ doped 20ZnO + xLi $_2$O + (30 - X)Na $_2$O + 50B $_2$O $_3$ glasses

(2011) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 79 (5), pp. 1116-1122. Cited 13 times.
doi: 10.1016/j.saa.2011.04.030

View at Publisher

11 Rao, T.R., Reddy, C.V., Krishna, C.R., Thampy, U.S.U., Raju, R.R., Rao, P.S., Ravikumar, R.V.S.S.N.

Correlation between physical and structural properties of Co^{2+} doped mixed alkali zinc borate glasses

(2011) *Journal of Non-Crystalline Solids*, 357 (18), pp. 3373-3380. Cited 35 times.
doi: 10.1016/j.jnoncrysol.2011.06.004

View at Publisher

12 Raghavendra Rao, T., Venkata Reddy, C., Rama Krishna, C., Sathish, D.V., Sambasiva Rao, P., Ravikumar, R.V.S.S.N.

Spectroscopic investigations and physical properties of Mn^{2+} doped mixed alkali zinc borate glasses

(2011) *Materials Research Bulletin*, 46 (12), pp. 2222-2229. Cited 25 times.
doi: 10.1016/j.materresbull.2011.09.007

View at Publisher

13 Krishna Kumari, G., Muntaz Begum, S., Rama Krishna, C., Sathish, D.V., Murthy, P.N., Rao, P.S., Ravikumar, R.V.S.S.N.

Physical and optical properties of Co $^{2+}$, Ni $^{2+}$ doped 20ZnO + xLi $_2$O + (30 - X)K $_2$O + 50B $_2$O $_3$ (5 ≤ x ≤ 25) glasses: Observation of mixed alkali effect

(2012) *Materials Research Bulletin*, 47 (9), pp. 2646-2654. Cited 18 times.
doi: 10.1016/j.materresbull.2012.04.075

View at Publisher

14 Krishna Kumari, G., Rama Krishna, C., Muntaz Begum, S., Pushpa Manjari, V., Murthy, P.N., Ravikumar, R.V.S.S.N.

Mixed alkali effect in Mn^{2+} doped 20ZnO + xLi$_2$O + (30 - X)K$_2$O + 50B$_2$O$_3$(5 ≤ x ≤ 25) glasses

(2013) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 101, pp. 140-147. Cited 11 times.
doi: 10.1016/j.saa.2012.09.066

View at Publisher

15 Bamford, C.R.
(1977) *Color Generation and Control in Glass, Glass Science and Technology*. Cited 404 times.
Elsevier Scientific Publishing Company Amsterdam

16 Abdelghany, A.M.
The Elusory Role of Low Level Doping Transition Metals in Lead Silicate Glasses

(2010) *Silicon*, 2 (3), pp. 179-184. Cited 22 times.
doi: 10.1007/s12633-010-9053-8

View at Publisher

17 ElBatal, F.H., Hamdy, Y.M., Marzouk, S.Y.
UV-visible and infrared absorption spectra of transition metals-doped lead phosphate glasses and the effect of gamma irradiation

(2009) *Journal of Non-Crystalline Solids*, 355 (50-51), pp. 2439-2447. Cited 48 times.
doi: 10.1016/j.jnoncrysol.2009.08.044

View at Publisher

18 Mott, N.F., Davis, E.A.
(1979) *Electronic Processes in Non-Crystalline Materials*. Cited 11193 times.
second ed. Clarendon Oxford

19 Nagaraja, N., Sankarappa, T., Prashant Kumar, M.
Electrical conductivity studies in single and mixed alkali doped cobalt-borate glasses

(2008) *Journal of Non-Crystalline Solids*, 354 (14), pp. 1503-1508. Cited 33 times.
doi: 10.1016/j.jnoncrysol.2007.08.042

View at Publisher

20 Hassan, M.A., Farouk, M., Abdullah, A.H., Kashef, I., Elokr, M.M.
ESR and ligand field theory studies of Nd $_2$O $_3$ doped borochoromate glasses

(2012) *Journal of Alloys and Compounds*, 539, pp. 233-236. Cited 10 times.
doi: 10.1016/j.jallcom.2012.06.060

View at Publisher

21 Terczynska-Madej, A., Cholewa-Kowalska, K., Laczka, M.
The effect of silicate network modifiers on colour and electron spectra of transition metal ions

(2010) *Optical Materials*, 32 (11), pp. 1456-1462. Cited 45 times.
doi: 10.1016/j.optmat.2010.05.024

View at Publisher

22 Subhadra, M., Kistaiah, P.
Characterization and optical absorption studies of VO^{2+}:Li $_2$O-K_2O-Bi_2O_3-B_2O $_3$ glass system

(2010) *Journal of Alloys and Compounds*, 505 (2), pp. 634-639. Cited 20 times.
doi: 10.1016/j.jallcom.2010.06.097

View at Publisher

23 Subhadra, M., Kistaiah, P.
Effect of Bi_2O_3 content on physical and optical properties of $15Li_2O15K_2OxBi_2O_3(65-x)B_2O_3$: $5V_2O_5$ glass system

(2011) *Physica B: Condensed Matter*, 406 (8), pp. 1501-1505. Cited 15 times.
doi: 10.1016/j.physb.2011.01.057

View at Publisher

24 Hassan, M.A.
Effect of halides addition on the ligand field of chromium in alkali borate glasses

(2013) *Journal of Alloys and Compounds*, 574, pp. 391-397. Cited 12 times.
doi: 10.1016/j.jallcom.2013.05.177

View at Publisher

25 Moustafa, F.A., Fayad, A.M., Ezz-Eldin, F.M., El-Kashif, I.
Effect of gamma radiation on ultraviolet, visible and infrared studies of NiO, Cr2O3 and Fe2O3-doped alkali borate glasses (Open Access)

(2013) *Journal of Non-Crystalline Solids*, 376, pp. 18-25. Cited 19 times.
doi: 10.1016/j.jnoncrysol.2013.04.052

View at Publisher

26 Rama Sundari, G., Sathish, D.V., Raghavendra Rao, T., Rama Krishna, Ch., Venkata Reddy, Ch., Ravikumar, R.V.S.S.N.
(2013) *J. Non-Cryst. Solids*, 365, pp. 6-12. Cited 6 times.

27 Bendow, B., Banerjee, P.K., Lucas, J., Fonteneau, G., Drexhage, M.G.
Polarized Raman Scattering in Rare-Earth Fluoride Glasses

(1985) *Journal of the American Ceramic Society*, 68 (4), pp. C-92-C-95. Cited 27 times.
doi: 10.1111/j.1151-2916.1985.tb15303.x

View at Publisher

28 Ohishi, Y., Mitachi, S., Kanamori, T., Manabe, T.
OPTICAL ABSORPTION OF 3d TRANSITION METAL AND RARE EARTH ELEMENTS IN ZIRCONIUM FLUORIDE GLASSES.

(1983) *Physics and Chemistry of Glasses*, 24 (5), pp. 135-140. Cited 162 times.

29 Shelby, J.E., Ruller, J.
(1987) *Phys. Chem. Glasses*, 28, pp. 262-268. Cited 117 times.

30 Kłonkowski, A.
Non-monotonic variations of some parameters in vitreous R_2OSiO_2 and $R_2OAl_2O_3SiO_2$ systems

(1985) *Journal of Non-Crystalline Solids*, 72 (1), pp. 117-137. Cited 42 times.
doi: 10.1016/0022-3093(85)90169-3

View at Publisher

31 Ahmed, M.M., Hogarth, C.A., Khan, M.N.
A study of the electrical and optical properties of the GeO2-TeO2 glass system

(1984) *Journal of Materials Science*, 19 (12), pp. 4040-4044. Cited 92 times.
doi: 10.1007/BF00980769

View at Publisher

32 Roling, B., Happe, A., Ingram, M.D., Funke, K.
Interrelation between different mixed cation effects in the electrical conductivity and mechanical loss spectra of ion conducting glasses

(1999) *Journal of Physical Chemistry B*, 103 (20), pp. 4122-4127. Cited 55 times.
doi: 10.1021/jp9839652

View at Publisher

33 Kumar, A., Rai, S.B., Rai, D.K.
Effect of thermal neutron irradiation on Gd^{3+} ions doped in oxyfluoroborate glass: An infra-red study

(2003) *Materials Research Bulletin*, 38 (2), pp. 333-339. Cited 39 times.
doi: 10.1016/S0025-5408(02)01003-6

View at Publisher

34 Sumalatha, B., Omkaram, I., Rajavardana Rao, T., Raju, C.L.
Coordination and ion-ion interactions of chromium centers in alkaline earth zinc borate glasses probed by electron paramagnetic resonance and optical spectroscopy

(2013) *Physica Scripta*, 87 (5), art. no. 055602. Cited 3 times.
http://iopscience.iop.org/1402-4896/87/5/055602/pdf/1402-4896_87_5_055602.pdf
doi: 10.1088/0031-8949/87/05/055602

View at Publisher

35 Seeber, W., Ehrt, D., Ebendorff-Heidepriem, H.
Spectroscopic and laser properties of $Ce^{3+}Cr^{3+}Nd^{3+}$ co-doped fluoride phosphate and phosphate glasses

(1994) *Journal of Non-Crystalline Solids*, 171 (1), pp. 94-104. Cited 52 times.
doi: 10.1016/0022-3093(94)90036-1

View at Publisher

36 Jorgensen, C.K.
(1962) *Absorption Spectra and Chemical Bonding in Complexes*. Cited 1407 times.
Plenum Oxford

37 Ducel, J.F., Videau, J.J., Couzi, M.
Structural study of borophosphate glasses by raman and infrared spectroscopy

(1993) *Physics and Chemistry of Glasses*, 34 (5), pp. 212-218. Cited 54 times.

38 Ravikumar, R.V.S.S.N., Kayalvizhi, K., Chandrasekhar, A.V., Reddy, Y.P., Yamauchi, J., Arunakumari, K., Rao, P.S.
Strontium tetraborate dlasses doped with transition metal ions: EPR and optical absorption study

(2008) *Applied Magnetic Resonance*, 33 (1-2), pp. 185-195. Cited 12 times.
doi: 10.1007/s00723-008-0053-4

View at Publisher

39 Chandrasekhar, A.V., Ravikumar, R.V.S.S.N., Reddy, B.J., Reddy, Y.P., Rao, P.S.
Distorted octahedral sites of Cr3+ doped sodium phosphate glasses

(2002) *Glass Technology*, 43 (1), pp. 32-33. Cited 28 times.

View at Publisher

40 Davis, E.A., Mott, N.F.

Conduction in non-crystalline systems V. Conductivity, optical absorption and photoconductivity in amorphous semiconductors

(1970) *Philosophical Magazine*, 22 (179), pp. 903-922. Cited 2119 times.
doi: 10.1080/14786437008221061

View at Publisher

41 Hassan, M.A., Hogarth, C.A.

A study of the structural, electrical and optical properties of copper tellurium oxide glasses

(1988) *Journal of Materials Science*, 23 (7), pp. 2500-2504. Cited 109 times.
doi: 10.1007/BF01111908

View at Publisher

42 Urbach, F.

The long-wavelength edge of photographic sensitivity and of the electronic Absorption of Solids [8]

(1953) *Physical Review*, 92 (5), p. 1324. Cited 2738 times.
doi: 10.1103/PhysRev.92.1324

View at Publisher

43 Weinstein, I.A., Zatsepin, A.F., Kortov, V.S.

Effects of structural disorder and Urbach's rule in binary lead silicate glasses

(2001) *Journal of Non-Crystalline Solids*, 279 (1), pp. 77-87. Cited 49 times.
doi: 10.1016/S0022-3093(00)00396-3

View at Publisher

44 Naga Raju, G., Veeraiah, N., Nagarjuna, G., Satyanarayana, P.V.V.

The structural role of chromium ions on the improvement of insulating character of ZnO-ZnF_2-B_2O_3 glass system by means of dielectric, spectroscopic and magnetic properties

(2006) *Physica B: Condensed Matter*, 373 (2), pp. 297-305. Cited 29 times.
doi: 10.1016/j.physb.2005.11.164

View at Publisher

45 Bala Murali Krishna, S., Teja, P.M.V., Krishna Rao, D.

Role of chromium ion valence states in ZnO-As_2O_3-Sb_2O_3 glass system by means of spectroscopic and dielectric studies

(2010) *Materials Research Bulletin*, 45 (12), pp. 1783-1791. Cited 10 times.
doi: 10.1016/j.materresbull.2010.09.026

View at Publisher

46 Venkateswara Rao, G., Veeraiah, N.
(2002) *J. Alloys Compd.*, 339, pp. 54-64. Cited 15 times.

47 Fuxi, G., He, D., Huiming, L.
(1985) *J. Non-Cryst. Solids*, 52, pp. 135-141. Cited 40 times.

48 Kumar, V.R., Rao, J.L., Gopal, N.O.

EPR and optical absorption studies of Cr^{3+} ions in alkaline earth alumino borate glasses

(2006) *Journal of Materials Science*, 41 (7), pp. 2045-2053. Cited 17 times.
doi: 10.1007/s10853-006-0889-7

View at Publisher

49 Rao, A.S., Rao, J.L., Lakshman, S.V.J.

Electron paramagnetic resonance and optical absorption spectra of Cr3+ ions doped alkali zinc borosulphate glasses

(1993) *Solid State Communications*, 85 (6), pp. 529-533. Cited 17 times.
doi: 10.1016/0038-1098(93)90013-D

View at Publisher

50 Srinivasa Rao, A., Lakshmana Rao, J., Ramakrishna Reddy, R., Ramakrishna Rao, T.V.

Electron Paramagnetic Resonance and optical absorption spectra of Cr(III) ions in alkali cadmium borosulphate glasses

(1995) *Optical Materials*, 4 (6), pp. 717-721. Cited 15 times.
doi: 10.1016/0925-3467(95)00040-2

View at Publisher

51 Ardelean, I., Filip, S.

EPR and magnetic investigations of chromium ions in TeO_2 based glasses

(2005) *Journal of Optoelectronics and Advanced Materials*, 7 (2), pp. 745-752. Cited 10 times.

View at Publisher

52 Brückner, R., Sammet, M., Stockhorst, H.

Evidence of structural anisotropies in silicate glass fibres by ESR

(1980) *Journal of Non-Crystalline Solids*, 40 (1-3), pp. 273-289. Cited 35 times.
doi: 10.1016/0022-3093(80)90106-4

View at Publisher

53 Santhan Kumar, J., Lakshmi Kumari, J., Subba Rao, M., Cole, S.

EPR, optical and physical properties of chromium ions in CdO-SrO-B_2O_3-SiO_2 (CdSBSi) glasses

(2013) *Optical Materials*, 35 (7), pp. 1320-1326. Cited 22 times.
doi: 10.1016/j.optmat.2013.01.012

View at Publisher

54 Haouari, M., Ben Ouada, H., Maaref, H., Hommel, H., Legrand, A.P.

Optical absorption and electron paramagnetic resonance study of Cr3+-doped phosphate glasses

(1997) *Journal of Physics Condensed Matter*, 9 (31), pp. 6711-6718. Cited 64 times.
doi: 10.1088/0953-8984/9/31/021

View at Publisher

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Document details

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Serrated spike antenna performance evaluation based on arlon substrate materials (Article)

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Abstract

View references (15)

Performance evaluation of serrated spike antenna on different Arlon substrate materials are presented in this paper. Arlon substrate materials with dielectric constant ranging from 2.5 to 3 are taken in this investigation. Spike antenna is resonating at multiple bands with moderate gain and excellent radiation characteristics. Omni directional radiation pattern with 2:1 VSWR bandwidth makes the proposed antenna suitable for different communication applications. Details of the antenna design and results are presented and discussed. © Research India Publications.

Author keywords

Arlon substrates | Performance evaluation | Serrations | Spike antenna

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References (15)

View in search results format

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1 Huff, G.H., Bernhard, J.T.
Improvements in the performance of microstrip antennas on finite ground planes through ground plane edge serrations
(2002) *IEEE Microwave and Wireless Components Letters*, 12 (8), pp. 308-310. Cited 18 times.
doi: 10.1109/LMWC.2002.802032
View at Publisher

2 Huff, G.H., Cung, G., Bernhard, J.T.
Investigation of polarization purity and port isolation in circularly polarized microstrip patch antennas with ground plane edge serrations
(2002) *Proc. 2002 Antenna Applications Symp*, pp. 307-319. Cited 3 times.
in Monticello, IL, Sept

3 Madhav, B.T.P., Pisipati, V., Bhavani, K.V.L., Sreekanth, P., Kumar, P.R.

Rectangular microstrip patch antenna on liquid crystal polymer substrate

(2010) *Journal of Theoretical and Applied Information Technology*, 18 (1), pp. 62-66. Cited 22 times.
http://www.jatit.org/volumes/research-papers/Vol18No1/9Vol18No1.pdf

4 Madhav, B.T.P., Ujwala, D., Khan, H., Tejaswani, A.L., Guntupalli, S., Bala, A.

Substrate permittivity effects on the performance of slotted aperture stacked patch antenna

(2013) *International Journal of Applied Engineering Research*, 8 (8), pp. 909-916. Cited 39 times.
http://www.ripublication.com/ijaerv6/ijaerv8n8_04.pdf

5 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, P.D.

Shorting plate planar inverted folded antenna on LC substrate for bluetooth application

(2012) *Journal of Engineering Science and Technology Review*, 5 (2), pp. 42-45. Cited 10 times.
http://www.jestr.org/downloads/Volume5Issue2/fulltext08050212.pdf

6 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Praveen Kumar, K., Bhavani, K.V.L., Ravi Kumar, M.

Liquid crystal Bow-Tie microstrip antenna for wireless communication applications

(2011) *Journal of Engineering Science and Technology Review*, 4 (2), pp. 131-134. Cited 34 times.
http://www.jestr.org/downloads/issue2/fulltext222011.pdf

7 Madhav, B.T.P., Pisipati, V.G.K.M., Ramesh, N.V.K., Khan, H., Datta Prasad, P.V.

Planar inverted-F antenna on liquid crystal polymer substrate for PCS, UMTS, WIBRO applications

(2011) *ARPN Journal of Engineering and Applied Sciences*, 6 (4), pp. 98-103. Cited 13 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2011/jeas_0411_487.pdf

8 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Murty, K.S.N.

Ultra wide band liquid crystal polymer microstrip elliptical patch antenna

(2010) *Journal of Theoretical and Applied Information Technology*, 20 (2), pp. 105-109. Cited 15 times.
http://www.jatit.org/volumes/research-papers/Vol20No2/6Vol20No2.pdf

9 Rakesh, D., Rakesh Kumar, P., Khan, H., Sri Kavya, K.C.H., Madhav, B.T.P., Prabhu Kumar, K., Bala Durga Prasad, S.

Performance evaluation of microstrip square patch antenna on different substrate materials

(2011) *Journal of Theoretical and Applied Information Technology*, 26 (2), pp. 97-106. Cited 24 times.
http://www.jatit.org/volumes/research-papers/Vol26No2/5Vol26No2.pdf

10 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Praveen Kumar, K., Bhavani, K.V.L., Datta Prasad, P.V.

Microstrip 2 × 2 square patch array antenna on K15 liquid crystal substrate

(2011) *International Journal of Applied Engineering Research*, 6 (9), pp. 1099-1104. Cited 25 times.
http://www.ripublication.com/ijaerv6/ijaerv6n9s_1.pdf

11 Madhav, B.T.P., Mohan Reddy, S.S., Sanjay, B., Ujwala, D.

Trident shaped ultra wideband antenna analysis based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1355-1361. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_02.pdf

12 Madhav, B.T.P., Khan, H., Ujwala, D., Bhavani Sankar, Y., Kandepi, M., Nagendra Reddy, A.S., Nagajyothi, D.

CPW fed serrated antenna performance based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1349-1354. Cited 25 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_01.pdf

13 Madhav, B.T.P., Mohan Reddy, S.S., Sharma, N., Ravindranath Chowdary, J., Pavithra, B.R., Kishore, K.N.V.S., Sriram, G., (...), Sachin Kumar, B.

Performance characterization of radial stub microstrip bow-tie antenna

(2013) *International Journal of Engineering and Technology*, 5 (2), pp. 760-764. Cited 21 times.
http://www.enggjournals.com/ijet/docs/IJET13-05-02-042.pdf

14 Madhav, B.T.P., Mohan Reddy, S., Ravindranath Chowdary, J., Vinod Babu, V., Satya Parthiva, S., Kalyana Saravana, S.

Analysis of dual feed asymmetric antenna

(2013) *International Journal of Applied Engineering Research*, 8 (4), pp. 461-467. Cited 36 times.
http://www.ripublication.com/ijaerv6/ijaerv8n4_07.pdf

15 Madhav, B.T.P., Syam Sundar, P., Sarat Kumar, K., Kishore, A.N.V., Jain, A.K.
Liquid Crystal Polymer Dual Band Pan Slot Antenna
Wireless and Optical Communications Networks (WOCN), pp. 1-5. Cited 7 times.
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Image analysis method to study electro-optic parameters of nematogens (Article)

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Abstract

View references (46)

This paper demonstrated the image analysis technique for the investigation of electro-optic behaviour of homogeneously aligned nematic liquid crystals p-n alkyl benzoic acids (nBA) where n = 5 and 6 under the application of direct current (DC) electric field. Textures of the liquid crystals in the mesophase region of particular temperature were recorded in three monochromatic image planes at the wavelengths of 635 (red), 530 (green) and 475 nm (blue) as a function of applied DC voltage. Electro-optic properties such as transmittance, birefringence, phase retardation and contrast ratio were measured by analysing the optical intensities of the recorded textures using MATLAB software. The changes in the textural features and formation of new textures as a function of voltage provided information for better understanding of the electro-optic characteristics of liquid crystals. Results of this study were compared with the data of the other standard techniques: laser source (633 nm) experiment and United Detector Technology (UDT) sensor of model UV- 35P silicon photo diode which uses white light as source and filters the wavelengths using three colour filters of wavelengths 635, 530 and 475nm. © 2013 © 2013 Taylor & Francis.

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electro-optic | image analysis | nematogens | textures

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References (46)

View in search results format

1 Martin Stalder, O., Martin Schadt, S.
(2003)

2 Lueder, E.
(2005) *Liquid crystal displays - addressing schemes and electro optic effects*, 2, p. 3.
Chichester,: John Wiley & Sons

3 Scott, J.W., Gregory, D.J., Gregory, P.C.
(2007) *Liquid crystals: Frontiers in biomedical applications*, 1, p. 26.
Singapore,: World Scientific Publishing

4 Waclawik, E.R., Ford, M.J., Hale, P.S., Shapter, J.G., Voelcker, N.H.
Liquid-crystal displays: Fabrication and measurement of a twisted nematic liquid-crystal cell
(2004) *Journal of Chemical Education*, 81 (6), pp. 854-858. Cited 12 times.
View at Publisher

5 Kelly, S.M.
(2000) *Hand book of advanced electronic and photonic materials and devices*, 7, p. 1. Cited 25 times.
San Diego, CA,: Academic Press

6 Nowinowski-Kruszelnicki, E., Kedzierski, J., Raszewski, Z., Jaroszewicz, L., Dabrowski, R., Kojdecki, M., Piecek, W., (...), Miszczyk, E.
High birefringence liquid crystal mixtures for electro-optical devices
(2012) *Optica Applicata*, 42 (1), pp. 167-180. Cited 42 times.
http://www.if.pwr.wroc.pl/~optappl/pdf/2012/no1/optappl_4201p167.pdf
doi: 10.5277/oa120116
View at Publisher

7 Li, Q.
(2012) *Liquid crystals beyond displays - chemistry, physics and applications*, 1, p. 1.
John Wiley & Sons

8 de Gennes, P.G., Prost, J.
(1993) *The physics of liquid crystals*, 2, p. 1.
Oxford,: Oxford University Press

9 Frisken, B.J.
(1989)

10 Khoo, I.-C., Wu, S.-T.
(1993) *Optics and nonlinear optics of liquid crystals*, 1, p. 106.
Singapore,: World Scientific

based on structural similarity index measure

Madhav, B.T.P. , Venu Gopala Rao, M. , Pisipati, V.G.K.M.
(2015) Liquid Crystals

Histogram equalisation technique to analyse induced cholesteric phase in nanodoped liquid crystalline compound

Madhav, B.T.P. , Pardhasaradhi, P. , Manepalli, R.K.N.R.
(2015) Liquid Crystals

Novel method for order parameter of ferroelectric liquid crystals by image analysis

Sreeramakavacham, S.S. , Rao, B.G.S. , Mallika, K.
(2013) Liquid Crystals

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11 Wu, S.-T.
(1995) *Chapter -14: Hand book of optics*, 2, p. 14.
New York,: McGraw Hill

12 Avci, N., Nesrullajev, A., Oktik, Ş.
Nonlinear thermotropic and thermo-optical behaviour of planar oriented textures in nematic liquid crystals at phase transitions

(2010) *Brazilian Journal of Physics*, 40 (2), pp. 224-227. Cited 3 times.
http://www.scielo.br/pdf/bjp/v40n2/a17v40n2.pdf
doi: 10.1590/S0103-97332010000200017

View at Publisher

13 Kedzierski, J., Raszewski, Z., Kojdecki, M.A., Kruszelnicki-Nowinowski, E., Perkowski, P., Piecek, W., Miszczyk, E., (...), Ogrodnik, K.
Determination of ordinary and extraordinary refractive indices of nematic liquid crystals by using wedge cells

(2010) *Opto-electronics Review*, 18 (2), pp. 214-218. Cited 19 times.
doi: 10.2478/s11772-010-0009-8

View at Publisher

14 Murty, M.V.R.K., Shukla, R.P.
SIMPLE METHOD FOR MEASURING THE REFRACTIVE INDEX OF A LIQUID.

(1979) *Opt Eng*, 18 (2), pp. 177-180. Cited 11 times.

15 Madusudana, N.V., Shashidhara, R., Chandrasekhar, S.
(1971) *Orientational order in anisaldazine in the nametic phase. Mol Cryst Liq Cryst*, 13, p. 61.

16 Masahiro, K., Tomomi, Y., Tadashi, A.
(1989) *Measurement of refractive indices of ferroelectric SmC* liquid crystal by the Fabry-Perot interference method. Jpn J Appl Phys*, 28, pp. L1602-L1605.

17 Dumitrascu, I., Dumitrascu, L., Dorohoi, D.O.
The influence of the external electric field on the birefringence of nematic liquid crystal layers

(2006) *Journal of Optoelectronics and Advanced Materials*, 8 (3), pp. 1028-1032. Cited 23 times.

18 Clarke, D.
(2010) *Stellar polarimetry*, 1, p. 10.
Weinheim,: Wiley - VCH Verlag GmbH

19 Yilmaz, S., Melik, H., Angay, F., Emek, M., Yildirim, A.
Optical properties of aligned nematic liquid crystals in electric field
(2011) *J Mod Phys*, 2, pp. 248-255. Cited 5 times.

20 Singh, A.K., Manohar, S., Shukla, J.P., Manohar, R., Chandel, V.S.
Electro-optic behaviour of a nematic liquid crystal mixture

(2012) *Journal of Physical Science*, 23 (2), pp. 33-42. Cited 2 times.
http://web.usm.my/jps/23-2-12/23.2.3.pdf

21 Trushkevych, O.
(2005)

22 Kumar, A., Singh, G., Joshi, T., Rao, G.K., Singh, A.K., Biradar, A.M.
Tailoring of electro-optical properties of ferroelectric liquid crystals by doping Pd nanoparticles

(2012) *Applied Physics Letters*, 100 (5), art. no. 054102. Cited 15 times.
doi: 10.1063/1.3681381

View at Publisher

23 Gartland Jr., E.C., Huang, H., Lavrentovich, O.D., Palffy-Muhoray, P., Smalyukh, I.I., Kosa, T., Taheri, B.
Electric-field induced transitions in a cholesteric liquid-crystal film with negative dielectric anisotropy

(2010) *Journal of Computational and Theoretical Nanoscience*, 7 (4), pp. 709-725. Cited 5 times.
doi: 10.1166/jctn.2010.1415

View at Publisher

24 Singh, G., Prakash, G.V., Choudhary, A., Biradar, A.M.
Electro-optic studies in conventional and pure/ethanol mixed de Vries ferroelectric liquid crystals

(2012) *Liquid Crystals*, 39 (2), pp. 185-190. Cited 7 times.
doi: 10.1080/02678292.2011.625450

View at Publisher

25 Castles, F., Morris, S.M., Coles, H.J.
Flexoelectro-optic properties of chiral nematic liquid crystals in the uniform standing helix configuration

(2009) *Physical Review E - Statistical, Nonlinear, and Soft Matter Physics*, 80 (3), art. no. 031709. Cited 42 times.
http://oai.aps.org/oai?verb=GetRecord&Identifier=oai:aps.org:PhysRevE.80.031709&metadataPrefix=oai_apsmeta_2
doi: 10.1103/PhysRevE.80.031709

View at Publisher

26 Kumar, A., Biradar, A.M.
Effect of cadmium telluride quantum dots on the dielectric and electro-optical properties of ferroelectric liquid crystals

(2011) *Physical Review E - Statistical, Nonlinear, and Soft Matter Physics*, 83 (4), art. no. 041708. Cited 48 times.
http://oai.aps.org/filefetch?identifier=10.1103/PhysRevE.83.041708&component=fulltext&description=markup&format=xml
doi: 10.1103/PhysRevE.83.041708

View at Publisher

27 Monzen, K., Fujita, D., Hiraoka, K., Uematsu, Y., Date, M.
Banded texture induced by an electric field in lyotropic liquid crystals

(1997) *Molecular Crystals and Liquid Crystals Science and Technology Section A: Molecular Crystals and Liquid Crystals*, 303, pp. 51-56. Cited 4 times.
doi: 10.1080/10587259708039405

View at Publisher

28 de Oliveira, B.F., Avelino, P.P., Moraes, F., Oliveria, J.C.R.E.
(2010) *Nematic liquid crystal dynamics under applied electric fields. Phys Rev E*, 82, pp. 1-7.

29 Singh, G., Vijaya Prakash, G., Choudhary, A., Biradar, A.M.
Homeotropic alignment of nematic liquid crystals with negative dielectric anisotropy

(2010) *Physica B: Condensed Matter*, 405 (8), pp. 2118-2121. Cited 6 times.
doi: 10.1016/j.physb.2010.01.116

View at Publisher

30 Aguirre, L.E., Anoardo, E., Iber, N., Buka, A.
Regular structures in 5CB liquid crystals under the joint action of ac and dc voltages

(2012) *Physical Review E - Statistical, Nonlinear, and Soft Matter Physics*, 85 (4), art. no. 041703. Cited 7 times.
http://oai.aps.org/filefetch?identifier=10.1103/PhysRevE.85.041703&component=fulltext&description=markup&format=xml
doi: 10.1103/PhysRevE.85.041703

View at Publisher

31 Sastry, S.S., Mallika, K., Rao, B.G.S., Tiong, H.S., Lakshminarayana, S.
Liquid crystal textural analysis based on histogram homogeneity and peak detection algorithm

(2012) *Liquid Crystals*, 39 (4), pp. 415-418. Cited 8 times.
doi: 10.1080/02678292.2011.652198

View at Publisher

32 Sastry, S.S., Mallika, K., Rao, B.G.S., Tiong, H.S., Lakshminarayana, S.
Identification of phase transition temperatures by statistical image analysis

(2012) *Liquid Crystals*, 39 (6), pp. 695-700. Cited 8 times.
doi: 10.1080/02678292.2012.672661

View at Publisher

33 Sastry, S.S., Ha, S.T., Gowri Sankara Rao, B., Mallika, K., Kumari, T.V.
Optical properties of a mesogen by image analysis

(2012) *Liquid Crystals*, 39 (11), pp. 1414-1419. Cited 3 times.
doi: 10.1080/02678292.2012.719041

View at Publisher

34 Sastry, S.S., Kumar, S., Kumari, T.V., Mallika, K., Sankara Rao, B.G., Tiong, H.S.
Liquid crystal parameters through image analysis

(2012) *Liquid Crystals*, 39 (12), pp. 1527-1537. Cited 5 times.
doi: 10.1080/02678292.2012.725870

View at Publisher

35 Sreeramakavacham, S.S., Rao, B.G.S., Mallika, K., Kumari, T.V., Lakshminarayana, S., Ha, S.T.
Novel method for order parameter of ferroelectric liquid crystals by image analysis

(2013) *Liquid Crystals*, 40 (3), pp. 384-390. Cited 6 times.
doi: 10.1080/02678292.2012.754960

View at Publisher

36 (2013) *Liquid crystal cells and cell holders [Internet]*
http://www.instec.com/pdf/brochures/LCCell-brochure.pdf

37 Gray, W.
(1962) *Molecular structure and the properties of liquid crystals*. Cited 987 times.
New York (NY),: Academic Press

38 Dolgov, L., Yaroshchuk, O., Lebovka, M.
Effect of electro-optical memory in liquid crystals doped with carbon nanotubes
(2008) *Molecular Crystals and Liquid Crystals*, 496, pp. 212-229. Cited 44 times.
doi: 10.1080/15421400802451816
View at Publisher

39 (2013) *Liquid crystal group*
http://bly.colorado.edu/

40 Gonzalez, R.C., Woods, R.E., Eddins, S.L.
(2009) *Digital image processing using MATLAB*, 2, p. 1.
Natick,: Gatesmark

41 Manohar, R., Srivastava, A.K., Jyotishman, P., Shukla, J.P., Prajapati, A.K., Bonde, N.L.
Dielectric, optical and thermodynamical properties of liquid crystal sample exhibiting SmA phase
(2006) *Int J Phys Sci*, 1, pp. 147-153. Cited 9 times.

42 Singh, S.
(2002) *Liquid crystals fundamentals*, 1, p. 5639.
Singapore,: World Scientific

43 Bahadur, B.
(1993) *Liquid crystals - applications and uses*, 1, p. 196.
Singapore,: World Scientific

44 (2013) *UV enhanced series - inversion layers and planar diffused silicon photo diodes [Internet]*
http://www.osioptoelectronics.com/Files/application-notes/UV-Planar-Diffused-Photodiodes.sflb.pdf

45 Smith, J.

46 Greg, A.K., Michael, J.D., Graham, A.
(1996) *Proceedings of SPIE, optical spectroscopic techniques and instrumentation for atmospheric and space research II, Vol. 2830. Bellingham (WA): SPIE*, p. 345.

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Typical comparisons between plasma bubble and blob distributions at different altitudes over the Indian sector using a unique combination of satellite-based observations – a case study (Article)

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Abstract

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We report in this article, for the first time, on the altitudinal variations of ionospheric irregularities during post-sunset hours between 14 and 17 October 2001 at Indian longitudes by using a unique combination of Challenging Mini Satellite Payload (CHAMP), Republic of China Satellite (ROCSAT-1), and Defense Meteorological Satellite Programme (DMSP) satellites located at about 400, 650, and 850 km, respectively. It became possible for us to study the width of plasma bubbles and plasma blobs in the longitudinal (zonal) direction at different altitudes along with temporal variations of ion velocity components in horizontal (V_y) and vertical (V_z) directions as probed by ROCSAT-1 and DMSP satellites. The dominant features noticed in $V_y$and $V_z$components are their anti-correlation relationship at the ROCSAT-1 satellite's altitude (mirroring effect). The most important observation from this study is that plasma bubbles are found to have occurred immediately after post-sunset hours, whereas plasma blobs were observed after three hours following the bubbles' appearance time and continued until pre-sunrise hours at higher altitudes between around ±5° and ±20° from the magnetic equator, which indicate that the plasma blobs emanate from plasma bubbles that generated at the bottomside of the ionospheric F-layer shortly after sunset on similar lines to a few recent research studies. It is therefore believed that the polarized electric fields generated inside plasma bubbles might have played a role in the generation of higher-altitude plasma blobs. Importantly, the calculated power spectra of bubbles and blobs show a nearly equal trend, indicating that they are intricately connected with each other. © 2014, © 2014 Taylor & Francis.

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References (35)

View in search results format >

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1 Anderson, D., Anghel, A., Chau, J., Veliz, J.
Daytime Vertical E × B Drift Velocities Inferred from Ground-Based Magnetometer Observations at Low Latitudes
(2004) *Space Weather*, 2, p. S11001. Cited 99 times.

2 Basu, S., Kudeki, E., Basu, S.U., Valladares, C.E., Weber, E.J., Zengingonul, H.P., Bhattacharyya, S., (...), Espinoza, J.
Scintillations, Plasma Drifts, and Neutral Winds in the Equatorial Ionosphere after Sunset
(1996) *Journal of Geophysical Research*, 101 (A12), pp. 26795-26809. Cited 121 times.

3 Basu, S., Basu, S.
Equatorial scintillations: advances since ISEA-6
(1985) *Journal of Atmospheric and Terrestrial Physics*, 47 (8-10), pp. 753-768. Cited 90 times.
doi: 10.1016/0021-9169(85)90052-2
View at Publisher

4 Behnke, R.A., Harper, R.M.
Vector Measurements of F Region Ion Transport at Arecibo
(1973) *Journal of Geophysical Research*, 78, pp. 8222-8234. Cited 94 times.

5 Brahmanandam, P.S., Uma, G., Liu, J.Y., Chu, Y.H., Devi, N.S.M.P.L., Kakinami, Y.
Global S4 index variations observed using FORMOSAT-3/ COSMIC GPS RO technique during a solar minimum year
(2012) *Journal of Geophysical Research: Space Physics*, 117 (9), art. no. A09322. Cited 22 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2012JA017966
View at Publisher

6 Burke, W.J., Gentile, L.C., Huang, C.Y., Valladares, C.E., Su, S.Y.
Longitudinal variability of equatorial plasma bubbles observed by DMSP and ROCSAT-1
(2004) *Journal of Geophysical Research: Space Physics*, 109 (A12), art. no. A12301. Cited 117 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2004JA010583
View at Publisher

7 Burke, W.J., Gentile, L.C., Shomo, S.R., Roddy, P.A., Pfaff, R.F.
Images of bottomside irregularities observed at topside altitudes
(2012) *Journal of Geophysical Research: Space Physics*, 117 (3), art. no. A03332. Cited 3 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2011JA017169
View at Publisher

8 Choi, H.-S., Kil, H., Kwak, Y.-S., Park, Y.-D., Cho, K.-S.
Comparison of the bubble and blob distributions during the solar minimum

(2012) *Journal of Geophysical Research: Space Physics*, 117 (4), art. no. A04314. Cited 12 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2011JA017292

View at Publisher

9 Dyson, P.L., Benson, R.F.
Topside sounder observations of equatorial bubbles

(1978) *Geophysical Research Letters*, 5 (9), pp. 795-798. Cited 53 times.
doi: 10.1029/GL005i009p00795

View at Publisher

10 Fejer, B.G., Scherliess, L.
Empirical models of storm time equatorial zonal electric fields

(1997) *Journal of Geophysical Research A: Space Physics*, 102 (A11), art. no. 97JA02164, pp. 24047-24056. Cited 242 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9291
doi: 10.1029/97JA02164

View at Publisher

11 Huang, C.-S., De La Beaujardiere, O., Roddy, P.A., Hunton, D.E., Pfaff, R.F., Valladares, C.E., Ballenthin, J.O.
Evolution of equatorial ionospheric plasma bubbles and formation of broad plasma depletions measured by the C/NOFS satellite during deep solar minimum

(2011) *Journal of Geophysical Research: Space Physics*, 116 (3), art. no. A03309. Cited 31 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2010JA015982

View at Publisher

12 Huang, C.-S., Le, G., De La Beaujardiere, O., Roddy, P.A., Hunton, D.E., Pfaff, R.F., Hairston, M.R.
Relationship between Plasma bubbles and density enhancements: Observations and interpretation

(2014) *Journal of Geophysical Research A: Space Physics*, 119 (2), pp. 1325-1336. Cited 10 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2013JA019579

View at Publisher

13 Kil, H., Choi, H.-S., Heelis, R.A., Paxton, L.J., Coley, W.R., Miller, E.S.
Onset conditions of bubbles and blobs: A case study on 2 March 2009

(2011) *Geophysical Research Letters*, 38 (6), art. no. L06101. Cited 18 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1944-8007/issues?year=2012
doi: 10.1029/2011GL046885

View at Publisher

14 Klenzing, J.H., Rowland, D.E., Pfaff, R.F., Le, G., Freudenreich, H., Haaser, R.A., Burrell, A.G., (...), Heelis, R.A.
Observations of low-latitude plasma density enhancements and their associated plasma drifts

(2011) *Journal of Geophysical Research: Space Physics*, 116 (9), art. no. A09324. Cited 14 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2011JA016711

View at Publisher

15 Ko, C.P., Yeh, H.C.
COSMIC/FORMOSAT-3 observations of equatorial F region irregularities in the SAA longitude sector
(2010) *Journal of Geophysical Research: Space Physics*, 115 (11), art. no. A11309. Cited 16 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2010JA015618
View at Publisher

16 Krall, J., Huba, J.D., Joyce, G., Yokoyama, T.
Density enhancements associated with equatorial spread F
(2010) *Annales Geophysicae*, 28 (2), pp. 327-337. Cited 25 times.
doi: 10.5194/angeo-28-327-2010
View at Publisher

17 Le, G., Huang, C.-S., Pfaff, R.F., Su, S.-Y., Yeh, H.-C., Heelis, R.A., Rich, F.J., (...), Hairston, M.
Plasma density enhancements associated with equatorial spread F: ROCSAT-1 and DMSP observations
(2003) *Journal of Geophysical Research: Space Physics*, 108 (A8), art. no. 1318. Cited 48 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2002JA009592
View at Publisher

18 Li, G., Ning, B., Liu, L., Zhao, B., Yue, X., Su, S.-Y., Venkatraman, S.
Correlative Study of Plasma Bubbles, Evening Equatorial Ionization Anomaly, and Equatorial Prereversal E × B Drifts at Solar Maximum
(2008) *Radio Science*, 43, p. RS4005. Cited 20 times.

19 Martinis, C., Baumgardner, J., Mendillo, M., Su, S.-Y., Aponte, N.
Brightening of 630.0 nm equatorial spread-F airglow depletions
(2009) *Journal of Geophysical Research: Space Physics*, 114 (6), art. no. A06318. Cited 27 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2008JA013931
View at Publisher

20 Mendillo, M., Baumgardner, J., Pi, X., Sultan, P.J., Tsunoda, R.
Onset Conditions for Equatorial Spread-F
(1992) *Journal of Geophysical Research*, 97, pp. 13865-13876. Cited 116 times.

21 Ossakow, S.L., Zalesak, S.T., McDonald, B.E., Chaturvedi, P.K.
Nonlinear Equatorial Spread F: Dependence on Altitude of the F Peak and Bottomside Background Electron Density Gradient Scale Length
(1979) *Journal of Geophysical Research*, 84, pp. 17-29. Cited 92 times.

22 Oya, H., Takahashi, T., Watanabe, S.
Observation of Low Latitude Ionosphere by the Impedance Probe on Board the Hinotori Satellite
(1986) *Journal of geomagnetism and geoelectricity*, 38 (2), pp. 111-123. Cited 55 times.
doi: 10.5636/jgg.38.111
View at Publisher

23 Park, J., Min, K.W., Lee, J.-J., Kil, H., Kim, V.P., Kim, H.-J., Lee, E., (...), Lee, D.Y.

Plasma blob events observed by KOMPSAT-1 and DMSP F15 in the low latitude nighttime upper ionosphere

(2003) *Geophysical Research Letters*, 30 (21), pp. SSC 9-1 - SSC 9-4. Cited 27 times.

24 Park, J., Stolle, C., Lühr, H., Rother, M., Su, S.-Y., Min, K.W., Lee, J.-J.

Magnetic signatures and conjugate features of low-latitude plasma blobs as observed by the CHAMP satellite

(2008) *Journal of Geophysical Research: Space Physics*, 113 (9), art. no. A09313. Cited 28 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2008JA013211

View at Publisher

25 Pimenta, A.A., Sahai, Y., Bittencourt, J.A., Abdu, M.A., Takahashi, H., Taylor, M.J.

Plasma blobs observed by ground-based optical and radio techniques in the Brazilian tropical sector

(2004) *Geophysical Research Letters*, 31 (12), pp. L12810 1-4. Cited 26 times.
doi: 10.1029/2004/GL020233

View at Publisher

26 Pimenta, A.A., Sahai, Y., Bittencourt, J.A., Rich, F.J.

Ionospheric plasma blobs observed by OI 630 nm all-sky imaging in the Brazilian tropical sector during the major geomagnetic storm of April 6-7, 2000

(2007) *Geophysical Research Letters*, 34 (2), art. no. L02820. Cited 27 times.
doi: 10.1029/2006GL028529

View at Publisher

27 Su, S.-Y., Yeh, H.C., Chao, C.K., Heelis, R.A.

Observation of a large density dropout across the magnetic field at 600 km altitude during the 6-7 April 2000 magnetic storm

(2002) *Journal of Geophysical Research: Space Physics*, 107 (A11), art. no. 1404. Cited 33 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2001JA007552

View at Publisher

28 Tsunoda, R.T.

Magnetic-field-aligned characteristics of plasma bubbles in the nighttime equatorial ionosphere

(1980) *Journal of Atmospheric and Terrestrial Physics*, 42 (8), pp. 743-752. Cited 83 times.
doi: 10.1016/0021-9169(80)90057-4

View at Publisher

29 Tulasi Ram, S., Rama Rao, P.V.S., Niranjan, K., Prasad, D.S.V.V.D., Sridharan, R., Devasia, C.V., Ravindran, S.

The role of post-sunset vertical drifts at the equator in predicting the onset of VHF scintillations during high and low sunspot activity years

(2006) *Annales Geophysicae*, 24 (6), pp. 1609-1616. Cited 34 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.5194/angeo-24-1609-2006

View at Publisher

30 Uemoto, J., Maruyama, T., Saito, S., Ishii, M., Yoshimura, R.

Relationships between pre-sunset electrojet strength, pre-reversal enhancement and equatorial spread-F onset

(2010) *Annales Geophysicae*, 28 (2), pp. 449-454. Cited 23 times.
doi: 10.5194/angeo-28-449-2010

View at Publisher

31 Uma, G., Liu, J.Y., Chen, S.P., Sun, Y.Y., Brahmanandam, P.S., Lin, C.H.

A comparison of the equatorial spread F derived by the International Reference Ionosphere and the S_4 index observed by FORMOSAT-3/COSMIC during the solar minimum period of 2007-2009

(2012) *Earth, Planets and Space*, 64 (6), pp. 467-471. Cited 17 times.
http://rd.springer.com/journal/40623
doi: 10.5047/eps.2011.10.014

View at Publisher

32 Watanabe, S., Oya, H.

Occurrence Characteristics of Low Latitude Ionosphere Irregularities Observed by Impedance Probe on Board the Hinotori Satellite

(1986) *Journal of geomagnetism and geoelectricity*, 38 (2), pp. 125-149. Cited 68 times.
doi: 10.5636/jgg.38.125

View at Publisher

33 Wickert, J., Reigber, C., Beyerle, G., König, R., Marquardt, C., Schmidt, T., Grunwaldt, L., (...), Hocke, K.

Atmosphere sounding by GPS radio occultation: First results from CHAMP

(2001) *Geophysical Research Letters*, 28 (17), pp. 3263-3266. Cited 296 times.
doi: 10.1029/2001GL013117

View at Publisher

34 Woodman, Ronald F., La Hoz, Cesar

RADAR OBSERVATIONS OF F REGION EQUATORIAL IRREGULARITIES.

(1976) *J Geophys Res*, 81 (31), pp. 5447-5466. Cited 549 times.

View at Publisher

35 Yokoyama, T., Su, S.-Y., Fukao, S.

Plasma blobs and irregularities concurrently observed by ROCSAT-1 and Equatorial Atmosphere Radar

(2007) *Journal of Geophysical Research: Space Physics*, 112 (5), art. no. A05311. Cited 31 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2006JA012044

View at Publisher

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Numerical Optimization of Novel Functions Using vTLBO Algorithm (Conference Paper)

Mohankrishna, S.[a], Naik, A.[b], Satapathy, S.C.[c], Rao, K.R.S.[d], Biswal, B.N.[e]

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Abstract

View references (20)

Teaching-Learning-Based Optimization (TLBO) is recently being used as a new, reliable, accurate and robust optimization technique for global optimization. It outperforms some of the well-known metaheuristics regarding constrained benchmark functions, constrained mechanical design, and continuous non-linear numerical optimization problems. However, the success of TLBO in solving some specific types of problems such as shifted function goes down. In this paper we have modified little bit in code of TLBO to improve its performance while solving shifted type of functions. The modified code of TLBO is named as vTLBO (variant TLBO). The performance of vTLBO algorithm is extensively evaluated on 9 shifted and 9 shifted rotated numerical optimization problems and compares favorably with the DE, PSO and conventional TLBO. The results show the better performance of the vTLBO algorithm. Also we have shown that whenever the performance of vTLBO compare with TLBO by taking simple benchmark function, its performance has been degraded. © Springer International Publishing Switzerland 2014.

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metaheuristics | numerical optimization | shifted function | shifted rotated function | TLBO

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References (20)

View in search results format

1 Rao, R.V., Savsani, V.J., Vakharia, D.P.

Teaching-learning-based optimization: A novel method for constrained mechanical design optimization problems

(2011) *CAD Computer Aided Design*, 43 (3), pp. 303-315. Cited 752 times.
doi: 10.1016/j.cad.2010.12.015

View at Publisher

2 Rao, R.V., Savsani, V.J., Vakharia, D.P.

Teaching-Learning-Based Optimization: An optimization method for continuous non-linear large scale problems

(2012) *Information Sciences*, 183 (1), pp. 1-15. Cited 486 times.
doi: 10.1016/j.ins.2011.08.006

View at Publisher

3 Rao, R.V., Patel, V.

An elitist teaching-learning-based optimization algorithm for solving complex constrained optimization problems

(2012) *International Journal of Industrial Engineering Computations*, 3 (4), pp. 535-560. Cited 222 times.
http://www.growingscience.com/ijiec/Vol3/IJIEC_2012_37.pdf
doi: 10.5267/j.ijiec.2012.03.007

View at Publisher

4 Satapathy, S.C., Naik, A.

Data clustering based on teaching-learning-based optimization

(2011) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 7077 LNCS (PART 2), pp. 148-156. Cited 56 times.
doi: 10.1007/978-3-642-27242-4_18

View at Publisher

5 Satapathy, S.C., Naik, A., Parvathi, K.

High dimensional real parameter optimization with teaching learning based optimization

(2012) *International Journal of Industrial Engineering Computations*, 3 (5), pp. 807-816. Cited 12 times.
http://www.growingscience.com/ijiec/Vol3/IJIEC_2012_54.pdf
doi: 10.5267/j.ijiec.2012.06.001

View at Publisher

6 Naik, A., Parvathi, K., Satapathy, S.C., Nayak, R., Panda, B.S.

QoS multicast routing using teaching learning based optimization

(2013) *Advances in Intelligent Systems and Computing*, 174 AISC, pp. 49-55. Cited 5 times.
http://www.springer.com/series/11156
ISBN: 978-813220739-9
doi: 10.1007/978-81-322-0740-5_6

View at Publisher

7 Satapathy, S.C., Naik, A., Parvathi, K.

0-1 Integer programming for generation maintenance scheduling in power systems based on Teaching Learning Based Optimization (TLBO)

(2012) *Communications in Computer and Information Science*, 306 CCIS, pp. 53-63. Cited 7 times.
ISBN: 978-364232128-3
doi: 10.1007/978-3-642-32129-0_11

View at Publisher

Improved teaching learning based optimization for global function optimization

Satapathy, S.C. , Naik, A.
(2013) Decision Science Letters

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8 Krishnanand, K.R., Panigrahi, B.K., Rout, P.K., Mohapatra, A.
Application of multi-objective teaching-learning-based algorithm to an economic load dispatch problem with incommensurable objectives

(2011) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 7076 LNCS (PART 1), pp. 697-705. Cited 32 times.
ISBN: 978-364227171-7
doi: 10.1007/978-3-642-27172-4_82

View at Publisher

9 Naik, A., Satapathy, S.C., Parvathi, K.
Improvement of initial cluster center of c-means using Teaching learning based optimization
Procedia Technology
Accepted and will be published in, Elsevier and indexed by Scopus

10 Naik, A., Satapathy, S.C.
Rough set and Teaching learning based optimization technique for Optimal Features Selection
Under Minor Review in Central European Journal of Computer Science. Cited 2 times.
Ref.: Ms. No. CEJCS-D-12-00042

11 Satapathy, S.C., Naik, A.
Weighted Teaching-Learning-Based Optimization for global function optimization
Under Review in Applied Soft Computing. Cited 2 times.
Ms. Ref. No.: ASOC-D-12-00775

12 Satapathy, S.C., Naik, A.
A Modified Teaching-Learning-Based Optimization (mTLBO) for Global Search
Under Review in Swarm and Evolutionary Computation

13 Venkata Rao, R., Patel, V.
Multi-objective optimization of combined Brayton and inverse Brayton cycles using advanced optimization algorithms

(2012) *Engineering Optimization*, 44 (8), pp. 965-983. Cited 26 times.
doi: 10.1080/0305215X.2011.624183

View at Publisher

14 Rao, R.V., Savsani, V.J.
(2012) *Mechanical design optimization using advanced optimization techniques*. Cited 87 times.
Springer, London

15 Toĝan, V.
Design of planar steel frames using Teaching-Learning Based Optimization

(2012) *Engineering Structures*, 34, pp. 225-232. Cited 125 times.
doi: 10.1016/j.engstruct.2011.08.035

View at Publisher

16 Venkata Rao, R., Kalyankar, V.D.
Parameter optimization of machining processes using a new optimization algorithm

(2012) *Materials and Manufacturing Processes*, 27 (9), pp. 978-985. Cited 30 times.
doi: 10.1080/10426914.2011.602792

View at Publisher

17 Liang, J.J., Suganthan, P.N., Deb, K.
Novel composition test functions for numerical global optimization

(2005) *Proceedings - 2005 IEEE Swarm Intelligence Symposium, SIS 2005*, 2005, art. no. 1501604, pp. 71-78. Cited 232 times.
ISBN: 0780389166; 978-078038916-8
doi: 10.1109/SIS.2005.1501604

View at Publisher

18 Salomon, R.
Re-evaluating genetic algorithm performance under coordinate rotation of benchmark functions. A survey of some theoretical and practical aspects of genetic algorithms

(1996) *BioSystems*, 39 (3), pp. 263-278. Cited 326 times.
www.elsevier.com/locate/biosystems
doi: 10.1016/0303-2647(96)01621-8

View at Publisher

19 Shi, Yuhui, Eberhart, Russell
Modified particle swarm optimizer

(1998) *Proceedings of the IEEE Conference on Evolutionary Computation, ICEC*, pp. 69-73. Cited 6828 times.

View at Publisher

20 Storn, R., Price, K.
(1995) *Differential evolution-a simple and efficient adaptive scheme for global optimization over continuous spaces*. Cited 2905 times.
TR-95-012
http://http.icsi.berkeley.edu/

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Synthesis of novel macrocyclic tetraamides (Article)

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Abstract

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A simple and facile route has been described for the synthesis of macrocyclic tetraamides. This method is applicable for the preparation of a variety of macrocyclic tetraamides of various heteroatom substitutions. © 2014 Bentham Science Publishers.

Reaxys Database Information

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Author keywords

Coupling | Heteroatom substitution | Macrocyclic Tetraamides | Peptide

Indexed keywords

EMTREE drug terms: amide | macrocyclic compound | macrocyclic tetraamide A | macrocyclic tetraamide B | natural product | nitrogen | oxygen | unclassified drug

EMTREE medical terms: analytic method | article | atom | chemical reaction | column chromatography | crystal structure | drug synthesis | priority journal | proton nuclear magnetic resonance

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References (41)

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1 Lawson, K.È., Rose, T.E., Harran, P.G.

Template-constrained macrocyclic peptides prepared from natiève, unprotected precursors

(2013) *Proceedings of the National Academy of Sciences of the United States of America*, 110 (40), pp. E3753-E3760. Cited 22 times.
http://www.pnas.org/content/110/40/E3753.full.pdf+html
doi: 10.1073/pnas.1311706110

View at Publisher

2 Beckmann, H.S.G., Nie, F., Hagerman, C.E., Johansson, H., Tan, Y.S., Wilcke, D., Spring, D.R.

A strategy for the diversity-oriented synthesis of macrocyclic scaffolds using multidimensional coupling

(2013) *Nature Chemistry*, 5 (10), pp. 861-867. Cited 60 times.
doi: 10.1038/nchem.1729

View at Publisher

3 Giordanetto, F., Kihlberg, J.
Macrocyclic drugs and clinical candidates: What can medicinal chemists learn from their properties
(2013) *J. Med. Chem.*
dx.doi. org/10.1021/ jm400887

4 De Riccardis, F., Izzo, I., Montesarchio, D., Tecilla, P.

Ion transport through lipid bilayers by synthetic ionophores: Modulation of activity and selectivity

(2013) *Accounts of Chemical Research*, 46 (12), pp. 2781-2790. Cited 45 times.
doi: 10.1021/ar4000136

View at Publisher

5 Lindoy, L.F., Park, K.-M., Lee, S.S.

Metals, macrocycles and molecular assemblies-macrocyclic complexes in metallo-supramolecular chemistry

(2013) *Chemical Society Reviews*, 42 (4), pp. 1713-1727. Cited 107 times.
doi: 10.1039/c2cs35218d

View at Publisher

6 Iyoda, M., Yamakawa, J., Rahman, M.J.

Conjugated macrocycles: Concepts and applications

(2011) *Angewandte Chemie - International Edition*, 50 (45), pp. 10522-10553. Cited 240 times.
doi: 10.1002/anie.201006198

View at Publisher

7 Singh, N., Hundal, M.S., Hundal, G., Martinez-Ripoll, M.

Zinc templated synthesis - A route to get metal ion free tripodal ligands and lariat coronands, containing Schiff bases

(2005) *Tetrahedron*, 61 (32), pp. 7796-7806. Cited 28 times.
doi: 10.1016/j.tet.2005.05.052

View at Publisher

8 Rajakumar, P., Rasheed, A.M.A.

Synthesis, characterization and ion transportation studies of some novel cyclophane amides

(2005) *Tetrahedron*, 61 (22), pp. 5351-5362. Cited 29 times.
doi: 10.1016/j.tet.2005.03.064

View at Publisher

9 Kim, H.J., Jin, Y., Seo, J., Lee, J.-E., Lee, J.Y., Lee, S.S.

Endocyclic disilver(I) complex and one-dimensional copper(I) iodide coordination polymer of a ditopic xylyl-bridged NO_2S_2 macrocycle

(2006) *Inorganic Chemistry Communications*, 9 (10), pp. 1040-1044. Cited 20 times.
doi: 10.1016/j.inoche.2006.07.005

View at Publisher

10 Algarra, A.G., Basallote, M.G., Belda, R., Blasco, S., Castillo, C.E., Llinares, J.M., García-España, E., (...), Verdejo, B.

Synthesis, protonation and Cu^{II} complexes of two novel isomeric pentaazacyclophane ligands: Potentiometric, DFT, kinetic and AMP recognition studies

(2009) *European Journal of Inorganic Chemistry*, (1), pp. 62-75. Cited 9 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/121540685/PDFSTART
doi: 10.1002/ejic.200800576

View at Publisher

11 Radecka-Paryzek, W., Patroniak, V., Lisowski, J.

Metal complexes of polyaza and polyoxaaza Schiff base macrocycles

(2005) *Coordination Chemistry Reviews*, 249 (21-22), pp. 2156-2175. Cited 193 times.
doi: 10.1016/j.ccr.2005.02.021

View at Publisher

12 Katayev, E.A., Sessler, J.L., Khrustalev, V.N., Ustynyuk, Y.A.

Synthetic model of the phosphate binding protein: Solid-state structure and solution-phase anion binding properties of a large oligopyrrolic macrocycle

(2007) *Journal of Organic Chemistry*, 72 (19), pp. 7244-7252. Cited 59 times.
doi: 10.1021/jo071106g

View at Publisher

13 Brunet, E., Juanes, O., Rodriguez-Ubis, J.C.
Supramolecularly organized lanthanide complexes for efficient metal excitation and luminescence as sensors in organic and biological applications
(2007) *Curr.Chem. Biol.*, 1, pp. 11-39. Cited 117 times.

14 Lodeiro, C., Pina, F.

Luminescent and chromogenic molecular probes based on polyamines and related compounds

(2009) *Coordination Chemistry Reviews*, 253 (9-10), pp. 1353-1383. Cited 115 times.
doi: 10.1016/j.ccr.2008.09.008

View at Publisher

15 Verdejo, B., Aguilar, J., Doménech, A., Miranda, C., Navarro, P., Jiménez, H.R., Soriano, C., (...), García-España, E.

Binuclear Cu^{2+} complex mediated discrimination between L-glutamate and L-aspartate in water

(2005) *Chemical Communications*, (24), pp. 3086-3088. Cited 39 times.
doi: 10.1039/b503417e

View at Publisher

16 Lin, P.K.T., Araujo, A.N., Montenegro, M.C.B.S.M., Pérez-Olmos, R.

New PVC nitrate-selective electrode: Application to vegetables and mineral waters

(2005) *Journal of Agricultural and Food Chemistry*, 53 (2), pp. 211-215. Cited 17 times.
doi: 10.1021/jf049227u

View at Publisher

17 Gasperov, V., Galbraith, S.G., Lindoy, L.F., Rumbel, B.R., Skelton, B.W., Tasker, P.A., White, A.H.

A study of the complexation and extraction of Cu(II) sulfate and Ni(II) sulfate by N_3O_2-donor macrocycles

(2005) *Dalton Transactions*, (1), pp. 139-145. Cited 27 times.
doi: 10.1039/b415189e

View at Publisher

18 Arbuse, A., Font, M., Martínez, M.A., Fontrodona, X., Prieto, M.J., Moreno, V., Sala, X., (...), Llobet, A.

DNA-cleavage induced by new macrocyclic schiff base dinuclear Cu(I) complexes containing pyridyl pendant arms

(2009) *Inorganic Chemistry*, 48 (23), pp. 11098-11107. Cited 36 times.
http://pubs.acs.org/doi/pdfplus/10.1021/ic901488j
doi: 10.1021/ic901488j

View at Publisher

19 Chang, S.-K., Hamilton, A.D.

Molecular recognition of biologically interesting substrates: Synthesis of an artificial receptor for barbiturates employing six hydrogen bonds

(1988) *Journal of the American Chemical Society*, 110 (4), pp. 1318-1319. Cited 331 times.
doi: 10.1021/ja00212a065

View at Publisher

20 Fan, E., Hamilton, A.D., Chang, S.-K., Van Engen, D.

Hydrogen Bonding and Molecular Recognition: Synthetic, Complexation, and Structural Studies on Barbiturate Binding to an Artificial Receptor

(1991) *Journal of the American Chemical Society*, 113 (20), pp. 7640-7645. Cited 230 times.
doi: 10.1021/ja00020a027

View at Publisher

21 Hunter, C.A., Purvis, D.H.

A Binary Quinone Receptor

(1992) *Angewandte Chemie International Edition in English*, 31 (6), pp. 792-795. Cited 85 times.
doi: 10.1002/anie.199207921

View at Publisher

22 Kluger, R., Tsao, B.

Molecular Reception Catalysis of the Decarboxylation of N-Carboxyimidazolidinone. A Model for Activation by Distortion of N-Carboxybiotin

(1993) *Journal of the American Chemical Society*, 115 (5), pp. 2089-2090. Cited 21 times.
doi: 10.1021/ja00058a093

View at Publisher

23 Inoue, M.B., Fernando, Q., Inoue, M.B., Villegas, C.A., Asano, K., Nakamura, M., Inoue, M., (...), Nakamura, M.

New 12-Membered and 24-Membered Macrocycles with Pendent Acetato Groups and X-ray Crystal Structures of the Copper(II) and Manganese(II) Complexes

(1992) *Inorganic Chemistry*, 31 (12), pp. 2480-2483. Cited 58 times.
doi: 10.1021/ic00038a033

View at Publisher

24 Bradshaw, J.S., Krakowiak, K.E., Izatt, R.M.
(1993) *Azacrown Macrocycles John Wiley & Sons*
New York, NY

25 Murakami, Y., Nakano, A., Miyata, R., Matsuda, Y.

Syntheses of macrocyclic enzyme models. Part 3. Preparation and properties of water-soluble azaparacyclophanes

(1979) *Journal of the Chemical Society, Perkin Transactions 1*, pp. 1669-1676. Cited 40 times.
doi: 10.1039/P19790001669

View at Publisher

26 An, H., Bradshaw, J.S., Izatt, R.M.

Macropolycyclic Polyethers (Cages) and Related Compounds

(1992) *Chemical Reviews*, 92 (4), pp. 543-572. Cited 161 times.
doi: 10.1021/cr00012a004

View at Publisher

27 Murakami, Y., Nakano, A., Akiyoshi, K., Fukuya, K.

Syntheses of macrocyclic enzyme models. Part 4. Preparation and characterization of cationic octopus azaparacyclophanes

(1981) *Journal of the Chemical Society, Perkin Transactions 1*, pp. 2800-2808. Cited 31 times.
doi: 10.1039/P19810002800

View at Publisher

28 Krutov, V.I., Shevko, O.N., Butin, M.K.
Syntheses of macrocyclic enzyme models
(1992) *Sulfur Lett.*, 14, p. 91. Cited 6 times.

29 Pigot, T., Duriez, M.-C., Picard, C., Cazaux, L., Tisnès, P.

Macrocyclic polyether tetralactams II : a study of their binding properties with alkaline - earth cations

(1992) *Tetrahedron*, 48 (21), pp. 4359-4368. Cited 35 times.
doi: 10.1016/S0040-4020(01)80445-2

View at Publisher

30 Kataoka, H., Katagi, T.

Syntheses of macrocycles from l-amino acid and their selective transport of amino ester salts through an organic liquid membrane

(1987) *Tetrahedron*, 43 (20), pp. 4519-4530. Cited 27 times.
doi: 10.1016/S0040-4020(01)86893-9

View at Publisher

31 Cazaux, L., Tisnes, P., Picard, C., D'Silva, C., Williams, G.

Macrocyclic polyether tetralactams. Part IV. Potentiometric evaluation of ion-selective characteristics with alkaline-earth cations

(1994) *The Analyst*, 119 (11), pp. 2315-2318. Cited 24 times.
doi: 10.1039/AN9941902315

View at Publisher

32 Cathala, B., Cazaux, L., Picard, C., Tisnès, P.

Macrobicyclic and macrotricyclic tetralactams with 1,10-phenanthroline units. Dinuclear Eu^{3+} cryptate of the macrotricyclic ligand

(1994) *Tetrahedron Letters*, 35 (12), pp. 1863-1866. Cited 16 times.
doi: 10.1016/S0040-4039(00)73181-9

View at Publisher

33 Kostka, K.L., Fox, B.G., Collins, T.J., Münck, E., Hendrich, M.P., Rickard, C.E.F., Wright, L.J.

High-Valent Transition Metal Chemistry. Mössbauer and EPR Studies of High-Spin (S = 2) Iron(IV) and Intermediate-Spin (S = 3/2) Iron(III) Complexes with a Macrocyclic Tetraamido-N Ligand

(1993) *Journal of the American Chemical Society*, 115 (15), pp. 6746-6757. Cited 138 times.
doi: 10.1021/ja00068a035

View at Publisher

34 Frey, S.T., Pounds, K.L., Horrocks, W.D., Chang, C.A., Carvalho, J.F., Varadarajan, A., Schultze, L.M.

Characterization of Lanthanide Complexes with a Series of Amide-Based Macrocycles, Potential MRI Contrast Agents, Using Eu^{3+} Luminescence Spectroscopy and Molecular Mechanics

(1994) *Inorganic Chemistry*, 33 (13), pp. 2882-2889. Cited 84 times.
doi: 10.1021/ic00091a032

View at Publisher

35 Ottens-Hildebrandt, S., Meier, S., Schmidt, W., Vögtle, F.

Isomeric Lactam Catenanes and the Mechanism of their Formation

(1994) *Angewandte Chemie International Edition in English*, 33 (17), pp. 1767-1770. Cited 68 times.
doi: 10.1002/anie.199417671

View at Publisher

36 Chang, K.-H., Liao, J.-H., Chen, C.-T., Mehta, B.K., Chou, P.-T., Fang, J.-M.

Stereoselective recognition of tripeptides guided by encoded library screening: Construction of chiral macrocyclic tetraamide ruthenium receptor for peptide sensing

(2005) *Journal of Organic Chemistry*, 70 (6), pp. 2026-2032. Cited 15 times.
doi: 10.1021/jo048368s

View at Publisher

37 Nestler, H.P., Wennemers, H., Sherlock, R., Dong, D.L.-Y.

Microautoradiographic identification of receptor-ligand interactions in bead-supported combinatorial libraries

(1996) *Bioorganic and Medicinal Chemistry Letters*, 6 (12), pp. 1327-1330. Cited 12 times.
http://www.journals.elsevier.com/bioorganic-and-medicinal-chemistry-letters/
doi: 10.1016/0960-894X(96)00228-4

View at Publisher

38 Guilard, R., Lopez, M.A., Tabard, A., Richard, P., Lecomte, C., Brandes, S., Hutchison, J.E., (...), Collman, J.P.

Synthesis and Characterization of Novel Cobalt Aluminum Cofacial Porphyrins. First Crystal and Molecular Structure of a Heterobimetallic Biphenylene Pillared Cofacial Diporphyrin

(1992) *Journal of the American Chemical Society*, 114 (25), pp. 9877-9889. Cited 81 times.
doi: 10.1021/ja00051a021

View at Publisher

39 Parker, D., Gareth Williams, J.A.

Luminescence behaviour of cadmium, lead, zinc, copper, nickel and lanthanide complexes of octadentate macrocyclic ligands bearing naphthyl chromophores

(1995) *Journal of the Chemical Society, Perkin Transactions 2*, (7), pp. 1305-1314. Cited 117 times.

View at Publisher

40 Granzhan, A., Largy, E., Saettel, N., Teulade-Fichou, M.-P.

Macrocyclic DNA-mismatch-binding ligands: Structural determinants of selectivity

(2010) *Chemistry - A European Journal*, 16 (3), pp. 878-889. Cited 32 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/123190636/PDFSTART
doi: 10.1002/chem.200901989

View at Publisher

41 Ren, J., Zhao, X.-L., Wang, Q.-C., Ku, C.-F., Qu, D.-H., Chang, C.-P., Tian, H.

Synthesis and fluorescence properties of novel co-facial folded naphthalimide dimers

(2005) *Dyes and Pigments*, 64 (2), pp. 179-186. Cited 15 times.
doi: 10.1016/j.dyepig.2004.05.011

View at Publisher

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Document details

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Investigation of structural, thermal and magnetic properties of cadmium substituted cobalt ferrite nanoparticles (Article)

Venkata Reddy, Ch.[a], Byon, C.[a], Narendra, B.[b], Baskar, D.[b], Srinivas, G.[b], Shim, J.[a], Prabhakar Vattikuti, S.V.[a]

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Abstract

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Abstract Cd substituted Cobalt ferrite nano particles are synthesis using co-precipitation method. The as prepared samples are calcinated at 300 and 600 C respectively. The existence of single phase spinal cubic structure of the prepared ferrite material is confirmed by the powder XRD measurement. The surface morphology images, compositional features are studied by SEM with EDX, and TEM. From the FT-IR spectra the absorption bands observed at 595 and 402 cm^{-1} are attributed to vibrations of tetrahedral and octahedral complexes respectively. From the VSM data, parameters like magnetization, coercivity, remanent magnetization and remanent squareness are measured. The saturation magnetization value is increases with increasing calcination temperature. The DSC and TG-DTA curves reveal that the thermal stability of the prepared ferrite nanoparticles. The calcination temperature affects the crystallite size, morphology and magnetic properties of the samples.

Author keywords

Calcination temperature | Ferrites | FT-IR | Magnetic properties | X-ray diffraction

Indexed keywords

Engineering controlled terms: Calcination | Cobalt | Crystallite size | Ferrite | Gyrators | Magnetic properties | Magnetization | Morphology | Nanoparticles | Precipitation (chemical) | Saturation magnetization | Synthesis (chemical) | Thermodynamic stability | X ray diffraction

Compendex keywords: Calcination temperature | Cobalt ferrite nanoparticles | Compositional features | Coprecipitation method | Ferrite nanoparticles | Octahedral complex | Remanent magnetization | Remanent squareness

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References (44)

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1 Gharagozlou, M., Bayati, R.
(2015) *Superlattice Microst.*, 78, p. 190.

2 Tartaj, P., Del Puerto Morales, M., Veintemillas-Verdaguer, S., González-Carreño, T., Serna, C.J.
The preparation of magnetic nanoparticles for applications in biomedicine
(2003) *Journal of Physics D: Applied Physics*, 36 (13), pp. R182-R197. Cited 1351 times.
doi: 10.1088/0022-3727/36/13/202
View at Publisher

3 Jakubovics, J.P.
(1994) *Magnetism and Magnetic Materials*, p. 107. Cited 75 times.
University Press Cambridge

4 Lee, J.-G., Park, J.Y., Oh, Y.-J., Kim, C.S.
Magnetic properties of $CoFe_2O_4$ thin films prepared by a sol-gel method
(1998) *Journal of Applied Physics*, 84 (5), pp. 2801-2804. Cited 153 times.
http://scitation.aip.org/content/aip/journal/jap
doi: 10.1063/1.368393
View at Publisher

5 Grigorova, M., Blythe, H.J., Blaskov, V., Rusanov, V., Petkov, V., Masheva, V., Nihtianova, D., (...), Mikhov, M.
Magnetic properties and Mössbauer spectra of nanosized $CoFe_2O_4$ powders
(1998) *Journal of Magnetism and Magnetic Materials*, 183 (1-2), pp. 163-172. Cited 200 times.
doi: 10.1016/S0304-8853(97)01031-7
View at Publisher

6 Pillai, V., Shah, D.O.
Synthesis of high-coercivity cobalt ferrite particles using water-in-oil microemulsions
(1996) *Journal of Magnetism and Magnetic Materials*, 163 (1-2), pp. 243-248. Cited 353 times.
doi: 10.1016/S0304-8853(96)00280-6
View at Publisher

7 Kotitz, R., Bunte, T., Weitschies, W., Trahms, L.
(1997) *J. Appl. Phys.*, 81, p. 4317. Cited 10 times.

Related documents

Effect of temperature on structural, morphological and magnetic properties of Cd<inf>0.7<... nanoparticles
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(2015) Journal of Magnetism and Magnetic Materials

Effect of calcination temperature on cobalt substituted cadmium ferrite nanoparticles
Venkata Reddy, C. , Byon, C. , Narendra, B.
(2015) Journal of Materials Science: Materials in Electronics

Influence of calcination temperature on Cd<inf>0.3<... nanoparticles: Structural, thermal and magnetic properties
Reddy, C.V. , Prabhakarvattikuti, S.V. , Ravikumar, R.V.S.S.N.
(2015) Journal of Magnetism and Magnetic Materials

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8 Giri, A.K., Pellerin, K., Pongsaksawad, W., Sorescu, M., Majetich, S.A.
Effect of light on the magnetic properties of cobalt ferrite nanoparticles

(2000) *IEEE Transactions on Magnetics*, 36 (5 I), pp. 3029-3031. Cited 60 times.
doi: 10.1109/20.908666

View at Publisher

9 Giri, A.K., Kirkpatrick, E.M., Moongkhamklang, P., Majetich, S.A., Harris, V.G.
Photomagnetism and structure in cobalt ferrite nanoparticles

(2002) *Applied Physics Letters*, 80 (13), pp. 2341-2343. Cited 115 times.
doi: 10.1063/1.1464661

View at Publisher

10 Singh, R.N, Singh, N.K, Singh, J.P
Electrocatalytic properties of new active ternary ferrite film anodes for O_2 evolution in alkaline medium

(2002) *Electrochimica Acta*, 47 (24), pp. 3873-3879. Cited 70 times.
doi: 10.1016/S0013-4686(02)00354-7

View at Publisher

11 Yang, X., Wang, X., Zhang, Z.
Electrochemical properties of submicron cobalt ferrite spinel through a co-precipitation method

(2005) *Journal of Crystal Growth*, 277 (1-4), pp. 467-470. Cited 53 times.
doi: 10.1016/j.jcrysgro.2005.02.004

View at Publisher

12 Mooney, K.E., Nelson, J.A., Wagner, M.J.
Superparamagnetic cobalt ferrite nanocrystals synthesized by alkalide reduction

(2004) *Chemistry of Materials*, 16 (16), pp. 3155-3161. Cited 86 times.
doi: 10.1021/cm040012+

View at Publisher

13 Cornejo, D.R., Medina-Boudri, A., Bertorello, H.R., Matutes-Aquino, J.
Magnetization reversal in co-precipitated cobalt ferrite

(2002) *Journal of Magnetism and Magnetic Materials*, 242-245 (PART I), pp. 194-196. Cited 21 times.
doi: 10.1016/S0304-8853(01)01169-6

View at Publisher

14 Farea, A.M.M., Kumar, S., Mujasam Batoo, K., Yousef, A., Alimuddin
Influence of frequency, temperature and composition on electrical properties of polycrystalline $Co_{0.5}Cd_xFe_{2.5-x}O_4$ ferrites

(2008) *Physica B: Condensed Matter*, 403 (4), pp. 684-701. Cited 53 times.
doi: 10.1016/j.physb.2007.09.080

View at Publisher

15 Farea, A.M.M., Kumar, S., Batoo, K.M., Yousef, A., Lee, C.G., Alimuddin
Structure and electrical properties of $Co_{0.5}Cd_xFe_{2.5-x}O_4$ ferrites

(2008) *Journal of Alloys and Compounds*, 464 (1-2), pp. 361-369. Cited 104 times.
doi: 10.1016/j.jallcom.2007.09.126

View at Publisher

16 Nongjai, R., Khan, S., Asokan, K., Ahmed, H., Khan, I.
Magnetic and electrical properties of in doped cobalt ferrite nanoparticles

(2012) *Journal of Applied Physics*, 112 (8), art. no. 084321. Cited 69 times.
doi: 10.1063/1.4759436

View at Publisher

17 Narendra, B., Bhaskar, D., Srinivas, G., Ravikumar, R.V.S.S.N., Venkata Reddy, Ch.
Structural and magnetic properties of $Co_{0.5}Cd_{0.5}Fe_2O_4$ nano ferrite particles

(2013) *Proceedings of the International Conference on "Advanced Nanomaterials and Emerging Engineering Technologies", ICANMEET 2013*, art. no. 6609271, pp. 181-183. Cited 2 times.
ISBN: 978-147991379-4
doi: 10.1109/ICANMEET.2013.6609271

View at Publisher

18 Gabr, R.M., Girgis, M.M., El-Awad, A.M.
Role of CdO/Cd^{2+} content on the electrical conductivity and catalytic behaviour of $Co_{1.0-x}$ -Cd $-Fe_{2.0}$ oxide/spinel system ($0.0 < x < 0.5$) for the decomposition of 2 propanol

(1991) *Materials Chemistry and Physics*, 28 (4), pp. 413-429. Cited 22 times.
doi: 10.1016/0254-0584(91)90076-7

View at Publisher

19 Nikumbh, A.K., Nagawade, A.V., Tadke, V.B., Bakare, P.P.
Electrical, magnetic and Mössbauer properties of cadmium - Cobalt ferrites prepared by the tartarate precursor method

(2001) *Journal of Materials Science*, 36 (3), pp. 653-662. Cited 22 times.

View at Publisher

20 Nayak, P.K.
Synthesis and characterization of cadmium ferrite

(2008) *Materials Chemistry and Physics*, 112 (1), pp. 24-26. Cited 27 times.
http://www.journals.elsevier.com/materials-chemistry-and-physics
doi: 10.1016/j.matchemphys.2008.05.018

View at Publisher

21 Amer, M.A.
Mössbauer, infrared, and X-ray studies of Ti-doped $CoCr_{1.2}Fe_{0.8}O_4$ ferrites

(2003) *Physica Status Solidi (B) Basic Research*, 237 (2), pp. 459-471. Cited 17 times.
doi: 10.1002/pssb.200301652

View at Publisher

22 Shitre, A.R., Kawade, V.B., Bichile, G.K., Jadhav, K.M.
X-ray diffraction and dielectric study of $Co_{1-x}Cd_xFe_{2-x}Cr_xO_4$ ferrite system

(2002) *Materials Letters*, 56 (3), pp. 188-193. Cited 32 times.
doi: 10.1016/S0167-577X(02)00438-X

View at Publisher

23 Hassan, R.S., Viart, N., Ulhaq-Bouillet, C., Loison, J.L., Versini, G., Vola, J.P., Crégut, O., (...), Chateigner, D.
Structural properties of cobalt ferrite thin films deposited by pulsed laser deposition: Effect of the reactive atmosphere

(2007) *Thin Solid Films*, 515 (5), pp. 2943-2948. Cited 24 times.
doi: 10.1016/j.tsf.2006.08.033

View at Publisher

24 Na, J.G.
Mössbauer effect study of the relaxation phenomenon of cobalt ferrite thin films

(1997) *Journal of Materials Science Letters*, 17 (3), pp. 229-231. Cited 6 times.
doi: 10.1023/A:1006592413585

View at Publisher

25 Naoe, Masahiko, Matsushita, Nobuhiro
Deposition of single-layer $CoFe_2O_4$ and multilayer $CoFe_2O_4$/ α-Fe_2O_3 with large $4\pi M_s$ and high H_c using vacuum arc evaporation

(1996) *Journal of Magnetism and Magnetic Materials*, 155 (1-3), pp. 216-218. Cited 20 times.
doi: 10.1016/0304-8853(95)00741-5

View at Publisher

26 Mane, R.S., Lokhande, C.D.
Chemical deposition method for metal chalcogenide thin films

(2000) *Materials Chemistry and Physics*, 65 (1), pp. 1-31. Cited 582 times.
doi: 10.1016/S0254-0584(00)00217-0

View at Publisher

27 Gabal, M.A., Ata-Allah, S.S.
Effect of diamagnetic substitution on the structural, electrical and magnetic properties of CoFe2O4

(2004) *Materials Chemistry and Physics*, 85 (1), pp. 104-112. Cited 43 times.
doi: 10.1016/j.matchemphys.2003.12.013

View at Publisher

28 Aswani, T., Pushpa Manjari, V., Babu, B., Muntaz Begum, S., Rama Sundari, G., Ravindranadh, K., Ravikumar, R.V.S.S.N.
Spectral characterizations of undoped and Cu^{2+}doped CdO nanopowder

(2014) *Journal of Molecular Structure*, 1063 (1), pp. 178-183. Cited 19 times.
doi: 10.1016/j.molstruc.2014.01.059

View at Publisher

29 Vigneshwaran, M., Chandiramouli, R., Jeyaprakash, B.G., Balamurugan, D.
Physical properties of spray deposited Mg doped CdO thin films

(2012) *Journal of Applied Sciences*, 12 (16), pp. 1754-1757. Cited 12 times.
http://scialert.net/qredirect.php?doi=jas.2012.1754.1757&linkid=pdf
doi: 10.3923/jas.2012.1754.1757

View at Publisher

30 Alone, S.T., Shirsath, S.E., Kadam, R.H., Jadhav, K.M.

Chemical synthesis, structural and magnetic properties of nano-structured Co-Zn-Fe-Cr ferrite

(2011) *Journal of Alloys and Compounds*, 509 (16), pp. 5055-5060. Cited 46 times.
doi: 10.1016/j.jallcom.2011.02.006

View at Publisher

31 Gabal, M.A., El-Shishtawy, R.M., Al Angari, Y.M.

Structural and magnetic properties of nano-crystalline NiZn ferrites synthesized using egg-white precursor

(2012) *Journal of Magnetism and Magnetic Materials*, 324 (14), pp. 2258-2264. Cited 90 times.
doi: 10.1016/j.jmmm.2012.02.112

View at Publisher

32 West, A.R.
(1984) *Solid State Chemistry and Its Applications*. Cited 1280 times.
John Wiley & Sons London

33 Liu, Y., Zhang, Y., Feng, J.D., Li, C.F., Shi, J., Xiong, R.

Dependence of magnetic properties on crystallite size of $CoFe_2O_4$ nanoparticles synthesised by auto-combustion method

(2009) *Journal of Experimental Nanoscience*, 4 (2), pp. 159-168. Cited 32 times.
doi: 10.1080/17458080902929895

View at Publisher

34 Deraz, N.M., Alarifi, A.

Structural, morphological and magnetic properties of nano-crystalline zinc substituted cobalt ferrite system

(2012) *Journal of Analytical and Applied Pyrolysis*, 94, pp. 41-47. Cited 31 times.
doi: 10.1016/j.jaap.2011.10.004

View at Publisher

35 Waje, S.B., Hashim, M., Wan Yusoff, W.D., Abbas, Z.

Sintering temperature dependence of room temperature magnetic and dielectric properties of $Co_{0.5}Zn_{0.5}Fe_2O_4$ prepared using mechanically alloyed nanoparticles

(2010) *Journal of Magnetism and Magnetic Materials*, 322 (6), pp. 686-691. Cited 38 times.
doi: 10.1016/j.jmmm.2009.10.041

View at Publisher

36 George, M., Mary John, A., Nair, S.S., Joy, P.A., Anantharaman, M.R.

Finite size effects on the structural and magnetic properties of sol-gel synthesized $NiFe_2O_4$ powders

(2006) *Journal of Magnetism and Magnetic Materials*, 302 (1), pp. 190-195. Cited 261 times.
doi: 10.1016/j.jmmm.2005.08.029

View at Publisher

37 Gharagozlou, M.
Synthesis, characterization and influence of calcination temperature on magnetic properties of nanocrystalline spinel Co-ferrite prepared by polymeric precursor method

(2009) *Journal of Alloys and Compounds*, 486 (1-2), pp. 660-665. Cited 68 times.
doi: 10.1016/j.jallcom.2009.07.025

View at Publisher

38 Singhal, S., Chandra, K.
Cation distribution and magnetic properties in chromium-substituted nickel ferrites prepared using aerosol route

(2007) *Journal of Solid State Chemistry*, 180 (1), pp. 296-300. Cited 99 times.
doi: 10.1016/j.jssc.2006.10.010

View at Publisher

39 Mane, D.R., Birajdar, D.D., Shirsath, S.E., Telugu, R.A., Kadam, R.H.
Structural and magnetic characterizations of Mn-Ni-Zn ferrite nanoparticles

(2010) *Physica Status Solidi (A) Applications and Materials Science*, 207 (10), pp. 2355-2363. Cited 30 times.
doi: 10.1002/pssa.201026079

View at Publisher

40 Chen, Z., Gao, L.
Synthesis and magnetic properties of $CoFe_2O_4$ nanoparticles by using PEG as surfactant additive

(2007) *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, 141 (1-2), pp. 82-86. Cited 73 times.
doi: 10.1016/j.mseb.2007.06.003

View at Publisher

41 Zhang, F., Kitamoto, Y., Abe, M., Naoe, M.
Effect of Ni addition into Co ferrite thin films for perpendicular recording media

(2000) *Journal of Applied Physics*, 87 (9 III), pp. 6881-6883. Cited 18 times.

View at Publisher

42 Sun, J., Wang, Z., Wang, Y., Yao, C., Wei, K., Li, F.
Study of the magnetic modifications of Fe_3O_4 ferrite thin films induced by 2.03 GeV Kr ions irradiation

(2011) *Nuclear Instruments and Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms*, 269 (9), pp. 873-875. Cited 14 times.
doi: 10.1016/j.nimb.2010.11.073

View at Publisher

43 Taheri, M., Carpenter, E.E., Cestone, V., Miller, M.M., Raphael, M.P., McHenry, M.E., Harris, V.G.
Magnetism and structure of Zn xFe 3-xO 4 films processed via spin-spray deposition

(2002) *Journal of Applied Physics*, 91 (10 I), pp. 7595-7597. Cited 20 times.
doi: 10.1063/1.1456428

View at Publisher

44 Kambale, R.C., Song, K.M., Koo, Y.S., Hur, N.
(2011) *J. Appl. Phys.*, 110, p. 0539101.

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Ketorolac salt is a newly discovered DDX3 inhibitor to treat oral cancer (Article)

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Abstract

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DDX3 belongs to DEAD box RNA helicase family and is involved in the progression of several types of cancer. In this work, we employed a High Throughput Virtual screening approach to identify bioactive compounds against DDX3 from ZINC natural database. Ketorolac salt was selected based on its binding free energy less than or equals to -5 Kcal/mol with reference to existing synthetic DDX3 inhibitors and strong hydrogen bond interactions as similar to crystallized DDX3 protein (2I4I). The anti-cancer activity of Ketorolac salt against DDX3 was tested using oral squamous cell carcinoma (OSCC) cell lines. This compound significantly down regulated the expression of DDX3 in human OSCC line (H357) and the half maximal growth inhibitory concentration (IC 50) of Ketorolac salt in H357 cell line is 2.6μM. Ketorolac salt also inhibited the ATP hydrolysis by directly interacting with DDX3. More importantly, we observed decreased number of neoplastic tongue lesions and reduced lesion severity in Ketorolac salt treated groups in a carcinogen induced tongue tumor mouse model. Taken together, our result demonstrates that Ketorolac salt is a newly discovered bioactive compound against DDX3 and this compound can be used as an ideal drug candidate to treat DDX3 associated oral cancer.

Indexed keywords

EMTREE drug terms: antineoplastic agent | DDX3X protein, human | DEAD box protein | inorganic salt | ketorolac

EMTREE medical terms: animal | antagonists and inhibitors | Bagg albino mouse | Carcinoma, Squamous Cell | cell survival | dose response | drug effects | female | human | LD50 | metabolism | molecularly targeted therapy | mouse | pathology | preclinical study | procedures | Tongue Neoplasms | treatment outcome | tumor cell line

MeSH: Animals | Antineoplastic Agents | Carcinoma, Squamous Cell | Cell Line, Tumor | Cell Survival | DEAD-box RNA Helicases | Dose-Response Relationship, Drug | Drug Evaluation, Preclinical | Female | Humans | Ketorolac | Lethal Dose 50 | Mice | Mice, Inbred BALB C | Molecular Targeted Therapy | Salts | Tongue Neoplasms | Treatment Outcome

Chemicals and CAS Registry Numbers:

ketorolac, 74103-06-3;

Antineoplastic Agents; DDX3X protein, human; DEAD-box RNA Helicases; Ketorolac; Salts

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	University Grants Committee	UGC	
	Council for Scientific and Industrial Research	CSIR	

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References (49)

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1 Umate, P., Tuteja, N., Tuteja, R.
Genome-wide comprehensive analysis of human helicases

(2011) *Communicative and Integrative Biology*, 4 (1), pp. 1-20. Cited 33 times.
http://www.landesbioscience.com/journals/cib/UmateCIB4-1.pdf

View at Publisher

2 Silverman, E., Edwalds-Gilbert, G., Lin, R.-J.
DExD/H-box proteins and their partners: Helping RNA helicases unwind

(2003) *Gene*, 312 (1-2), pp. 1-16. Cited 152 times.
www.elsevier.com/locate/gene
doi: 10.1016/S0378-1119(03)00626-7

View at Publisher

3 Cordin, O., Banroques, J., Tanner, N.K., Linder, P.
The DEAD-box protein family of RNA helicases

(2006) *Gene*, 367 (1-2), pp. 17-37. Cited 565 times.
doi: 10.1016/j.gene.2005.10.019

View at Publisher

4 Rocak, S., Linder, P.
Dead-box proteins: The driving forces behind RNA metabolism

(2004) *Nature Reviews Molecular Cell Biology*, 5 (3), pp. 232-241. Cited 485 times.
doi: 10.1038/nrm1335

View at Publisher

Bheemanapally, K. , Thimmaraju, M.K. , Kasagoni, S.
(2017) Journal of Young Pharmacists

Structure-based drug design and potent anti-cancer activity of tricyclic 5:7:5-fused diimidazo[4,5-d:4′,5′-f] [1,3]diazepines

Kondaskar, A. , Kondaskar, S. , Fishbein, J.C.
(2013) Bioorganic and Medicinal Chemistry

NZ51, a ring-expanded nucleoside analog, inhibits motility and viability of breast cancer cells by targeting the RNA helicase DDX3

Xie, M. , Vesuna, F. , Botlagunta, M.
(2015) Oncotarget

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5 De La Cruz, J., Iost, I., Kressler, D., Linder, P.

The p20 and Ded1 proteins have antagonistic roles in eIF4E-dependent translation in Saccharomyces cerevisiae

(1997) *Proceedings of the National Academy of Sciences of the United States of America*, 94 (10), pp. 5201-5206. Cited 155 times.
doi: 10.1073/pnas.94.10.5201

View at Publisher

6 Tanner, N.Kyle, Linder, P.

DExD/H box RNA helicases: From generic motors to specific dissociation functions (Open Access)

(2001) *Molecular Cell*, 8 (2), pp. 251-262. Cited 508 times.
www.molecule.org
doi: 10.1016/S1097-2765(01)00329-X

View at Publisher

7 Park, S.H., Lee, S.-G., Kim, Y., Song, K.

Assignment of a human putative RNA helicase gene, DDX3, to human X chromosome bands p11.3→p11.23

(1998) *Cytogenetics and Cell Genetics*, 81 (3-4), pp. 178-179. Cited 39 times.

8 Kim, Y.-S., Lee, S.-G., Park, S.H., Song, K.

Gene structure of the human DDX3 and chromosome mapping of its related sequences

(2001) *Molecules and Cells*, 12 (2), pp. 209-214. Cited 30 times.

9 Högbom, M., Collins, R., van den Berg, S., Jenvert, R.-M., Karlberg, T., Kotenyova, T., Flores, A., (...), Schiavone, L.H.

Crystal Structure of Conserved Domains 1 and 2 of the Human DEAD-box Helicase DDX3X in Complex with the Mononucleotide AMP

(2007) *Journal of Molecular Biology*, 372 (1), pp. 150-159. Cited 77 times.
doi: 10.1016/j.jmb.2007.06.050

View at Publisher

10 Gee, S.L., Conboy, J.G.

Mouse erythroid cells express multiple putative RNA helicase genes exhibiting high sequence conservation from yeast to mammals

(1994) *Gene*, 140 (2), pp. 171-177. Cited 37 times.
doi: 10.1016/0378-1119(94)90541-X

View at Publisher

11 Botlagunta, M., Vesuna, F., Mironchik, Y., Raman, A., Lisok, A., Winnard Jr., P., Mukadam, S., (...), Raman, V.

Oncogenic role of DDX3 in breast cancer biogenesis

(2008) *Oncogene*, 27 (28), pp. 3912-3922. Cited 101 times.
doi: 10.1038/onc.2008.33

View at Publisher

12 Celià-Terrassa, T., Meca-Cortés, Ó., Mateo, F., De Paz, A.M., Rubio, N., Arnal-Estapé, A., Ell, B.J., (...), Thomson, T.M.

Epithelial-mesenchymal transition can suppress major attributes of human epithelial tumor-initiating cells

(2012) *Journal of Clinical Investigation*, 122 (5), pp. 1849-1868. Cited 221 times.
http://www.jci.org/articles/view/59218/pdf
doi: 10.1172/JCI59218

View at Publisher

13 Sarrió, D., Rodriguez-Pinilla, S.M., Hardisson, D., Cano, A., Moreno-Bueno, G., Palacios, J.

Epithelial-mesenchymal transition in breast cancer relates to the basal-like phenotype

(2008) *Cancer Research*, 68 (4), pp. 989-997. Cited 629 times.
http://cancerres.aacrjournals.org/cgi/reprint/68/4/989
doi: 10.1158/0008-5472.CAN-07-2017

View at Publisher

14 Talbot, L.J., Bhattacharya, S.D., Kuo, P.C.

Epithelial-mesenchymal transition, the tumor microenvironment, and metastatic behavior of epithelial malignancies

(2012) *International Journal of Biochemistry and Molecular Biology*, 3 (2), pp. 117-136. Cited 100 times.
http://www.ijbmb.org/files/IJBMB1203006.pdf

15 Teicher, B.A., Dupuis, N.P., Robinson, M.F., Kusumoto, T., Liu, M., Menon, K.

Reduced oxygenation in a rat mammary carcinoma post-radiation and reoxygenation with a perflubron emulsion/carbogen breathing

(1994) *In Vivo*, 8 (1), pp. 125-131. Cited 17 times.

16 Reynolds, T.Y., Rockwell, S., Glazer, P.M.

Genetic instability induced by the tumor microenvironment

(1996) *Cancer Research*, 56 (24), pp. 5754-5757. Cited 340 times.

17 Brizel, D.M., Scully, S.P., Harrelson, J.M., Layfield, L.J., Bean, J.M., Prosnitz, L.R., Dewhirst, M.W.

Tumor oxygenation predicts for the likelihood of distant metastases in human soft tissue sarcoma

(1996) *Cancer Research*, 56 (5), pp. 941-943. Cited 1023 times.

18 Semenza, G.L.

HIF-1: Mediator of physiological and pathophysiological responses to hypoxia

(2000) *Journal of Applied Physiology*, 88 (4), pp. 1474-1480. Cited 1191 times.

View at Publisher

19 Botlagunta, M., Krishnamachary, B., Vesuna, F., Winnard Jr., P.T., Bol, G.M., Patel, A.H., Raman, V.

Expression of DDX3 is directly modulated by hypoxia inducible factor-1 alpha in breast epithelial cells (Open Access)

(2011) *PLoS ONE*, 6 (3), art. no. e17563. Cited 22 times.
http://www.plosone.org/article/fetchObjectAttachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0017563&representation=PDF
doi: 10.1371/journal.pone.0017563

View at Publisher

20 Chang, P.-C., Chi, C.-W., Chau, G.-Y., Li, F.-Y., Tsai, Y.-H., Wu, J.-C., Wu Lee, Y.-H.

DDX3, a DEAD box RNA helicase, is deregulated in hepatitis virus-associated hepatocellular carcinoma and is involved in cell growth control

(2006) *Oncogene*, 25 (14), pp. 1991-2003. Cited 88 times.
doi: 10.1038/sj.onc.1209239

View at Publisher

21 Chao, C.-H., Chen, C.-M., Cheng, P.-L., Shih, J.-W., Tsou, A.-P., Lee, Y.-H.W.

DDX3, a DEAD box RNA helicase with tumor growth-suppressive property and transcriptional regulation activity of the $p21^{waf1/cip1}$ promoter, is a candidate tumor suppressor

(2006) *Cancer Research*, 66 (13), pp. 6579-6588. Cited 114 times.
doi: 10.1158/0008-5472.CAN-05-2415

View at Publisher

22 Garbelli, A., Beermann, S., Di Cicco, G., Dietrich, U., Maga, G.

A motif unique to the human dead-box protein DDX3 is important for nucleic acid binding, ATP hydrolysis, RNA/DNA unwinding and HIV-1 replication (Open Access)

(2011) *PLoS ONE*, 6 (5), art. no. e19810. Cited 29 times.
http://www.plosone.org/article/fetchObjectAttachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0019810&representation=PDF
doi: 10.1371/journal.pone.0019810

View at Publisher

23 Yedavalli, V.S.R.K., Neuveut, C., Chi, Y.-H., Kleiman, L., Jeang, K.-T.

Requirement of DDX3 DEAD box RNA helicase for HIV-1 Rev-RRE export function (Open Access)

(2004) *Cell*, 119 (3), pp. 381-392. Cited 316 times.
doi: 10.1016/j.cell.2004.09.029

View at Publisher

24 Czerninski, R., Amornphimoltham, P., Patel, V., Molinolo, A.A., Gutkind, J.S.

Targeting mammalian target of rapamycin by rapamycin prevents tumor progression in an oral-specific chemical carcinogenesis model

(2009) *Cancer Prevention Research*, 2 (1), pp. 27-36. Cited 79 times.
doi: 10.1158/1940-6207.CAPR-08-0147

View at Publisher

25 Kim, J.L., Morgenstern, K.A., Griffith, J.P., Dwyer, M.D., Thomson, J.A., Murcko, M.A., Lin, C., (...), Caron, P.R.

Hepatitis C virus NS3 RNA helicase domain with a bound oligonucleotide: The crystal structure provides insights into the mode of unwinding (Open Access)

(1998) *Structure*, 6 (1), pp. 89-100. Cited 545 times.
http://www.journals.elsevier.com/structure/
doi: 10.1016/S0969-2126(98)00010-0

View at Publisher

26 Hodgman, T.C.

A new superfamily of replicative proteins [14]

(1988) *Nature*, 333 (6168), pp. 22-23. Cited 308 times.
doi: 10.1038/333022b0

View at Publisher

27 Zhang, P., Zhang, N., Buckwold, V.E., Hosmane, R.S.

Chemical and biological effects of substitution of the 2-position of ring-expanded ('fat') nucleosides containing the imidazo[4,5-e][1,3]diazepine-4,8-dione ring system: The role of electronic and steric factors on glycosidic bond stability and anti-HCV activity

(2007) *Bioorganic and Medicinal Chemistry*, 15 (14), pp. 4933-4945. Cited 8 times.
doi: 10.1016/j.bmc.2007.04.043

View at Publisher

28 Zhang, N., Chen, H.-M., Koch, V., Schmitz, H., Liao, C.-L., Bretner, M., Bhadti, V.S., (...), Borowski, P.

Ring-expanded ("fat") nucleoside and nucleotide analogues exhibit potent in vitro activity against Flaviviridae NTPases/helicases, including those of the West Nile virus, hepatitis C virus, and Japanese encephalitis virus

(2003) *Journal of Medicinal Chemistry*, 46 (19), pp. 4149-4164. Cited 71 times.
doi: 10.1021/jm030842j

View at Publisher

29 Yedavalli, V.S.R.K., Zhang, N., Cai, H., Zhang, P., Starost, M.F., Hosmane, R.S., Jeang, K.-T.

Ring expanded nucleoside analogues inhibit RNA helicase and intracellular human immunodeficiency virus type 1 replication

(2008) *Journal of Medicinal Chemistry*, 51 (16), pp. 5043-5051. Cited 51 times.
doi: 10.1021/jm800332m

View at Publisher

30 Bretner, M., Beckett, D., Sood, R.K., Baldisseri, D.M., Hosmane, R.S.

Substrate/inhibition studies of bacteriophage T7 RNA polymerase with the 5'-triphosphate derivative of a ring-expanded ('fat') nucleoside possessing potent antiviral and anticancer activities

(1999) *Bioorganic and Medicinal Chemistry*, 7 (12), pp. 2931-2936. Cited 10 times.
doi: 10.1016/S0968-0896(99)00235-7

View at Publisher

31 Kumar, R., Ujjinamatada, R.K., Hosmane, R.S.

The first synthesis of a novel 5:7:5-fused diimidazodiazepine ring system and some of its chemical properties

(2008) *Organic Letters*, 10 (20), pp. 4681-4684. Cited 12 times.
doi: 10.1021/ol8020176

View at Publisher

32 Zhang, N., Chen, H.-M., Koch, V., Schmitz, H., Minczuk, M., Stepien, P., Fattom, A.I., (...), Hosmane, R.S.

Potent Inhibition of NTPase/Helicase of the West Nile Virus by Ring-Expanded ("Fat") Nucleoside Analogues

(2003) *Journal of Medicinal Chemistry*, 46 (22), pp. 4776-4789. Cited 56 times.
doi: 10.1021/jm030277k

View at Publisher

33 Maga, G., Falchi, F., Garbelli, A., Belfiore, A., Witvrouw, M., Manetti, F., Botta, M.

Pharmacophore modeling and molecular docking led to the discovery of inhibitors of human immunodeficiency virus-1 replication targeting the human cellular aspartic acid-glutamic acid-alanine-aspartic acid box polypeptide 3

(2008) *Journal of Medicinal Chemistry*, 51 (21), pp. 6635-6638. Cited 50 times.
doi: 10.1021/jm8008844

View at Publisher

34 Najda-Bernatowicz, A., Krawczyk, M., Stankiewicz-Drogoń, A., Bretner, M., Boguszewska-Chachulska, A.M.

Studies on the anti-hepatitis C virus activity of newly synthesized tropolone derivatives: Identification of NS3 helicase inhibitors that specifically inhibit subgenomic HCV replication

(2010) *Bioorganic and Medicinal Chemistry*, 18 (14), pp. 5129-5136. Cited 17 times.
doi: 10.1016/j.bmc.2010.05.066

View at Publisher

35 Kondaskar, A., Kondaskar, S., Kumar, R., Fishbein, J.C., Muvarak, N., Lapidus, R.G., Sadowska, M., (...), Hosmane, R.S.

Novel, broad spectrum anticancer agents containing the tricyclic 5:7:5-fused diimidazodiazepine ring system

(2011) *ACS Medicinal Chemistry Letters*, 2 (3), pp. 252-256. Cited 19 times.
doi: 10.1021/ml100281b

View at Publisher

36 Blaylock, R.L., Maroon, J.

Natural plant products and extracts that reduce immunoexcitotoxicity- associated neurodegeneration and promote repair within the central nervous system

(2012) *Surgical Neurology International*, 3 (1), art. no. 92935. Cited 20 times.
doi: 10.4103/2152-7806.92935

View at Publisher

37 Razzaq, S.N., Khan, I.U., Mariam, I., Razzaq, S.S.

Stability indicating HPLC method for the simultaneous determination of moxifloxacin and prednisolone in pharmaceutical formulations (Open Access)

(2012) *Chemistry Central Journal*, 6 (1), art. no. 94. Cited 20 times.
http://journal.chemistrycentral.com/content/6/1/94
doi: 10.1186/1752-153X-6-94

View at Publisher

38 Molodecky, N.A., Panaccione, R., Ghosh, S., Barkema, H.W., Kaplan, G.G.

Challenges associated with identifying the environmental determinants of the inflammatory bowel diseases

(2011) *Inflammatory Bowel Diseases*, 17 (8), pp. 1792-1799. Cited 48 times.
doi: 10.1002/ibd.21511

View at Publisher

39 Mantovani, A., Allavena, P., Sica, A., Balkwill, F.

Cancer-related inflammation

(2008) *Nature*, 454 (7203), pp. 436-444. Cited 4472 times.
doi: 10.1038/nature07205

View at Publisher

40 Harris, A.L.

Hypoxia - A key regulatory factor in tumour growth

(2002) *Nature Reviews Cancer*, 2 (1), pp. 38-47. Cited 3205 times.

View at Publisher

41 Cosse, J.P., Michiels, C.

Tumour hypoxia affects the responsiveness of cancer cells to chemotherapy and promotes cancer progression.

(2008) *Anti-cancer agents in medicinal chemistry*, 8 (7), pp. 790-797. Cited 146 times.
doi: 10.2174/187152008785914798

View at Publisher

42 Sun, M., Song, L., Li, Y., Zhou, T., Jope, R.S.

Identification of an antiapoptotic protein complex at death receptors

(2008) *Cell Death and Differentiation*, 15 (12), pp. 1887-1900. Cited 64 times.
doi: 10.1038/cdd.2008.124

View at Publisher

43 Retsky, M., Rogers, R., Demicheli, R., Hrushesky, W.J.M., Gukas, I., Vaidya, J.S., Baum, M., (...), Pachmann, K.

NSAID analgesic ketorolac used perioperatively may suppress early breast cancer relapse: Particular relevance to triple negative subgroup

(2012) *Breast Cancer Research and Treatment*, 134 (2), pp. 881-888. Cited 45 times.
doi: 10.1007/s10549-012-2094-5

View at Publisher

44 Shivakumar, D., Williams, J., Wu, Y., Damm, W., Shelley, J., Sherman, W.

Prediction of absolute solvation free energies using molecular dynamics free energy perturbation and the opls force field

(2010) *Journal of Chemical Theory and Computation*, 6 (5), pp. 1509-1519. Cited 421 times.
doi: 10.1021/ct900587b

View at Publisher

45 Halgren, T.A., Murphy, R.B., Friesner, R.A., Beard, H.S., Frye, L.L., Pollard, W.T., Banks, J.L.

Glide: A New Approach for Rapid, Accurate Docking and Scoring. 2. Enrichment Factors in Database Screening

(2004) *Journal of Medicinal Chemistry*, 47 (7), pp. 1750-1759. Cited 1557 times.
doi: 10.1021/jm030644s

View at Publisher

46 Leelahavanichkul, K., Gutkind, J.S.

Oral and pharyngeal epithelial keratinocyte culture

(2013) *Methods in Molecular Biology*, 945, pp. 67-79. Cited 7 times.
ISBN: 978-162703124-0
doi: 10.1007/978-1-62703-125-7_5

View at Publisher

47 Dash, R., Azab, B., Quinn, B.A., Shen, X., Wang, X.-Y., Das, S.K., Rahmani, M., (...), Fisher, P.B.

Apogossypol derivative BI-97C1 (Sabutoclax) targeting Mcl-1 sensitizes prostate cancer cells to mda-7/IL-24-mediated toxicity

(2011) *Proceedings of the National Academy of Sciences of the United States of America*, 108 (21), pp. 8785-8790. Cited 79 times.
http://www.pnas.org/content/108/21/8785.full.pdf+html
doi: 10.1073/pnas.1100769108

View at Publisher

48 Beuria, T.K., Singh, P., Surolia, A., Panda, D.

Promoting assembly and bundling of FtsZ as a strategy to inhibit bacterial cell division: A new approach for developing novel antibacterial drugs

(2009) *Biochemical Journal*, 423 (1), pp. 61-69. Cited 40 times.
http://www.biochemj.org/bj/423/0061/4230061.pdf
doi: 10.1042/BJ20090817

View at Publisher

49 Beuria, T.K., Santra, M.K., Panda, D.

Sanguinarine blocks cytokinesis in bacteria by inhibiting FtsZ assembly a bundling

(2005) *Biochemistry*, 44 (50), pp. 16584-16593. Cited 109 times.
doi: 10.1021/bi050767+

View at Publisher

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Schiff base Liquid Crystalline compounds with dispersed citrate capped gold nanoparticles - Optical and textural analysis (Article)

Tejaswi, M.[a], Rao, M.C.[b], Manepalli, R.K.N.R.[a], Madhav, B.T.P.[c], Pardhasaradhi, P.[c], Giridhar, G.[d], Pandian, K.[e], Pisipati, V.G.K.M.[c]

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Abstract

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In this paper, 20 µl citrate capped Gold (Au) nanoparticles are dispersed in Schiff base Liquid Crystalline compounds 6O.Om (m = 7 and 9) and characterizations are carried-out to observe the changes occurred with the dispersion of nanoparticles in Liquid Crystalline compounds. The Polarizing Microscopy (POM) technique is used to measure the phase transition temperatures. Differential Scanning Calorimetry (DSC) is used to determine the transition temperatures and enthalpy values. Further characterization is carried-out by Scanning Electron Microscopy (SEM). The nematic transition temperature is decreased by 1 ï¿½C with the dispersion of citrate capped Au nanoparticles into the Liquid Crystalline compounds. Image processing technique of textural analysis is also carried-out to identify the statistical parameters of the images and their transition temperatures. ï¿½ RASĀYAN. All rights reserved.

Reaxys Database Information

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Author keywords

DSC | Liquid crystal | Nano-dispersion | POM | SEM and image processing

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References (50)

View in search results format

All Export Print E-mail Save to PDF Create bibliography

1 Rao, D.V., Pardhasaradhi, P., Pisipati, V.G.K.M., Prasad, P.V.D.
Orientational order parameter studies on 3.O m and 3O.O m liquid crystals

(2015) *Phase Transitions*, 88 (2), pp. 137-152. Cited 5 times.
http://www.tandfonline.com/toc/gpht20/current
doi: 10.1080/01411594.2014.961154

2 Sastry, P.S., Srinivasu, C.H., Pardhasaradhi, P.
(2016) *Phase Transit*, 89, p. 37.

3 Sastry, P.S., Pardhasaradhi, P., Srinivasu, C., Pisipati, V.G.K.M., Datta Prasad, P.V.
Synthesis, characterisation and phase transition studies in N-(-4-ethyloxybenzylydene)-4'-alkoxyanilines

(2016) *Liquid Crystals*, 43 (5), pp. 632-638. Cited 2 times.
http://www.tandf.co.uk/journals/titles/02678292.asp
doi: 10.1080/02678292.2015.1131342

4 Manepalli, R.K.N.R., Pardhasaradhi, P., Madhav, B.T.P., Jayaprada, P., Pisipati, V.G.K.M.
Synthesis, characterization and textural analysis to reduce the multiplicative noise in nano disperesed liquid crystalline compounds using HF technique

(2016) *International Journal of Earth Sciences and Engineering*, 9 (1), pp. 25-28.
http://www.cafetinnova.org/ijee.html

5 Androie, K.P., Amer, J.
(2005) *J. Am. Coll. Radio*, 2, p. 543.

6 De Gennes, P.G., Prost, J.
(1993) *The Physics of Liquid Crystals*. Cited 12779 times.
second ed., Clarendon, Oxford

7 Takatoh, K., Hasegawa, M., Koden, M., Itoh, N., Hasegawa, R., Sakamoto, M.
(2004) *Alignment Technologies and Application of Liquid Crystals Devices*. Cited 182 times.
Taylor &Francis, New York

8 Shiraishi, Y., Toshima, N., Maeda, K., Yoshikawa, H., Xu, J., Kobayashi, S.
Frequency modulation response of a liquid-crystal electro-optic device doped with nanoparticles

(2002) *Applied Physics Letters*, 81 (15), pp. 2845-2847. Cited 190 times.
doi: 10.1063/1.1511282

9 Lynch, M.D., Patrick, D.L.
Organizing Carbon Nanotubes with Liquid Crystals

(2002) *Nano Letters*, 2 (11), pp. 1197-1201. Cited 413 times.
doi: 10.1021/nl025694j

10 Dierking, I., Scalia, G., Morales, P.
Liquid crystal-carbon nanotube dispersions

(2005) *Journal of Applied Physics*, 97 (4), art. no. 044309. Cited 293 times.
doi: 10.1063/1.1850606

11 Basu, R., Iannacchione, G.S.
Carbon nanotube dispersed liquid crystal: A nano electromechanical system

(2008) *Applied Physics Letters*, 93 (18), art. no. 183105. Cited 68 times.
doi: 10.1063/1.3005590

12 Lagerwall, J.P.F., Scalia, G.
Carbon nanotubes in liquid crystals

(2008) *Journal of Materials Chemistry*, 18 (25), pp. 2890-2898. Cited 175 times.
doi: 10.1039/b802707b

13 Russell, J.M., Oh, S., LaRue, I., Zhou, O., Samulski, E.T.
Alignment of nematic liquid crystals using carbon nanotube films

(2006) *Thin Solid Films*, 509 (1-2), pp. 53-57. Cited 103 times.
doi: 10.1016/j.tsf.2005.09.099

14 Galewski, Z.
Liquid crystalline properties of 4-halogenobenzylidene-4'-alkoxy-anilines

(1994) *Molecular Crystals and Liquid Crystals Science and Technology. Section A. Molecular Crystals and Liquid Crystals*, 249 (1), pp. 43-49. Cited 22 times.
doi: 10.1080/10587259408038654

15 Yeap, G.-Y., Ha, S.-T., Lim, P.-L., Boey, P.-L., Ito, M.M., Sanehisa, S., Vill, V.
Nematic and smectic a phases in ortho-hydroxy-para- hexadecanoyloxbenzylidene-para-substituted anilines

(2006) *Molecular Crystals and Liquid Crystals*, 452 (1), pp. 63-72. Cited 37 times.
doi: 10.1080/15421400500377750

16 Collings, P.J., Hird, M.
(1998) *Introduction to Liquid Crystals Chemistry and Physics*. Cited 47 times.
London:Taylor and Francis

17 Babu, R., Iannacchione, G.
(2009) *Phys. Rev. E*, 106.

18 Sivasri, J., Rao, M.C., Giridhar, G., Madav, B.T.P., Divakar, T.E., Manepalli, R.K.N.R.
Influence of Fe_3O_4nanoparticles dispersed in liquid crystalline compounds – spectroscopic characterization

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 556-565. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/63_pdf.pdf

19 Jayaprada, P., Tejaswi, M., Giridhar, G., Rao, M.C., Pisipati, V.G.K.M., Manepalli, R.K.N.R.
Synthesis and characterization of schiff base liquid crystals with dispersed ZnO nanoparticles-optical properties

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 588-596. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/67_pdf.pdf

20 Tejaswi, M., Rao, M.C., Datta Prasad, P.V., Giridhar, G., Pisipti, V.G.K.M., Manepalli, R.K.N.R.
Synthesis and characterization of citrate capped gold nanoparticles and their effect on liquid crystals: Optical studies

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 697-705. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/82_pdf.pdf

21 Rao, M.C.
Growth and microstructural features of laser ablated LiCoO2 thin films

(2010) *Journal of Crystal Growth*, 312 (19), pp. 2799-2803. Cited 44 times.
doi: 10.1016/j.jcrysgro.2010.06.012

22 Rao, M.C., Ramachandra Rao, K.
Thermal evaporated V_2O_5 thin films: Thermodynamic properties

(2014) *International Journal of ChemTech Research*, 6 (7), pp. 3931-3934. Cited 33 times.
http://sphinxsai.com/2014/ch_vol_6_7/7/%283931-3934%29O14.pdf

23 Rao, M.C.
Fabrication of LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin film cells for rechargeable lithium microbatteries

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (1), pp. 85-88. Cited 43 times.
http://oam-rc.inoe.ro/download.php?idu=1453

24 Begum, S.M., Rao, M.C., Ravikumar, R.
(2012) *Spectrochim. Acta Part A: Mol. & Biomol. Spec*, 98, p. 100. Cited 7 times.

25 Rao, M.C.
Grain size effect on the growth of LiCoO2 thin film cathodes

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (4), pp. 428-431. Cited 40 times.
http://joam.inoe.ro/download.php?idu=2757

26 Rao, M.C., Hussain, O.M.
Spectroscopic investigations on tetravalent doped $LiCoO_2$ thin film cathodes

(2009) *EPJ Applied Physics*, 48 (2), pp. 20503p1-20503p6. Cited 31 times.
doi: 10.1051/epjap/2009142

27 Muntaz Begum, S., Rao, M.C., Ravikumar, R.V.S.S.N.
Cu^{2+} Doped PVA Passivated ZnSe Nanoparticles-Preparation, Characterization and Properties

(2013) *Journal of Inorganic and Organometallic Polymers and Materials*, 23 (2), pp. 350-356. Cited 45 times.
doi: 10.1007/s10904-012-9783-8

28 Mc Rao, J.
(2010) *Optoelect. & Adv. Mater*, 12, p. 2433.

29 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated amorphous LiCoO 2 thin film cathodes

(2009) *IOP Conference Series: Materials Science and Engineering*, 2, art. no. 012037. Cited 23 times.
doi: 10.1088/1757-899X/2/1/012037

30 Rao, M.C., Hussain, O.M.
Growth and characterization of tetravalent doped LiCoO2 thin film cathodes

(2009) *Indian Journal of Engineering and Materials Sciences*, 16 (5), pp. 335-340. Cited 28 times.

31 Ravindranadh, K., Rao, M.C., Ravikumar, R., Mater, J.
(2015) *Sci: Mater. Elect*, 26, p. 6667. Cited 4 times.

32 Rao, M.C.
Effect of target composition on the growth of stiochiometric LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin films

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (6), pp. 651-654. Cited 39 times.
http://oam-rc.inoe.ro/download.php?idu=1600

33 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (9), pp. 1109-1113. Cited 37 times.
http://joam.inoe.ro/download.php?idu=2881

34 Ravindranadh, K., Babu, B., Reddy, C.V., Shim, J., Rao, M.C., Ravikumar, R.
(2015) *Appl. Mag. Reson*, 46 (1), p. 1. Cited 21 times.

35 Mc Rao, O.M.
(2011) *Hussain, Res. J. Chem. Sci*, 1 (7), p. 92. Cited 3 times.

36 Rao, M.C.
Microfabrication of LiCoO 2 thin film cell

(2012) *International Journal of Chemical Sciences*, 10 (2), pp. 1111-1116. Cited 33 times.
http://www.sadgurupublications.com/ContentPaper/2012/61_1581_10(2)2012.pdf

37 Rao, M.C.
Synthesis and characterization of $LiCoO_2$ thin film cathodes grown by pulsed laser deposition

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 511-515. Cited 32 times.
http://oam-rc.inoe.ro/download.php?idu=1866

38 Rao, M.C.
Spectroscopic investigations on laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (1), pp. 78-81. Cited 29 times.
http://joam.inoe.ro/download.php?idu=2691

39 Ravindranadh, K., Rao, M.C., Ravikumar, R.
(2015) *J. Luminesce*, 159, p. 119. Cited 11 times.

40 Rao, M.C., Muntaz Begum, S.K.
Substrate effect on microstructure of LiCoO 2 thin film cathodes

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 508-510. Cited 25 times.
http://oam-rc.inoe.ro/download.php?idu=1865

41 Rao, M.C., Ravindranadh, K., Satyanarayana, T., Dasaradhudu, Y., Nagarjuna, G., Srinivas, K., Shekhawat, M.S.

Luminescent and gas sensing properties of SnO_2thin films grown by pulsed laser deposition

(2016) *Der Pharma Chemica*, 8 (4), pp. 243-250. Cited 22 times.
http://derpharmachemica.com/vol8-iss4/DPC-2016-8-4-243-250.pdf

42 Rao, M.C.

Raman investigations on laser ablated LiCoO 2 and LiTi xCo 1-xO 2 thin film cathodes

(2010) *Optoelectronics and Advanced Materials, Rapid Communications*, 4 (12), pp. 2088-2091. Cited 25 times.
http://oam-rc.inoe.ro/download.php?idu=1406

43 Sivaram, K., Rao, M.C., Giridhar, G., Tejaswi, M., Madhav, B.T.P., Pisipati, V.G.K.M., Manepalli, R.K.N.R.

Synthesis and characterization of thiol - Capped silver nanoparticles and their effect on liquid crystals

(2017) *Rasayan Journal of Chemistry*, 10 (1), pp. 16-24. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/107_pdf.pdf
doi: 10.7324/RJC.2017.1011539

44 Rao, M.C., Ravindranadh, K., Shekhawat, M.S.

Structural and electrical properties of TiO_2 thin films

(2016) *AIP Conference Proceedings*, 1728, art. no. 020077. Cited 19 times.
http://scitation.aip.org/content/aip/proceeding/aipcp
ISBN: 978-073541375-7
doi: 10.1063/1.4946128

45 Rao, M.C., Ravindranadh, K., Begum, Sk.M., Nirmala, G.

$LiNi_xCo_{1-x}O_2$ cell grown by pulsed laser deposition

(2011) *AIP Conference Proceedings*, 1349 (PART A), pp. 641-642. Cited 16 times.
ISBN: 978-073540905-7
doi: 10.1063/1.3606021

46 Ravindranadh, K., Sridhar Kumar, D., Durga Venkata Prasad, K., Rao, M.C.

Luminescent properties of Cu^{2+} doped SnO_2 thin films by spray pyrolysis

(2016) *International Journal of ChemTech Research*, 9 (4), pp. 598-603. Cited 22 times.
http://sphinxsai.com/2016/ch_vol9_no4/2/(598-603)V9N4CT.pdf

47 Kelker, H., Scheurle, B.

A Liquid-crystalline (Nematic) Phase with a Particularly Low Solidification Point

(1969) *Angewandte Chemie International Edition in English*, 8 (11), pp. 884-885. Cited 107 times.
doi: 10.1002/anie.196908841

48 Rambabu, M., Prasad, K.R.S., Madhav, B.T.P., Venu Gopalarao, M.
(2016) *J. Engg. Appl. Sci*, 11, p. 1.

49 Rambabu, M., Prasad, K.R.S., Venu Gopala Rao, M., Madhav, B.T.P., Pisipati, V.G.K.M.

Thermal and phase behaviour studies of hydrogen-bonded compounds (SA:nOBA) using POM, DSC and image-processing techniques

(2015) *Liquid Crystals Today*, 24 (3), pp. 81-92. Cited 6 times.
http://www.tandfonline.com/loi/tlcy20
doi: 10.1080/1358314X.2015.1039195

50 Madhav, B.T.P., Pardhasaradhi, P., Manepalli, R.K.N.R., Kishore, P.V.V., Pisipati, V.G.K.M. (2015) *Liquid Crystals*, 37, p. 41.

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Circularly polarized koch fractal triband antenna for wireless communication applications (Article)

Madhav, B.T.P.[a], Sairam, K.[a], Deepika, M.[a], Naresh, V.[a], Saisri, C.H.[a], Mounika, K.[b]

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Abstract

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A novel monopole asymmetric fractal micro strip antenna is designed and analyzed in this paper. The proposed Koch fractal monopole antenna is resonating at triband with circular polarization operation. Five diffstructures - without slot (basic model), single slot (Iteration 1), double slotted (Iteration 2), triple slotted (Iteration 3), and optimized fractal slot (Iteration 4) are studied for circular polarization radiation. Perturbations in the structure for triband CP radiation are introduced by employing optimization in the asymmetrical Koch fractal curves as boundaries of a square patch and embedded triangular slots. The generated 3-dB axial ratios are analyzed with the simulation results demonstrate that the proposed antenna design is suitable for wireless communication applications. © 2006-2015 Asian Research Publishing Network (ARPN).

Author keywords

axial ratio (AR) | Circular polarization (CP) | Koch fractal | Triband | Wireless communications

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References (15)

View in search results format

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1 Sung, Y.
Dual-band circularly polarized pentagonal slot antenna
(2011) *IEEE Antennas and Wireless Propagation Letters*, 10, art. no. 5740942, pp. 259-261. Cited 42 times.
doi: 10.1109/LAWP.2011.2129551
View at Publisher

2 Yang, K.-P., Wong, K.-L.
Dual-band circularly-polarized square microstrip antenna
(2001) *IEEE Transactions on Antennas and Propagation*, 49 (3), pp. 377-382. Cited 161 times.
doi: 10.1109/8.918611
View at Publisher

3 Madhav, B.T.P., Vaishnavi, G., Manichandana, V., Harinath Reddy, C., Ravi Teja, S., Sesi Kumar, J.
Compact sierpinski carpet antenna on destructive ground plane

(2013) *International Journal of Applied Engineering Research*, 8 (4), pp. 443-452. Cited 13 times.
http://www.ripublication.com/ijaerv6/ijaerv8n4_05.pdf

4 Zhai, H., Ma, Z., Han, Y., Liang, C.
A compact printed antenna for triple-band WLAN/WiMAX applications

(2013) *IEEE Antennas and Wireless Propagation Letters*, 12, art. no. 6407710, pp. 65-68. Cited 75 times.
doi: 10.1109/LAWP.2013.2238881

View at Publisher

5 Ren, X.-S., Yin, Y.-Z., Hu, W., Wei, Y.-Q.
Compact tri-band rectangular ring patch antenna with asymmetrical strips for wlan/wimax applications

(2010) *Journal of Electromagnetic Waves and Applications*, 24 (13), pp. 1829-1838. Cited 32 times.
doi: 10.1163/156939310792486548

View at Publisher

6 Madhav, B.T.P., Khan, H., Ujwala, D., Bhavani Sankar, Y., Kandepi, M., Nagendra Reddy, A.S., Nagajyothi, D.
CPW fed serrated antenna performance based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1349-1354. Cited 25 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_01.pdf

7 Madhav, B.T.P., Mohan Reddy, S.S., Sanjay, B., Ujwala, D.
Trident shaped ultra wideband antenna analysis based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1355-1361. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_02.pdf

8 Chang, T.-H., Kiang, J.-F.
Compact multi-band h-shaped slot antenna

(2013) *IEEE Transactions on Antennas and Propagation*, 61 (8), art. no. 6515330, pp. 4345-4349. Cited 36 times.
doi: 10.1109/TAP.2013.2262666

View at Publisher

9 Mok, W.C., Wong, S.H., Luk, K.M., Lee, K.F.
Single-Layer single-patch dual-band and triple-band patch antennas

(2013) *IEEE Transactions on Antennas and Propagation*, 61 (8), art. no. 6516965, pp. 4341-4344. Cited 48 times.
doi: 10.1109/TAP.2013.2260516

View at Publisher

10 Madhav, B.T.P., Manikanta Prasanth, A., Prasanth, S., Krishna, B.M.S., Manikantha, D., NagaSai, U.S.
Analysis of defected ground structure notched monopole antenna

(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (2), pp. 747-752. Cited 48 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0215_1519.pdf

11 Srinivas, M.S.S.S., Ramakrishna, T.V., Madhav, B.T.P., Bhagyalakshmi, N., Madhavi, S., Venkateswarulu, K.
A novel compact CPW fed slot antenna with EBG structure

(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (2), pp. 835-841. Cited 18 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0215_1531.pdf

Sree, Y.N. , Reddy, P.V.A. , Kumar, K.A.
(2015) 2015 International Conference on Advances in Computing, Communications and Informatics, ICACCI 2015

Triband circularly polarized koch fractal boundary microstrip antenna

Reddy, V.V. , Sarma, N.V.S.N.
(2014) IEEE Antennas and Wireless Propagation Letters

Novel compact asymmetrical fractal aperture Notch band antenna

Ramkiran, D.S. , Madhav, B.T.P. , Prasanth, A.M.
(2015) Leonardo Electronic Journal of Practices and Technologies

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12 Baek, J.G., Hwang, K.C.

Triple-band unidirectional circularly polarized hexagonal slot antenna with multiple L-shaped slits

(2013) *IEEE Transactions on Antennas and Propagation*, 61 (9), art. no. 6522136, pp. 4831-4835. Cited 21 times.
doi: 10.1109/TAP.2013.2265216

View at Publisher

13 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Ujwala, D.

Fractal shaped Sierpinski on EBG structured ground plane

(2014) *Leonardo Electronic Journal of Practices and Technologies*, 13 (25), pp. 26-35. Cited 40 times.
http://lejpt.academicdirect.org/A25/026_035.pdf

14 Wang, L., Guo, Y.-X., Sheng, W.X.

A single-feed tri-band circularly polarized dual-annular slot antenna for wireless applications

(2012) *Journal of Electromagnetic Waves and Applications*, 26 (11-12), pp. 1389-1396. Cited 8 times.
doi: 10.1080/09205071.2012.700888

View at Publisher

15 Madhav, B.T.P., Gogineni, J., Appana, H., Chennam, J.P., Thota, D.S.S., Kotte, P.

Analysis of compact coplanar waveguide fed slot antenna with EBG structure

(2015) *International Conference on Signal Processing and Communication Engineering Systems - Proceedings of SPACES 2015, in Association with IEEE*, art. no. 7058252, pp. 219-225. Cited 6 times.
ISBN: 978-147996108-5
doi: 10.1109/SPACES.2015.7058252

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Holmium doped Lead Tungsten Tellurite glasses for green luminescent applications (Article)

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Abstract

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Abstract Lead Tungsten Tellurite (LTT) glasses doped with different concentrations of Ho^{3+} ions have been synthesized using the melt quenching method and characterized to understand their visible emission characteristic features using optical absorption and photoluminescence spectral studies. The Judd-Ofelt (JO) parameters measured from the absorption spectral features were used to evaluate radiative properties such as transition probability (A_R), branching ratio (β_R) and radiative lifetimes (τ_R) for the prominent fluorescent levels of Ho^{3+} ions in LTT glasses. The photoluminescence spectra recorded for all the Ho^{3+} doped LTT glasses at an excitation wavelength 452 nm gives three prominent emission transitions $^5F_4 \rightarrow {}^5I_8$, $^5F_5 \rightarrow {}^5I_8$ and $^5F_4 \rightarrow {}^5I_7$, of which $^5F_4 \rightarrow {}^5I_8$ observed in visible green region (546 nm) is relatively more intense than the other two transitions. The intensity of $^5F_4 \rightarrow {}^5I_8$ emission transition in these glasses increases up to 1 mol% of Ho^{3+} ions and beyond concentration quenching is observed. Branching ratios (β_R) and emission cross-sections (σ_{se}) were evaluated for the intense emission transition $^5F_4 \rightarrow {}^5I_8$ in these glasses to understand the luminescence efficiency in visible green region (546 nm). The CIE chromaticity coordinates were also evaluated in order to understand the suitability of these glasses for visible luminescence. From the measured emission cross-sections and CIE coordinates, it was found that 1 mol% of Ho^{3+} ions in LTT glasses are most suitable for visible green luminescence in principle.

Author keywords

Glass | Holmium | JO Parameters | Luminescence | Optical properties

Indexed keywords

Engineering controlled terms: Electromagnetic wave absorption | High energy physics | Holmium | Ions | Light absorption | Luminescence | Optical properties | Photoluminescence | Quenching | Spectroscopic analysis | Tellurium compounds | Tungsten

Compendex keywords: Absorption and photoluminescence | Concentration quenching | Emission cross section | J-O parameter | Luminescence efficiencies | Melt quenching method | Photoluminescence spectrum | Transition probabilities

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Jupri, S.A. , Ghoshal, S.K. , Omar, M.F.
(2018) Journal of Alloys and Compounds

Pr^{3+}/Er^{3+}co-doped tellurite glass with ultra-broadband near-infrared fluorescence emission
Cheng, P. , Zhou, Y. , Su, X.
(2018) Journal of Luminescence

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(2018) Materials Research Bulletin

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Suhasini, T. , Jamalaiah, B.C. , Chengaiah, T.
(2012) Physica B: Condensed Matter

Visible red, NIR and Mid-IR emission studies of Ho^{3+}doped Zinc Alumino Bismuth Borate glasses

Mahamuda, S. , Swapna, K. , Packiyaraj, P.
(2013) Optical Materials

Optical spectra and calculation for the gain properties of Ho^{3+}-doped GeO2-Ga BaO-La2O3glasses

Lin, Q.-F. , Xia, H.-P. , Wang, J.-H.
(2008) Guangzi Xuebao/Acta Photonica Sinica

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References (72)

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1 Biswas, K., Sontakke, A.D., Sen, R., Annapurna, K.
Enhanced 2 μm broad-band emission and NIR to visible frequency up-conversion from Ho^{3+}/Yb^{3+} co-doped Bi_2O_3-GeO_2-ZnO
(2013) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 112, pp. 301-308. Cited 28 times.
doi: 10.1016/j.saa.2013.04.062
View at Publisher

2 Rama Kumar, R., Rao, A.S., Venkata Reddy, B.C.
Electron Paramagnetic Resonance (EPR) and optical absorption spectra of VO^{2+} ions in $K_2SO_4Na_2SO_4ZnSO_4$ glasses
(1995) *Optical Materials*, 4 (6), pp. 723-728. Cited 15 times.
doi: 10.1016/0925-3467(95)00021-6
View at Publisher

3 Swapna, K., Mahamuda, S., Srinivasa Rao, A., Jayasimhadri, M., Sasikala, T., Rama Moorthy, L.
Optical absorption and luminescence characteristics of Dy^{3+} doped Zinc Alumino Bismuth Borate glasses for lasing materials an
(2013) *Journal of Luminescence*, 139, pp. 119-124. Cited 47 times.
doi: 10.1016/j.jlumin.2013.02.035
View at Publisher

4 Sreenivasulu, M., Rao, A.S.
Absorption and emission spectra of Pr^{3+}-doped mixed alkali fluorophosphate optical glasses
(2001) *Journal of Materials Science Letters*, 20 (8), pp. 737-740. Cited 15 times.
doi: 10.1023/A:1010971327076
View at Publisher

5 Srinivasa Rao, A., Rupa Venkateswara Rao, B., Prasad, M.V.V.K.S., Shanmukha Kumar, J.V., Jayasimhadri, M., Rao, J.L., Chakradhar, R.P.S.
Spectroscopic and optical properties of Nd^{3+} doped fluorine containing alkali and alkaline earth zinc-aluminophosphate optical g

(2009) *Physica B: Condensed Matter*, 404 (20), pp. 3717-3721. Cited 24 times.
doi: 10.1016/j.physb.2009.06.114

View at Publisher

6 Culea, E., Pop, L., Simon, S.
Spectroscopic and magnetic behaviour of xGd_2O_3 $(1 - x)(Bi_2O_3 \cdot PbO)$ glasses

(2004) *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, 112 (1), pp. 59-63. Cited 54 times.
doi: 10.1016/j.mseb.2004.06.001

View at Publisher

7 El-Mallawany, R., Abousehly, A., Yousef, E.
Elastic moduli of tricomponent tellurite glasses TeO_2-V_2O_5-Ag_2O

(2000) *Journal of Materials Science Letters*, 19 (5), pp. 409-411. Cited 47 times.
doi: 10.1023/A:1006790721653

View at Publisher

8 Sushama, D., Predeep, P.
(2014) *J. App. Phys. Math.*, 4, p. 139. Cited 13 times.

9 Narro-García, R., Chillcce, E.F., Barbosa, L.C., De Posada, E., Arronte, M., Rodriguez, E.
Fabrication and upconversion luminescence of Er3+/Yb 3+ codoped TeO2-WO3-Na2O-Nb 2O5-Al2O3 glass fibers

(2013) *Journal of Luminescence*, 134, pp. 528-532. Cited 19 times.
doi: 10.1016/j.jlumin.2012.07.034

View at Publisher

10 El-Mallawany, R., Ahmed, I.A.
Thermal properties of multicomponent tellurite glass

(2008) *Journal of Materials Science*, 43 (15), pp. 5131-5138. Cited 44 times.
doi: 10.1007/s10853-008-2737-4

View at Publisher

11 Sooraj Hussain, N., Hungerford, G., El-Mallawany, R., Gomes, M.J.M., Lopes, M.A., Ali, N., Santos, J.D., (...), Buddhudu, S.
Absorption and emission analysis of RE $^{3+}$(Sm^{3+} and Dy^{3+}): Lithium boro tellurite glasses

(2009) *Journal of Nanoscience and Nanotechnology*, 9 (6), pp. 3672-3677. Cited 22 times.
doi: 10.1166/jnn.2009.NS49

View at Publisher

12 Ledemi, Y., Manzani, D., Ribeiro, S.J.L., Messaddeq, Y.
Multicolor up conversion emission and color tunability in Yb^{3+}/Tm^{3+}/Ho^{3+} triply doped heavy metal oxide glasses

(2011) *Optical Materials*, 33 (12), pp. 1916-1920. Cited 27 times.
doi: 10.1016/j.optmat.2011.03.029

View at Publisher

13 Nayak, R., Gupta, V., Dawar, A.L., Sreenivas, K.
Optical waveguiding in amorphous tellurium oxide thin films

(2003) *Thin Solid Films*, 445 (1), pp. 118-126. Cited 60 times.
doi: 10.1016/S0040-6090(03)01284-7

View at Publisher

14 Jiang, Z.Y., Xie, Z.X., Zhang, X.H., Xie, S.Y., Huang, R.B., Zheng, L.S.
(2004) *Inorg. Chem. Commun.*, 7, p. 178.

15 Liu, Z., Yamazaki, T., Shen, Y., Kikuta, T., Nakatani, N.
Synthesis and characterization of TeO_2 nanowires

(2008) *Japanese Journal of Applied Physics*, 47 (1 PART 2), pp. 771-774. Cited 36 times.
http://jjap.ipap.jp/link?JJAP/47/771/pdf
doi: 10.1143/JJAP.47.771

View at Publisher

16 Fuxi, G.
(1995) *J. Non-Cryst. Solids*, 184, p. 9. Cited 3 times.

17 Arshak, K., Korostynska, O.
Gamma radiation dosimetry using Tellurium dioxide thin film structures

(2002) *Sensors*, 2 (8), pp. 347-355. Cited 50 times.

View at Publisher

18 Ryba-Romanowski, W.
Effect of temperature and activator concentration on luminescence decay of erbium-doped tellurite glass

(1990) *Journal of Luminescence*, 46 (3), pp. 163-172. Cited 29 times.
doi: 10.1016/0022-2313(90)90036-B

View at Publisher

19 Sidek, H.A.A., Rosmawati, S., Talib, Z.A., Halimah, M.K., Daud, W.M.
Synthesis and optical properties of ZnO-TeO_2 glass system

(2009) *American Journal of Applied Sciences*, 6 (8), pp. 1489-1494. Cited 84 times.
http://www.scipub.org/fulltext/ajas/ajas681489-1494.pdf
doi: 10.3844/ajassp.2009.1489.1494

View at Publisher

20 Sidebottom, D.L., Hruschka, M.A., Potter, B.G., Brow, R.K.
Structure and optical properties of rare earth-doped zinc oxyhalide tellurite glasses

(1997) *Journal of Non-Crystalline Solids*, 222, pp. 282-289. Cited 86 times.

21 Eraiah, B.
Optical properties of lead-tellurite glasses doped with samarium trioxide

(2010) *Bulletin of Materials Science*, 33 (4), pp. 391-394. Cited 23 times.
http://www.ias.ac.in/matersci/bmsaug2010/391.pdf
doi: 10.1007/s12034-010-0059-z

View at Publisher

22 Ravi, O., Reddy, C.M., Reddy, B.S., Raju, B.D.P.
Judd-Ofelt analysis and spectral properties of Dy^{3+} ions doped niobium containing tellurium calcium zinc borate glasses

(2014) *Optics Communications*, 312, pp. 263-268. Cited 31 times.
doi: 10.1016/j.optcom.2013.09.044

View at Publisher

23 Jlassi, I., Elhouichet, H., Ferid, M., Barthou, C.
JuddOfelt analysis and improvement of thermal and optical properties of tellurite glasses by adding P_2O_5

(2010) *Journal of Luminescence*, 130 (12), pp. 2394-2401. Cited 72 times.
doi: 10.1016/j.jlumin.2010.07.026

View at Publisher

24 Zhan, G., Hu, L.-Y., Jian, L.-L., Hong, G.Z.
(2003) *Prog. Phys.*, 23, p. 473. Cited 7 times.

25 Pal, I., Agarwal, A., Sanghi, S., Sanjay, Aggarwal, M.P.
Spectroscopic and radiative properties of Nd^{3+} ions doped zinc bismuth borate glasses

(2013) *Indian Journal of Pure and Applied Physics*, 51 (1), pp. 18-25. Cited 15 times.
http://nopr.niscair.res.in/bitstream/123456789/15361/1/IJPAP%2051%281%29%2018-25.pdf

26 Chiodini, N., Paleari, A., Brambilla, G., Taylor, E.R.
Erbium doped nanostructured tin-silicate glass-ceramic composites

(2002) *Applied Physics Letters*, 80 (23), pp. 4449-4451. Cited 62 times.
doi: 10.1063/1.1485105

View at Publisher

27 Venkateswarlu, M., Prasad, M.V.V.K.S., Swapna, K., Mahamuda, S., Rao, A.S., Babu, A.M., Haranath, D.
Pr^{3+} doped lead tungsten tellurite glasses for visible red lasers

(2014) *Ceramics International*, 40 (4), pp. 6261-6269. Cited 22 times.
doi: 10.1016/j.ceramint.2013.11.084

View at Publisher

28 Nii, H., Ozaki, K., Herren, M., Morita, M.
Up-conversion fluorescence of Er^{3+}- and Yb^{3+}-doped TeO_2-based oxide glass and single crystals

(1998) *Journal of Luminescence*, 76-77, pp. 116-119. Cited 34 times.
doi: 10.1016/S0022-2313(97)00271-8

View at Publisher

29 Mori, A., Ohishi, Y., Sudo, S.
Erbium-doped tellurite glass fibre laser and amplifier

(1997) *Electronics Letters*, 33 (10), pp. 863-864. Cited 262 times.
http://scitation.aip.org/dbt/dbt.jsp?KEY=ELLEAK
doi: 10.1049/el:19970585

View at Publisher

30 Satyanarayana, T., Kalpana, T., Ravi Kumar, V., Veeraiah, N.
Role of Al coordination in barium phosphate glasses on the emission features of Ho^{3+} ion in the visible and IR spectral ranges

(2010) *Journal of Luminescence*, 130 (3), pp. 498-506. Cited 30 times.
doi: 10.1016/j.jlumin.2009.10.021

View at Publisher

31 Giri, N.K., Rai, S.B., Rai, A.
Intense green and red upconversion emissions from Ho^{3+} in presence of Yb^{3+} in Li:TeO_2 glass

(2009) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 74 (5), pp. 1115-1119. Cited 14 times.
doi: 10.1016/j.saa.2009.09.019

View at Publisher

32 Lin, H., Chen, D., Yu, Y., Yang, A., Wang, Y.
Near-infrared quantum cutting in Ho3+/Yb3+ codoped nanostructured glass ceramic

(2011) *Optics Letters*, 36 (6), pp. 876-878. Cited 75 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F69865F8F%2D01D5%2D7D43%2DE3CEE935CB76534C%5F210627%2Epd
doi: 10.1364/OL.36.000876

View at Publisher

33 Qi, Changhong, Zhang, Xiurong, Hu, Hefang
Spectral properties of Ho^{3+} in ZBLAN glass

(1994) *Guangxue Xuebao/Acta Optica Sinica*, 14 (6), pp. 583-588. Cited 12 times.

34 Feng, L., Wang, J., Tang, Q., Liang, L., Liang, H., Su, Q.
Optical properties of Ho^{3+}-doped novel oxyfluoride glasses

(2007) *Journal of Luminescence*, 124 (2), pp. 187-194. Cited 85 times.
doi: 10.1016/j.jlumin.2006.02.017

View at Publisher

35 He, C.J., Chen, X.B., Sun, Y.G., Chen, L.
(2002) *Chin. J. Quantum Electron.*, 19 (2), p. 109. Cited 5 times.

36 Lande, D., Orlov, S.S., Akella, A., Hesselink, L., Neurgaonkar, R.R.
Digital holographic storage system incorporating optical fixing

(1997) *Optics Letters*, 22 (22), pp. 1722-1724. Cited 92 times.
http://ol.osa.org/Issue.cfm
doi: 10.1364/OL.22.001722

View at Publisher

37 Erbil, A., Jenssen, H.P.
Tunable Ho_{+3}:YLF laser at 2.06 ¼m

(1980) *Applied Optics*, 19 (11), pp. 1729-1730. Cited 20 times.
doi: 10.1364/AO.19.001729

View at Publisher

38 Rao, A.S., Ahammed, Y.N., Reddy, R.R., Rao, T.V.R.
Spectroscopic studies of Nd^{3+}-doped alkali fluoroborophosphate glasses

(1998) *Optical Materials*, 10 (4), pp. 245-252. Cited 71 times.
doi: 10.1016/S0925-3467(97)00055-4

View at Publisher

39 Ebendorff-Heidepriem, H., Seeber, W., Ehrt, D.
Dehydration of phosphate glasses

(1993) *Journal of Non-Crystalline Solids*, 163 (1), pp. 74-80. Cited 75 times.
doi: 10.1016/0022-3093(93)90647-G

View at Publisher

40 Mahamuda, S., Swapna, K., Packiyaraj, P., Srinivasa Rao, A., Vijaya Prakash, G.
Visible red, NIR and Mid-IR emission studies of Ho^{3+} doped Zinc Alumino Bismuth Borate glasses

(2013) *Optical Materials*, 36 (2), pp. 362-371. Cited 31 times.
doi: 10.1016/j.optmat.2013.09.023

View at Publisher

41 Suhasini, T., Jamalaiah, B.C., Chengaiah, T., Suresh Kumar, J., Rama Moorthy, L.
An investigation on visible luminescence of Ho ^{3} activated LBTAF glasses

(2012) *Physica B: Condensed Matter*, 407 (3), pp. 523-527. Cited 20 times.
doi: 10.1016/j.physb.2011.11.029

View at Publisher

42 Kale, B.B., Jha, A., Apte, S.K., Adhyapak, P.V., Amalnerkar, D.P.
Removal of OH impurities from GeS2 by reactive atmosphere and its glass preparation

(2003) *Materials Chemistry and Physics*, 78 (2), pp. 330-336. Cited 13 times.
doi: 10.1016/S0254-0584(01)00551-X

View at Publisher

43 Suratwala, T.I., Steele, R.A., Wilke, G.D., Campbell, J.H., Takeuchi, K.
Effects of OH content, water vapor pressure, and temperature on sub-critical crack growth in phosphate glass

(2000) *Journal of Non-Crystalline Solids*, 263, pp. 213-227. Cited 87 times.
doi: 10.1016/S0022-3093(99)00680-8

View at Publisher

44 Rao, C.S., Ravikumar, V., Srikumar, T., Gandhi, Y., Veeraiah, N.
The role of coordination and valance states of tungsten ions on some physical properties of Li_2O-Al_2O_3-ZrO $_2$-SiO_2 glass system

(2011) *Journal of Non-Crystalline Solids*, 357 (16-17), pp. 3094-3102. Cited 25 times.
doi: 10.1016/j.jnoncrysol.2011.04.018

View at Publisher

45 Stegeman, R., Rivero, C., Richardson, K., Stegeman, G., Delfyett Jr., P., Guo, Y., Pope, A., (...), Champarnaud-Mesjard, J.-C.
Raman gain measurements of thallium-tellurium oxide glasses

(2005) *Optics Express*, 13 (4), pp. 1144-1149. Cited 47 times.
http://www.opticsexpress.org/view_file.cfm?doc=%24%29%5C%2F%2EK0%20%20%0A&id=%25%28%2C%23%2CKL0%20%0A
doi: 10.1364/OPEX.13.001144

View at Publisher

46 Dimitriev, Y., Dimitrov, V., Arnaudov, M.
IR spectra and structures of tellurite glasses

(1983) *Journal of Materials Science*, 18 (5), pp. 1353-1358. Cited 182 times.
doi: 10.1007/BF01111954

View at Publisher

47 Dimitrova-Pankova, M., Dimitriev, Y., Arnaudov, M., Dimitrov, V.
Infrared spectral investigation of the influence of modifying oxides on the structure of tellurite glasses

(1989) *Physics and Chemistry of Glasses*, 30 (6), pp. 260-263. Cited 49 times.

48 Feng, L., Wang, J., Tang, Q., Liang, L., Liang, H., Su, Q.
Optical properties of Ho^{3+}-doped novel oxyfluoride glasses

(2007) *Journal of Luminescence*, 124 (2), pp. 187-194. Cited 85 times.
doi: 10.1016/j.jlumin.2006.02.017

View at Publisher

49 Florez, A., Oliveira, S.L., Flórez, M., Gómez, L.A., Nunes, L.A.O.
Spectroscopic characterization of Ho^{3+} ion-doped fluoride glass

(2006) *Journal of Alloys and Compounds*, 418 (1-2), pp. 238-242. Cited 31 times.
doi: 10.1016/j.jallcom.2005.12.088

View at Publisher

50 Rai, S.B., Singh, A.K., Singh, S.K.
Spectroscopic properties of Ho^{3+} ions doped in tellurite glass

(2003) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 59 (14), pp. 3221-3226. Cited 50 times.
doi: 10.1016/S1386-1425(03)00178-1

View at Publisher

51 Oliveira, S.L., Bell, M.J.V., Flórez, A., Nunes, L.A.O.
Spectroscopic investigation of 2.0 vm emission in Ho^{3+}-doped fluoroindate glasses

(2006) *Journal of Physics D: Applied Physics*, 39 (15), art. no. 003, pp. 3230-3234. Cited 6 times.
doi: 10.1088/0022-3727/39/15/003

View at Publisher

52 Carnall, W.T., Fields, P.R., Rajnak, K.
Electronic energy levels of the trivalent lanthanide aquo ions. IV. Eu 8+

(1968) *The Journal of Chemical Physics*, 49 (10), pp. 4424-4442. Cited 1729 times.

View at Publisher

53 Mahamuda, S., Swapna, K., Venkateswarlu, M., Srinivasa Rao, A., Shakya, S., Vijaya Prakash, G.
Spectral characterisation of Sm^{3+} ions doped Oxy-fluoroborate glasses for visible orange luminescent applications

(2014) *Journal of Luminescence*, 154, pp. 410-424. Cited 36 times.
doi: 10.1016/j.jlumin.2014.05.017

View at Publisher

54 Carnall, W.T.
(1979) *Handbook on the Physics and Chemistry of Rare Earths*, 3. Cited 1577 times.
K.A. Gschneidner, L.R. Eyring, Elsevier North-Holland, Amsterdam (Chapter 24)

55 Jacobs, R.R., Weber, M.J.
Dependence of the 4F3/2 ? 4I11/2 Induced-Emission Cross Section for Nd3+ on Glass Composition

(1976) *IEEE Journal of Quantum Electronics*, 12 (2), pp. 102-111. Cited 295 times.
doi: 10.1109/JQE.1976.1069101

View at Publisher

56 Judd, B.R.
Optical absorption intensities of rare-earth ions

(1962) *Physical Review*, 127 (3), pp. 750-761. Cited 5553 times.
doi: 10.1103/PhysRev.127.750

View at Publisher

57 Opelt, G.S.
Intensities of crystal spectra of rare-earth ions

(1962) *The Journal of Chemical Physics*, 37 (3), pp. 511-520. Cited 5055 times.

View at Publisher

58 Tanner, P.A.
Excitation and absorption spectra of $Cs_2NaErCl_6$

(1986) *Molecular Physics*, 57 (4), pp. 737-754. Cited 22 times.
doi: 10.1080/00268978600100531

View at Publisher

59 Tanner, P.A., Piante, A.D., Richardson, F.S., Reid, M.F.
Energy levels of er^3+ in $Cs_2naercl_6$

(1987) *Molecular Physics*, 60 (5), pp. 1037-1045. Cited 17 times.
doi: 10.1080/00268978700100681

View at Publisher

60 Legendziewicz, J., Huskowska, E., Argay, Gy., Wáskowska, A.
Application of luminescence and absorption spectroscopy and x-ray methods to studies of Ln^{+3} ions interaction with aminoacids

(1984) *Inorganica Chimica Acta*, 95 (2), pp. 57-63. Cited 46 times.
doi: 10.1016/S0020-1693(00)87367-3

View at Publisher

61 Iftkar, K., Ahmad, N.
(1985) *Polyhedron*, 4, p. 333. Cited 3 times.

62 Shojiya, M., Kawamoto, Y., Kadono, K.
Judd-Ofelt parameters and multiphonon relaxation of Ho^{3+} ions in $ZnCl_2$-based glass

(2001) *Journal of Applied Physics*, 89 (9), pp. 4944-4950. Cited 49 times.
doi: 10.1063/1.1337586

View at Publisher

63 Dugall, M., Hollis, D.B., Payne, M.J.P.
(1994) *Phys. Chem. Glasses*, 35, p. 258. Cited 3 times.

64 Weber, M.J., Matsinger, B.H., Donlan, V.L., Surratt, G.T.
(1972) *J. Chem. Phys.*, 57, p. 562. Cited 38 times.

65 Shen, L.F., Chen, B.J., Pun, E.Y.B., Lin, H.
Gain properties of the transition emissions near the second telecommunication window in Ho^{3+}-doped multicomponent heavy-

(2012) *Journal of Luminescence*, 132 (3), pp. 676-681. Cited 18 times.
doi: 10.1016/j.jlumin.2011.10.018

View at Publisher

66 Srikumar, T., Brik, M.G., Rao, C.S., Venkatramaiah, N., Gandhi, Y., Veeraiah, N.
Emission features of Ho^3 ion in Nb_2O_5, Ta_2O_5 and La_2O_3 mixed Li $_2OZrO_2SiO_2$ glasses

(2011) *Physica B: Condensed Matter*, 406 (19), pp. 3592-3598. Cited 9 times.
doi: 10.1016/j.physb.2011.06.046

View at Publisher

67 Speghini, A., Peruffo, M., Casarin, M., Ajo, D., Bettinelli, M.
(2000) *J. Alloy. Compd.*, 174, p. 300.

68 Boyer, J.C., Vertone, F., Capobianco, J.A., Speghini, A., Bettinelli, M.
(2003) *J. Appl. Phys.*, 93, p. 9461. Cited 4 times.

69 Cases, R., Chamarro, M.A.
Judd-Ofelt analysis and multiphonon relaxations of rare earth ions in fluorohafnate glasses

(1991) *Journal of Solid State Chemistry*, 90 (2), pp. 313-319. Cited 64 times.
doi: 10.1016/0022-4596(91)90148-B

View at Publisher

70 Mahamuda, S., Swapna, K., Srinivasa Rao, A., Jayasimhadri, M., Sasikala, T., Pavani, K., Rama Moorthy, L.
Spectroscopic properties and luminescence behavior of Nd^{3+} doped zinc alumino bismuth borate glasses

(2013) *Journal of Physics and Chemistry of Solids*, 74 (9), pp. 1308-1315. Cited 33 times.
doi: 10.1016/j.jpcs.2013.04.009

View at Publisher

71 Karthikeyan, B., Mohan, S., Baesso, M.L.
Spectroscopic and glass transition studies on Nd^{3+}-doped sodium zincborate glasses

(2003) *Physica B: Condensed Matter*, 337 (1-4), pp. 249-254. Cited 64 times.
doi: 10.1016/S0921-4526(03)00411-3

View at Publisher

72 Wang, N.Q., Zhao, X., Li, C.M., Pun, E.Y.B., Lin, H.
Upconversion and color tunability in Tm^{3+}/Ho^{3+}/Yb^{3+} doped low phonon energy bismuth tellurite glasses

(2010) *Journal of Luminescence*, 130 (6), pp. 1044-1047. Cited 44 times.
doi: 10.1016/j.jlumin.2010.01.022

View at Publisher

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Effect of calcination temperature on cobalt substituted cadmium ferrite nanoparticles (Article)

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Abstract

View references (56)

The $Cd_{0.9}Co_{0.1}Fe_2O_4$ nanoparticles are synthesized using chemical co-precipitation method. The as-prepared samples are calcinated at 300 and 600 °C for 2 h. The thermal effects on structural, morphological and magnetic properties are reported. The X-ray diffraction data confirm the formation of single-phase cubic spinel structure. The Surface morphology and compositional features are studied using SEM with EDX and TEM measurements. The Magnetic properties of samples are evaluated using vibrating sample magnetometer. The magnetic properties, like saturation magnetization and coercivity are increases with increasing calcination temperature. The enhancement is attributed to the transition from a multi-domain to a single-domain nature. From the FTIR spectra, it is confirmed that the vibrations of tetrahedral and octahedral complexes corresponds to absorption bands at 590 cm^{-1} (v_1) and 460 cm^{-1} (v_2) respectively. The particle size enhances significantly with increasing the calcinated temperature. © 2015, Springer Science+Business Media New York.

Indexed keywords

Engineering controlled terms: Calcination, Cobalt compounds, Fourier transform infrared spectroscopy, Magnetic properties, Nanoparticles, Particle size, Saturation magnetization, Synthesis (chemical), X ray diffraction

Compendex keywords: Calcinated temperature, Calcination temperature, Chemical coprecipitation method, Compositional features, Cubic spinel structure, Octahedral complex, Vibrating sample magnetometer, X-ray diffraction data

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References (56)

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1 Zi, Z.F., Sun, Y.P., Zhu, X.B., Yang, Z.R., Dai, J.M., Song, W.H.
Synthesis of magnetoresistive $La_{0.7}Sr_{0.3}MnO_3$ nanoparticles by an improved chemical coprecipitation method
(2009) *Journal of Magnetism and Magnetic Materials*, 321 (15), pp. 2378-2381. Cited 38 times.
doi: 10.1016/j.jmmm.2009.02.130
View at Publisher

2 Grigorova, M., Blythe, H.J., Blaskov, V., Rusanov, V., Petkov, V., Masheva, V., Nihtianova, D., (...), Mikhov, M.
Magnetic properties and Mössbauer spectra of nanosized $CoFe_2O_4$ powders
(1998) *Journal of Magnetism and Magnetic Materials*, 183 (1-2), pp. 163-172. Cited 200 times.
doi: 10.1016/S0304-8853(97)01031-7
View at Publisher

3 Shenker, H.
Magnetic anisotropy of cobalt ferrite (Co1.01Fe2.00O3.62) and nickel cobalt ferrite (Ni0.72Fe0.20Co0.08Fe2O4)
(1957) *Physical Review*, 107 (5), pp. 1246-1249. Cited 112 times.
doi: 10.1103/PhysRev.107.1246
View at Publisher

4 West, A.R.
(1998) *Basic Solid State Chemistry*, p. 356. Cited 529 times.
Wiley, Delhi

5 Salunkhe, A.B., Khot, V.M., Phadatare, M.R., Pawar, S.H.
Combustion synthesis of cobalt ferrite nanoparticles - Influence of fuel to oxidizer ratio
(2012) *Journal of Alloys and Compounds*, 514, pp. 91-96. Cited 75 times.
doi: 10.1016/j.jallcom.2011.10.094
View at Publisher

6 Maaz, K., Mumtaz, A., Hasanain, S.K., Ceylan, A.
Synthesis and magnetic properties of cobalt ferrite (CoFe2O4) nanoparticles prepared by wet chemical route
(2007) *Journal of Magnetism and Magnetic Materials*, 308 (2), pp. 289-295. Cited 445 times.
doi: 10.1016/j.jmmm.2006.06.003
View at Publisher

7 Naidek, K.P., Bianconi, F., da Rocha, T.C.R., Zanchet, D., Bonacin, J.A., Novak, M.A., das Graças Fialho Vaz, M., (...), Winnischofer, H.
Structure and morphology of spinel MFe_2O_4 (M=Fe, Co, Ni) nanoparticles chemically synthesized from heterometallic complexes
(2011) *Journal of Colloid and Interface Science*, 358 (1), pp. 39-46. Cited 30 times.
doi: 10.1016/j.jcis.2011.03.001
View at Publisher

8 Cedeño-Mattei, Y., Perales-Pérez, O.
Synthesis of high-coercivity cobalt ferrite nanocrystals
(2009) *Microelectronics Journal*, 40 (4-5), pp. 673-676. Cited 54 times.
doi: 10.1016/j.mejo.2008.07.040
View at Publisher

Related documents

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(2015) Journal of Magnetism and Magnetic Materials

Effect of temperature on structural, morphological and magnetic properties of Cd<inf>0.7<... nanoparticles
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(2015) Journal of Magnetism and Magnetic Materials

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9 Fannin, P.C., Marin, C.N., Malaescu, I., Stefu, N., Vlazan, P., Novaconi, S., Sfirloaga, P., (...), Couper, C.
Microwave absorbent properties of nanosized cobalt ferrite powders prepared by coprecipitation and subjected to different thermal treatments

(2011) *Materials and Design*, 32 (3), pp. 1600-1604. Cited 29 times.
doi: 10.1016/j.matdes.2010.08.053

View at Publisher

10 Zhang, Y., Yang, Z., Yin, D., Liu, Y., Fei, C., Xiong, R., Shi, J., (...), Yan, G.
Composition and magnetic properties of cobalt ferrite nano-particles prepared by the co-precipitation method

(2010) *Journal of Magnetism and Magnetic Materials*, 322 (21), pp. 3470-3475. Cited 57 times.
doi: 10.1016/j.jmmm.2010.06.047

View at Publisher

11 Sajjia, M., Oubaha, M., Prescott, T., Olabi, A.G.
Development of cobalt ferrite powder preparation employing the sol-gel technique and its structural characterization

(2010) *Journal of Alloys and Compounds*, 506 (1), pp. 400-406. Cited 37 times.
doi: 10.1016/j.jallcom.2010.07.015

View at Publisher

12 Caizer, C., Stefanescu, M.
Magnetic characterization of nanocrystalline Ni-Zn ferrite powder prepared by the glyoxylate precursor method

(2002) *Journal of Physics D: Applied Physics*, 35 (23), pp. 3035-3040. Cited 152 times.
http://www.iop.org/EJ/journal/JPhysD
doi: 10.1088/0022-3727/35/23/301

View at Publisher

13 George, M., Nair, S.S., Malini, K.A., Joy, P.A., Anantharaman, M.R.
Finite size effects on the electrical properties of sol-gel synthesized $CoFe_2O_4$ powders: Deviation from Maxwell-Wagner theory and evidence of surface polarization effects

(2007) *Journal of Physics D: Applied Physics*, 40 (6), art. no. 001, pp. 1593-1602. Cited 85 times.
doi: 10.1088/0022-3727/40/6/001

View at Publisher

14 Krieble, K., Lo, C.C.H., Melikhov, Y., Snyder, J.E.
(2006) *J. Appl. Phys.*, 99, p. 8912. Cited 9 times.

15 Lee, S.J., Lo, C.C.H., Matlage, P.N., Song, S.H., Melikhov, Y., Snyder, J.E., Jiles, D.C.
Magnetic and magnetoelastic properties of Cr-substituted cobalt ferrite

(2007) *Journal of Applied Physics*, 102 (7), art. no. 073910. Cited 50 times.
doi: 10.1063/1.2794711

View at Publisher

16 B. Narendra, D. Bhaskar, G. Srinivas, R.V.S.S.N. Ravikumal, Ch. Venkata Reddy, in International Conference on Advanced Nanomaterials & Emerging Engineering Technologies (ICANMEET-2013): IEEE (2013), p. 181

17 Farea, A.M.M., Kumar, S., Mujasam Batoo, K., Yousef, A., Alimuddin

Influence of frequency, temperature and composition on electrical properties of polycrystalline $Co_{0.5}Cd_xFe_{2.5-x}O_4$ ferrites

(2008) *Physica B: Condensed Matter*, 403 (4), pp. 684-701. Cited 53 times.
doi: 10.1016/j.physb.2007.09.080

View at Publisher

18 Farea, A.M.M., Kumar, S., Batoo, K.M., Yousef, A., Lee, C.G., Alimuddin

Structure and electrical properties of $Co_{0.5}Cd_xFe_{2.5-x}O_4$ ferrites

(2008) *Journal of Alloys and Compounds*, 464 (1-2), pp. 361-369. Cited 104 times.
doi: 10.1016/j.jallcom.2007.09.126

View at Publisher

19 Nongjai, R., Khan, S., Asokan, K., Ahmed, H., Khan, I.

Magnetic and electrical properties of in doped cobalt ferrite nanoparticles

(2012) *Journal of Applied Physics*, 112 (8), art. no. 084321. Cited 69 times.
doi: 10.1063/1.4759436

View at Publisher

20 Gabr, R.M., Girgis, M.M., El-Awad, A.M.

Role of CdO/Cd^{2+} content on the electrical conductivity and catalytic behaviour of $Co_{1.0-x}$ -Cd -$Fe_{2.0}$ oxide/spinel system ($0.0 < x < 0.5$) for the decomposition of 2 propanol

(1991) *Materials Chemistry and Physics*, 28 (4), pp. 413-429. Cited 22 times.
doi: 10.1016/0254-0584(91)90076-7

View at Publisher

21 Nikumbh, A.K., Nagawade, A.V., Tadke, V.B., Bakare, P.P.

Electrical, magnetic and Mössbauer properties of cadmium - Cobalt ferrites prepared by the tartarate precursor method

(2001) *Journal of Materials Science*, 36 (3), pp. 653-662. Cited 22 times.

View at Publisher

22 Pillai, V., Shah, D.O.

Synthesis of high-coercivity cobalt ferrite particles using water-in-oil microemulsions

(1996) *Journal of Magnetism and Magnetic Materials*, 163 (1-2), pp. 243-248. Cited 353 times.
doi: 10.1016/S0304-8853(96)00280-6

View at Publisher

23 Caillot, T., Pourroy, G., Stuerga, D.

Microwave hydrothermal flash synthesis of nanocomposites Fe-Co alloy/cobalt ferrite

(2004) *Journal of Solid State Chemistry*, 177 (10), pp. 3843-3848. Cited 29 times.
doi: 10.1016/j.jssc.2004.06.009

View at Publisher

24 Maaz, K., Mumtaz, A., Hasanain, S.K., Ceylan, A.

Synthesis and magnetic properties of cobalt ferrite (CoFe2O4) nanoparticles prepared by wet chemical route

(2007) *Journal of Magnetism and Magnetic Materials*, 308 (2), pp. 289-295. Cited 445 times.
doi: 10.1016/j.jmmm.2006.06.003

View at Publisher

25 Montemayor, S.M., García-Cerda, L.A., Torres-Lubián, J.R.
Preparation and characterization of cobalt ferrite by the polymerized complex method

(2005) *Materials Letters*, 59 (8-9), pp. 1056-1060. Cited 55 times.
doi: 10.1016/j.matlet.2004.12.004

View at Publisher

26 Hassan, R.S., Viart, N., Ulhaq-Bouillet, C., Loison, J.L., Versini, G., Vola, J.P., Crégut, O., (...), Chateigner, D.
Structural properties of cobalt ferrite thin films deposited by pulsed laser deposition: Effect of the reactive atmosphere

(2007) *Thin Solid Films*, 515 (5), pp. 2943-2948. Cited 24 times.
doi: 10.1016/j.tsf.2006.08.033

View at Publisher

27 Na, J.G.
Mössbauer effect study of the relaxation phenomenon of cobalt ferrite thin films

(1997) *Journal of Materials Science Letters*, 17 (3), pp. 229-231. Cited 6 times.
doi: 10.1023/A:1006592413585

View at Publisher

28 Naoe, Masahiko, Matsushita, Nobuhiro
Deposition of single-layer $CoFe_2O_4$ and multilayer $CoFe_2O_4$/ α-Fe_2O_3 with large $4\pi M_s$ and high H_c using vacuum arc evaporation

(1996) *Journal of Magnetism and Magnetic Materials*, 155 (1-3), pp. 216-218. Cited 20 times.
doi: 10.1016/0304-8853(95)00741-5

View at Publisher

29 Mane, R.S., Lokhande, C.D.
Chemical deposition method for metal chalcogenide thin films

(2000) *Materials Chemistry and Physics*, 65 (1), pp. 1-31. Cited 582 times.
doi: 10.1016/S0254-0584(00)00217-0

View at Publisher

30 Gabal, M.A., Ata-Allah, S.S.
Effect of diamagnetic substitution on the structural, electrical and magnetic properties of CoFe2O4

(2004) *Materials Chemistry and Physics*, 85 (1), pp. 104-112. Cited 43 times.
doi: 10.1016/j.matchemphys.2003.12.013

View at Publisher

31 B.D. Culity, Elements of X-ray Diffraction, (Addison-Wesley Publishing Co. Inc., 1976), chapter 14

32 Aswani, T., Pushpa Manjari, V., Babu, B., Muntaz Begum, S., Rama Sundari, G., Ravindranadh, K., Ravikumar, R.V.S.S.N.
Spectral characterizations of undoped and Cu^{2+}doped CdO nanopowder

(2014) *Journal of Molecular Structure*, 1063 (1), pp. 178-183. Cited 19 times.
doi: 10.1016/j.molstruc.2014.01.059

View at Publisher

33 Kalita, P.K., Sarma, B.K., Das, H.L.
Structural characterization of vacuum evaporated ZnSe thin films

(2000) *Bulletin of Materials Science*, 23 (4), pp. 313-317. Cited 97 times.

View at Publisher

34 Modak, S., Ammar, M., Mazaleyrat, F., Das, S., Chakrabarti, P.K.
XRD, HRTEM and magnetic properties of mixed spinel nanocrystalline Ni-Zn-Cu-ferrite

(2009) *Journal of Alloys and Compounds*, 473 (1-2), pp. 15-19. Cited 58 times.
doi: 10.1016/j.jallcom.2008.06.020

View at Publisher

35 Alone, S.T., Shirsath, S.E., Kadam, R.H., Jadhav, K.M.
Chemical synthesis, structural and magnetic properties of nano-structured Co-Zn-Fe-Cr ferrite

(2011) *Journal of Alloys and Compounds*, 509 (16), pp. 5055-5060. Cited 46 times.
doi: 10.1016/j.jallcom.2011.02.006

View at Publisher

36 Gabal, M.A., El-Shishtawy, R.M., Al Angari, Y.M.
Structural and magnetic properties of nano-crystalline NiZn ferrites synthesized using egg-white precursor

(2012) *Journal of Magnetism and Magnetic Materials*, 324 (14), pp. 2258-2264. Cited 90 times.
doi: 10.1016/j.jmmm.2012.02.112

View at Publisher

37 Deraz, N.M., Alarifi, A.
Structural, morphological and magnetic properties of nano-crystalline zinc substituted cobalt ferrite system

(2012) *Journal of Analytical and Applied Pyrolysis*, 94, pp. 41-47. Cited 31 times.
doi: 10.1016/j.jaap.2011.10.004

View at Publisher

38 Gharagozlou, M.
Synthesis, characterization and influence of calcination temperature on magnetic properties of nanocrystalline spinel Co-ferrite prepared by polymeric precursor method

(2009) *Journal of Alloys and Compounds*, 486 (1-2), pp. 660-665. Cited 68 times.
doi: 10.1016/j.jallcom.2009.07.025

View at Publisher

39 Singhal, S., Chandra, K.
Cation distribution and magnetic properties in chromium-substituted nickel ferrites prepared using aerosol route

(2007) *Journal of Solid State Chemistry*, 180 (1), pp. 296-300. Cited 99 times.
doi: 10.1016/j.jssc.2006.10.010

View at Publisher

40 Mane, D.R., Birajdar, D.D., Shirsath, S.E., Telugu, R.A., Kadam, R.H.
Structural and magnetic characterizations of Mn-Ni-Zn ferrite nanoparticles

(2010) *Physica Status Solidi (A) Applications and Materials Science*, 207 (10), pp. 2355-2363. Cited 30 times.
doi: 10.1002/pssa.201026079

View at Publisher

41 Chen, Z., Gao, L.
Synthesis and magnetic properties of $CoFe_2O_4$ nanoparticles by using PEG as surfactant additive

(2007) *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, 141 (1-2), pp. 82-86. Cited 73 times.
doi: 10.1016/j.mseb.2007.06.003

View at Publisher

42 Chen, Y., Ruan, M., Jiang, Y.F., Cheng, S.G., Li, W.
The synthesis and thermal effect of $CoFe_2O_4$ nanoparticles

(2010) *Journal of Alloys and Compounds*, 493 (1-2), pp. L36-L38. Cited 17 times.
doi: 10.1016/j.jallcom.2009.12.170

View at Publisher

43 Paul, S.A., Mahajan, V.C., Ghatage, A.K., Lotke, S.D.
Structure and magnetic properties of Cd and Ti/Si substituted cobalt ferrites

(1998) *Materials Chemistry and Physics*, 57 (1), pp. 86-91. Cited 43 times.

View at Publisher

44 Hemeda, O.M., Barakat, M.M.
Effect of hopping rate and jump length of hopping electrons on the conductivity and dielectric properties of Co-Cd ferrite

(2001) *Journal of Magnetism and Magnetic Materials*, 223 (2), pp. 127-132. Cited 40 times.
doi: 10.1016/S0304-8853(00)00521-7

View at Publisher

45 Joshi, G.K., Khot, A.Y., Sawant, S.R.
Magnetisation, curie temperature and YK angle studies of Cu substituted and non substituted NiZn mixed ferrites

(1988) *Solid State Communications*, 65 (12), pp. 1593-1595. Cited 71 times.
doi: 10.1016/0038-1098(88)90658-8

View at Publisher

46 Bammannavar, B.K., Naik, L.R., Pujar, R.B., Chougule, B.K.
Preparation, characterization and physical properties of Mg-Zn ferrites

(2007) *Indian Journal of Engineering and Materials Sciences*, 14 (5), pp. 381-385. Cited 14 times.

47 Cedeño-Mattei, Y., Perales-Pérez, O.
Synthesis of high-coercivity cobalt ferrite nanocrystals

(2009) *Microelectronics Journal*, 40 (4-5), pp. 673-676. Cited 54 times.
doi: 10.1016/j.mejo.2008.07.040

View at Publisher

48 Bean, C.P.
Hysteresis loops of mixtures of ferromagnetic micropowders

(1955) *Journal of Applied Physics*, 26 (11), pp. 1381-1383. Cited 228 times.
doi: 10.1063/1.1721912

View at Publisher

49 Kambale, R.C., Song, K.M., Koo, Y.S., Hur, N.
Low temperature synthesis of nanocrystalline Dy^{3+} doped cobalt ferrite: Structural and magnetic properties

(2011) *Journal of Applied Physics*, 110 (5), art. no. 053910. Cited 71 times.
doi: 10.1063/1.3632987

View at Publisher

50 Waldron, R.D.
Infrared spectra of ferrites

(1955) *Physical Review*, 99 (6), pp. 1727-1735. Cited 1192 times.
doi: 10.1103/PhysRev.99.1727

View at Publisher

51 West, A.R.
(1984) *Solid State Chemistry and Its Applications*. Cited 1280 times.
Wiley, London

52 Villete, C., Tailhades, P., Rousset, A., Kulkarni, G.U., Kanan, K.R., Rao, C.N.R., Lenglet, M.
(1998) *J. Solid State Chem.*, 141, p. 56. Cited 3 times.

53 Ladgaonkar, B.P., Kolekar, C.B., Vaingankar, A.S.
Infrared absorption spectroscopic study of Nd3+ substituted Zn-Mg ferrites

(2002) *Bulletin of Materials Science*, 25 (4), pp. 351-354. Cited 48 times.

View at Publisher

54 Xiao, S.H., Jiang, W.F., Li, L.Y., Li, X.J.
Low-temperature auto-combustion synthesis and magnetic properties of cobalt ferrite nanopowder

(2007) *Materials Chemistry and Physics*, 106 (1), pp. 82-87. Cited 104 times.
doi: 10.1016/j.matchemphys.2007.05.021

View at Publisher

55 Liu, Y., Zhang, Y., Feng, J.D., Li, C.F., Shi, J., Xiong, R.
Dependence of magnetic properties on crystallite size of $CoFe_2O_4$ nanoparticles synthesised by auto-combustion method

(2009) *Journal of Experimental Nanoscience*, 4 (2), pp. 159-168. Cited 32 times.
doi: 10.1080/17458080902929895

View at Publisher

56 Pui, A., Gherca, D., Carja, G.
Characterization and magnetic properties of capped $CoFe_2O_4$ nanoparticles ferrite prepared in carboxymethylcelullose solution

(2011) *Digest Journal of Nanomaterials and Biostructures*, 6 (4), pp. 1783-1791. Cited 20 times.
http://www.chalcogen.infim.ro/1783_Pui.pdf

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Document details

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Volume 54, Issue 49, 16 December 2015, Pages 12233-12241

Pathway of Sucrose Oxidation in Manganese (Pyrolusite) Nodule (Article)

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Abstract

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Polymetallic sea nodules are the potential resources of copper, cobalt, manganese, and nickel. The exploration and exploitation of manganese nodules are necessary to meet the future demands of Mn in the world. This work describes the valuable extraction of Mn through an innovative approach of using sucrose as a reductant. The metal extraction from the nodule leaching was studied in ambient temperature (27 °C) and at an elevated temperature 90 °C with and without agitation. In both cases, 99.9% of Mn was extracted while the extraction time appears to be significantly low (2 h) at 90 °C but it requires a longer time of 24 h at 27 °C. The optimum sucrose concentration selected was 7% (w/w) of nodule for maximum metal extraction. With use of 10% (v/v) H_2SO_4, 7% (w/w) sucrose at 90 °C, and solid to liquid (S/L) ratio of 1:10 the achieved metal recovery figures were the following: Mn >99%, Ni 98%, Cu 87%, Co 83% in 2 h. The oxidation pathway of sucrose is outlined in this study with the aid of mass spectrometry during reductive leaching of ocean bed nodule. Sucrose in acidic environment generates 1- or 6-monoacid of sucrose with ions of m/z (mass-to-charge ratio) 355 and 127, 5-hydroxymethylfurfural (5HMF). A dehydrated glucose complex (m/z 325) was generated at elevated temperature. These released organics act as reductant for the leaching of Mn^{2+} from MnO_2. Glucaric acid (m/z 211) is generated as the end product of the sucrose oxidation in the solution. © 2015 American Chemical Society.

Indexed keywords

Engineering controlled terms: Extraction, Leaching, Manganese oxide, Mass spectrometry, Metal recovery, Nickel, Oxidation, Sugar (sucrose)

Compendex keywords: 5 hydroxymethyl furfurals, Elevated temperature, Exploration and exploitation, Innovative approaches, Mass-to-charge ratio, Polymetallic sea nodules, Potential resources, Sucrose concentration

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Publisher: American Chemical Society

References (35)

1 Acharya, R., Ghosh, M.K., Anand, S., Das, R.P.
Leaching of metals from Indian ocean nodules in SO_2-H_2O-H_2SO_4-$(NH_4)_2SO_4$ medium

(1999) *Hydrometallurgy*, 53 (2), pp. 169-175. Cited 35 times.
doi: 10.1016/S0304-386X(99)00040-7

View at Publisher

2 Mishra, D., Srivastava, R.R., Sahu, K.K., Singh, T.B., Jana, R.K.
Leaching of roast-reduced manganese nodules in NH_3-$(NH_4)_2CO_3$ medium

(2011) *Hydrometallurgy*, 109 (3-4), pp. 215-220. Cited 24 times.
doi: 10.1016/j.hydromet.2011.07.006

View at Publisher

3 Li, H., Feng, Y., Lu, S., Du, Z.
Bio-leaching of valuable metals from marine nodules under anaerobic condition

(2005) *Minerals Engineering*, 18 (15), pp. 1421-1422. Cited 11 times.
doi: 10.1016/j.mineng.2005.04.001

View at Publisher

4 Acharya, C., Kar, R.N., Sukla, L.B.
Bioleaching of low grade manganese ore with Penicillium citrinum
(2002) *Eur. J. Miner. Process. Environ. Prot.*, 2, pp. 197-204. Cited 4 times.

5 Mehta, K.D., Das, C., Pandey, B.D.
Leaching of copper, nickel and cobalt from Indian Ocean manganese nodules by Aspergillus niger

(2010) *Hydrometallurgy*, 105 (1-2), pp. 89-95. Cited 38 times.
doi: 10.1016/j.hydromet.2010.08.002

View at Publisher

6 Kumari, A., Natarajan, K.A.
Electrobioleaching of polymetallic ocean nodules

(2001) *Hydrometallurgy*, 62 (2), pp. 125-134. Cited 17 times.
doi: 10.1016/S0304-386X(01)00192-X

View at Publisher

7 Kanungo, S.B., Jena, P.K.
Reduction leaching of manganese nodules of Indian Ocean origin in dilute hydrochloric acid

(1988) *Hydrometallurgy*, 21 (1), pp. 41-58. Cited 39 times.
doi: 10.1016/0304-386X(88)90015-1

View at Publisher

8 Anand, S., Das, S.C., Das, R.P., Jena, P.K.
Leaching of manganese nodules at elevated temperature and pressure in the presence of oxygen

(1988) *Hydrometallurgy*, 20 (2), pp. 155-167. Cited 31 times.
doi: 10.1016/0304-386X(88)90049-7

View at Publisher

using NH3OHCl as a novel reductant in sulfuric acid medium

Hariprasad, D. , Mohapatra, M. , Anand, S.
(2013) Journal of Chemical Technology and Biotechnology

View all related documents based on references

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Authors > Keywords >

9 Das, S.C., Anand, S., Das, R.P., Jena, P.K.
Sulphuric acid leaching of manganese nodules in the presence of charcoal

(1989) *AusIMM Bulletin and Proceedings*, 294 (1), pp. 73-76. Cited 17 times.

10 Anand, S., Das, S.C., Das, R.P., Jena, P.K.
Leaching of manganese nodule in ammoniacal medium using ferrous sulfate as the reductant

(1988) *Metallurgical Transactions B*, 19 (1), pp. 331-334. Cited 7 times.
doi: 10.1007/BF02654218

View at Publisher

11 Furlani, G., Pagnanelli, F., Toro, L.
Reductive acid leaching of manganese dioxide with glucose: Identification of oxidation derivatives of glucose

(2006) *Hydrometallurgy*, 81 (3-4), pp. 234-240. Cited 47 times.
doi: 10.1016/j.hydromet.2005.12.008

View at Publisher

12 Beolchini, F., Petrangeli Papini, M., Toro, L., Trifoni, M., Vegliò, F.
Acid leaching of manganiferous ores by sucrose: Kinetic modelling and related statistical analysis

(2001) *Minerals Engineering*, 14 (2), pp. 175-184. Cited 35 times.
doi: 10.1016/S0892-6875(00)00173-4

View at Publisher

13 Furlani, G., Moscardini, E., Pagnanelli, F., Ferella, F., Vegliò, F., Toro, L.
Recovery of manganese from zinc alkaline batteries by reductive acid leaching using carbohydrates as reductant

(2009) *Hydrometallurgy*, 99 (1-2), pp. 115-118. Cited 30 times.
doi: 10.1016/j.hydromet.2009.07.005

View at Publisher

14 Su, H., Wen, Y., Wang, F., Sun, Y., Tong, Z.
Reductive leaching of manganese from low-grade manganese ore in H_2SO_4 using cane molasses as reductant

(2008) *Hydrometallurgy*, 93 (3-4), pp. 136-139. Cited 56 times.
doi: 10.1016/j.hydromet.2008.01.001

View at Publisher

15 Su, H., Liu, H., Wang, F., Lü, X., Wen, Y.
Kinetics of reductive leaching of low-grade pyrolusite with molasses alcohol wastewater in H_2SO_4

(2010) *Chinese Journal of Chemical Engineering*, 18 (5), pp. 730-735. Cited 25 times.
doi: 10.1016/S1004-9541(09)60121-X

View at Publisher

16 Vegliò, F., Volpe, I., Trifoni, M., Toro, L.
Surface response methodology and preliminary process analysis in the study of manganiferous ore leaching by using whey or lactose in sulfuric acid solutions

(2000) *Industrial and Engineering Chemistry Research*, 39 (8), pp. 2947-2953. Cited 38 times.
http://pubs.acs.org/journal/iecred
doi: 10.1021/ie990841i

View at Publisher

17 Hariprasad, D., Dash, B., Ghosh, M.K., Anand, S.
Leaching of manganese ores using sawdust as a reductant

(2007) *Minerals Engineering*, 20 (14), pp. 1293-1295. Cited 79 times.
doi: 10.1016/j.mineng.2007.07.013

View at Publisher

18 Hariprasad, D., Dash, B., Ghosh, M.K., Anand, S.
Mn recovery from medium grade ore using a waste cellulosic reductant

(2009) *Indian Journal of Chemical Technology*, 16 (4), pp. 322-327. Cited 9 times.

19 Hariprasad, D., Ghosh, M.K., Anand, S.
Dried leaves - Novel reductant for acid leaching of manganese ore

(2009) *Transactions of the Indian Institute of Metals*, 62 (6), pp. 551-554. Cited 7 times.

View at Publisher

20 Ghosh, M.K., Barik, S.P., Anand, S.
Sulphuric acid leaching of polymetallic nodules using paper as a reductant

(2008) *Transactions of the Indian Institute of Metals*, 61 (6), pp. 477-481. Cited 7 times.

View at Publisher

21 Biswal, A., Tripathy, B.C., Sanjay, K., Subbaiah, T., Minakshi, M.
Electrolytic manganese dioxide (EMD): A perspective on worldwide production, reserves and its role in electrochemistry
(2015) *RSC Adv.*, 5, pp. 58255-58283. Cited 20 times.

22 Biswal, A., Tripathy, B.C., Li, D., Minakshi, M.
Electrodeposition of Pluronic F127 assisted rod-like EMD/carbon arrays for efficient energy storage

(2015) *Dalton Transactions*, 44 (37), pp. 16446-16457. Cited 6 times.
http://www.rsc.org/Publishing/Journals
doi: 10.1039/c5dt01975c

View at Publisher

23 Sahoo, R.N, Das, S.C, Reddy, B.R., Rath, P.C., Das, R.P.
Adsorption of copper on manganese nodule residue obtained from NH_3-SO_2 leaching

(2001) *Hydrometallurgy*, 62 (3), pp. 185-192. Cited 18 times.
doi: 10.1016/S0304-386X(01)00190-6

View at Publisher

24 Ricci, A., Di Rienzo, B., Pepi, F., Troiani, A., Garzoli, S., Giacomello, P.

Acid-catalysed glucose dehydration in the gas phase: A mass spectrometric approach

(2015) *Journal of Mass Spectrometry*, 50 (1), pp. 228-234. Cited 6 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1096-9888b
doi: 10.1002/jms.3525

View at Publisher

25 Biswal, A., Tripathy, B.C., Sanjay, K., Meyrick, D., Subbaiah, T., Minakshi, M.

Influence of the microstructure and its stability on the electrochemical properties of EMD produced from a range of precursors

(2013) *Journal of Solid State Electrochemistry*, 17 (12), pp. 3191-3198. Cited 4 times.
doi: 10.1007/s10008-013-2231-z

View at Publisher

26 Sahoo, R.N., Naik, P.K., Das, S.C.

Leaching of manganese from low-grade manganese ore using oxalic acid as reductant in sulphuric acid solution

(2001) *Hydrometallurgy*, 62 (3), pp. 157-163. Cited 123 times.
doi: 10.1016/S0304-386X(01)00196-7

View at Publisher

27 Ali, S., Iqbal, Y., Farooq, U., Ahmad, S.

Leaching of manganese ores using corncob as reductant in H^2SO^4 solution

(2016) *Physicochemical Problems of Mineral Processing*, 52 (1), pp. 56-65. Cited 3 times.
http://www.ppmp.pwr.wroc.pl/sorpa/file/9d5e95fc1fc6421cb4f1f23f81279888/download
doi: 10.5277/ppmp160105

View at Publisher

28 Zhang, Y., Liu, Q., Sun, C.

Sulfuric acid leaching of ocean manganese nodules using phenols as reducing agents

(2001) *Minerals Engineering*, 14 (5), pp. 525-537. Cited 33 times.
http://www.journals.elsevier.com/minerals-engineering/
doi: 10.1016/S0892-6875(01)00040-1

View at Publisher

29 Zhang, Y., Liu, Q., Sun, C.

Sulfuric acid leaching of ocean manganese nodules using aromatic amines as reducing agents

(2001) *Minerals Engineering*, 14 (5), pp. 539-542. Cited 12 times.
http://www.journals.elsevier.com/minerals-engineering/
doi: 10.1016/S0892-6875(01)00041-3

View at Publisher

30 Veglio', F., Toro, L.

Reductive leaching of a concentrate manganese dioxide ore in acid solution: stoichiometry and preliminary kinetic analysis

(1994) *International Journal of Mineral Processing*, 40 (3-4), pp. 257-272. Cited 41 times.
doi: 10.1016/0301-7516(94)90047-7

View at Publisher

31 de Koster, C.G., Pajarron, A.M., Heerma, W., Haverkamp, J.

Fast atom bombardment mass spectrometry of sucrose monocaprate and sucrose monolaurate

(1993) *Biological Mass Spectrometry*, 22 (5), pp. 277-284. Cited 9 times.
doi: 10.1002/bms.1200220503

View at Publisher

32 Parida, K.M., Sahu, S., Reddy, K.H., Sahoo, P.C.

A kinetic, thermodynamic, and mechanistic approach toward adsorption of methylene blue over water-washed manganese nodule leached residues

(2011) *Industrial and Engineering Chemistry Research*, 50 (2), pp. 843-848. Cited 37 times.
doi: 10.1021/ie101866a

View at Publisher

33 Antal Jr., M.J., Mok, W.S.L., Richards, G.N.

Mechanism of formation of 5-(hydroxymethyl)-2-furaldehyde from d-fructose and sucrose

(1990) *Carbohydrate Research*, 199 (1), pp. 91-109. Cited 510 times.
doi: 10.1016/0008-6215(90)84096-D

View at Publisher

34 Xue, J., Song, L., Khaja, S.D., Locke, R.D., West, C.M., Laine, R.A., Matta, K.L.

Determination of linkage position and anomeric configuration in Hex-Fuc disaccharides using electrospray ionization tandem mass spectrometry

(2004) *Rapid Communications in Mass Spectrometry*, 18 (17), pp. 1947-1955. Cited 22 times.
doi: 10.1002/rcm.1573

View at Publisher

35 Taylor, V.F., March, R.E., Longerich, H.P., Stadey, C.J.

A mass spectrometric study of glucose, sucrose, and fructose using an inductively coupled plasma and electrospray ionization

(2005) *International Journal of Mass Spectrometry*, 243 (1), pp. 71-84. Cited 48 times.
http://www.journals.elsevier.com/international-journal-of-mass-spectrometry/
doi: 10.1016/j.ijms.2005.01.001

View at Publisher

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Document details

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Insights into activity enhancement of 4-aminoquinoline-based hybrids using atom-based and field-based QSAR studies (Article)

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Abstract

View references (32)

Malaria has remained one of the most devastating diseases, and the problem has further complicated due to wide spread of chloroquine (CQ)-resistance strain of Plasmodium falciparum. In order to overcome this problem, efforts are being made to develop new chemical entities that can solve the problem of drug resistance. In this context, both atom-based and field-based 3D-QSAR (3-Dimensional quantitative structure–activity relationship) studies were carried out for some of our recently reported 4-aminoquinoline hybrids. The four models generated have shown good correlation coefficients r^2 (0.97, 0.97, 0.94, and 0.95) and test set prediction coefficients q^2 (0.86, 0.88, 0.93, and 0.89). The 3D-QSAR models gave insights into the facts about the changes in the activity pattern with the change in pyrimidine, triazine, and triazole rings. These models will be useful in the future projects of developing new antimalarial compounds against both the CQ-sensitive and CQ-resistance strains of P. falciparum. © Springer Science+Business Media New York 2014.

Author keywords

Aminoquinoline | Atom-based QSAR | Chloroquine | D6-Clone | Field-based QSAR | W2-Clone

Indexed keywords

EMTREE drug terms: 4 aminoquinoline derivative | pyrimidine derivative | triazine derivative | triazole derivative

EMTREE medical terms: antimalarial activity | Article | chemical composition | correlation coefficient | drug cost | finger dermatoglyphics | human | hydrogen bond | IC50 | malaria falciparum | partial least squares regression | quantitative structure activity relation

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References (32)

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1 Atheaya, H., Khan, S.I., Mamgain, R., Rawat, D.S.

Synthesis, thermal stability, antimalarial activity of symmetrically and asymmetrically substituted tetraoxanes

(2008) *Bioorganic and Medicinal Chemistry Letters*, 18 (4), pp. 1446-1449. Cited 43 times.
doi: 10.1016/j.bmcl.2007.12.069

View at Publisher

2 Brogi, S., Papazafiri, P., Roussis, V., Tafi, A.

3D-QSAR using pharmacophore-based alignment and virtual screening for discovery of novel MCF-7 cell line inhibitors

(2013) *European Journal of Medicinal Chemistry*, 67, pp. 344-351. Cited 15 times.
http://www.journals.elsevier.com/european-journal-of-medicinal-chemistry/
doi: 10.1016/j.ejmech.2013.06.048

View at Publisher

3 Chang, H.-W., Chung, F.-S., Yang, C.-N.

Molecular modeling of p38α mitogen-activated protein kinase inhibitors through 3D-QSAR and molecular dynamics simulations

(2013) *Journal of Chemical Information and Modeling*, 53 (7), pp. 1775-1786. Cited 13 times.
doi: 10.1021/ci4000085

View at Publisher

4 Chen, I.-J., Foloppe, N.

Drug-like bioactive structures and conformational coverage with the ligprep/confgen suite: Comparison to programs MOE and catalyst

(2010) *Journal of Chemical Information and Modeling*, 50 (5), pp. 822-839. Cited 66 times.
doi: 10.1021/ci100026x

View at Publisher

5 Dixon, S.L., Smondyrev, A.M., Knoll, E.H., Rao, S.N., Shaw, D.E., Friesner, R.A.

PHASE: A new engine for pharmacophore perception, 3D QSAR model development, and 3D database screening: 1. Methodology and preliminary results

(2006) *Journal of Computer-Aided Molecular Design*, 20 (10-11), pp. 647-671. Cited 527 times.
doi: 10.1007/s10822-006-9087-6

View at Publisher

6 Free, S.M., Wilson, J.W.

A Mathematical Contribution to Structure-Activity Studies

(1964) *Journal of Medicinal Chemistry*, 7 (4), pp. 395-399. Cited 688 times.
doi: 10.1021/jm00334a001

View at Publisher

7 Ghose, A.K., Viswanadhan, V.N., Wendoloski, J.J.

Prediction of hydrophobic (lipophilic) properties of small organic molecules using fragmental methods: An analysis of ALOGP and CLOGP methods

(1998) *Journal of Physical Chemistry A*, 102 (21), pp. 3762-3772. Cited 449 times.
http://pubs.acs.org/jpca
doi: 10.1021/jp980230o

View at Publisher

Synthesis of piperazine tethered 4-aminoquinoline-pyrimidine hybrids as potent antimalarial agents

Thakur, A. , Khan, S.I. , Rawat, D.S.
(2014) RSC Advances

Synthesis and characterization of novel 1,2,3-triazole-linked theophylline and coumarin s-triazines

Joshi, P. , Tripathi, M. , Rawat, D.S.
(2014) Indian Journal of Chemistry - Section B Organic and Medicinal Chemistry

Anticancer activity of 4-aminoquinoline-triazine based molecular hybrids

Manohar, S. , Pepe, A. , Vélez Gerena, C.E.
(2014) RSC Advances

View all related documents based on references

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Authors > Keywords >

8 Golbraikh, A., Tropsha, A.
Beware of q^2!

(2002) *Journal of Molecular Graphics and Modelling*, 20 (4), pp. 269-276. Cited 2240 times.
doi: 10.1016/S1093-3263(01)00123-1

View at Publisher

9 Hansch, C., Fujita, T.
ρ-σ-π Analysis. A Method for the Correlation of Biological Activity and Chemical Structure

(1964) *Journal of the American Chemical Society*, 86 (8), pp. 1616-1626. Cited 1938 times.
doi: 10.1021/ja01062a035

View at Publisher

10 Jabeen, I., Wetwitayaklung, P., Chiba, P., Pastor, M., Ecker, G.F.
2D- and 3D-QSAR studies of a series of benzopyranes and benzopyrano[3,4b][1,4]-oxazines as inhibitors of the multidrug transporter P-glycoprotein

(2013) *Journal of Computer-Aided Molecular Design*, 27 (2), pp. 161-171. Cited 12 times.
doi: 10.1007/s10822-013-9635-9

View at Publisher

11 Jiang, Y.-K.
Molecular docking and 3D-QSAR studies on β-phenylalanine derivatives as dipeptidyl peptidase IV inhibitors

(2010) *Journal of Molecular Modeling*, 16 (7), pp. 1239-1249. Cited 16 times.
doi: 10.1007/s00894-009-0637-4

View at Publisher

12 Krafts, K., Hempelmann, E., Skórska-Stania, A.
From methylene blue to chloroquine: A brief review of the development of an antimalarial therapy

(2012) *Parasitology Research*, 111 (1), pp. 1-6. Cited 51 times.
doi: 10.1007/s00436-012-2886-x

View at Publisher

13 Kumar, N., Khan, S.I., Beena, Rajalakshmi, G., Kumaradhas, P., Rawat, D.S.
Synthesis, antimalarial activity and cytotoxicity of substituted 3,6-diphenyl-[1,2,4,5]tetraoxanes

(2009) *Bioorganic and Medicinal Chemistry*, 17 (15), pp. 5632-5638. Cited 35 times.
doi: 10.1016/j.bmc.2009.06.020

View at Publisher

14 Kumar, N., Khan, S.I., Sharma, M., Atheaya, H., Rawat, D.S.
Iodine-catalyzed one-pot synthesis and antimalarial activity evaluation of symmetrically and asymmetrically substituted 3,6-diphenyl[1,2,4,5]tetraoxanes

(2009) *Bioorganic and Medicinal Chemistry Letters*, 19 (6), pp. 1675-1677. Cited 37 times.
doi: 10.1016/j.bmcl.2009.01.103

View at Publisher

15 Kumar, N., Khan, S.I., Atheaya, H., Mamgain, R., Rawat, D.S.
Synthesis and in vitro antimalarial activity of tetraoxane-amine/amide conjugates

(2011) *European Journal of Medicinal Chemistry*, 46 (7), pp. 2816-2827. Cited 34 times.
doi: 10.1016/j.ejmech.2011.04.002

View at Publisher

16 Kumar, N., Sharma, M., Rawat, D.S.
Medicinal chemistry perspectives of trioxanes and tetraoxanes

(2011) *Current Medicinal Chemistry*, 18 (25), pp. 3889-3928. Cited 41 times.
http://www.benthamscience.com/contents-JCode-CMC-Vol-00000019-Iss-00000006.htm
doi: 10.2174/092986711803414340

View at Publisher

17 Kumar, N., Khan, S.I., Rawat, D.S.
Synthesis and antimalarial-activity evaluation of tetraoxane-triazine hybrids and spiro[piperidine-4,3′-tetraoxanes]

(2012) *Helvetica Chimica Acta*, 95 (7), pp. 1181-1197. Cited 15 times.
doi: 10.1002/hlca.201200015

View at Publisher

18 Kumar, N., Singh, R., Rawat, D.S.
Tetraoxanes: Synthetic and medicinal chemistry perspective

(2012) *Medicinal Research Reviews*, 32 (3), pp. 581-610. Cited 28 times.
doi: 10.1002/med.20223

View at Publisher

19 CoMSIA and DISCOtech
Chemosphere, 78, pp. 300-306.
LiuGY, JuXL,Cheng J, Liu ZQ(2010) 3D-QSARstudies of insecticidal anthranilic diamides as ryanodine receptor activators using CoMFA

20 Manohar, S., Khan, S.I., Rawat, D.S.
Synthesis, antimalarial activity and cytotoxicity of 4-aminoquinoline-triazine conjugates

(2010) *Bioorganic and Medicinal Chemistry Letters*, 20 (1), pp. 322-325. Cited 65 times.
doi: 10.1016/j.bmcl.2009.10.106

View at Publisher

21 Manohar, S., Khan, S.I., Rawat, D.S.
Synthesis of 4-aminoquinoline-1,2,3-triazole and 4-aminoquinoline-1,2,3-triazole-1,3,5-triazine hybrids as potential antimalarial agents

(2011) *Chemical Biology and Drug Design*, 78 (1), pp. 124-136. Cited 52 times.
doi: 10.1111/j.1747-0285.2011.01115.x

View at Publisher

22 Manohar, S., Rajesh, U.C., Khan, S.I., Tekwani, B.L., Rawat, D.S.
Novel 4-aminoquinoline-pyrimidine based hybrids with improved in vitro and in vivo antimalarial activity

(2012) *ACS Medicinal Chemistry Letters*, 3 (7), pp. 555-559. Cited 80 times.
doi: 10.1021/ml3000808

View at Publisher

23 Manohar, S., Khan, S.I., Kandi, S.K., Raj, K., Sun, G., Yang, X., Calderon Molina, A.D., (...), Rawat, D.S.

Synthesis, antimalarial activity and cytotoxic potential of new monocarbonyl analogues of curcumin

(2013) *Bioorganic and Medicinal Chemistry Letters*, 23 (1), pp. 112-116. Cited 39 times.
doi: 10.1016/j.bmcl.2012.11.004

View at Publisher

24 Manohar, S., Khan, S.I., Rawat, D.S.

4-aminoquinoline-triazine-based hybrids with improved in vitro antimalarial activity against CQ-sensitive and CQ-resistant strains of plasmodium falciparum

(2013) *Chemical Biology and Drug Design*, 81 (5), pp. 625-630. Cited 32 times.
doi: 10.1111/cbdd.12108

View at Publisher

25 Moorthy, N.S.H.N., Ramos, M.J., Fernandes, P.A.

HERG binding feature analysis of structurally diverse compounds by QSAR and fragmental analysis

(2011) *RSC Advances*, 1 (6), pp. 1126-1136. Cited 18 times.
http://pubs.rsc.org/en/journals/journalissues
doi: 10.1039/c1ra00131k

View at Publisher

26 O'Neill, P.M., Bray, P.G., Hawley, S.R., Ward, S.A., Kevin Park, B.

4-Aminoquinolines - Past, present, and future: A chemical perspective

(1998) *Pharmacology and Therapeutics*, 77 (1), pp. 29-58. Cited 209 times.
doi: 10.1016/S0163-7258(97)00084-3

View at Publisher

27 Ridley, R.G.

Medical need, scientific opportunity and the drive for antimalarial drugs

(2002) *Nature*, 415 (6872), pp. 686-693. Cited 599 times.
doi: 10.1038/415686a

View at Publisher

28 Sapre, N.S., Jain, N., Gupta, S., Sapre, N.

Ligand based 3D-QSAR modelling studies on 2-amino-6-aryl sulfonylbenzonitriles (AASBNs) as non-nucleoside reverse transcriptase inhibitors of HIV-1

(2013) *RSC Advances*, 3 (26), pp. 10442-10451. Cited 5 times.
doi: 10.1039/c3ra40685g

View at Publisher

29 Shelley, J.C., Cholleti, A., Frye, L.L., Greenwood, J.R., Timlin, M.R., Uchimaya, M.

Epik: A software program for pKa prediction and protonation state generation for drug-like molecules

(2007) *Journal of Computer-Aided Molecular Design*, 21 (12), pp. 681-691. Cited 344 times.
doi: 10.1007/s10822-007-9133-z

View at Publisher

30 Wang, J., Li, F., Li, Y., Yang, Y., Zhang, S., Yang, L.
Structural features of falcipain-3 inhibitors: An in silico study

(2013) *Molecular BioSystems*, 9 (9), pp. 2296-2310. Cited 13 times.
http://www.rsc.org/is/journals/current/mbs/mbspub.htm
doi: 10.1039/c3mb70105k

View at Publisher

31 Wootton, J.C., Feng, X., Ferdig, M.T., Cooper, R.A., Mu, J., Baruch, D.I., Magill, A.J., (...), Su, X.-Z.
Genetic diversity and chloroquine selective sweeps in Plasmodium falciparum

(2002) *Nature*, 418 (6895), pp. 320-323. Cited 501 times.
doi: 10.1038/nature00813

View at Publisher

32 Zhang, S., Golbraikh, A., Oloff, S., Kohn, H., Tropsha, A.
A novel Automated Lazy Learning QSAR (ALL-QSAR) approach: Method development, applications, and virtual screening of chemical databases using validated ALL-QSAR models

(2006) *Journal of Chemical Information and Modeling*, 46 (5), pp. 1984-1995. Cited 138 times.
doi: 10.1021/ci060132x

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Influence of Fe_3O_4nanoparticles dispersed in liquid crystalline compounds – spectroscopic characterization (Article)

Sivasri, J.[a], Rao, M.C.[b], Giridhar, G.[c], Madav, B.T.P.[d], Divakar, T.E.[e], Manepalli, R.K.N.R.[a]

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Abstract

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The synthesis is carried on liquid crystalline (LC)p-decyloxy benzoic acid (10OBA) and p-undecyloxy benzoic acid (11OBA) with 0.5wt % and1wt% for Fe_3O_4nanoparticles dispersion. The prepared samples are characterized by different spectroscopic techniques like X-ray diffraction (XRD), Scanning Electron Microscopy (SEM), Fourier Transform Infra Red (FTIR) and Differential Scanning Calorimetry (DSC). Textural determinations of the synthesized compounds are recorded by using Polarizing Optical Microscope (POM) attached with a hot stage and camera. The results show that the dispersion of Fe_3O_4nanoparticles in 10OBA and 11OBA exhibits NC phases as same as the pure 10OBA and 11OBA with reduced clearing temperature as expected. Further, the nematic thermal range is increased in both 10OBA and 11OBA with Fe_3O_4nanoparticles dispersion. ï¿½ RASĀYAN. All rights reserved.

Reaxys Database Information

View Compounds

Author keywords

DSC FTIR Nano-dispersion POM SEM Synthesis XRD

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References (37)

View in search results format

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1 Kato, T., Mizoshita, N., Kishimoto, K.
(2006) *Angew, Chem., Int. Ed.*, 45.

2 Goodby, J.W., Saez, I.M., Cowling, S.J., Gortz, V., Drapper, M., Hall, A.W., Sia, S., (...), Raynes, E.P.
(2008) *Angew. Chem., Int.E.*, 47.

3 Tschiersle, C.
(2007) *Chem.Soc.Rev.*, 36.

4 Demus, D., Goodby, J., Gray, G.W., Spiess, H.W., Vill, V.
(1998) *Handbook of Liquid Crystals*. Cited 1923 times.
Wiley- VCH, Weinheim, Germany

5 Kumar, S.
(2007) *Synth, React, Inorg., Met.Org., Nano-Met. Chem.*, 37.

6 Hegmann, T., Qi, H., Marx, V.M.
Nanoparticles in liquid crystals: Synthesis, self-assembly, defect formation and potential applications

(2007) *Journal of Inorganic and Organometallic Polymers and Materials*, 17 (3), pp. 483-508. Cited 220 times.
doi: 10.1007/s10904-007-9140-5

View at Publisher

7 De Gennes, P.G., Prost, J.
(1993) *The Physics of Liquid Crystals*. Cited 12779 times.
second ed., Clarendon,Oxford

8 Takatoh, K., Hasegawa, M., Koden, M., Sakamoto, M.
(2004) *Alignmenttechnologies and Application of Liquid Crystals Devices*. Cited 182 times.
Taylor & Francis, New York

9 Garbovskiy, Y., Glushchenko, I.
(2015) *Crystals*, 5.

10 Goel, P., Arora, M., Biradar, A.M.
Electro-optic switching in iron oxide nanoparticle embedded paramagnetic chiral liquid crystal via magneto-electric coupling

(2014) *Journal of Applied Physics*, 115 (12), art. no. 124905. Cited 8 times.
doi: 10.1063/1.4869740

View at Publisher

11 Silva, J.B., Brito, W.D., Mohallem, N.D.S.
(2004) *Mater. Sci.Engg. B*, 112.

Room temperature synthesis and magnetic property studies of Fe3O4 nanoparticles prepared by a simple precipitation method

Nabiyouni, G. , Julaee, M. , Ghanbari, D.
(2015) Journal of Industrial and Engineering Chemistry

The uses of scanning electron microscopy for studying semiconductor devices

Reeves, C.
(1994) International Journal of Electronics

Introduction to the scanning electron microscope

Joy, D.C.
(2003) Microscopy and Microanalysis

View all related documents based on references

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Authors > Keywords >

12 Sun, S., Murray, C.B., Weller, D., Folks, L., Moser, A.
(2000) *Science*, 287.

13 Sun, S.
(2006) *Adv. Mater.*, 18.

14 Pankhurst, Q.A., Connolly, J., Jones, S.K., Dobson, J., Phys, J., Appl, D.
(2003) *Phys.*, 36.

15 Neuberger, T., Schï¿½pf, B., Hofmann, H., Hofmann, M., Rechenberg, B.V.
(2005) *J. Magn. Magn.Mater.*, 293.

16 Portet, D., Denizot, B., Rump, E., Lejeune, J.-J., Jallet, P.
Nonpolymeric coatings of iron oxide colloids for biological use as magnetic resonance imaging contrast agents

(2001) *Journal of Colloid and Interface Science*, 238 (1), pp. 37-42. Cited 214 times.
http://www.elsevier.com/inca/publications/store/6/2/2/8/6/1/index.htt
doi: 10.1006/jcis.2001.7500

View at Publisher

17 Ito, A., Shinkai, M., Honda, H., Kabayashi, T.
(2005) *J. Biosci. Bioeng.*, 100.

18 Meng, X., Li, H., Chen, J., Mei, L., Wang, K., Li, X.
Mössbauer study of cobalt ferrite nanocrystals substituted with rare-earth Y^{3+} ions

(2009) *Journal of Magnetism and Magnetic Materials*, 321 (9), pp. 1155-1158. Cited 59 times.
doi: 10.1016/j.jmmm.2008.10.041

View at Publisher

19 Zi, Z., Sun, Y., Zhu, X., Yang, Z., Dai, J., Song, W.
Synthesis and magnetic properties of $CoFe_2O_4$ ferrite nanoparticles

(2009) *Journal of Magnetism and Magnetic Materials*, 321 (9), pp. 1251-1255. Cited 147 times.
doi: 10.1016/j.jmmm.2008.11.004

View at Publisher

20 Phua, L.X., Xu, F., Ma, Y.G., Ong, C.K.
(2009) *Thin Solid Films*, 517.

21 Kashevsky, E., Agabekov, V.E., Prokhorov, I.V., Ulashchik, V.S.
(2008) *Particuology*, 6.

22 Dattaprasad, P.V., Ramakrishna Nanchara Rao, M., Lalithakumari, J., Pisipati, V.G.K.M.
(2009) *Phy. Chem. Liquids*, 47.

23 Gray, G.W.
(1962) *Molecular Structures and Properties of Liquid Crystals*. Cited 987 times.
Academic Press

24 Manepalli, R., Giridhar, G., Rao, M.C., Pardhasaradhi, P., Sivaram, K., Pisipati, V.G.K.M.
(2016) *Carmelight*, 12 (1).

25 Sophia, I.A., Gopu, G., Vedhi, C.
(2012) *J. Syn.Theory Appl.*, 1.

26 Yan, H., Wang, H.J., Adisasmito, S., Toshima, N.
(1996) *Bull.Chem. Soc.Japan*, 69.

27 Balaji, K.S., Lawrence, B., Saranya, A., Pandiarajan, J., Prithvikumaran, N., Jeyakumaran, N.
(2008) *Int. J. Tech. Res.Appl.*, 38.

28 Goldstein, J.I., Newbury, D.E., Echlin, P., Joy, D.C., Fiori, C., Lifshin, E.
(1981) *Scanning Microscopy and X-Ray Microanalysis*. Cited 2227 times.
Plenum Press, New York

29 Newbury, D., Joy, D.C., Echlin, P., Fiori, C.E., Goldstein, J.I.
(1986) *Advanced Scanning Electron Microscopy and X-Ray Microanalysis*. Cited 263 times.
Plenum Press, New York

30 Ghandoor, H.E., Zidan, H.M., Khalil, M.M.H., Ismail, M.I.M.
(2012) *Int. J. Electrochem. Sci.*

31 Oskam, G.
(2006) *J. Sol Gel Sci.Techn.*, 37.

32 Kulkarni, S.A., Sawadh, K.P.S., Kokate, W.K.K.
(2012) *Int. Conf.Benchmarks Engg. Sci.Tech.*

33 Rambabu, M., Prasad, K.R.S., Venu Gopala Rao, M., Madhav, B.T.P., Pisipati, V.G.K.M.
(2015) *Liquid Crystals Today*, 24.

34 Madhav, B.T.P., Pardhasaradhi, P., Manepalli, R.K.N.R., Pisipati, V.G.K.M.
(2015) *Phase Transitions*

35 Reference information not available.

36 Madhav, B.T.P., Pardhasaradhi, P., Manepalli, R.K.N.R., Pisipati, V.G.K.M.
(2015) *Liquid Crystals*, 101.

37 Madhav, B.T.P., Pardhasaradhi, P., Manepalli, R.K.N.R., Kishore, P.V.V., Pisipati, V.G.K.M.
(2015) *Liquid Crystals*

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Synthesis and characterization of schiff base liquid crystals with dispersed ZnO nanoparticles-optical properties (Article)

Jayaprada, P.[a], Tejaswi, M.[a], Giridhar, G.[b], Rao, M.C.[c], Pisipati, V.G.K.M.[d], Manepalli, R.K.N.R.[a]

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Abstract

View references (33)

Liquid crystalline compounds exhibit more enhanced optical properties with dispersed ZnO nanoparticles. In the present work 1wt% ZnO nanoparticles are dispersed in liquid crystalline Schiff base 10O.Om compounds (m=3,4 and 5). The Differential Scanning Calorimetry (DSC) technique is used to measure the phase transition temperatures. The characterization of nanoparticles is carried out by various spectroscopic techniques like Ultra- Violet Visible Spectroscopy(UV), X-ray Diffraction (XRD), Scanning Electron Microscopy (SEM) and Fourier Transform Infra Red Spectroscopy (FTIR). Textural determinations of the synthesized compounds are recorded by using Polarizing Optical Microscope (POM) connected with hot stage and camera. The results show that the dispersion of 1wt%ZnO nanoparticles in 10O.Om compounds exhibit NC phases as same as the pure compounds with reduced clearing temperatures as expected and the nematic thermal ranges are increased slightly. ï¿½ RASĀYAN. All rights reserved.

Reaxys Database Information

View Compounds

Author keywords

DSC FTIR Nano dispersion POM SEM Synthesis UV XRD

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References (33)

View in search results format

All Export Print E-mail Save to PDF Create bibliography

1 Blinov, L.M., Chigrinov, V.G.
(1993) *Electrooptic Effectsin Liquid Crystal Materials*. Cited 979 times.
Springer Verlag, NewYork

2 Anisimov, M.A.
(1991) *Critical Phenomena in Liquidsand Liquid Crystals*. Cited 531 times.
Gordon and Breach Science Publishers, New York–London

3 Yeh, P., Gu, C.
(2009) *Optics of Liquid Crystals Displays*. Cited 942 times.
Wiley Publishing, London–New York

4 Khoo, I.C.
(2007) *Liquid Crystals*. Cited 26 times.
Wiley Publishing, Lon-don–New York

5 Gray, G.W.
(1998) *Handbook of Liquid Crystals*, 1, pp. 1-16.
D. Demus,J. Goodby, G. W. Gray, H. W. Spiess and V. Vill, eds., Wiley-VCH, Weinheim

6 Hegmann, T., Qi, H., Marx, V.M.

Nanoparticles in liquid crystals: Synthesis, self-assembly, defect formation and potential applications

(2007) *Journal of Inorganic and Organometallic Polymers and Materials*, 17 (3), pp. 483-508. Cited 220 times.
doi: 10.1007/s10904-007-9140-5

View at Publisher

7 Bisoyi, H.K., Kumar, S.
(2008) *Chem. Soc. Rev.*, 40.

8 De Jong, W.H., Borm, P.J.A.
(2008) *Int. J. Nanomedicine*, 3.

9 Reiss, G., Hutten, A.
(2005) *Nature Mater.*, 4.

10 Scott, J.F.
(2000) *Ferroelectric Memories*, pp. 191-206. Cited 1480 times.
Berlin, Springer

11 Shiraishi, Y., Toshima, N., Maeda, K., Yoshikawa, H., Xu, J., Kobayashi, S.
(2002) *Appl. Phys.Lett.*, 81.

Tsvetkov, V.A.
(2001) Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals

The uses of scanning electron microscopy for studying semiconductor devices

Reeves, C.
(1994) International Journal of Electronics

Electro-optical characterization of E48:PVP polymer dispersed liquid crystals

Mahinay, C.L.E. , Macale, C.M. , Amos, F.F.
(2001) Molecular Crystals and Liquid Crystals Science and Technology Section A: Molecular Crystals and Liquid Crystals

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12 Prakash, J., Choudhary, A., Kumar, A., Mehta, D.S., Biradar, A.M.
Nonvolatile memory effect based on gold nanoparticles doped ferroelectric liquid crystal

(2008) *Applied Physics Letters*, 93 (11), art. no. 112904. Cited 57 times.
doi: 10.1063/1.2980037

View at Publisher

13 Prakash, J., Choudhary, A., Mehta, D.S., Biradar, A.M.
(2009) *Phys. Rev. E*, 80.

14 Lee, W., Wang, C.Y., Shih, Y.C.
(2004) *Appl. Phys. Lett.*, 85.

15 Poizot, P., Laruelle, S., Grugeon, S., Dupont, L., Tarascon, J.M.
(2000) *Nature*, 407.

16 Ando, M., Kadono, K., Haruta, M., Sakaguchi, T., Miya, M.
(1995) *Nature*, 374.

17 Kumar, R.V., Diamant, Y., Gedanken, A.
(2000) *Chem. Mater.*, 12.

18 Asahi, R., Morikawa, T., Ohwaki, T., Aoki, K., Taga, Y.
(2001) *Science*, 293.

19 Bacaksiz, E., Parlak, M., Tomakin, M., ï¿½zcelik, A., Karakiz, M., Altunbas, M.
(2008) *J. Alloy. Compd.*, 466.

20 Wang, J., Cao, J., Fang, B., Lu, P., Deng, S., Wang, H.
(2008) *Mater.Lett.*, 59.

21 Segets, D., Gradl, J., Taylor, R.K., Vassilev, V., Peukert, W.
(2009) *ACS Nano*, 3.

22 Lou, X., Sens, J.
(1991) *Trans. Technol.*, 3.

23 Wang, Z.L.
(2008) *ACS Nano*, 2.

24 Chaari, M., Matoussi, A.
Electrical conduction and dielectric studies of ZnO pellets

(2012) *Physica B: Condensed Matter*, 407 (17), pp. 3441-3447. Cited 27 times.
doi: 10.1016/j.physb.2012.04.056

View at Publisher

25 Jiang, H., Toshima, N.
(2009) *Chem. Lett.*, 38.

26 Malik, A., Choudhary, A., Silotia, P., Biradar, A.M.
(2011) *J. Appl. Phys.*, 110.

27 Gray, G.W.
(1962) *Molecular Structures and Properties of Liquid Crystals*. Cited 987 times.
Academic press

28 Kumar, H., Rani, R.
(2013) *Int. Lett.Chem. Phy. Astronomy*, 14.

29 Rao, C.N.R.
(1963) *Chemical Applications of Infrared Spectroscopy*. Cited 1668 times.
Academic Press, New York and London

30 Markova-Deneva, I.
(2010) *J. Univ.Chem. Tech. Metallurgy*, 45.

31 Parthasarathi, V., Thilagavathi, G.
(2012) *Int. J.Pharma. Sci.*, 3.

32 Goldstein, J.I., Newbury, D.E., Echlin, P., Joy, D.C., Fiori, C., Lifshin, E.
(1981) *Scanning Microscopy and X-Ray Microanalysis*. Cited 2227 times.
Plenum Press, New York

33 Newbury, D., Joy, D.C., Echlin, P., Fiori, C.E., Goldstein, J.I.
(1986) *Advanced Scanning Electron Microscopy and X-Ray Microanalysis*. Cited 263 times.
Plenum Press, New York

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Synthesis and characterization of citrate capped gold nanoparticles and their effect on liquid crystals: Optical studies (Article)

Tejaswi, M.[a], Rao, M.C.[b], Datta Prasad, P.V.[c], Giridhar, G.[d], Pisipti, V.G.K.M.[e], Manepalli, R.K.N.R.[a]

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Abstract

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In the present paper synthesis and characterization are carried on citrate capped Gold (Au) nanoparticles dispersed in Liquid Crystalline p-n-Hexyloxycyanobiphenyl (6OCB) compound. We have reported citrate capped Au nano particles are synthesized by chemical reduction method which is having a broad range of applications and dramatically effects the birefringence properties of 6OCB when dispersion with low concentration. The Polarizing Microscopy (POM) technique is used to measure the phase transition temperatures. Further characterization is carried out by various spectroscopic techniques like X-ray Diffraction Studies (XRD), Scanning Electron Microscopic studies (SEM), Ultra Violet Visible (UV) spectroscopy. Textural determinations of the synthesized compounds are recorded by using POM connected with a hot stage and camera. The results showed that the dispersion of citrate capped Au and in 6OCB exhibit nematic phase as same as the pure 6OCB with slightly reduced clearing temperature as expected. Further, the birefringence anisotropy of 6OCB with dispersed citrate capped Au nanoparticles increases by 14%. It is found that the birefringence anisotropy as well as orientation order parameter of 6OCB increases with dispersed citrate capped Au nanoparticles.

Reaxys Database Information

View Compounds

Author keywords

DSC Nano-dispersion POM SEM Synthesis UV and Birefringence XRD

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References (33)

View in search results format

1 Kato, T., Mizoshita, N., Kishimoto, K.

Functional liquid-crystalline assemblies: Self-organized soft materials

(2006) *Angewandte Chemie - International Edition*, 45 (1), pp. 38-68. Cited 962 times.
doi: 10.1002/anie.200501384

View at Publisher

2 Goodby, J.W., Saez, I.M., Cowling, S.J., Görtz, V., Draper, M., Hall, A.W., Sia, S., (...), Raynes, E.P.

Transmission and amplification of information and properties in nanostructured liquid crystals

(2008) *Angewandte Chemie - International Edition*, 47 (15), pp. 2754-2787. Cited 263 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/117926215/PDFSTART
doi: 10.1002/anie.200701111

View at Publisher

3 Tschierske, C.

Liquid crystal engineering - New complex mesophase structures and their relations to polymer morphologies, nanoscale patterning and crystal engineering

(2007) *Chemical Society Reviews*, 36 (12), pp. 1930-1970. Cited 308 times.
doi: 10.1039/b615517k

View at Publisher

4 Bahadur, B.
(1990) *Liquid crystals, applications and uses*. Cited 746 times.
Singapore: World scientific

5 Stupp, E.H., Brennesholtz, M.S.
(1998) *Projection Displays*. Cited 197 times.
Wiley, New York

6 Wu, S.T., Yang, D.K.
(2001) *Reflective Liquid Crystal Displays*. Cited 729 times.
Wiley, New York

7 Khoo, I.C., Wu, S.T.
(1993) *Optics and Nonlinear Optics of Liquid Crystals*. Cited 793 times.
World Scientific Singapore

8 Warenghem, M., Henninot, J.F., Abbate, G.

Non linearly induced self waveguiding structure in dye doped nematic liquid crystals confined in capillaries

(1998) *Optics Express*, 2 (12), pp. 483-490. Cited 72 times.
http://www.opticsexpress.org/view_file.cfm?doc=%23%28%5C%2B%2D%0A&id=%23%28L%23%27%0A

View at Publisher

9 Warenghem, M., Henninot, J.F., Derrien, F., Abbate, G.
Thermal and orientational 2D+1 spatial optical solitons in dye doped liquid crystals

(2002) *Molecular Crystals and Liquid Crystals Science and Technology Section A: Molecular Crystals and Liquid Crystals*, 373, pp. 213-225. Cited 17 times.
doi: 10.1080/10587250210546

View at Publisher

10 Peccianti, M., Assanto, G.
Signal readdressing by steering of spatial solitons in bulk nematic liquid crystals

(2001) *Optics Letters*, 26 (21), pp. 1690-1692. Cited 79 times.

View at Publisher

11 Peccianti, M., De Rossi, A., Assanto, G., De Luca, A., Umeton, C., Khoo, I.C.
Electrically assisted self-confinement and waveguiding in planar nematic liquid crystal cells

(2000) *Applied Physics Letters*, 77 (1), pp. 7-9. Cited 274 times.
http://scitation.aip.org/content/aip/journal/apl
doi: 10.1063/1.126859

View at Publisher

12 Narayanan, R., El-Sayed, M.A.
Catalysis with transition metal nanoparticles in colloidal solution: Nanoparticle shape dependence and stability

(2005) *Journal of Physical Chemistry B*, 109 (26), pp. 12663-12676. Cited 895 times.
doi: 10.1021/jp051066p

View at Publisher

13 Brust, M., Walker, M., Bethell, D., Schiffrin, D.J., Whyman, R.
(1994) *J.Chem. Soc. chem. commun.*, 801, p. 37.

14 Storhoff, J.J., Mirkin, C.A.
Programmed Materials Synthesis with DNA

(1999) *Chemical Reviews*, 99 (7), pp. 1849-1862. Cited 901 times.
http://pubs.acs.org/journal/chreay
doi: 10.1021/cr970071p

View at Publisher

15 Centore, R.
Mean field analysis of four liquid crystalline odd-even ester dimers

(2007) *Liquid Crystals*, 34 (6), pp. 729-736. Cited 9 times.
doi: 10.1080/02678290701298022

View at Publisher

16 Kuczyński, W., Zywucki, B., Małecki, J.
Determination of orientational order parameter in various liquid-crystalline phases

(2002) *Molecular Crystals and Liquid Crystals Science and Technology Section A: Molecular Crystals and Liquid Crystals*, 381, pp. 1-19. Cited 65 times.

View at Publisher

17 Ramakrishna Nanchara Rao, M., Datta Prasad, P.V., Pisipati, V.G.K.M., MadhaviLatha, D.
(2012) *Solid State Phenomena*, 102, pp. 181-182.

18 Rao, M.C.
Growth and microstructural features of laser ablated LiCoO2 thin films

(2010) *Journal of Crystal Growth*, 312 (19), pp. 2799-2803. Cited 44 times.
doi: 10.1016/j.jcrysgro.2010.06.012

View at Publisher

19 Rao, M.C.
Fabrication of LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin film cells for rechargeable lithium microbatteries

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (1), pp. 85-88. Cited 43 times.
http://oam-rc.inoe.ro/download.php?idu=1453

20 Muntaz Begum, S., Rao, M.C., Aparna, Y., Rao, P.S., Ravikumar, R.V.S.S.N.
Spectroscopic investigations of Fe $^{3+}$ doped poly vinyl alcohol (PVA) capped ZnSe nanoparticles

(2012) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 98, pp. 100-104. Cited 30 times.
doi: 10.1016/j.saa.2012.08.031

View at Publisher

21 Muntaz Begum, S., Rao, M.C., Ravikumar, R.V.S.S.N.
Cu^{2+} Doped PVA Passivated ZnSe Nanoparticles-Preparation, Characterization and Properties

(2013) *Journal of Inorganic and Organometallic Polymers and Materials*, 23 (2), pp. 350-356. Cited 45 times.
doi: 10.1007/s10904-012-9783-8

View at Publisher

22 Rao, M.C.
Grain size effect on the growth of LiCoO2 thin film cathodes

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (4), pp. 428-431. Cited 40 times.
http://joam.inoe.ro/download.php?idu=2757

23 Rao, M.C., Hussain, O.M.
Spectroscopic investigations on tetravalent doped $LiCoO_2$ thin film cathodes

(2009) *EPJ Applied Physics*, 48 (2), pp. 20503p1-20503p6. Cited 31 times.
doi: 10.1051/epjap/2009142

View at Publisher

24 Shahenoor Basha, S.K., Sunita Sundari, G., Vijay Kumar, K., Rao, M.C.
Spectroscopic properties of PVP based composite polymer electrolyte films for solid state battery application

(2016) *Rasayan Journal of Chemistry*, 9 (3), pp. 348-354. Cited 11 times.
http://www.rasayanjournal.co.in/admin/php/upload/38_pdf.pdf

25 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated amorphous LiCoO 2 thin film cathodes

(2009) *IOP Conference Series: Materials Science and Engineering*, 2, art. no. 012037. Cited 23 times.
doi: 10.1088/1757-899X/2/1/012037

View at Publisher

26 Ravindranadh, K., Rao, M.C., Ravikumar, R.V.S.S.N.
(2015) *J. Luminesce.*, 159, p. 119. Cited 11 times.

27 Rao, M.C.
Effect of target composition on the growth of stiochiometric LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin films

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (6), pp. 651-654. Cited 39 times.
http://oam-rc.inoe.ro/download.php?idu=1600

28 Sivasri, J., Rao, M.C., Giridhar, G., Madav, B.T.P., Divakar, T.E., Manepalli, R.K.N.R.
Influence of Fe_3O_4nanoparticles dispersed in liquid crystalline compounds – spectroscopic characterization

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 556-565. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/63_pdf.pdf

29 Jayaprada, P., Tejaswi, M., Giridhar, G., Rao, M.C., Pisipati, V.G.K.M., Manepalli, R.K.N.R.
Synthesis and characterization of schiff base liquid crystals with dispersed ZnO nanoparticles-optical properties

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 588-596. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/67_pdf.pdf

30 Priestley, E.B., Wojtowicz, P.J., Sheng, P.
(1974) *Introduction to Liquid Crystals*. Cited 439 times.
RCA Laboratories,Princeton, NJ

31 Goldstein, J.I., Newbury, D.E., Echlin, P., Joy, D.C., Fiori, C., Lifshin, E.
(1981) *Scanning Microscopy and X-Ray Microanalysis*. Cited 2227 times.
Plenum Press, New York

32 Ramakrishna, M., Rao, N., Prasad, P.V.D., Pisipati, V.G.K.M.
Orientational order parameter in alkoxy benzoic acids-optical studies

(2010) *Molecular Crystals and Liquid Crystals*, 528, pp. 49-63. Cited 20 times.
doi: 10.1080/15421406.2010.504515

View at Publisher

33 Zywucki, B.J., Kuczyński, W.
The orientational order in nematic liquid crystals from birefringence measurements

(2001) *IEEE Transactions on Dielectrics and Electrical Insulation*, 8 (3), pp. 512-515. Cited 44 times.
doi: 10.1109/94.933375

View at Publisher

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Luminescence spectral studies of Tm^{3+} ions doped Lead Tungsten Tellurite glasses for visible Red and NIR applications (Article)

Venkateswarlu, M.[a], Mahamuda, S.[a], Swapna, K.[a], Srinivasa Rao, A.[ab], Babu, A.M.[c], Shakya, S.[d], Haranath, D.[e], Prakash, G.V.[d]

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Abstract

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Lead Tungsten Tellurite (LTT) glasses doped with different concentrations of Tm^{3+} ions of composition (60-x) TeO_2+25WO_3+15PbF_2+xTm_2O_3 (Here x=0.1, 0.5, 1.0, 1.5, 2.0, 2.5 mol%) were prepared by using melt quenching technique and characterized through optical absorption, photoluminescence and decay spectral studies to know the feasibility of using these glasses as luminescent devices in visible Red and NIR regions. Judd-Ofelt (J-O) theory has been applied to the optical absorption spectral profiles to calculate the J-O intensity parameters Ω_λ (λ=2, 4 and 6) and consecutively used to evaluate various radiative properties such as radiative transition probability (A_R), radiative lifetimes ($I_{\tau R}I$) and branching ratios ($I_{\beta R}I$) for the prominent luminescent levels. The luminescence spectra for all the LTT glass samples have two intense peaks in bright red and near Infrared regions at 650 nm ($^1G_4 \rightarrow {}^3F_4$) and 800 nm ($^3H_4 \rightarrow {}^3H_6$) respectively for which effective band widths ($I_{\Delta\lambda P}I$), experimental branching ratios ($I_{\beta exp}I$) and stimulated emission cross-sections ($I_{\sigma se}I$) are evaluated. The decay profiles for all the glasses are recorded to measure the quantum efficiency by coupling the radiative with experimental lifetimes. From the measured emission cross-sections, quantum efficiency and CIE chromaticity co-ordinates, it was found that 0.5 mol% of Tm^{3+} ions doped LTT glass is most suitable for generating bright visible Red and NIR lasers to operate at 650 and 800 nm respectively.

Reaxys Database Information

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Author keywords

Glasses | JO parameters | Luminescence | Optical materials | Optical properties | Thulium

Indexed keywords

Engineering controlled terms: Efficiency | Electromagnetic wave absorption | Glass | Infrared devices | Ions | Judd-Ofelt theory | Light absorption | Luminescence | Optical materials | Optical properties | Spectroscopic analysis | Tellurium compounds | Thulium | Tungsten

Compendex keywords: Emission cross section | Intensity parameters | J-O parameter | Luminescence spectrum | Melt quenching techniques | Near infrared region | Radiative transition probabilities | Stimulated emission cross section

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2012/34/72	Department of Science and Technology, Ministry of Science and Technology	DST	See opportunities by DST↗

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References (53)

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1 Karafolas, N., Armengol, J., McKenzie, I.
(2009) *Proceedings of IEEE Aerospace Conference*, pp. 1-15.
7-14 March

2 Mahamuda, S., Swapna, K., Venkateswarlu, M., Srinivasa Rao, A., Shakya, S., Vijaya Prakash, G.
Spectral characterisation of Sm^{3+} ions doped Oxy-fluoroborate glasses for visible orange luminescent applications
(2014) *Journal of Luminescence*, 154, pp. 410-424. Cited 36 times.
doi: 10.1016/j.jlumin.2014.05.017
View at Publisher

3 Mahamuda, S., Swapna, K., Packiyaraj, P., Srinivasa Rao, A., Vijaya Prakash, G.
Lasing potentialities and white light generation capabilities of Dy^{3+} doped oxy-fluoroborate glasses
(2014) *Journal of Luminescence*, 153, pp. 382-392. Cited 31 times.
doi: 10.1016/j.jlumin.2014.03.009
View at Publisher

4 Swapna, K., Mahamuda, S., Srinivasa Rao, A., Jayasimhadri, M., Sasikala, T., Rama Moorthy, L.
Optical absorption and luminescence characteristics of Dy^{3+} doped Zinc Alumino Bismuth Borate glasses for lasing materials and white LEDs
(2013) *Journal of Luminescence*, 139, pp. 119-124. Cited 47 times.
doi: 10.1016/j.jlumin.2013.02.035
View at Publisher

Holmium doped Lead Tungsten Tellurite glasses for green luminescent applications
Venkateswarlu, M. , Mahamuda, Sk. , Swapna, K.
(2015) Journal of Luminescence

Effect of change in CaO concentration on spectroscopic properties of Tm^{3+} ions in phosphate glasses
Satyanarayana, T. , Mukherjee, T. , Nagarjuna, G.
(2016) Journal of Optoelectronics and Advanced Materials

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5 Swapna, K., Mahamuda, S., Rao, A.S., Sasikala, T., Moorthy, L.R.
Visible luminescence characteristics of Sm3+ doped Zinc Alumino Bismuth Borate glasses

(2014) *Journal of Luminescence*, 146, pp. 288-294. Cited 33 times.
doi: 10.1016/j.jlumin.2013.09.035

View at Publisher

6 Swapna, K., Mahamuda, S., Rao, A.S., Sasikala, T., Packiyaraj, P., Moorthy, L.R., Prakash, G.V.
Luminescence characterization of Eu^{3+} doped Zinc Alumino Bismuth Borate glasses for visible red emission applications

(2014) *Journal of Luminescence*, 156, pp. 80-86. Cited 34 times.
doi: 10.1016/j.jlumin.2014.07.022

View at Publisher

7 Swapna, K., Mahamuda, S., Rao, A.S., Jayasimhadri, M., Shakya, S., Prakash, G.V.
Tb^{3+} doped Zinc Alumino Bismuth Borate glasses for green emitting luminescent devices

(2014) *Journal of Luminescence*, 156, pp. 180-187. Cited 19 times.
doi: 10.1016/j.jlumin.2014.08.019

View at Publisher

8 Swapna, K., Mahamuda, S., Venkateswarlu, M., Srinivasa Rao, A., Jayasimhadri, M., Shakya, S., Prakash, G.V.
Visible, Up-conversion and NIR (~1.5 μm) luminescence studies of Er^{3+} doped Zinc Alumino Bismuth Borate glasses

(2015) *Journal of Luminescence*, 163, art. no. 13222, pp. 55-63. Cited 10 times.
doi: 10.1016/j.jlumin.2015.02.036

View at Publisher

9 Venkateswarlu, M., Mahamuda, Sk., Swapna, K., Prasad, M.V.V.K.S., Srinivasa Rao, A., Shakya, S., Mohan Babu, A., (...), Vijaya Prakash, G.
Holmium doped Lead Tungsten Tellurite glasses for green luminescent applications

(2015) *Journal of Luminescence*, 163, art. no. 13238, pp. 64-71. Cited 12 times.
doi: 10.1016/j.jlumin.2015.02.052

View at Publisher

10 Huang, L., Shen, S., Jha, A.
(2004) *J. Non-Cryst. Solids*, 349, p. 345.

11 Hodgson, S.N.B., Weng, L.
Sol-gel processing of tellurium oxide and suboxide thin films with potential for optical data storage application

(2000) *Journal of Sol-Gel Science and Technology*, 18 (2), art. no. 267133, pp. 145-158. Cited 52 times.
doi: 10.1023/A:1008717003930

View at Publisher

12 Hodgson, S.N.B., Weng, L.
Chemical and sol-gel processing of tellurite glasses for optoelectronics

(2006) *Journal of Materials Science: Materials in Electronics*, 17 (9), pp. 723-733. Cited 42 times.
doi: 10.1007/s10854-006-0016-1

View at Publisher

13 Park, S., An, S., Ko, H., Jin, C., Lee, C.
Enhancement of ethanol sensing of TeO_2 nanorods by Ag functionalization

(2013) *Current Applied Physics*, 13 (3), pp. 576-580. Cited 8 times.
doi: 10.1016/j.cap.2012.10.003

View at Publisher

14 Warner, A.W., White, D.L., Bonner, W.A.
Acousto-optic light deflectors using optical activity in paratellurite

(1972) *Journal of Applied Physics*, 43 (11), pp. 4489-4495. Cited 133 times.
doi: 10.1063/1.1660950

View at Publisher

15 Antonov, S.N.
Acoustooptic nonpolar light controlling devices and polarization modulators based on paratellurite crystals

(2004) *Technical Physics*, 49 (10), pp. 1329-1334. Cited 36 times.
doi: 10.1134/1.1809706

View at Publisher

16 Liu, Z., Yamazaki, T., Shen, Y., Kikuta, T., Nakatani, N., Kawabata, T.
Room temperature gas sensing of p -type Te O2 nanowires

(2007) *Applied Physics Letters*, 90 (17), art. no. 173119. Cited 84 times.
doi: 10.1063/1.2732818

View at Publisher

17 Khattak, G.D., Salim, M.A.
X-ray photoelectron spectroscopic studies of zinc-tellurite glasses

(2002) *Journal of Electron Spectroscopy and Related Phenomena*, 123 (1), pp. 47-55. Cited 31 times.
doi: 10.1016/S0368-2048(01)00371-1

View at Publisher

18 Sidek, H.A.A., Rosmawati, S., Talib, Z.A., Halimah, M.K., Daud, W.M.
Synthesis and optical properties of ZnO-TeO_2 glass system

(2009) *American Journal of Applied Sciences*, 6 (8), pp. 1489-1494. Cited 84 times.
http://www.scipub.org/fulltext/ajas/ajas681489-1494.pdf
doi: 10.3844/ajassp.2009.1489.1494

View at Publisher

19 Ravi Kumar, V., Veeraiah, N.
Infrared spectral investigations on ZnF_2-PbO-TeO_2 glasses

(1997) *Journal of Materials Science Letters*, 16 (22), pp. 1816-1818. Cited 31 times.
doi: 10.1023/A:1018516718244

View at Publisher

20 Ali Erçin Ersundu, M.
(2012) *Current Microscopy Contributions to Advances in Science and Technology*, pp. 1105-1114.
A. Méndez-Vilas (Ed.), FORMATEX

21 Rao, K.J.
Structural Chemistry of Glasses. Cited 288 times.
Elsevier Science Ltd., The Boulevard, Langford Lane, Kidington, Oxford OX51GB, UK

22 Anderson, D.F., Kobayashi, M., Yoshimura, Y., Woody, C.L.
(1989) *FermiLab*
Pub-89

23 Ramachari, D., Rama Moorthy, L., Jayasankar, C.K.
Spectral investigations of Sm^{3+}-doped oxyfluorosilicate glasses
(2013) *Materials Research Bulletin*, 48 (9), pp. 3607-3613. Cited 18 times.
doi: 10.1016/j.materresbull.2013.05.081
View at Publisher

24 France, P.W., Drexage, M.G., Parken, J.M., Morre, M.W., Carter, S.F., Wright, J.W.
(1990) *Fluoride Glass Optical Fibre*. Cited 164 times.
CRC Press Boca Raton

25 Venkateswarlu, M., Mahamuda, S., Swapna, K., Prasad, M.V.V.K.S., Srinivasa Rao, A., Mohan Babu, A., Shakya, S., (...), Vijaya Prakash, G.
Spectroscopic studies of Nd^{3+} doped lead tungsten tellurite glasses for the NIR emission at 1062 nm
(2015) *Optical Materials*, 39, pp. 8-15. Cited 18 times.
doi: 10.1016/j.optmat.2014.10.031
View at Publisher

26 Poirier, G., Jerez, V.A., De Araújo, C.B., Messaddeq, Y., Ribeiro, S.J.L., Poulain, M.
Optical spectroscopy and frequency upconversion properties of Tm3+ doped tungstate fluorophosphate glasses
(2003) *Journal of Applied Physics*, 93 (3), pp. 1493-1497. Cited 61 times.
doi: 10.1063/1.1536017
View at Publisher

27 Myslinski, Piotr, Xing, Pan, Barnard, Chris, Sullivan, E., Bayon, Jean-Francosis
Q-switched thulium-doped fiber laser
(1993) *Optical Engineering*, 32 (9), pp. 2025-2030. Cited 26 times.
doi: 10.1117/12.143911
View at Publisher

28 Esterowitz, L.
Diode pumped holmium, thulium and erbium lasers between 2 and 3 micrometers operating cw at room temperature
(1990) *Optical Engineering*, 29 (6), pp. 676-680. Cited 40 times.
http://www.spie.org/x867.xml
doi: 10.1117/12.55628
View at Publisher

29 Stoneman, R.C., Esterowitz, L.
Efficient, broadly tunable, laser-pumped Tm:YAG and Tm:YSGG cw lasers

(1990) *Optics Letters*, 15 (9), pp. 486-488. Cited 271 times.
doi: 10.1364/OL.15.000486

View at Publisher

30 Henderson, S.W., Suni, P.J., Hale, C.P., Stephen, S., Hannor, M., Magee, J.R., Bruns, D.L., (...), Yuen, E.H.
Coherent Laser Radar at 2 μm Using Solid-State Lasers

(1993) *IEEE Transactions on Geoscience and Remote Sensing*, 31 (1), pp. 4-15. Cited 315 times.
doi: 10.1109/36.210439

View at Publisher

31 Damak, K., Maâlej, R., Yousef, E.S., Qusti, A.H., Rüssel, C.
Thermal and spectroscopic properties of Tm^{3+} doped TZPPN transparent glass laser material

(2012) *Journal of Non-Crystalline Solids*, 358 (22), pp. 2974-2980. Cited 21 times.
doi: 10.1016/j.jnoncrysol.2012.07.027

View at Publisher

32 Liu, X., Li, M., Wang, X., Huang, F., Ma, Y., Zhang, J., Hu, L., (...), Chen, D.
≈2 μm Luminescence properties and nonradiative processes of Tm^{3+} in silicate glass

(2014) *Journal of Luminescence*, 150, pp. 40-45. Cited 27 times.
doi: 10.1016/j.jlumin.2014.01.030

View at Publisher

33 (2010) *Frontiers in Guided Wave Optics and Optoelectronics*, p. 674.
Book edited by: Bishnu Pal, February, INTECH, Croatia, downloaded from SCIYO.COM.

34 Rao, A.S., Ahammed, Y.N., Reddy, R.R., Rao, T.V.R.
Spectroscopic studies of Nd^{3+}-doped alkali fluoroborophosphate glasses

(1998) *Optical Materials*, 10 (4), pp. 245-252. Cited 71 times.
doi: 10.1016/S0925-3467(97)00055-4

View at Publisher

35 Carnall, W.T., Fields, P.R., Rajnak, K.
Electronic energy levels of the trivalent lanthanide aquo ions. IV. Eu 8+

(1968) *The Journal of Chemical Physics*, 49 (10), pp. 4424-4442. Cited 1729 times.

View at Publisher

36 Özen, G., Aydinli, A., Cenk, S., Sennaroglu, A.
Effect of composition on the spontaneous emission probabilities, stimulated emission cross-sections and local environment of Tm^{3+} in TeO_2-WO_3 glass

(2003) *Journal of Luminescence*, 101 (4), pp. 293-306. Cited 39 times.
doi: 10.1016/S0022-2313(02)00572-0

View at Publisher

37 Oomen, E.W.J.L.
Up-conversion of red light into blue light in thulium doped fluorozirconate glasses

(1992) *Journal of Luminescence*, 50 (6), pp. 317-332. Cited 70 times.
doi: 10.1016/0022-2313(92)90081-J

View at Publisher

38 Lincoln, J.R., Brocklesby, W.S., Cusso, F., Townsend, J.E., Tropper, A.C., Pearson, A.
Time resolved and site selective spectroscopy of thulium doped into germano- and alumino-silicate optical fibres and preforms

(1991) *Journal of Luminescence*, 50 (5), pp. 297-308. Cited 38 times.
doi: 10.1016/0022-2313(91)90035-T

View at Publisher

39 Srinivasa Rao, A., Rupa Venkateswara Rao, B., Prasad, M.V.V.K.S., Shanmukha Kumar, J.V., Jayasimhadri, M., Rao, J.L., Chakradhar, R.P.S.
Spectroscopic and optical properties of Nd^{3+} doped fluorine containing alkali and alkaline earth zinc-aluminophosphate optical glasses

(2009) *Physica B: Condensed Matter*, 404 (20), pp. 3717-3721. Cited 24 times.
doi: 10.1016/j.physb.2009.06.114

View at Publisher

40 Judd, B.R.
Optical absorption intensities of rare-earth ions

(1962) *Physical Review*, 127 (3), pp. 750-761. Cited 5553 times.
doi: 10.1103/PhysRev.127.750

View at Publisher

41 Opelt, G.S.
Intensities of crystal spectra of rare-earth ions

(1962) *The Journal of Chemical Physics*, 37 (3), pp. 511-520. Cited 5055 times.

View at Publisher

42 Tanner, P.A.
Excitation and absorption spectra of $Cs_2NaErCl_6$

(1986) *Molecular Physics*, 57 (4), pp. 737-754. Cited 22 times.
doi: 10.1080/00268978600100531

View at Publisher

43 Tanner, P.A., Piante, A.D., Richardson, F.S., Reid, M.F.
Energy levels of $er^{3}+$ in $Cs_2naercl_6$

(1987) *Molecular Physics*, 60 (5), pp. 1037-1045. Cited 17 times.
doi: 10.1080/00268978700100681

View at Publisher

44 Praveena, R., Jang, K.H., Jayasankar, C.K., Seo, H.J.
Optical absorption and fluorescence properties of Tm^{3+}-doped K-Mg-Al phosphate glasses for laser applications

(2010) *Journal of Alloys and Compounds*, 496 (1-2), pp. 335-340. Cited 11 times.
doi: 10.1016/j.jallcom.2010.02.007

View at Publisher

45 Lim, K.-S., Babu, P., Jayasankar, C.K., Lee, S.-K., Pham, V.-T., Seo, H.-J.
Optical spectroscopy of thulium-doped oxyfluoroborate glass

(2004) *Journal of Alloys and Compounds*, 385 (1-2), pp. 12-18. Cited 24 times.
doi: 10.1016/j.jallcom.2004.04.133

View at Publisher

46 Reisfeld, R., Boehm, L., Spector, N.
Multiphonon relaxation rates and fluorescence lifetimes for Tm^{3+} in four oxide glasses

(1977) *Chemical Physics Letters*, 49 (2), pp. 251-254. Cited 17 times.
doi: 10.1016/0009-2614(77)80580-0

View at Publisher

47 Kadono, K., Yazawa, T., Shojiya, M., Kawamoto, Y.
Judd-Ofelt analysis and luminescence property of Tm^{3+} in Ga_2S_3-GeS_2-La_2S_3 glasses

(2000) *Journal of Non-Crystalline Solids*, 274 (1), pp. 75-80. Cited 32 times.
doi: 10.1016/S0022-3093(00)00204-0

View at Publisher

48 Mahamuda, S., Swapna, K., Packiyaraj, P., Srinivasa Rao, A., Vijaya Prakash, G.
Visible red, NIR and Mid-IR emission studies of Ho^{3+} doped Zinc Alumino Bismuth Borate glasses

(2013) *Optical Materials*, 36 (2), pp. 362-371. Cited 31 times.
doi: 10.1016/j.optmat.2013.09.023

View at Publisher

49 Wang, M., Yi, L., Chen, Y., Yu, C., Wang, G., Hu, L., Zhang, J.
Effect of $Al(PO_3)_3$ content on physical, chemical and optical properties of fluorophosphate glasses for 2 μm application

(2009) *Materials Chemistry and Physics*, 114 (1), pp. 295-299. Cited 41 times.
doi: 10.1016/j.matchemphys.2008.09.014

View at Publisher

50 Özen, G., Demirata, B., Öveçoğlu, M.L., Genç, A.
Thermal and optical properties of Tm^{3+} doped tellurite glasses

(2001) *Spectrochimica Acta - Part A Molecular and Biomolecular Spectroscopy*, 57 (2), pp. 273-280. Cited 46 times.
doi: 10.1016/S1386-1425(00)00392-9

View at Publisher

51 Orera, V.M., Alonso, P.J., Cases, R., Alcala, R.
OPTICAL PROPERTIES OF DY**3** plus IN FLUOROZIRCONATE GLASSES.

(1988) *Physics and Chemistry of Glasses*, 29 (2), pp. 59-62. Cited 61 times.

52 Lahoz, F., Martín, I.R., Méndez-Ramos, J., Núñez, P.
Dopant distribution in a Tm3+-Yb3+ codoped silica based glass ceramic: An infrared-laser induced upconversion study

(2004) *Journal of Chemical Physics*, 120 (13), pp. 6180-6190. Cited 128 times.
doi: 10.1063/1.1652016

View at Publisher

53 Wang, N.Q., Zhao, X., Li, C.M., Pun, E.Y.B., Lin, H.

Upconversion and color tunability in $Tm^{3+}/Ho^{3+}/Yb^{3+}$ doped low phonon energy bismuth tellurite glasses

(2010) *Journal of Luminescence*, 130 (6), pp. 1044-1047. Cited 44 times.
doi: 10.1016/j.jlumin.2010.01.022

View at Publisher

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Compact uwb mimo slot antenna with defected ground structure (Article)

Rao, J.C.[a], Rao, N.V.[b], Madhav, B.T.P.[a], Vasavi, V.[c], Vyshnavi, K.[c], Yadav, G.S.K.[c]

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Abstract

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A compact ultra wideband (UWB) multiple-input multiple-output (MIMO) slot antenna having a size of 22 × 34 mm2 is proposed for portable device applications. The proposed MIMO antenna consists of two symmetric UWB slot antennas with microstrip-fed placed on the one side of dielectric substrate. To enhance the isolation between the antenna elements, two rectangular slots along with a ground stub are etched on the ground plane, which is on the other side of dielectric substrate. The proposed antenna exhibits a good 2:1 VSWR impedance bandwidth over the entire UWB band from 3.1-10.6 GHz with low mutual coupling less than -20dB, peak gain of 4.3 dBi and efficiency of more than 80%. The measured results are in good agreement with the simulation results and results show that the proposed antenna is good candidate for portable UWB applications.

Author keywords

Compact | Defected ground structure (DGS) | Multiple-input-multiple-output (MIMO) antenna | Mutual coupling | Ultra wideband (UWB)

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References (15)

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1 (2002) *Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems First Rep. and Order*. Cited 4 times.
ET Docket 98-153, FCC 02-48, Adopted: Feb.; Released.

2 Kaiser, T., Zheng, F., Dimitrov, E.
An overview of ultra-wide-band systems with MIMO
(2009) *Proceedings of the IEEE*, 97 (2), art. no. 4796281, pp. 285-312. Cited 158 times.
doi: 10.1109/JPROC.2008.2008784
View at Publisher

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Siva Prasad, B. , Mallikarjuna Rao, P. , Madhav, B.T.P.
(2018) International Journal of Engineering and Technology(UAE)

Cylindrical Structured Multiple-Input Multiple-Output Dielectric Resonator Antenna
Madhav, B.T.P. , Babu, M.A. , Kumar, P.V.S.P.
(2018) Lecture Notes in Electrical Engineering

A compact disc loaded curved elliptical shaped ultra-wideband MIMO antenna
Satyanarayana, E.V.V. , Kumar, V. , Mallikarjun Reddy, D.
(2018) International Journal of Engineering and Technology(UAE)

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3 Ren, J., Hu, W., Yin, Y., Fan, R.
Compact printed MIMO antenna for UWB applications

(2014) *IEEE Antennas and Wireless Propagation Letters*, 13, art. no. 6867290, pp. 1517-1520. Cited 67 times.
www.ieee.org
doi: 10.1109/LAWP.2014.2343454

View at Publisher

4 Mao, C.-X., Chu, Q.-X., Wu, Y.-T., Qian, Y.-H.
Design and investigation of closely-packed diversity UWB slot-antenna with high isolation

(2013) *Progress In Electromagnetics Research C*, 41, pp. 13-25. Cited 10 times.
http://www.jpier.org/PIERC/pierc41/02.13032301.pdf
doi: 10.2528/PIERC13032301

View at Publisher

5 Liu, L., Cheung, S.W., Yuk, T.I.
Compact MIMO antenna for portable devices in UWB applications

(2013) *IEEE Transactions on Antennas and Propagation*, 61 (8), art. no. 6516529, pp. 4257-4264. Cited 172 times.
doi: 10.1109/TAP.2013.2263277

View at Publisher

6 Madhav, B.T.P., Lakshmi Kranthi, D., Kusumanjali Devi, C., Navyasanthi, N., Tarunteja Reddy, B.
A multiband mimo antenna for S and C-Band communication applications

(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (14), pp. 6014-6022. Cited 8 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0815_2359.pdf

7 Zhang, S., Ying, Z., Xiong, J., He, S.
Ultrawideband MIMO/diversity antennas with a tree-like structure to enhance wideband isolation

(2009) *IEEE Antennas and Wireless Propagation Letters*, 8, art. no. 5340578, pp. 1279-1282. Cited 192 times.
doi: 10.1109/LAWP.2009.2037027

View at Publisher

8 Madhav, B.T.P., Khan, H., Kotamraju, S.K.
Circularly polarized slotted aperture antenna with coplanar waveguide fed for broadband applications

(2016) *Journal of Engineering Science and Technology*, 11 (2), pp. 267-277. Cited 23 times.
http://jestec.taylors.edu.my/Vol%2011%20issue%202%20February%202016/Volume%20(11)%20Issue%20(2)%20267-%20277.pdf

9 Mohan Reddy, S.S., Mallikarjuna Rao, P., Madhav, B.T.P.
Asymmetric defected ground structured monopole antenna for wideband communication systems

(2015) *International Journal on Communications Antenna and Propagation*, 5 (5), pp. 256-262. Cited 47 times.
http://www.praiseworthyprize.org/jsm/index.php?journal=irecap&page=issue&op=current
doi: 10.15866/irecap.v5i5.6005

View at Publisher

10 Tang, T.-C., Lin, K.-H.
An ultrawideband MIMO antenna with dual band-notched function

(2014) *IEEE Antennas and Wireless Propagation Letters*, 13, art. no. 6827215, pp. 1076-1079. Cited 44 times.
www.ieee.org
doi: 10.1109/LAWP.2014.2329496

View at Publisher

A miniaturized triple band-notched MIMO antenna for UWB application

Yang, Z.-X. , Yang, H.-C. , Hong, J.-S.
(2016) Microwave and Optical Technology Letters

Bandwidth enhanced electromagnetic Bandgap structure structured closed ground monopole antenna

Srinivas, M.S.S.S. , Ramakrishna, T.V. , Madhav, B.T.P.
(2016) Leonardo Electronic Journal of Practices and Technologies

Isolation Enhancement of a Very Compact UWB-MIMO Slot Antenna with Two Defected Ground Structures

Luo, C.-M. , Hong, J.-S. , Zhong, L.-L.
(2015) IEEE Antennas and Wireless Propagation Letters

View all related documents based on references

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Authors > Keywords >

11 Roy, B., Bhattacharya, A., Chowdhury, S.K., Bhattacharjee, A.K.
A Wideband Antenna with Defected Patch Structure Applicable for Wireless Communication
(2015) *Indian Journal of Science and Technology.*, 8 (30), pp. 1-5.

12 Madhav, B.T.P., Sanikommu, M., Pranoop, M.S., Bose, K.S.N.M.C., Kumar, B.S.
Cpw fed antenna for wideband applications based on tapered step ground and ebg structure

(2015) *Indian Journal of Science and Technology*, 8, pp. 119-127. Cited 46 times.
http://www.indjst.org
doi: 10.17485/ijst/2015/v8iS9/53392

View at Publisher

13 Bhavani, K.V.L., Khan, H., Madhav, B.T.P.
Multiband slotted aperture antenna with defected ground structure for C and X-band communication applications

(2015) *Journal of Theoretical and Applied Information Technology*, 82 (3), pp. 454-461. Cited 24 times.
http://www.jatit.org/volumes/Vol82No3/15Vol82No3.pdf

14 Danideh, A., Sadeghzadeh, R.A.
Cpw-fed slot antenna for mimo system applications

(2013) *Indian Journal of Science and Technology*, 6 (1), pp. 3872-3875. Cited 9 times.
http://www.indjst.org/archive/Jan-13/6-2617-danideh-jan13.pdf

15 Madhav, B.T.P., Manikanta Prasanth, A., Prasanth, S., Krishna, B.M.S., Manikantha, D., NagaSai, U.S.
Analysis of defected ground structure notched monopole antenna

(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (2), pp. 747-752. Cited 48 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0215_1519.pdf

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Document details

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Compact serrated notch band MIMO antenna for UWB applications (Article)

Reddiah Babu, M.V.[a], Kotamraju, S.K.[a], Madhav, B.T.P.[a], Mohan Reddy, S.S.[b], Krishna, G.V.[a], Giridhar, M.V.[a], Sai Krishna, V.[a]

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Abstract

View references (20)

A compact UWB antenna is been designed to notch Wi-Max (3.3GHz-3.7GHz) and W-LAN (5.15GHz-5.85GHZ) operating bands. The antenna comprises of two square slottedmonopoles with serrated edges on the patch surface and Tshaped stub as defected ground structure. Coplanar waveguide feeding is used in the antenna structure at two ports with the impedance of 50 ohms. Both simulation and measurement aredone to study the antenna parameters like return loss, radiation-characteristics, impedance matching and isolation between the two ports. To enhance isolation a slot is cut on the T-shaped ground surface. Two inverted L strips are added on either sides of the groundplane and a slot cut on the ground plane finally form T-shape defected ground structure. The proposed antenna notches two application bands in the UWB range with low mutual coupling which makes the antenna a suitable model for desired applications. © 2006-2016 Asian Research Publishing Network (ARPN).

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References (20)

View in search results format

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1 Zheng, L., Tse, D.N.C.
Diversity and multiplexing: A fundamental tradeoff in multiple-antenna channels

(2003) *IEEE Transactions on Information Theory*, 49 (5), pp. 1073-1096. Cited 2837 times.
doi: 10.1109/TIT.2003.810646

View at Publisher

2 Cheon, Y., Lee, J., Lee, J.

Quad-band monopole antenna including LTE 700 MHz with magneto-dielectric material

(2012) *IEEE Antennas and Wireless Propagation Letters*, 11, art. no. 6132403, pp. 137-140. Cited 27 times.
doi: 10.1109/LAWP.2012.2184517

View at Publisher

3 Madhav, B.T.P., Mohan Reddy, S.S., Sanjay, B., Ujwala, D.

Trident shaped ultra wideband antenna analysis based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1355-1361. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_02.pdf

4 Li, Z., Du, Z., Takahashi, M., Saito, K., Ito, K.

Reducing mutual coupling of MIMO antennas with parasitic elements for mobile terminals

(2012) *IEEE Transactions on Antennas and Propagation*, 60 (2 PART 1), art. no. 6060884, pp. 473-481. Cited 128 times.
doi: 10.1109/TAP.2011.2173432

View at Publisher

5 Madhav, B.T.P., Kumar, K.V.V., Manjusha, A.V.

Analysis of CPW fed step serrated ultra wide band antenna on Rogers RT/duroid substrates

(2014) *International Journal of Applied Engineering Research*, 9 (1), pp. 53-58. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv9n1_06.pdf

6 Su, S.-W., Lee, C.-T., Chang, F.-S.

Printed MIMO-antenna system using neutralization-line technique for wireless USB-dongle applications

(2012) *IEEE Transactions on Antennas and Propagation*, 60 (2 PART 1), art. no. 6060889, pp. 456-463. Cited 146 times.
doi: 10.1109/TAP.2011.2173450

View at Publisher

7 Zhang, S., Ying, Z., Xiong, J., He, S.

Ultrawideband MIMO/diversity antennas with a tree-like structure to enhance wideband isolation

(2009) *IEEE Antennas and Wireless Propagation Letters*, 8, art. no. 5340578, pp. 1279-1282. Cited 192 times.
doi: 10.1109/LAWP.2009.2037027

View at Publisher

8 Madhav, B.T.P., Manikanta Prasanth, A., Prasanth, S., Krishna, B.M.S., Manikantha, D., NagaSai, U.S.

Analysis of defected ground structure notched monopole antenna

(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (2), pp. 747-752. Cited 48 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0215_1519.pdf

9 Gallo, M., Antonino-Daviu, E., Ferrando-Bataller, M., Bozzetti, M., Molina-Garcia-Pardo, J.M., Juan-Llacer, L.

A broadband pattern diversity annular slot antenna

(2012) *IEEE Transactions on Antennas and Propagation*, 60 (3), art. no. 6109317, pp. 1596-1600. Cited 53 times.
doi: 10.1109/TAP.2011.2180314

View at Publisher

Band-Notched Characteristic

Liu, L. , Cheung, S.W. , Yuk, T.I.
(2015) IEEE Transactions on Antennas and Propagation

Designing of compact UWB-MIMO antenna to suppress the frequency interference with WIMAX &WLAN systems

Christina Josephine Malathi, A. , Thiripurasundari, D.
(2016) International Journal of Pharmacy and Technology

Differential fed MIMO Antenna for wide band applications

Khan, H. , Surendra, L. , Madhav, B.T.P.
(2016) ARPN Journal of Engineering and Applied Sciences

View all related documents based on references

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Authors > Keywords >

10 Liu, L., Cheung, S.W., Yuk, T.I.
Compact MIMO antenna for portable devices in UWB applications

(2013) *IEEE Transactions on Antennas and Propagation*, 61 (8), art. no. 6516529, pp. 4257-4264. Cited 172 times.
doi: 10.1109/TAP.2013.2263277

View at Publisher

11 Madhav, B.T.P., Kaza, H., Kartheek, T., Kaza, V.L., Prasanth, S., Chandra Sikakollu, K.S.S., Thammishetti, M., (...), Bhavani, K.V.L.
Novel printed monopole trapezoidal notch antenna with S-band rejection

(2015) *Journal of Theoretical and Applied Information Technology*, 76 (1), pp. 42-49. Cited 48 times.
http://www.jatit.org/volumes/Vol76No1/5Vol76No1.pdf

12 (2002) *Federal communications commission, First report and order*. Cited 322 times.
Revision of Part 15 of commission's rule regarding UWB transmission system FCC 02-48, Washington, DC, USA

13 Lakshmikanth, P., Takeshore, K., Madhav, B.T.P.
Printed log-periodic dipole antenna with notched filter at 2.45 GHz frequency for wireless communication applications

(2015) *Journal of Engineering and Applied Sciences*, 10 (3), pp. 40-44. Cited 43 times.
http://docsdrive.com/pdfs/medwelljournals/jeasci/2015/40-4.pdf
doi: 10.3923/jeasci.2015.40.44

View at Publisher

14 Lee, J.-M., Kim, K.-B., Ryu, H.-K., Woo, J.-M.
A compact ultrawideband MIMO antenna with WLAN band-rejected operation for mobile devices

(2012) *IEEE Antennas and Wireless Propagation Letters*, 11, art. no. 6276226, pp. 990-993. Cited 87 times.
doi: 10.1109/LAWP.2012.2214431

View at Publisher

15 Li, J-F., Chu, Q-X., Li, Z-H., Xia, X-X.
Compact dual band-notched UWB MIMO antenna with high isolation

(2013) *IEEE Transactions on Antennas and Propagation*, 61 (9), art. no. 6545304, pp. 4759-4766. Cited 107 times.
doi: 10.1109/TAP.2013.2267653

View at Publisher

16 Madhav, B.T.P., Lakshmi Kranthi, D., Kusumanjali Devi, C., Navyasanthi, N., Tarunteja Reddy, B.
A multiband mimo antenna for S and C-Band communication applications

(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (14), pp. 6014-6022. Cited 8 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0815_2359.pdf

17 Gao, P., He, S., Wei, X., Xu, Z., Wang, N., Zheng, Y.
Compact printed UWB diversity slot antenna with 5.5-GHz band-notched characteristics

(2014) *IEEE Antennas and Wireless Propagation Letters*, 13, art. no. 6740833, pp. 376-379. Cited 102 times.
doi: 10.1109/LAWP.2014.2305772

View at Publisher

18 Liu, L., Cheung, S.W., Yuk, T.I.

Bandwidth improvements using ground slots for compact UWB microstrip-fed antennas

(2011) *Progress in Electromagnetics Research Symposium*, pp. 1420-1423. Cited 14 times.
ISBN: 978-193414218-9

19 Ramkiran, D.S., Madhav, B.T.P., Prasanth, A.M., Harsha, N.S., Vardhan, V., Avinash, K., Chaitanya, M.N., (...), Nagasai, U.S.

Novel compact asymmetrical fractal aperture Notch band antenna

(2015) *Leonardo Electronic Journal of Practices and Technologies*, 14 (27), pp. 1-12. Cited 31 times.
http://lejpt.academicdirect.org/A27/001_012.pdf

20 Thomas, K.G., Sreenivasan, M.

A simple ultrawideband planar rectangular printed antenna with band dispensation

(2010) *IEEE Transactions on Antennas and Propagation*, 58 (1), art. no. 5325866, pp. 27-34. Cited 116 times.
doi: 10.1109/TAP.2009.2036279

View at Publisher

Madhav, B.T.P.; Department of Electronics and Communication Engineering, K L University, AP, India;
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Investigation and comparison of optical and raman bands of mechanically synthesised MoO_3 nano powders (Conference Paper)

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Abstract

View references (48)

MoO_3 Nano powders were synthesized using mechanochemical assisted synthesis technique at different time intervals at room temperature. The structural properties were analyzed by Powder X-ray Diffraction technique (PXRD), which reveals the average crystalline size, strain, dislocation densities and phase structure. The surface morphology and chemical composition of the sample is revealed by Scanning Electron Microscope (SEM) images and Energy Dispersive X-ray Spectroscopy (EDS) Spectra. The fundamental vibrational modes and Raman modes are demonstrated by FT-IR spectroscopy and Raman Spectroscopy and are compared. X-ray diffraction data is well matched with JCPDS data and confirms the orthorhombic α- MoO_3 phase structure of the Nano powders. The bandenergy is calculated from the UV-Spectra. The thermal properties are studies from TGDTA analysis.

Author keywords

FT-IR | Mechanochemical synthesis | Nano powders | Raman Spectroscopy and UV-Vis spectra

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Publisher: Elsevier Ltd

References (48)

View in search results format

All Export Print E-mail Save to PDF Create bibliography

1 Lamic-Humblot, A.-F., Barthe, P., Guzman, G., Delannoy, L., Louis, C.

Preparation of thin film gold based catalysts for oxidation reactions in liquid and gas phases

(2013) *Thin Solid Films*, 527, pp. 96-101. Cited 5 times.
doi: 10.1016/j.tsf.2012.11.096

View at Publisher

2 Zhao, Y., Yang, B., Xu, J., Fu, Z., Wu, M., Li, F.

Facile synthesis of Ag nanoparticles supported on TiO_2 inverse opal with enhanced visible-light photocatalytic activity

(2012) *Thin Solid Films*, 520 (9), pp. 3515-3522. Cited 31 times.
doi: 10.1016/j.tsf.2011.12.076

View at Publisher

3 Martínez, H.M., Torres, J., Rodríguez-García, M.E., López Carreño, L.D.

Gas sensing properties of nanostructured MoO_3 thin films prepared by spray pyrolysis

(2012) *Physica B: Condensed Matter*, 407 (16), pp. 3199-3202. Cited 31 times.
doi: 10.1016/j.physb.2011.12.064

View at Publisher

4 Hsu, C.-S., Chan, C.-C., Huang, H.-T., Peng, C.-H., Hsu, W.-C.

Electrochromic properties of nanocrystalline MoO3 thin films

(2008) *Thin Solid Films*, 516 (15), pp. 4839-4844. Cited 91 times.
doi: 10.1016/j.tsf.2007.09.019

View at Publisher

5 Yao, J.N., Hashimoto, K., Fujishima, A.

Photochromism induced in an electrolytically pretreated Mo03 thin film by visible light

(1992) *Nature*, 355 (6361), pp. 624-626. Cited 354 times.
doi: 10.1038/355624a0

View at Publisher

6 Hamelmann, F., Gesheva, K., Ivanova, T., Szekeres, A., Abrashev, M., Heinzmann, U.

Optical and electrochromic characterization of multilayered mixed metal oxide thin films

(2005) *Journal of Optoelectronics and Advanced Materials*, 7 (1), pp. 393-396. Cited 23 times.

View at Publisher

7 Sundeep, D., Daniel Ephraim, S.
Use of nanotechnology in reduction of friction and wear
(2014) *IJIRAE*, 1, pp. 2349-2363.

8 Song, J., Li, Y., Zhu, X., Zhao, S., Hu, Y., Hu, G.

Preparation and optical properties of hexagonal and orthorhombic molybdenum trioxide thin films

(2013) *Materials Letters*, 95, pp. 190-192. Cited 7 times.
doi: 10.1016/j.matlet.2012.12.111

View at Publisher

Manivel, A. , Lee, G.-J. , Chen, C.-Y.
(2015) Materials Research Bulletin

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Authors > Keywords >

9 Nirupama, V., Uthanna, S.
Influence of sputtering power on the physical properties of magnetron sputtered molybdenum oxide films

(2010) *Journal of Materials Science: Materials in Electronics*, 21 (1), pp. 45-52. Cited 13 times.
doi: 10.1007/s10854-009-9867-6

View at Publisher

10 Badica, P.
Preparation through the vapor transport and growth mechanism of the first-order hierarchical structures of MoO_3 belts on sillimanite fibers

(2007) *Crystal Growth and Design*, 7 (4), pp. 794-801. Cited 34 times.
doi: 10.1021/cg060893s

View at Publisher

11 Chernova, N.A., Roppolo, M., Dillon, A.C., Whittingham, M.S.
Layered vanadium and molybdenum oxides: Batteries and electrochromics

(2009) *Journal of Materials Chemistry*, 19 (17), pp. 2526-2552. Cited 470 times.
doi: 10.1039/b819629j

View at Publisher

12 He, T., Yao, J.
Photochromism of molybdenum oxide

(2003) *Journal of Photochemistry and Photobiology C: Photochemistry Reviews*, 4 (2), pp. 125-143. Cited 167 times.
http://www.elsevier.com/locate/jphotochemrev
doi: 10.1016/S1389-5567(03)00025-X

View at Publisher

13 Comini, E., Yubao, L., Brando, Y., Sberveglieri, G.
Gas sensing properties of MoO_3 nanorods to CO and CH_3OH

(2005) *Chemical Physics Letters*, 407 (4-6), pp. 368-371. Cited 146 times.
doi: 10.1016/j.cplett.2005.03.116

View at Publisher

14 Song, J., Ni, X., Zhang, D., Zheng, H.
Fabrication and photoluminescence properties of hexagonal MoO3 rods

(2006) *Solid State Sciences*, 8 (10), pp. 1164-1167. Cited 66 times.
doi: 10.1016/j.solidstatesciences.2006.05.002

View at Publisher

15 He, T., Ma, Y., Cao, Y., Yin, Y., Yang, W., Yao, J.
Enhanced visible-light coloration and its mechanism of MoO_3 thin films by Au nanoparticles

(2001) *Applied Surface Science*, 180 (3-4), pp. 336-340. Cited 33 times.
doi: 10.1016/S0169-4332(01)00370-1

View at Publisher

16 Wang, J., Rose, K.C., Lieber, C.M.
Load-Independent Friction: MoO_3 Nanocrystal Lubricants

(1999) *Journal of Physical Chemistry B*, 103 (40), pp. X-8409. Cited 75 times.

17 Reddy, K.R., Ramesh, K., Seela, K.K., Venkat Rao, V., Chary, K.V.R.
Alkylation of phenol with methanol over molybdenum oxide supported on NaY zeolite

(2003) *Catalysis Communications*, 4 (3), pp. 112-117. Cited 29 times.
doi: 10.1016/S1566-7367(03)00006-2

View at Publisher

18 Taurino, A.N., Forleo, A., Francioso, L., Siciliano, P., Stalder, M., Nesper, R.
(2006) *Appl. Phys. Chem*, 88.

19 Lou, X.W., Zeng, H.C.
Hydrothermal synthesis of α-MoO_3 nanorods via acidification of ammonium heptamolybdate tetrahydrate

(2002) *Chemistry of Materials*, 14 (11), pp. 4781-4789. Cited 267 times.
doi: 10.1021/cm0206237

View at Publisher

20 Li, W., Cheng, F., Tao, Z., Chen, J.
Vapor-transportation preparation and reversible lithium intercalation/deintercalation of α-MoO_3 microrods

(2006) *Journal of Physical Chemistry B*, 110 (1), pp. 119-124. Cited 150 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp0553784

View at Publisher

21 Li, Y.B., Bando, Y., Golberg, D., Kurashima, K.
Field emission from MoO_3 nanobelts

(2002) *Applied Physics Letters*, 81 (26), pp. 5048-5050. Cited 203 times.
doi: 10.1063/1.1532104

View at Publisher

22 Wei, X.M., Zeng, H.C.
Large-scale organizations of MoO_3 nanoplatelets with single-crystalline MoO_3(4,4′-bipyridyl)$_{0.5}$

(2003) *Journal of Physical Chemistry B*, 107 (12), pp. 2619-2622. Cited 40 times.
doi: 10.1021/jp0274177

View at Publisher

23 Song, J., Ni, X., Gao, L., Zheng, H.
Synthesis of metastable h-MoO_3 by simple chemical precipitation

(2007) *Materials Chemistry and Physics*, 102 (2-3), pp. 245-248. Cited 63 times.
doi: 10.1016/j.matchemphys.2006.12.011

View at Publisher

24 Nagano, M., Greenblatt, M.
Preparation of reduced molybdenum oxides (MoO_2MoO_3) by a sol-gel method

(1988) *Journal of Non-Crystalline Solids*, 101 (2-3), pp. 255-262. Cited 17 times.
doi: 10.1016/0022-3093(88)90161-5

View at Publisher

25 Dong, W., Dunn, B.
Sol-gel synthesis and characterization of molybdenum oxide gels

(1998) *Journal of Non-Crystalline Solids*, 225 (1-3), pp. 135-140. Cited 39 times.
http://www.journals.elsevier.com/journal-of-non-crystalline-solids/
doi: 10.1016/S0022-3093(98)00018-0

View at Publisher

26 Zhou, J., Deng, S.Z., Xu, N.S., Chen, J., She, J.C.
Synthesis and field-emission properties of aligned MoO_3 nanowires

(2003) *Applied Physics Letters*, 83 (13), pp. 2653-2655. Cited 112 times.
doi: 10.1063/1.1613992

View at Publisher

27 Li, X.L., Liu, J.F., Li, Y.D.
(2002) *Appl. Phys. Chem*, 81, p. 4832. Cited 2 times.

28 Li, G., Jiang, L., Pang, S., Peng, H., Zhang, Z.
Molybdenum trioxide nanostructures: The evolution from helical nanosheets to crosslike nanoflowers to nanobelts

(2006) *Journal of Physical Chemistry B*, 110 (48), pp. 24472-24475. Cited 62 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp064855v

View at Publisher

29 Peterson, M.B., Murray, S.F., Florek, J.J.
Consideration of lubricants for temperatures above 1000 f

(1959) *ASLE Transactions*, 2 (2), pp. 225-234. Cited 125 times.
doi: 10.1080/05698195908972374

View at Publisher

30 Takeichi, Y., Chujyo, N., Uemura, M.
(2009) *Tribology Online*, 4 (5), pp. 135-139.

31 Erdemir, A.
A crystal-chemical approach to lubrication by solid oxides

(2000) *Tribology Letters*, 8 (2-3), pp. 97-102. Cited 154 times.

View at Publisher

32 Zabinski, J.S., Sanders, J.H., Nainaparampil, J., Prasad, S.V.
Lubrication using a micro structurally engineered oxide: Performance and mechanisms

(2000) *Tribology Letters*, 8 (2-3), pp. 103-116. Cited 48 times.

View at Publisher

33 Wahl, K.J., Seitzman, L.E., Bolster, R.N., Singer, I.L., Peterson, M.B.
Ion-beam deposited Cu-Mo coatings as high temperature solid lubricants

(1997) *Surface and Coatings Technology*, 89 (3), pp. 245-251. Cited 53 times.
http://www.journals.elsevier.com/surface-and-coatings-technology/
doi: 10.1016/S0257-8972(96)02900-3

View at Publisher

34 Zabinski, J.S., Donley, M.S., Dyhouse, V.J., McDevitt, N.T.
Chemical and tribological characterization of $PbOMoS_2$ films grown by pulsed laser deposition

(1992) *Thin Solid Films*, 214 (2), pp. 156-163. Cited 111 times.
doi: 10.1016/0040-6090(92)90764-3

View at Publisher

35 Zabinski, J.S., Day, A.E., Donley, M.S., Dellacorte, C., McDevitt, N.T.
Synthesis and characterization of a high-temperature oxide lubricant

(1994) *Journal of Materials Science*, 29 (22), pp. 5875-5879. Cited 30 times.
doi: 10.1007/BF00366870

View at Publisher

36 Zheng, L., Xu, Y., Jin, D., Xie, Y.
(2009) *Chem Mater*, 21, pp. 5681-5690. Cited 125 times.

37 Cullity, B.D., Stock, S.R.
(2001) *Elements of X-ray diffraction*. Cited 20432 times.
3r ed. Prentice Hall Publication, India

38 Patterson, A.L.
The scherrer formula for X-ray particle size determination

(1939) *Physical Review*, 56 (10), pp. 978-982. Cited 3281 times.
doi: 10.1103/PhysRev.56.978

View at Publisher

39 Mote, V., Purushotham, Y., Dole, B.
Williamson-Hall analysis in estimation of lattice strain in nanometer-sized ZnO particles

(2012) *Journal of Theoretical and Applied Physics*, 6 (1), art. no. 6. Cited 281 times.
http://link.springer.com/journal/volumesAndIssues/40094
doi: 10.1186/2251-7235-6-6

View at Publisher

40 Natarajan, G., Daniels, S., Cameron, D.C., Reilly, L.O., Mitra, A., McNally, P.J., Lucas, O.F., (...), Bradley, A.L.
(2006) *J. Appl. Phys*, 100.

41 Seguin, L., Figlarz, M., Cavagnat, R., Lassègues, J.-C.
Infrared and Raman spectra of MoO_3 molybdenum trioxides and $MoO_3 \cdot xH_2O$ molybdenum trioxide hydrates

(1995) *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 51 (8), pp. 1323-1344. Cited 262 times.
doi: 10.1016/0584-8539(94)00247-9

View at Publisher

42 Harb, F., Gerand, B., Nowogrocki, G., Figlrz, M.
(1989) *J. Sol. State Ionics*, 32-33, p. 84. Cited 19 times.

43 Chithambararaj, A., Bose, A.C.

Investigation on structural, thermal, optical and sensing properties of meta-stable hexagonal moO3 nanocrystals of one dimensional structure

(2011) *Beilstein Journal of Nanotechnology*, 2 (1), pp. 585-592. Cited 42 times.
http://www.beilstein-journals.org/bjnano/content/pdf/2190-4286-2-62.pdf
doi: 10.3762/bjnano.2.62

View at Publisher

44 Yao, D.D., Ou, J.Z., Latham, K., Zhuiykov, S., O'Mullane, A.P., Kalantar-Zadeh, K.

Electrodeposited α- And β-phase MoO 3 films and investigation of their gasochromic properties

(2012) *Crystal Growth and Design*, 12 (4), pp. 1865-1870. Cited 90 times.
doi: 10.1021/cg201500b

View at Publisher

45 Atuchin, V.V., Gavrilova, T.A., Grigorieva, T.I., Kuratieva, N.V., Okotrub, K.A., Pervukhina, N.V., Surovtsev, N.V.

Sublimation growth and vibrational microspectrometry of α-MoO $_3$ single crystals

(2011) *Journal of Crystal Growth*, 318 (1), pp. 987-990. Cited 51 times.
doi: 10.1016/j.jcrysgro.2010.10.149

View at Publisher

46 Xu, J.F., Ji, W., Shen, Z.X., Li, W.S., Tang, S.H., Ye, X.R., Jia, D.Z., (...), Xin, X.Q.

Raman spectra of CuO nanocrystals

(1999) *Journal of Raman Spectroscopy*, 30 (5), pp. 413-415. Cited 244 times.
http://www3.interscience.wiley.com/journal/3420/home
doi: 10.1002/(SICI)1097-4555(199905)30:5<413::AID-JRS387>3.0.CO;2-N

View at Publisher

47 Klinbumrung, A., Thongtem, T., Thongtem, S.
(2012) *J. Nano Mat*

48 Seguin, L., Figlarz, M., Cavagnat, R., Lassègues, J.-C.

Infrared and Raman spectra of MoO_3 molybdenum trioxides and $MoO_3 \cdot xH_2O$ molybdenum trioxide hydrates

(1995) *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 51 (8), pp. 1323-1344. Cited 262 times.
doi: 10.1016/0584-8539(94)00247-9

View at Publisher

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Document details

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Spectral investigation of structural and optical properties of mechanically synthesized TiO_2-V_2O_5 nanocomposite powders (Conference Paper)

Ravikumar, R.V.S.S.N.[a], Sundeep, D.[b], Gopala Krishna, A.[b], Daniel Ephraim, S.[b], Ali, M.A.[c], Ahmed, S.I.[c], Manikanta, K.S.[c], Vijaya Kumar, T.[c]

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[c]Department of Mechanical Engineering, KL University, Green Fields, Vaddeswaram, Guntur, India

Abstract

View references (32)

TiO_2-V_2O_5 nanocomposite powders are prepared by simple ball milling process at room temperature. The structural and optical properties of the synthesised sample powders are characterised by Powder X-Ray diffraction (PXRD), SEM with EDS, Fourier Transform Infrared (FT-IR) Spectroscopy, UV Vis, Raman spectroscopy, TGA and DTA techniques. The X-ray diffraction (XRD) pattern contains a series of peaks corresponds to the tetragonal phase structure of both TiO_2 and V_2O_5 which are well matched with JCPDS data. The surface morphologies are revealed by SEM images. The average crystallite size is calculated by the scherrer's formula and is found to be 10 nm. SEM images at different parameters are taken and revels the spherical like structures with little agglomeration. FT-IR shows the fundamental vibration modes of TiO_2-V_2O_5. The band-gap energies are calculated from the UV Vis spectra. Raman analysis provided the qualitative information about the structure of the mixed oxide composite. The weight loss and temperature stability of the powders were analysed by TG and DTA analysis.

Author keywords

FT-IR | Mechanochemical synthesis | Nanopowders | Raman Spectroscopy and UV-Vis spectra

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Publisher: Elsevier Ltd

References (32)

View in search results format

1 Mohan, R., Sankarrajan, S., Santham, P.
(2013) *Int. J. Recent Sci. Res*, 4, p. 405.

2 Hines, M.A., Guyot-Sionnest, P.
Synthesis and characterization of strongly luminescing ZnS-capped CdSe nanocrystals

(1996) *Journal of Physical Chemistry*, 100 (2), pp. 468-471. Cited 2177 times.
doi: 10.1021/jp9530562

View at Publisher

3 Kim, H., Achermann, M., Balet, L.P., Hollingsworth, J.A., Klimov, V.I.
Synthesis and characterization of Co/CdSe core/shell nanocomposites: Bifunctional magnetic-optical nanocrystals

(2005) *Journal of the American Chemical Society*, 127 (2), pp. 544-546. Cited 394 times.
doi: 10.1021/ja047107x

View at Publisher

4 Halas, N.
Playing with plasmons: Tuning the optical resonant properties of metallic nanoshells

(2005) *MRS Bulletin*, 30 (5), pp. 362-367. Cited 214 times.
http://journals.cambridge.org/MRS
doi: 10.1557/mrs2005.99

View at Publisher

5 Monteiro, O.C., Esteves, A.C.C., Trindade, T.
The synthesis of SiO2@CdS nanocomposites using single-molecule precursors

(2002) *Chemistry of Materials*, 14 (7), pp. 2900-2904. Cited 49 times.
doi: 10.1021/cm011257e

View at Publisher

6 Lu, Y., McLellan, J., Xia, Y.
Synthesis and Crystallization of Hybrid Spherical Colloids Composed of Polystyrene Cores and Silica Shells

(2004) *Langmuir*, 20 (8), pp. 3464-3470. Cited 264 times.

View at Publisher

7 Caruso, F., Caruso, R.A., Möhwald, H.
Nanoengineering of inorganic and hybrid hollow spheres by colloidal templating

(1998) *Science*, 282 (5391), pp. 1111-1114. Cited 3561 times.
www.sciencemag.org
doi: 10.1126/science.282.5391.1111

View at Publisher

8 Averitt, R.D., Sarkar, D., Halas, N.J.
Plasmon resonance shifts of au-coated Au_2S nanoshells: Insight into multicomponent nanoparticle growth

(1997) *Physical Review Letters*, 78 (22), pp. 4217-4220. Cited 570 times.
doi: 10.1103/PhysRevLett.78.4217

View at Publisher

A facile synthesis and spectral characterization of Cu2+ doped CdO/ZnS nanocomposite

Joyce Stella, R. , Thirumala Rao, G. , Babu, B.
(2015) Journal of Magnetism and Magnetic Materials

View all related documents based on references

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Authors > Keywords >

9 Westcott, S.L., Oldenburg, S.J., Lee, T.R., Halas, N.J.
Formation and adsorption of clusters of gold nanoparticles onto functionalized silica nanoparticle surfaces

(1998) *Langmuir*, 14 (19), pp. 5396-5401. Cited 539 times.

View at Publisher

10 Emeline, A.V., Kuznetsov, V.N., Rybchuk, V.K., Serpone, N.
(2008) *Int. Journal of Photoenergy*, 2008, p. 19. Cited 149 times.

11 Chen, C., Ma, W., Zhao, J.
Semiconductor-mediated photodegradation of pollutants under visible-light irradiation

(2010) *Chemical Society Reviews*, 39 (11), pp. 4206-4219. Cited 1110 times.
doi: 10.1039/b921692h

View at Publisher

12 Mo, J., Zhang, Y., Xu, Q., Lamson, J.J., Zhao, R.
Photocatalytic purification of volatile organic compounds in indoor air: A literature review

(2009) *Atmospheric Environment*, 43 (14), pp. 2229-2246. Cited 444 times.
doi: 10.1016/j.atmosenv.2009.01.034

View at Publisher

13 Shieh, D.-L., Lin, Y.-S., Yeh, J.-H., Chen, S.-C., Lin, B.-C., Lin, J.-L.
N-doped, porous TiO2 with rutile phase and visible light sensitive photocatalytic activity

(2012) *Chemical Communications*, 48 (19), pp. 2528-2530. Cited 38 times.
www.rsc.org/chemcomm
doi: 10.1039/c2cc16960f

View at Publisher

14 Matsubara, K., Tatsuma, T.
Morphological changes and multicolor photochromism of Ag nanoparticles deposited on single-crystalline TiO_2 surfaces

(2007) *Advanced Materials*, 19 (19), pp. 2802-2806. Cited 139 times.
doi: 10.1002/adma.200602823

View at Publisher

15 Cao, J., Xu, B., Luo, B., Lin, H., Chen, S.
Preparation, characterization and visible-light photocatalytic activity of AgI/AgCl/TiO_2

(2011) *Applied Surface Science*, 257 (16), pp. 7083-7089. Cited 87 times.
doi: 10.1016/j.apsusc.2011.03.046

View at Publisher

16 Chin, S., Park, E., Kim, M., Bae, G.-N., Jurng, J.
Synthesis and visible light photocatalytic activity of transition metal oxide (V 2O 5) loading on TiO 2 via a chemical vapor condensation method

(2012) *Materials Letters*, 75, pp. 57-60. Cited 17 times.
doi: 10.1016/j.matlet.2012.02.001

View at Publisher

17 Mohan, R., Sankarrajan, S., Santham, P.
(2013) *Int. J. Recent Sci. Res*, 4, p. 405.

18 Tan, K., Zhang, H., Xie, C., Zheng, H., Gu, Y., Zhang, W.F.
Visible-light absorption and photocatalytic activity in molybdenum- and nitrogen-codoped TiO_2

(2010) *Catalysis Communications*, 11 (5), pp. 331-335. Cited 54 times.
doi: 10.1016/j.catcom.2009.10.025

View at Publisher

19 Yin, S., Liu, B., Zhang, P., Morikawa, T., Yamanaka, K.-I., Sato, T.
Photocatalytic oxidation of NO_x under visible led light irradiation over nitrogen-doped titania particles with iron or platinum loading

(2008) *Journal of Physical Chemistry C*, 112 (32), pp. 12425-12431. Cited 104 times.
doi: 10.1021/jp803371s

View at Publisher

20 Gannoun, C., Delaigle, R., Eloy, P., Debecker, D.P., Ghorbel, A., Gaigneaux, E.M.
Sol-gel derived V_2O_5-TiO_2 mesoporous materials as catalysts for the total oxidation of chlorobenzene

(2011) *Catalysis Communications*, 15 (1), pp. 1-5. Cited 23 times.
doi: 10.1016/j.catcom.2011.08.001

View at Publisher

21 Gao, Y.-L., Chen, Q.-Y., Tong, H.-X., Hu, H.-P., Qian, D., Yang, Y.-H., Zhou, J.-L.
Preparation of TiO2 photocatalyst loaded with V 2O5 for O2 evolution

(2009) *Journal of Central South University of Technology (English Edition)*, 16 (6), pp. 919-925. Cited 6 times.
doi: 10.1007/s11771-009-0153-9

View at Publisher

22 Bucharsky, E.C., Schell, G., Oberacker, R., Hoffmann, M.J.
Jeurceramsoc
2008.12.007

23 Choi, S., Lee, M.-S., Park, D.-W.
j.cap
2014.01.004

24 Lapina, O.B., Shubin, A.A., Nosov, A.V., Bosch, E., Spengler, J., Knözinger, H.
Characterization of V_2O_5-TiO_2 catalysts prepared by milling by ESR and solid state ^{1}H and ^{51}V NMR

(1999) *Journal of Physical Chemistry B*, 103 (36), pp. 7599-7606. Cited 40 times.

View at Publisher

25 Patterson, A.L.
The scherrer formula for X-ray particle size determination

(1939) *Physical Review*, 56 (10), pp. 978-982. Cited 3281 times.
doi: 10.1103/PhysRev.56.978

View at Publisher

26 Ravindranadh, K., Babu, B., Pushpa Manjari, V., Thirumala Rao, G., Rao, M.C., Ravikumar, R.V.S.S.N.
Optical and structural properties of undoped and Mn^{2+} doped Ca-Li hydroxyapatite nanopowders using mechanochemical synthesis

(2015) *Journal of Luminescence*, 159, pp. 119-127. Cited 29 times.
doi: 10.1016/j.jlumin.2014.10.039

View at Publisher

27 Reddy, C.V., Shim, J., Byon, C., Sarma, G.V.S.S., Murthy, P.N., Ravikumar, R.V.S.S.N.
Synthesis and spectroscopic studies of Fe^{3+}-doped zinc borate powder

(2015) *Journal of Molecular Structure*, 1081, pp. 311-315. Cited 5 times.
www.elsevier.com/inca/publications/store/5/0/0/8/5/0/index.htt
doi: 10.1016/j.molstruc.2014.10.042

View at Publisher

28 Fomichev, V.V., Ukrainskaya, P.I., Ilyin, T.M.
Vibrational spectra and electrostatic fields of V_2O_5 and lithium vanadium bronzes

(1997) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 53 (11), pp. 1833-1837. Cited 28 times.
doi: 10.1016/S1386-1425(97)00089-9

View at Publisher

29 Primet, M., Pichat, P., Mathieu, M.-V.
Infrared study of the surface of titanium dioxides. I. Hydroxyl groups

(1971) *Journal of Physical Chemistry*, 75 (9), pp. 1216-1220. Cited 405 times.
doi: 10.1021/j100679a007

View at Publisher

30 Ohsaka, T.
Temperature Dependence of the Raman Spectrum in Anatase Tio_2

(1980) *Journal of the Physical Society of Japan*, 48 (5), pp. 1661-1668. Cited 210 times.
doi: 10.1143/JPSJ.48.1661

View at Publisher

31 Santos, E.D.B., Sigoli, F.A., Mazali, I.O.
Study of structure of the TiO2-MoO3 bilayer films by Raman spectroscopy

(2014) *Materials Research Bulletin*, 60, pp. e242-e246. Cited 3 times.
http://www.sciencedirect.com/science/journal/00255408
doi: 10.1016/j.materresbull.2014.08.044

View at Publisher

32 Yanagisawa, K., Ovenstone, J.
Crystallization of anatase from amorphous titania using the hydrothermal technique: Effects of starting material and temperature

(1999) *Journal of Physical Chemistry B*, 103 (37), pp. 7781-7787. Cited 394 times.
http://pubs.acs.org/journal/jpcbfk

View at Publisher

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Document details

ARPN Journal of Engineering and Applied Sciences Open Access
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Performance of five phase induction motor using specially connected transformer (Article)

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Abstract

View references (14)

Earlier the production of multiphase system was a challenging task, but with the advance in the ratings of power semiconductor switches it turned to be effortless through inverters. The main cause for developing multi-phase system is that, it has some dominant features over the conventional three phase system. In order to obtain a five phase supply a specially connected transformer is proposed instead of an inverter. The induction motor (five phase) feed by the five phase output of the specially connected transformer. The performance of the motor is analyzed under balanced as well as unbalanced supply conditions and also under stator fault conditions. © 2006-2016 Asian Research Publishing Network (ARPN).

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Author keywords

Balanced and unbalanced power supply | Five phase induction motor | Multi-winding transformer | Turns ratio

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References (14)

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Dynamic analysis of high-phase induction machine
Khan, M.R. , Khan, I.
(2013) 2013 Annual IEEE India Conference, INDICON 2013

Experimental investigation of multiphase transformer fed induction motor
Jyothi, B. , Rao, M.V.G. , Karthikeyan, S.P.
(2017) IEEE Region 10 Annual International Conference, Proceedings/TENCON

Cell voltage balancing of a series-connected multiphase BLDC motor drive
Pan, Z. , Shrestha, G. , Schweizer, M.
(2016) Proceedings - 2016 22nd International Conference on Electrical Machines, ICEM 2016

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1 Jyothi, B.
(2011) *IEEE digital library December 16-18.INDICON*
Comparison between specially connected transformer scheme and five leg inverter

2 Iqbal, A., Moinuddin, S., Khan, M.R., Ahmed, S.M., Abu-Rub, H.
A novel three-phase to five-phase transformation using a special transformer connection
(2010) *IEEE Transactions on Power Delivery*, 25 (3), art. no. 5491358, pp. 1637-1644. Cited 29 times.
doi: 10.1109/TPWRD.2010.2042307
View at Publisher

3 Levi, E., Bojoi, R., Profumo, F., Toliyat, H.A., Williamson, S.
Multiphase induction motor drives - A technology status review
(2007) *IET Electric Power Applications*, 1 (4), pp. 489-516. Cited 753 times.
doi: 10.1049/iet-epa:20060342
View at Publisher

4 (2000) *Induction Motor Modelling for Vector Control Purposes*, p. 144. Cited 26 times.

5 Levi, E., Jones, M., Vukosavic, S., Toliyat, H.A.
A novel concept of a multiphase, multimotor vector controlled drive system supplied from a single voltage source inverter
(2004) *IEEE Transactions on Power Electronics*, 19 (2), pp. 320-335. Cited 163 times.
doi: 10.1109/TPEL.2003.823241
View at Publisher

6 Iqbal, A., Moinuddin, S., Rizwan Khan, M., Moin Ahmed, S., Abu-Rub, H.
(2010) *Power India, 2010 Joint International Conference on 20-23 December 2010*
IEEE digital library, Modeling, simulation and implementation of a five-phase induction motor drive system

7 Sharma, P.G., Rangari, S.
Simulation of Inverter Fed Five Phase Induction Motor

8 Krause, P.C.
(1986) *Analysis of electric machinery*. Cited 2217 times.
Newyork: Mc. Graw-Hill

9 Toliyat, H.A.
IEEE Transactions on Power Electronics
(1998) *Analysis and Simulation of Five-Phase Variable-Speed Induction Motor Drives under Asymmetrical Connections*, 13 (4).

10 Marcellonel, J., Stan, M.-F., Virjoghe, E.-O.
WSEAS Transactions on Systems and Control
(2010) *Current Trends on Command, Control, Modeling and Simulation of the Induction Machines*, 5 (2), pp. 91-101.

11 Singh, G.K.
Multi-phase induction machine drive research - A survey

(2002) *Electric Power Systems Research*, 61 (2), pp. 139-147. Cited 271 times.
doi: 10.1016/S0378-7796(02)00007-X

View at Publisher

12 Jones, M., Levi, E.
'A literature survey of state-of-the-art in multiphase AC drives'
(2002) *Proc. Universities Power Engineering Conference UPEC*, pp. 505-510. Cited 106 times.
Stafford, UK

13 Kestelyn, X., Semail, E., Hautier, J.P.
'Vectorial multi-machin modeling for a five-phase machine'
Proc. Int. Conf. on Electrical Machines ICEM, (2002).
Bruges, Belgium, CD-ROM paper 394

14 Parsa, L., Toliyat, H.A.
Five-phase permanent-magnet motor drives

(2005) *IEEE Transactions on Industry Applications*, 41 (1), pp. 30-37. Cited 275 times.
doi: 10.1109/TIA.2004.841021

View at Publisher

Jyothi, B.; Department of Electrical and Electronics Engineering, K L University, Guntur (dt), AP, India;
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Dual band notched planar printed antenna with serrated defected ground structure (Article)

Bhavani, K.V.L.[ab], Khan, H.[a], Sreenivasa Rao, D.[a], Madhav, B.T.P.[a], Rasagna Reddy, V.[a], Monika, M.[a], Dhanush Chand, Y.[a]

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Abstract

View references (16)

A low profile printed antenna with defected ground structure (DGS) is presented in this work. Initially a square patch radiating element is constructed on one side of the substrate and the other end of the substrate is etched with serrated shape DGS. Three different iterations are examined in this work by changing the number of serrated edges on the ground plane. To improve the gain of the designed antenna models a frequency selective surface is placed beneath the antenna structure as a reflecting surface. The overall performance characteristics of the proposed antenna models are simulated using commercial electromagnetic tool HFSS. Optimized proposed antenna model is fabricated on FR4 substrate and measured results are compared with simulation results for validation.

Author keywords

Defected ground structure (DGS) | Dual band | FR4 | High frequency structure simulator (HFSS) | Notched antenna (NA) | Serrated shape

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References (16)

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1 Madhav, B.T.P., Khan, H., Ujwala, D., Bhavani Sankar, Y., Kandepi, M., Nagendra Reddy, A.S., Nagajyothi, D.
CPW fed serrated antenna performance based on substrate permittivity
(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1349-1354. Cited 25 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_01.pdf

2 Sarkar, D., Srivastava, K.V., Saurav, K.
A compact microstrip-fed triple band-notched UWB monopole antenna
(2014) *IEEE Antennas and Wireless Propagation Letters*, 13, art. no. 6744598, pp. 396-399. Cited 106 times.
doi: 10.1109/LAWP.2014.2306812

View at Publisher

3 Madhav, B.T.P., Kumar, K.V.V., Manjusha, A.V.
Analysis of CPW fed step serrated ultra wide band antenna on Rogers RT/duroid substrates
(2014) *International Journal of Applied Engineering Research*, 9 (1), pp. 53-58. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv9n1_06.pdf

4 Chacko, B.P., Augustin, G., Denidni, T.A.
Uniplanar slot antenna for ultrawideband polarization-diversity applications
(2013) *IEEE Antennas and Wireless Propagation Letters*, 12, art. no. 6421035, pp. 88-91. Cited 44 times.
doi: 10.1109/LAWP.2013.2242841
View at Publisher

5 Madhav, B.T.P., Kandepi, M., Kanapala, S., Anjaneyulu, B., Anada Rao, N., Vijaya Vardhan, K.
Serrated spike antenna performance evaluation based on arlon substrate materials
(2014) *International Journal of Applied Engineering Research*, 9 (1), pp. 117-124. Cited 7 times.
http://www.ripublication.com/ijaerv6/ijaerv9n1_12.pdf

6 Madhav, B.T.P., Manikanta Prasanth, A., Prasanth, S., Krishna, B.M.S., Manikantha, D., NagaSai, U.S.
Analysis of defected ground structure notched monopole antenna
(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (2), pp. 747-752. Cited 48 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0215_1519.pdf

7 Ramkiran, D.S., Madhav, B.T.P., Grandhi, S.K., Sumanth, A.V., Kota, S.H., Boddu, L.K.
Compact microstrip band pass filter with defected ground structure
(2015) *Far East Journal of Electronics and Communications*, 15 (1), pp. 75-84. Cited 13 times.
http://www.pphmj.com/article.php?act=art_download&art_id=9244
doi: 10.17654/FJECSep2015-075-084
View at Publisher

8 Mohan Reddy, S.S., Mallikarjuna Rao, P., Madhav, B.T.P.
Asymmetric defected ground structured monopole antenna for wideband communication systems
(2015) *International Journal on Communications Antenna and Propagation*, 5 (5), pp. 256-262. Cited 47 times.
http://www.praiseworthyprize.org/jsm/index.php?journal=irecap&page=issue&op=current
doi: 10.15866/irecap.v5i5.6005
View at Publisher

9 Guha, D., Biswas, M., Antar, Y.M.M.
Microstrip patch antenna with defected ground structure for cross polarization suppression
(2005) *IEEE Antennas and Wireless Propagation Letters*, 4 (1), pp. 455-458. Cited 124 times.
doi: 10.1109/LAWP.2005.860211
View at Publisher

10 Bhavani, K.V.L., Khan, H., Madhav, B.T.P.
Multiband slotted aperture antenna with defected ground structure for C and X-band communication applications
(2015) *Journal of Theoretical and Applied Information Technology*, 82 (3), pp. 454-461. Cited 24 times.
http://www.jatit.org/volumes/Vol82No3/15Vol82No3.pdf

Sundar, P.S. , Kotamraju, S.K. , Madhav, B.T.P.
(2016) International Journal of Electrical and Computer Engineering

Analysis of circularly polarized notch band antenna with DGS

Raman, Y.S.V. , Madhav, B.T.P. , Mounika, G.
(2016) ARPN Journal of Engineering and Applied Sciences

Differential fed MIMO Antenna for wide band applications

Khan, H. , Surendra, L. , Madhav, B.T.P.
(2016) ARPN Journal of Engineering and Applied Sciences

View all related documents based on references

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Authors > Keywords >

11 Madhav, B.T.P., Kaza, H., Kartheek, T., Kaza, V.L., Prasanth, S., Chandra Sikakollu, K.S.S., Thammishetti, M., (...), Bhavani, K.V.L.

Novel printed monopole trapezoidal notch antenna with S-band rejection

(2015) *Journal of Theoretical and Applied Information Technology*, 76 (1), pp. 42-49. Cited 48 times.
http://www.jatit.org/volumes/Vol76No1/5Vol76No1.pdf

12 Ghosh, A., Ghosh, D., Chattopadhyay, S., Singh, L.L.K.

Rectangular microstrip antenna on slot-type defected ground for reduced cross-polarized radiation

(2015) *IEEE Antennas and Wireless Propagation Letters*, 14, art. no. 6924742, pp. 321-324. Cited 25 times.
www.ieee.org
doi: 10.1109/LAWP.2014.2363563

View at Publisher

13 Lakshmikanth, P., Takeshore, K., Madhav, B.T.P.

Printed log-periodic dipole antenna with notched filter at 2.45 GHz frequency for wireless communication applications

(2015) *Journal of Engineering and Applied Sciences*, 10 (3), pp. 40-44. Cited 43 times.
http://docsdrive.com/pdfs/medwelljournals/jeasci/2015/40-4.pdf
doi: 10.3923/jeasci.2015.40.44

View at Publisher

14 Ramkiran, D.S., Madhav, B.T.P., Prasanth, A.M., Harsha, N.S., Vardhan, V., Avinash, K., Chaitanya, M.N., (...), Nagasai, U.S.

Novel compact asymmetrical fractal aperture Notch band antenna

(2015) *Leonardo Electronic Journal of Practices and Technologies*, 14 (27), pp. 1-12. Cited 31 times.
http://lejpt.academicdirect.org/A27/001_012.pdf

15 Lakshmi, M.L.S.N.S., Khan, H., Madhav, B.T.P.

Novel sequential rotated 2×2 array notched circular patch antenna

(2015) *Journal of Engineering Science and Technology Review*, 8 (4), pp. 73-77. Cited 27 times.
http://www.jestr.org/downloads/Volume8Issue4/fulltext84112015.pdf

16 Madhav, B.T.P., Khan, H., Kotamraju, S.K.

Circularly polarized slotted aperture antenna with coplanar waveguide fed for broadband applications

(2016) *Journal of Engineering Science and Technology*, 11 (2), pp. 267-277. Cited 23 times.
http://jestec.taylors.edu.my/Vol%2011%20issue%202%20February%202016/Volume%20(11)%20Issue%20(2)%20267-%20277.pdf

Document details

IEEE Geoscience and Remote Sensing Letters
Volume 13, Issue 6, June 2016, Article number 7458847, Pages 875-879

Ionospheric Spatial Gradient Detector Based on GLRT Using GNSS Observations (Article)

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Abstract

View references (22)

A space-based augmentation system (SBAS) provides delay corrections to the Global Navigation Satellite System (GNSS) along with the residual error bounds falling within a high confidence interval. SBAS considerably improves the safety of an aircraft during flight even under all weather conditions. The dispersive nature of the ionosphere is the largest contributor of range error in GNSS, thus threatening its accuracy. Scrutiny of the ionospheric behavior over low latitudes is one of the most challenging tasks for any SBAS system. In this letter, an attempt has been made to detect the spatial gradients in the ionospheric vertical total electron content (VTEC), using statistical hypothesis tests, for the chosen probability of false alarm (P_{fa}) and probability of detection (P_d). Logarithm of likelihood ratio test (log LRT) and generalized likelihood ratio test (GLRT) were performed individually on GNSS data recorded by the multifrequency receiver at Koneru Lakshmaiah University, Guntur (GNT), Andhra Pradesh, India. The tests were performed on the data recorded on January 22, 2013, and March 17, 2013, which were geomagnetically quiet and disturbed days, respectively. The tests were validated by selectively introducing external noise in the VTEC and observing the outcomes. GLRT not only demonstrated a superior performance over log LRT, but it was also simpler to implement as it did not require any prior knowledge of the probability distribution of TEC values. © 2016 IEEE.

Author keywords

Global Positioning System (GPS) | ionosphere | ionospheric wave propogation | Satellite navigation system

Indexed keywords

Engineering controlled terms: Embedded systems | Error analysis | Ionosphere | Probability | Probability distributions | Statistical tests

Compendex keywords: Generalized likelihood-ratio tests | Global Navigation Satellite Systems | Likelihood ratio tests | Probability of detection | Probability of false alarm | Space-based augmentation systems | Statistical hypothesis test | Vertical total electron contents

Engineering main heading: Global positioning system

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Document Type: Article
Publisher: Institute of Electrical and Electronics Engineers Inc.

References (22)

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1 BALSLEY BB
NIGHTTIME ELECTRIC FIELDS AND VERTICAL IONOSPHERIC DRIFTS NEAR THE MAGNETIC EQUATOR
(1969) *J Geophys Res*, 74 (5), pp. 1213-1217. Cited 17 times.

2 Rastogi, R.G., Patel, V.L.
Effect of interplanetary magnetic field on ionosphere over the magnetic equator
(1975) *Proceedings of the Indian Academy of Sciences - Section A*, 82 (4), pp. 121-141. Cited 90 times.
doi: 10.1007/BF03046722
View at Publisher

3 Bakry, E.A.M., Roland, O.L.
Description of an ionospheric spatial gradient irregularity detector for WAAS
(2000) *Proc. 13th Int. Tech. Meet. Satellite Div. ION GPS, Salt Lake City, UT, USA*, pp. 294-300. Cited 2 times.
Sep.

4 Wald, A.
Sequential tests of statistical hypotheses
(1945) *Ann. Math. Statist.*, 16 (2), pp. 117-186. Cited 796 times.
Jun.

5 O'Mahony, N., O'Driscoll, C., Murphy, C.C.
Performance of sequential probability ratio test for GPS acquisition
(2009) *IEEE International Conference on Communications*, art. no. 5199333. Cited 9 times.
ISBN: 978-142443435-0
doi: 10.1109/ICC.2009.5199333
View at Publisher

6 Mooney, J.E.
Performance analysis of a GLRT in late-time radar target detection
(1999) *Progress Electromagn. Res.*, 24, pp. 77-96. Cited 7 times.

7 Bon, N., Khenchaf, A., Garello, R., Quellec, J.M.
GLRT detection for range and Doppler distributed targets in non-Gaussian clutter
(2006) *Proc. CIE Int. Conf. Radar, Shanghai, China*, pp. 1-5.
Oct. 16-19

Detection of ionospheric anomalies based on FFT Averaging Ratio (FAR) algorithm
Kowsik, J. , Kumar, T.B. , Mounika, G.
(2015) ICIIECS 2015 - 2015 IEEE International Conference on Innovations in Information, Embedded and Communication Systems

Comments on: Nonparametric inference with generalized likelihood ratio tests
Carroll, R.J. , Maity, A.
(2007) Test

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

8 Gerlach, K.
Spatially distributed target detection in non-Gaussian clutter

(1999) *IEEE Transactions on Aerospace and Electronic Systems*, 35 (3), pp. 926-934. Cited 125 times.
doi: 10.1109/7.784062

View at Publisher

9 Font-Segura, J., Wang, X.
GLRT-based spectrum sensing for cognitive radio with prior information

(2010) *IEEE Transactions on Communications*, 58 (7), art. no. 5504614, pp. 2137-2146. Cited 64 times.
doi: 10.1109/TCOMM.2010.07.090556

View at Publisher

10 Zhang, W., Ghogho, M.
GPS signal detection using hypothesis testing analysis
(2011) *J. Global Positioning Syst.*, 10 (1), pp. 125-135.

11 Jing, J., Khanafseh, S., Chan, F.-C., Langel, S., Pervan, B.
Detecting ionospheric gradients for GBAS using a null space monitor

(2012) *Record - IEEE PLANS, Position Location and Navigation Symposium*, art. no. 6236967, pp. 1125-1133. Cited 11 times.
ISBN: 978-146730386-6
doi: 10.1109/PLANS.2012.6236967

View at Publisher

12 Wen, D.B., Yuan, Y.B., Ou, J.K., Huo, X.L., Zhang, K.F.
Ionospheric temporal and spatial variations during the 18 August 2003 storm over China

(2007) *Earth, Planets and Space*, 59 (4), pp. 313-317. Cited 26 times.
http://rd.springer.com/journal/40623
doi: 10.1186/BF03353110

View at Publisher

13 Yao, Y.B., Chen, P., Zhang, S., Chen, J.J.
Temporal and spatial variations in ionospheric electron density profiles over South Africa during strong magnetic storms

(2013) *Natural Hazards and Earth System Science*, 13 (2), pp. 375-384. Cited 9 times.
doi: 10.5194/nhess-13-375-2013

View at Publisher

14 Pullen, S., Enge, P.
An overview of GBAS integrity monitoring with a focus on ionospheric spatial anomalies

(2007) *Indian Journal of Radio and Space Physics*, 36 (4), pp. 249-260. Cited 8 times.
http://nopr.niscair.res.in/bitstream/123456789/4705/1/IJRSP%2036(4)%20249-260.pdf

15 Cormier, D., Altshuler, E.
An improved ionospheric model for the Wide Area Augmentation System

(2004) *Radio Science*, 39 (1), pp. 365-372. Cited 5 times.

16 (2012) *Receiver User Manual, Revision 2*, pp. 12-13.
GPStation-6 GNSS Ionospheric Scintillation and TEC Monitor (GISTM) NovAtel Inc., Calgary, AB, Canada

17 Rama Rao, P.V.S., Niranjan, K., Prasad, D.S.V.V.D., Gopi Krishna, S., Uma, G.
On the validity of the ionospheric pierce point (IPP) altitude of 350 km in the Indian equatorial and low-latitude sector

(2006) *Annales Geophysicae*, 24 (8), pp. 2159-2168. Cited 64 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.5194/angeo-24-2159-2006

View at Publisher

18 Sunehra, D.
Validation of GPS receiver instrumental bias results for precise navigation

(2013) *Indian Journal of Radio and Space Physics*, 42 (3), pp. 175-181. Cited 6 times.
http://nopr.niscair.res.in/bitstream/123456789/19411/1/IJRSP%2042(3)%20175-181.pdf

19 Jakowski, N., Borries, C., Wilken, V.
Introducing a disturbance ionosphere index

(2012) *Radio Science*, 47 (3), art. no. RS0L14. Cited 22 times.
doi: 10.1029/2011RS004939

View at Publisher

20 Kay, M.S.
Deterministic signals with unknown parameters
(2010) *Fundamentals of Statistical Signal Processing-Detection Theory*, 2, pp. 253-257.
Englewood Cliffs, NJ, USA: Prentice-Hall

21 Raghunath, S., Ratnam, D.V.
Detection of Low-Latitude Ionospheric Irregularities from GNSS Observations

(2015) *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 8 (11), art. no. 7331601, pp. 5171-5176. Cited 7 times.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=4609443
doi: 10.1109/JSTARS.2015.2496201

View at Publisher

22 Fan, J., Zhang, C., Zhang, J.
Generalized likelihood ratio statistics and wilks phenomenon

(2001) *Annals of Statistics*, 29 (1), pp. 153-193. Cited 344 times.
http://projecteuclid.org/DPubS?service=UI&version=1.0&verb=Display&page=past&handle=euclid.aos
doi: 10.1214/aos/996986505

View at Publisher

Document details

Der Pharmacia Lettre
Volume 8, Issue 8, 2016, Pages 204-220

Removal of aluminium (III) from waste waters using bio-sorbents pertaining to Withania somnifera plant (Article)

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Abstract

View references (75)

Removal of Aluminum (III) from waste waters using bio-adsorbents derived from plant materials of Withania somnifera has been investigated by varying various physicochemical parameters such as pH, time of equilibration, sorbent dosage, agitation time, initial concentration of Aluminum ions, temperature and presence of foreign ions using simulated waters and by adopting batch methods of extraction. Optimum conditions for the maximum extraction of Al (III) ions have been investigated. The adsorption process is analyzed with Freundlich, Langmuir, Temkin and Dubinin-Radushkevich (D-R) isotherm models and found that the Langmuir isotherm model better describes the adsorption process emphasizing the mono-layer formation of the Al (III) ions on the adsorbent and further, the mean free energy (E) and heats of sorption (B) of Temkin isotherm and Dubinin-Radushkevich isotherms indicate that the adsorption is 'physisorption' in nature. Kinetics of adsorption is quantified using pseudo first-order, pseudo second-order, Weber and Morris intraparticle diffusion, Bangham's pore diffusion and Elovich equations and found that the adsorption process has good correlation coefficient values with pseudo-second-order model. The endothermic nature of the adsorption is found on the analysis of the thermodynamic parameters, ΔH, ΔS and ΔG. Interference of common co-ions has been studied. The methodologies developed are successfully applied to industrial sewages and polluted natural waters.

Reaxys Database Information

View Compounds

Author keywords

Adsorption isotherms | Aluminum (III) | Bio-sorbents | Kinetics | Pollution control | Withania somnifera

Indexed keywords

EMTREE drug terms: adsorbent | aluminum

EMTREE medical terms: adsorption kinetics | Article | concentration (parameters) | nonhuman | pH | physical parameters | plant leaf | plant stem | simulation | thermodynamics | waste component removal | waste water management | water pollution | water temperature | Withania somnifera

Chemicals and CAS Registry Numbers:

aluminum, 7429-90-5

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References (75)

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1 Devi, O.S., Ravindhranath, K.
Control of chromate in polluted waters: A biological approach
(2012) *Indian Journal of Environmental Protection*, 32 (11), pp. 943-951. Cited 15 times.

2 Naga Babu, A., Krishna Mohan, G.V., Ravindhranath, K.
Removal of Chromium (VI) from Polluted waters using Adsorbents derived from chenopodium album and eclipta prostrate Plant Materials
(2016) *International Journal of ChemTech Research*, 9 (3), pp. 506-516. Cited 23 times.
http://sphinxsai.com/2016/ch_vol9_no3/2/(506-516)V9N3CT.pdf

3 Hanumantha Rao, Y., Ravindhranath, K.
New bio-sorbents in the extraction of chromium (VI) from polluted waters
(2015) *Der Pharma Chemica*, 7 (12), pp. 286-298. Cited 8 times.
http://derpharmachemica.com/vol7-iss12/DPC-2015-7-12-286-298.pdf

4 Sekhar, K.P.C., Vishnu Babu, R.V., Srividhya, D., Ravindhranath, K.
Removal of chromium (VI) from waste waters using leaves powders of Justicia adhatoda, Cissus quadrangularis, Soapnut Acacia
(2012) *Der Pharma Chemica*, 4 (2), pp. 664-673. Cited 9 times.
http://derpharmachemica.com/vol4-iss2/DPC-2012-4-2-664-673.pdf

5 Papodu, K., Hanumantha Rao, Y., Ravindhranath, K.
Removal of zinc from waste waters using new biosorbents derived from Terminalia arjuna, Atlantia monophylla (L) Correa and Madhuca indica plants
(2014) *Der Pharma Chemica*, 6 (6), pp. 19-34. Cited 13 times.
http://derpharmachemica.com/vol6-iss6/DPC-2014-6-6-19-34.pdf

6 Hanumantha Rao, Y., Krishna Mohan, G.V., Ravindhranath, K.
(2015) *Journal of Chemical and Pharmaceutical Research*, 7 (9), pp. 794-808.

7 Kumari, A.A., Ravindhranath, K.
Extraction of aluminium (III) ions from polluted waters using bio-sorbents derived from Acacia melanoxylon and Eichhornia crassipes plants
(2012) *Journal of Chemical and Pharmaceutical Research*, 4 (5), pp. 2836-2849. Cited 12 times.
http://jocpr.com/vol4-iss5-2012/JCPR-2012-4-5-2836-2849.pdf

8 Kumari, A.A., Ravindhranath, K.
(2012) *Asian Journal of Research in Chemistry*, 5 (7), pp. 882-892. Cited 5 times.

9 Kumari, A.A., Ravindhranath, K.
Removal of aluminium (iii) ions from polluted waters using bio-sorbents derived from moryngea millingtonia and cygium arjunum plants
(2012) *International Journal of ChemTech Research*, 4 (4), pp. 1733-1745. Cited 13 times.
http://www.sphinxsai.com/2012/oct-dec/chempdf/CT=69%281733-1745%29OD12.pdf

Removal of naphthol green B dye from polluted waters using hydrogen peroxide treated red mud
Krishna Mohan, G.V. , Naga Babu, A. , Kalpana, K.
(2016) Der Pharma Chemica

Zirconium-treated fine red mud impregnated in Zn-alginate beads as adsorbent in removal of phosphate from water
Krishna Mohan, G.V. , Naga Babu, A. , Kalpana, K.
(2017) Asian Journal of Chemistry

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10 Kumari, A.A., Ravindhranath, K.
(2012) *International Journal of Water Resources and Environmental Sciences*, 1 (1), pp. 8-19. Cited 5 times.

11 Suneetha, M., Syama Sundar, B., Ravindhranath, K.
(2015) *Journal of Analytical Science and Technology*, 6, p. 15. Cited 18 times.

12 Suneetha, M., Syama Sundar, B., Ravindhranath, K.
(2014) *J of Chemical and Pharmaceutical Research*, 6 (10), pp. 574-592. Cited 6 times.

13 Suneetha, M., Sundar, B.S., Ravindhranath, K.
Ground water quality status with respect to fluoride contamination in Vinukonda Mandal, Guntur District, Andhra Pradesh, India and defluoridation with activated carbons

(2015) *International Journal of ChemTech Research*, 7 (1), pp. 93-107. Cited 13 times.
http://sphinxsai.com/2015/ch_vol7_no1/1/(93-107)%20014.pdf

14 Suneetha, M., Syama Sundar, B., Ravindhranath, K.
Extraction of fluoride from polluted waters using low-cost active carbon derived from stems of acalypha indica plant

(2015) *Asian Journal of Water, Environment and Pollution*, 12 (3), pp. 33-49. Cited 13 times.
www.iospress.nl/loadtop/load.php?isbn=09729860
doi: 10.3233/AJW-150005

View at Publisher

15 Suneetha, M., Sundar, B.S., Ravindhranath, K.
Defluoridation of waters using low-cost HNO_3activated carbon derived from stems of Senna Occidentalis plant

(2015) *International Journal of Environmental Technology and Management*, 18 (5-6), pp. 420-447. Cited 15 times.
http://www.inderscience.com/browse/index.php
doi: 10.1504/IJETM.2015.073079

View at Publisher

16 Hanumantharao, Y., Kishore, M., Ravindhranath, K.
Characterization and adsorption studies of "Lagenaria siceraria" shell carbon for the removal of fluoride

(2012) *International Journal of ChemTech Research*, 4 (4), pp. 1686-1700. Cited 14 times.
http://www.sphinxsai.com/2012/oct-dec/chempdf/CT=64%281686-1700%29OD12.pdf

17 Hanumantharao, Y., Kishore, M., Ravindhranath, K.
Characterization and defluoridation studies using activated Acacia farnesiana carbon as adsorbent

(2012) *Electronic Journal of Environmental, Agricultural and Food Chemistry*, 11 (5), pp. 442-458. Cited 20 times.
http://minerva.uvigo.es/index.php/ejeafche/article/view/288/189

View at Publisher

18 Suneetha, M., Ravindhranath, K.
Extractability of nitrites from polluted waters using bio-sorbents derived from leaves, Barks or stems of some herbal plants

(2014) *Journal of Chemical and Pharmaceutical Research*, 6 (8), pp. 408-420. Cited 12 times.
http://jocpr.com/vol6-iss8-2014/JCPR-2014-6-8-408-420.pdf

19 Suneetha, M., Ravindhranath, K.
(2012) *International Journal of Chemical, Environmental and Pharmaceutical Research*, 3 (1), pp. 24-34. Cited 10 times.

20 Suneetha, M., Ravindhranth, K.
(2012) *Journal of Pharmaceutical And Biomedical Sciences*, 25 (25), pp. 322-329.

21 Prameela Rani, K., Ravindhranath, K.
The use of bio-adsorbents derived from Cassia Auriculata, Celastrus Paniculata and Carmona Retusa in the removal of ammonia from polluted waters
(2014) *Der Pharma Chemica*, 6 (3), pp. 56-63. Cited 9 times.
http://derpharmachemica.com/vol6-iss3/DPC-2014-6-3-56-63.pdf

22 Suneetha, M., Ravindhranath, K.
Removal of ammonia from polluted waters using biosorbents derived from powders of leaves, stems or barks of some plants
(2012) *Der Pharma Chemica*, 4 (1), pp. 214-227. Cited 19 times.
http://derpharmachemica.com/vol4-iss1/DPC-2012-4-1-214-227.pdf

23 Prameela Rani, K., Ravindhranath, K.
Removal of ammonia from polluted waters using new bio-sorbents
(2014) *Journal of Chemical and Pharmaceutical Research*, 6 (5), pp. 889-900. Cited 8 times.
http://jocpr.com/vol6-iss5-2014/JCPR-2014-6-5-889-900.pdf

24 Hanumantha Rao, Y., Ravindhranath, K.
New methodologies in Phosphate Pollution control: Using bio-sorbents derived from Terminalia arjuna and Madhuca indica plants
(2015) *International Journal of ChemTech Research*, 8 (12), pp. 784-796. Cited 12 times.
http://sphinxsai.com/2015/ch_vol8_no12/3/(784-796)V8N12CT.pdf

25 Divya Jyothi, M., Kiran, K.R., Ravindhranath, K.
New bio-sorbents in the control of phosphate pollution in waste waters
(2012) *International Journal of Applied Environmental Sciences*, 7 (2), pp. 127-140. Cited 9 times.
http://www.ripublication.com/ijaesv2/ijaesv7n2_02.pdf

26 Ravindhranath, K., Sreenivasa Reddy, B.
Leaves and barks of some plants as bio-adsorbents in the control of methylene blue dye from waste waters
(2014) *International Journal of ChemTech Research*, 6 (14), pp. 5612-5624. Cited 13 times.
http://sphinxsai.com/2014/ch_vol6_no14/2/(5612-5624)%20014.pdf

27 Srinivasa Reddy, B., Krishna Veni, V., Ravindhranath, K.
Removal of methylene blue dye from waste waters using new bio-sorbents derived from Annona squamosa and Azadiracta indica plants
(2012) *Journal of Chemical and Pharmaceutical Research*, 4 (11), pp. 4682-4694. Cited 15 times.
http://jocpr.com/vol4-iss11-2012/JCPR-2012-4-11-4682-4694.pdf

28 Karimulla, S., Ravindhranath, K.
Extraction of methyl orange dye from polluted waters using bio-sorbents derived from thespesia populnea and pongamia pinnata plants

(2014) *Der Pharma Chemica*, 6 (4), pp. 333-344. Cited 8 times.
http://derpharmachemica.com/vol6-iss4/DPC-2014-6-4-333-344.pdf

29 Ravindhranath, K., Srinivasa Reddy, B.
New bio-sorbents in the extraction of methylene blue dye from waste waters

(2015) *Der Pharmacia Lettre*, 7 (1), pp. 159-171. Cited 8 times.
http://scholarsresearchlibrary.com/dpl-vol7-iss1/DPL-2015-7-1-159-171.pdf

30 Hanumantha Rao, Y., Rohini Kiran, K., Ravindhranath, K.
Extraction of some pollutive ions using different biomasses in oxidation ponds

(2014) *Journal of Chemical and Pharmaceutical Research*, 6 (9), pp. 48-54. Cited 8 times.
http://jocpr.com/vol6-iss9-2014/JCPR-2014-6-9-48-54.pdf

31 Flaten, T.P., Alfrey, A.C., Brichall, J.D., Savory, J., Yokel, R.A.
(1996) *J. Toxicol. Environ. Health*, 48, p. 525.

32 Flaten, T.P.
Aluminium as a risk factor in Alzheimer's disease, with emphasis on drinking water

(2001) *Brain Research Bulletin*, 55 (2), pp. 187-196. Cited 504 times.
doi: 10.1016/S0361-9230(01)00459-2

View at Publisher

33 McClure, J., Smith, P.S.
The localization of aluminium and other elements inbone tissue of a case of renal osteodystrophy with an associated dialysis encephalopathy syndrome

(1984) *The Journal of Pathology*, 142 (4), pp. 293-299. Cited 18 times.
doi: 10.1002/path.1711420407

View at Publisher

34 Desccotes, J.
(1988) *Immune-Toxicology of Drugs and Chemicals*. Cited 131 times.
Elsevier, Amsterdam

35 Srinivasan, P.T., Viraraghavan, T., Subramanian, K.S.
Aluminium in drinking water: An overview

(1999) *Water SA*, 25 (1), pp. 47-55. Cited 133 times.

View at Publisher

36 Pesavento, M., Alberti, G., Biesuz, R.
Investigation of the speciation of aluminium in drinking waters by sorption on a strong anionic-exchange resin AG1X8

(1998) *Analytica Chimica Acta*, 367 (1-3), pp. 215-222. Cited 22 times.
doi: 10.1016/S0003-2670(98)00177-9

View at Publisher

37 Matúš, P., Kubová, J.

Complexation of labile aluminium species by chelating resins Iontosorb - A new method for Al environmental risk assessment

(2005) *Journal of Inorganic Biochemistry*, 99 (9 SPEC. ISS.), pp. 1769-1778. Cited 27 times.
doi: 10.1016/j.jinorgbio.2005.06.009

View at Publisher

38 Singh, T.S., Pant, K.K.

Equilibrium, kinetics and thermodynamic studies for adsorption of As(III) on activated alumina

(2004) *Separation and Purification Technology*, 36 (2), pp. 139-147. Cited 362 times.
doi: 10.1016/S1383-5866(03)00209-0

View at Publisher

39 Paul, B., Oaykmr Zimnik, R., Sneddon, J.
(1988) *Analytical letters*, 21, pp. 1383-1396.

40 Ghazy, S.E., Samra, S.E., Mahdy, A.M., El-Morsey, S.M.

Kinetic investigation of the removal of aluminum from water samples by adsorption onto powdered marble wastes

(2005) *Separation Science and Technology*, 40 (9), pp. 1797-1815. Cited 18 times.
doi: 10.1081/SS-200064573

View at Publisher

41 Ghazy, S.E.-S., Samra, S.E.-S., Mahdy, A.E.-F.M., El-Morsy, S.M.

Removal of aluminum from some water samples by sorptive-flotation using powdered modified activated carbon as a sorbent and oleic acid as a surfactant

(2006) *Analytical Sciences*, 22 (3), pp. 377-382. Cited 20 times.
http://wwwsoc.nii.ac.jp/jsac/analsci/pdfs/a22_0377.pdf
doi: 10.2116/analsci.22.377

View at Publisher

42 Jayaweera, M.W., Kasturiarachchi, J.C., Kularatne, R.K.A., Wijeyekoon, S.L.J.

Removal of aluminium by constructed wetlands with water hyacinth (Eichhornia crassipes (Mart.) Solms) grown under different nutritional conditions

(2007) *Journal of Environmental Science and Health - Part A Toxic/Hazardous Substances and Environmental Engineering*, 42 (2), pp. 185-193. Cited 16 times.
doi: 10.1080/10934520601011361

View at Publisher

43 Septhum, C., Rattanaphani, S., Bremner, J.B., Rattanaphani, V.

An adsorption study of Al(III) ions onto chitosan

(2007) *Journal of Hazardous Materials*, 148 (1-2), pp. 185-191. Cited 53 times.
doi: 10.1016/j.jhazmat.2007.02.024

View at Publisher

44 Singh, T.S., Parikh, B., Pant, K.K.

Investigation on the sorption of aluminium in drinking water by low-cost adsorbents

(2006) *Water SA*, 32 (1), pp. 49-54. Cited 20 times.
http://www.wrc.org.za/downloads/watersa/2006/Jan%2006/1816.pdf

45 Crapper McLachlan, D.R., De Boni, V.
(1980) *Neurotoxicology*, 1, p. 3. Cited 8 times.
1980

46 Clesceri, L.S., Greenberg, A.E., Eaton, A.D.
(1998) *Standard Methods for the Examination of Water and Wastewater*, 3, p. 65. Cited 3 times.
20th Edition, American Public Health Association

47 Trivedy, R.K.
(1979) *Pollution Management in Industries*. Cited 35 times.
Environmental Publications, KARAD, INDIA

48 Kiely, G.
(1998) *Environmental Engineering*. Cited 211 times.
McGraw-hall International Editions

49 Metcalf, Eddy
(2003) *Wastewater Engineering: Treatment of Reuse.*. Cited 4835 times.
4th. Ed., McGraw Hill Co., New York

50 (1989) *Vogel's Textbook of Quantitative Chemical Analysis*, p. 678. Cited 30 times.
revised by G.H. Jeffery, J J. Bassett, J. Mendham and R.C. Denney) Fifth Edition, Addison Wesley Longman Limited,

51 Alagumuthu, G., Rajan, M.
Kinetic and equilibrium studies on fluoride removal by zirconium (iv)-impregnated groundnut shell carbon

(2010) *Hemijska Industrija*, 64 (4), pp. 295-304. Cited 43 times.
http://www.ache.org.rs/HI/2010/No4/05_3141_2010_AIP.pdf
doi: 10.2298/HEMIND100307017A

View at Publisher

52 Karthikeyan, G., Ilango, S.S.
Fluoride sorption using Morringa Indica-based activated carbon

(2007) *Iranian Journal of Environmental Health Science and Engineering*, 4 (1), pp. 21-28. Cited 55 times.
http://www.bioline.org.br/pdf?se07004

53 Sekar, M., Sakthi, V., Rengaraj, S.
Kinetics and equilibrium adsorption study of lead(II) onto activated carbon prepared from coconut shell

(2004) *Journal of Colloid and Interface Science*, 279 (2), pp. 307-313. Cited 379 times.
doi: 10.1016/j.jcis.2004.06.042

View at Publisher

54 Horsfall Jr., M., Spiff, A.I.
Effects of temperature on the sorption of Pb^{2+} and Cd^{2+} from aqueous solution by Caladium bicolor (Wild Cocoyam) biomass

(2005) *Electronic Journal of Biotechnology*, 8 (2), pp. 162-169. Cited 183 times.
http://www.ejbiotechnology.info/content/vol8/issue2/full/4/4.pdf
doi: 10.2225/vol8-issue2-fulltext-4

View at Publisher

55 Viswanathan, N., Meenakshi, S.
Enriched fluoride sorption using alumina/chitosan composite

(2010) *Journal of Hazardous Materials*, 178 (1-3), pp. 226-232. Cited 85 times.
doi: 10.1016/j.jhazmat.2010.01.067

View at Publisher

56 Bouberka, Z., Kacha, S., Kameche, M., Elmaleh, S., Derriche, Z.
Sorption study of an acid dye from an aqueous solutions using modified clays

(2005) *Journal of Hazardous Materials*, 119 (1-3), pp. 117-124. Cited 126 times.
doi: 10.1016/j.jhazmat.2004.11.026

View at Publisher

57 Sairam Sundaram, C., Viswanathan, N., Meenakshi, S.
Defluoridation of water using magnesia/chitosan composite

(2009) *Journal of Hazardous Materials*, 163 (2-3), pp. 618-624. Cited 96 times.
doi: 10.1016/j.jhazmat.2008.07.009

View at Publisher

58 Chaturvedi, A.K., Pathak, K.C., Singh, V.N.
Fluoride removal from water by adsorption on china clay

(1988) *Applied Clay Science*, 3 (4), pp. 337-346. Cited 80 times.
doi: 10.1016/0169-1317(88)90024-5

View at Publisher

59 Freundlich, H.M.F.
(1906) *J. Phys. Chem.*, 57, pp. 385-471. Cited 7927 times.

60 Langmuir, I.
The adsorption of gases on plane surfaces of glass, mica and platinum

(1918) *Journal of the American Chemical Society*, 40 (9), pp. 1361-1403. Cited 9947 times.
doi: 10.1021/ja02242a004

View at Publisher

61 Temkin, M.J., Pyzhev, V.
Recent modifications to Langmuir isotherms
(1940) *Acta Physiochim. U.S.S.R.*, 12, pp. 217-222. Cited 2025 times.

62 Dubinin, M.M., RadushKevich, L.V.
(1947) *Phys. Chem. Sect.*, 55, p. 331. Cited 168 times.

63 Hall, K.R., Eagleton, L.C., Acrivos, A., Vermeulen, T.
Pore- and solid-diffusion kinetics in fixed-bed adsorption under constant-pattern conditions

(1966) *Industrial and Engineering Chemistry Fundamentals*, 5 (2), pp. 212-223. Cited 1884 times.
doi: 10.1021/i160018a011

View at Publisher

64 Hameed, B.H.
Evaluation of papaya seeds as a novel non-conventional low-cost adsorbent for removal of methylene blue

(2009) *Journal of Hazardous Materials*, 162 (2-3), pp. 939-944. Cited 211 times.
doi: 10.1016/j.jhazmat.2008.05.120

View at Publisher

65 Nunes, A.A., Franca, A.S., Oliveira, L.S.
Activated carbons from waste biomass: An alternative use for biodiesel production solid residues

(2009) *Bioresource Technology*, 100 (5), pp. 1786-1792. Cited 99 times.
doi: 10.1016/j.biortech.2008.09.032

View at Publisher

66 Onyango, M.S., Kojima, Y., Aoyi, O., Bernardo, E.C., Matsuda, H.
Adsorption equilibrium modeling and solution chemistry dependence of fluoride removal from water by trivalent-cation-exchanged zeolite F-9

(2004) *Journal of Colloid and Interface Science*, 279 (2), pp. 341-350. Cited 385 times.
doi: 10.1016/j.jcis.2004.06.038

View at Publisher

67 Monika, J., Garg, V., Kadirvelu, K.
(2009) *J. Hazardous materials*, 162, pp. 365-372.

68 Atkins, P.
(1999) *Physical chemistry*, pp. 857-864. Cited 10018 times.
6th Edn. Oxford University press, London

69 Lagergren, S.
(1898) *Handlingar*, 24 (4), pp. 1-39. Cited 6704 times.

70 Ho, Y.S., McKay, G.
Pseudo-second order model for sorption processes

(1999) *Process Biochemistry*, 34 (5), pp. 451-465. Cited 7279 times.
doi: 10.1016/S0032-9592(98)00112-5

View at Publisher

71 Ho, Y.S., Ng, J.C.Y., McKay, G.
Kinetics of pollutant sorption by biosorbents: Review

(2000) *Separation and Purification Methods*, 29 (2), pp. 189-232. Cited 731 times.
doi: 10.1081/SPM-100100009

View at Publisher

72 Weber, W.J., Morris, C.
(1963) *J. Sanit. Eng. Div.*, 89, pp. 31-59. Cited 4622 times.

73 Aharoni, C., Ungarish, M.
Kinetics of activated chemisorption. Part 2. - Theoretical models

(1977) *Journal of the Chemical Society, Faraday Transactions 1: Physical Chemistry in Condensed Phases*, 73, pp. 456-464. Cited 286 times.
doi: 10.1039/F19777300456

View at Publisher

74 Özacar, M., Şengil, I.A.
A kinetic study of metal complex dye sorption onto pine sawdust

(2005) *Process Biochemistry*, 40 (2), pp. 565-572. Cited 231 times.
doi: 10.1016/j.procbio.2004.01.032

View at Publisher

75 Gerente, C., Lee, V.K.C., Le Cloirec, P., McKay, G.
Application of chitosan for the removal of metals from wastewaters by adsorption - Mechanisms and models review

(2007) *Critical Reviews in Environmental Science and Technology*, 37 (1), pp. 41-127. Cited 387 times.
doi: 10.1080/10643380600729089

View at Publisher

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Performance analysis of artificial neural network and neuro-fuzzy controlled shunt hybrid active power filter for power conditioning (Conference Paper)

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Abstract

View references (19)

Harmonics are developed in the power systems at various stages with the increased role of power electronic converters. Harmonics reduces the quality of power systems results in instability and voltage distortion. Several filtering techniques with different controllers have been proposed earlier for reducing the har- monics, but accurate and fast controllers are needed. This paper presents different intelligent control techniques such as artificial neural network (ANN) and neuro-fuzzy controllers for shunt hybrid active power filter (SHAPF), based on feed forward-type (trained by a back propagation algorithm) ANN and mamdani-type neuro-fuzzy method for mitigating the harmonics in the distribution system. In SHAPF, the active power filters (APF) mainly uses the energy of the capacitor in order to maintain its DC-link bus voltage and thus reduces the time of the transient response when there is abrupt variation in the load. The suggested control tech- niques are usually appropriate for any type of other APF. The proposed control strategies for SHAPF have been constructed in MATLAB/SIMULINK environ- ment. In this paper, simulation results of both the methods are presented, it is observed that there is a considerable reduction in harmonics with both controllers. © Springer India 2016.

Author keywords

Distribution system | Feed forward ANN | Mamdani neuro-fuzzy controller | Shunt Hybrid active power filter | Total harmonic distortion (THD)

Indexed keywords

Engineering controlled terms: Backpropagation | Backpropagation algorithms | Bandpass filters | Controllers | Fuzzy filters | Fuzzy inference | Harmonic analysis | MATLAB | Neural networks | Power converters | Soft computing

Compendex keywords: Distribution systems | Feed forward | Neuro-fuzzy controller | Shunt hybrid active power filters | Total harmonic distortion (THD)

Engineering main heading: Active filters

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References (19)

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1 Dougan, R.C., Beaty, H.W.
(2002) *Electrical Power Systems Quality*. Cited 1830 times.
McGraw-Hill, New York

2 Das, J.C.
Passive Filters - Potentialities and Limitations
(2004) *IEEE Transactions on Industry Applications*, 40 (1), pp. 232-241. Cited 309 times.
doi: 10.1109/TIA.2003.821666
View at Publisher

3 Singh, B., Al-Haddad, K., Chandra, A.
Review of active filters for power quality improvement
(1999) *IEEE Transactions on Industrial Electronics*, 46 (5), pp. 960-971. Cited 1305 times.
doi: 10.1109/41.793345
View at Publisher

4 Somlal, J., Mannam, V.
Analysis f discrete and space vector PWM controlled hybrid active filters for power quality enhancement
(2012) *Int J Adv Eng Technol (IJAET)*, 2 (1), pp. 331-341. Cited 4 times.

5 Fujita, H., Akagi, H.
A Practical Approach to Harmonic Compensation in Power Systems Series Connection of Passive and Active Filters
(1991) *IEEE Transactions on Industry Applications*, 27 (6), pp. 1020-1025. Cited 438 times.
doi: 10.1109/28.108451
View at Publisher

6 Fujita, H., Akagi, H.
A Practical Approach to Harmonic Compensation in Power Systems Series Connection of Passive and Active Filters
(1991) *IEEE Transactions on Industry Applications*, 27 (6), pp. 1020-1025. Cited 438 times.
doi: 10.1109/28.108451
View at Publisher

7 Bhattacharya, S., Cheng, P.-T., Divan, D.M.
Hybrid solutions for improving passive filter performance in high power applications
(1997) *IEEE Transactions on Industry Applications*, 33 (3), pp. 732-747. Cited 241 times.
doi: 10.1109/28.585864
View at Publisher

8 Singh, B., Verma, V.
An indirect current control of hybrid power filter for varying loads

(2006) *IEEE Transactions on Power Delivery*, 21 (1), pp. 178-184. Cited 41 times.
doi: 10.1109/TPWRD.2005.855627

View at Publisher

9 Inzunza, R., Akagi, H.
A 6.6-kV transformerless shunt hybrid active filter for installation on a power distribution system

(2005) *IEEE Transactions on Power Electronics*, 20 (4), pp. 893-900. Cited 120 times.
doi: 10.1109/TPEL.2005.850951

View at Publisher

10 Corasaniti, V.F., Barbieri, M.B., Arnera, P.L., Valla, M.I.
Hybrid active filter for reactive and harmonics compensation in a distribution network

(2009) *IEEE Transactions on Industrial Electronics*, 56 (3), pp. 670-677. Cited 104 times.
doi: 10.1109/TIE.2008.2007997

View at Publisher

11 Chen, Z., Blaabjerg, F., Pedersen, J.K.
Hybrid compensation arrangement in dispersed generation systems

(2005) *IEEE Transactions on Power Delivery*, 20 (2 II), pp. 1719-1727. Cited 36 times.
doi: 10.1109/TPWRD.2004.834349

View at Publisher

12 Herman, L., Papic, I., Blazic, B.
A proportional-resonant current controller for selective harmonic compensation in a hybrid active power filter

(2014) *IEEE Transactions on Power Delivery*, 29 (5), art. no. 6880399, pp. 2055-2065. Cited 57 times.
doi: 10.1109/TPWRD.2014.2344770

View at Publisher

13 Chen, L., Xie, Y., Zhang, Z.
Comparison of hybrid active power filter topologies and principles

(2008) *Proceedings of the 11th International Conference on Electrical Machines and Systems, ICEMS 2008*, art. no. 4771077, pp. 2030-2035. Cited 11 times.
ISBN: 978-750629221-4

14 Luo, A., Tang, C., Shuai, Z.K., Zhao, W., Rong, F., Zhou, K.
A novel three-phase hybrid active power filter with a series resonance circuit tuned at the fundamental frequency

(2009) *IEEE Transactions on Industrial Electronics*, 56 (7), pp. 2431-2440. Cited 54 times.
doi: 10.1109/TIE.2009.2020082

View at Publisher

15 Sathya Priyanka, A., Satheesh, A.
Harmonic compensation and reactive power support using ultracapacitor with shunt active filter in distribution system
(2014) *IOCR J Electric Electr Eng (IOCR-JEEE)*, 9 (5), pp. 60-65.

16 Asiminoaei, L., Aeloiza, E., Enjeti, P., Blaabjerg, F.
Shunt active-power-filter topology based on parallel interleaved inverters

(2008) *IEEE Transactions on Industrial Electronics*, 55 (3), pp. 1175-1189. Cited 204 times.
doi: 10.1109/TIE.2007.907671

View at Publisher

17 Somlal, J., Venu Gopala Rao, M.
FUZZY logic based space vector PWM controlled hybrid active power filter for power conditioning

(2014) *WSEAS Transactions on Power Systems*, 9, pp. 242-248. Cited 2 times.
http://www.wseas.org/multimedia/journals/power/2014/a025716-186.pdf

18 Jain, S.K., Agrawal, P., Gupta, H.O.
Fuzzy logic controlled shunt active power filter for power quality improvement

(2002) *IEE Proceedings: Electric Power Applications*, 149 (5), pp. 317-328. Cited 247 times.
doi: 10.1049/ip-epa:20020511

View at Publisher

19 Somlal, J., Rao, V.G., Vutlapalli, M.N.R.
Performance analysis of artificial Nueral network based Shuntactive power filter

(2014) *International Journal of Applied Engineering Research*, 9 (19), pp. 5697-5708.
http://www.ripublication.com/IJAER%207/ijaerv9n19_37.pdf

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Influence of Bi^{3+} ions on the amplification of 1.3 μm emission of Pr^{3+} ions in lead silicate glasses for the applications in second telecom window communications (Article)

Suresh, B.[ab], Purnachand, N.[c], Zhydachevskii, Y.[d], Brik, M.G.[efg], Reddy, M.S.[b], Suchocki, A.[d], Piasecki, M.[g], Veeraiah, N.[a]

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Abstract

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The primary objective of this study is to characterize $^1G_4 \rightarrow {}^3H_5$ (1.3 μm, which is highly important in telecommunications) and also $^3P_0 \rightarrow {}^3F_2$ (red emission) spectral lines of Pr^{3+} ions in lead silicate glasses sensitized with bismuth ions. The intensity of these spectral lines exhibited large amplification (nearly four times) due to co-doping with Bi^{3+} ions with fixed concentration of Pr^{3+} ions. Several radiative parameters, e.g., transition probabilities (A_{ij}), branching ratios (β), radiative life times (τ) and quantum efficiencies (η) of these spectral lines were evaluated using modified Judd-Ofelt theory. These parameters exhibited the maximal values when the glasses were codoped with the optimal concentration of Bi_2O_3 (5.0 mol%). The increasing population of $^3P_0$ and $^1G_4$ levels of Pr^{3+} ions (with the gradual increase of Bi_2O_3 concentration up to 5.0 mol%) that caused the amplification of above mentioned emissions occurred: (i) due to the energy transfer from $^3P_1 \rightarrow {}^1S_0$ emission transition of Bi^{3+} ions and (ii) due to the increasing presence of Bi^{3+} ions in octahedral positions that are predicted to induce structural defects in the glass network. The quantitative analysis of these results together with the kinetic rate equations suggested that the Pr^{3+} ions doped lead silicate glasses mixed with (about 5.0 mol%) Bi_2O_3 are highly efficient in producing intense 1.3 μm ($^1G_4 \rightarrow {}^3H_5$) narrow emission. Hence, it is concluded that the optical fibers drawn from the glasses of such compositions are highly useful for the applications in the second telecom window. © 2016 Elsevier B.V.

Author keywords

1.3 μm emission | Lead bismuth silicate glasses | Pr^{3+} ions | Second telecom window

Indexed keywords

Engineering controlled terms: Bismuth | Doping (additives) | Energy transfer | Glass | Glass transition | Judd-Ofelt theory | Optical fibers | Silicates | Spectroscopy | Water vapor

Compendex keywords: Emission transition | Kinetic rate equation | Lead silicate glass | Lead-bismuth | Optimal concentration | Radiative parameters | Telecom | Transition probabilities

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References (35)

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1 Zhang, Y.Y., Chen, B.J., Pun, E.Y.B., Lin, H.

Optical radiative parameters and 1.3 μ m emission anticipation of Pr^{3+} in two kinds of bismuth-containing oxide glasses with lower phonon energies

(2009) *Physica B: Condensed Matter*, 404 (8-11), pp. 1132-1136. Cited 7 times.
doi: 10.1016/j.physb.2008.11.075

View at Publisher

2 Man, S.Q., Pun, E.Y.B., Chung, P.S.

Tellurite glasses for 1.3 μm optical amplifiers

(1999) *Optics Communications*, 168 (5), pp. 369-373. Cited 70 times.
doi: 10.1016/S0030-4018(99)00374-0

View at Publisher

3 Park, S.H., Heo, J., Kim, H.S.

Compositional dependence of the 1.3 μm emission and energy transfer mechanism in Ge-Ga-S glasses doped with Pr^{3+}

(1999) *Journal of Non-Crystalline Solids*, 259 (1-3), pp. 31-38. Cited 15 times.
doi: 10.1016/S0022-3093(99)00492-5

View at Publisher

4 Belançon, M.P., Marconi, J.D., Ando, M.F., Barbosa, L.C.
Near-IR emission in Pr^{3+}single doped and tunable near-IR emission in Pr^{3+}/Yb^{3+} codoped tellurite tungstate glasses for broadband optical amplifiers

(2014) *Optical Materials*, 36 (6), pp. 1020-1026. Cited 27 times.
doi: 10.1016/j.optmat.2014.01.014

View at Publisher

5 Rai, V.K., Kumar, K., Rai, S.B.
Upconversion in Pr3+ doped tellurite glass

(2007) *Optical Materials*, 29 (7), pp. 873-878. Cited 30 times.
doi: 10.1016/j.optmat.2006.01.011

View at Publisher

6 Choi, Y.G., Baik, J.H., Heo, J.
Spectroscopic properties of Pr^{3+}: $^1D_2 \rightarrow {}^1G_4$ transition in SiO_2-based glasses

(2005) *Chemical Physics Letters*, 406 (4-6), pp. 436-440. Cited 24 times.
doi: 10.1016/j.cplett.2005.03.028

View at Publisher

7 Ding, J., Zhao, G., Tian, Y., Chen, W., Hu, L.
Bismuth silicate glass: A new choice for 2 μm fiber lasers

(2012) *Optical Materials*, 35 (1), pp. 85-88. Cited 14 times.
doi: 10.1016/j.optmat.2012.07.003

View at Publisher

8 Peng, M., Chen, D., Qiu, J., Jiang, X., Zhu, C.
Bismuth-doped zinc aluminosilicate glasses and glass-ceramics with ultra-broadband infrared luminescence

(2007) *Optical Materials*, 29 (5), pp. 556-561. Cited 72 times.
doi: 10.1016/j.optmat.2005.08.049

View at Publisher

9 Suresh, B., Zhydachevskii, Y., Brik, M.G., Suchocki, A., Reddy, M.S., Piasecki, M., Veeraiah, N.
Amplification of green emission of Ho^{3+}ions in lead silicate glasses by sensitizing with Bi^{3+}ions

(2016) *Journal of Alloys and Compounds*, 683, pp. 114-122. Cited 10 times.
doi: 10.1016/j.jallcom.2016.05.056

View at Publisher

10 Biswas, K., Sontakke, A.D., Balaji, S., Molla, A.R., Annapurna, K.
Crystallization kinetics and luminescence properties of a new low phonon Bi_2O_3-ZnO-GeO_2 glass

(2013) *Physics and Chemistry of Glasses: European Journal of Glass Science and Technology Part B*, 54 (5), pp. 206-215. Cited 6 times.
http://docserver.ingentaconnect.com/deliver/connect/sgt/00319090/v54n5/s3.pdf?expires=1385517619&id=76406015&titleid=6340&accname=Elsevier+BV&checksum=B397826D2D59C62D111F837A25F8F881

View at Publisher

11 Choi, Y.G., Kim, K.H., Heo, J.
Spectroscopic properties of and energy transfer in PbO-Bi_2O_3-Ga_2O_3 glass doped with Er_2O_3

(1999) *Journal of the American Ceramic Society*, 82 (10), pp. 2762-2768. Cited 80 times.

View at Publisher

12 Yasaka, P., Boonin, K., Limsuwan, P., Chewpraditkul, W., Pattanaboonmee, N., Kaewkhao, J.
Physical, structural and luminescence properties of ZnO-Bi2O3-B2O3 glass system

(2013) *Applied Mechanics and Materials*, 431, pp. 8-13. Cited 3 times.
ISBN: 978-303785893-6
doi: 10.4028/www.scientific.net/AMM.431.8

View at Publisher

13 Rajeswara Rao, D., Sahaya Baskaran, G., Ramesh Babu, P., Gandhi, Y., Veeraiah, N.
Studies on optimizing sesquioxide contents to enhance luminescence efficiency of Pr^{3+} ions in PbO-PbF2-B2O3 glass system

(2014) *Journal of Molecular Structure*, 1073 (C), pp. 164-173. Cited 8 times.
www.elsevier.com/inca/publications/store/5/0/0/8/5/0/index.htt
doi: 10.1016/j.molstruc.2014.04.078

View at Publisher

14 Suresh, B., Srinivasa Reddy, M., Siva Sesha Reddy, A., Gandhi, Y., Ravi Kumar, V., Veeraiah, N.
Spectroscopic features of Ni^{2+} ion in $PbO-Bi_2O_3-SiO_2$ glass system

(2015) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 141, pp. 263-271. Cited 9 times.
doi: 10.1016/j.saa.2015.01.058

View at Publisher

15 Weber, M.J., Saroyan, R.A., Ropp, R.C.
Optical properties of Nd^{3+} in metaphosphate glasses

(1981) *Journal of Non-Crystalline Solids*, 44 (1), pp. 137-148. Cited 91 times.
doi: 10.1016/0022-3093(81)90138-1

View at Publisher

16 Judd, B.R.
Optical absorption intensities of rare-earth ions

(1962) *Physical Review*, 127 (3), pp. 750-761. Cited 5553 times.
doi: 10.1103/PhysRev.127.750

View at Publisher

17 Opelt, G.S.
Intensities of crystal spectra of rare-earth ions

(1962) *The Journal of Chemical Physics*, 37 (3), pp. 511-520. Cited 5055 times.

View at Publisher

18 Klimesz, B., Dominiak-Dzik, G., Solarz, P., Zelechower, M., Ryba-Romanowski, W.
Optical study of GeO2-PbO-PbF2 oxyfluoride glass singly doped with Pr3+, Nd3+, Sm3+ and Eu 3+

(2005) *Journal of Alloys and Compounds*, 403 (1-2), pp. 76-85. Cited 61 times.
doi: 10.1016/j.jallcom.2005.05.033

View at Publisher

19 Wang, D., Huang, S., You, F., Qi, S., Peng, H.
Application of original and modified Judd-Ofelt theories to the $^1S_0$ state of Pr^{3+}-doped $SrAl_{12}O_{19}$ and LaF_3

(2007) *Physica B: Condensed Matter*, 387 (1-2), pp. 86-91. Cited 16 times.
doi: 10.1016/j.physb.2006.03.031

View at Publisher

20 Van Deun, R., Binnemans, K., Görller-Walrand, C., Adam, J.L.
Judd-Ofelt intensity parameters of trivalent lanthanide ions in a $NaPO_3$-BaF_2 based fluorophosphate glass

(1999) *Journal of Alloys and Compounds*, 283 (1-2), pp. 59-65. Cited 60 times.
doi: 10.1016/S0925-8388(98)00895-0

View at Publisher

21 Huang, S., Lu, L., Jia, W., Wang, X.-J., Yen, W.M., Srivastava, A.M., Setlur, A.A.
The spectral properties of the 1S0 state in SrAl12O19 :Pr

(2001) *Chemical Physics Letters*, 348 (1-2), pp. 11-16. Cited 36 times.
doi: 10.1016/S0009-2614(01)01053-3

View at Publisher

22 Goldner, P., Auzel, F.
Application of standard and modified Judd-Ofelt theories to a praseodymium-doped fluorozirconate glass

(1996) *Journal of Applied Physics*, 79 (10), pp. 7972-7977. Cited 114 times.
http://scitation.aip.org/content/aip/journal/jap
doi: 10.1063/1.362347

View at Publisher

23 Guery, C., Adam, J.L., Lucas, J.
Optical properties of Tm3+ ions in indium-based fluoride glasses

(1988) *Journal of Luminescence*, 42 (4), pp. 181-189. Cited 82 times.
doi: 10.1016/0022-2313(88)90037-3

View at Publisher

24 Weber, M.J., Cropp, R.
(1981) *J. Non-Cryst. Solids*, 4, p. 137. Cited 4 times.

25 Weber, M.J.
Spontaneous emission probabilities and quantum efficiencies for excited states of Pr^{3+} in LaF_3

(1968) *The Journal of Chemical Physics*, 48 (10), pp. 4774-4780. Cited 215 times.
doi: 10.1063/1.1668061

View at Publisher

26 Nakamura, M., Mochizuki, Y., Usami, K., Itoh, Y., Nozaki, T.
Infrared absorption spectra and compositions of evaporated silicon oxides (SiO_x)

(1984) *Solid State Communications*, 50 (12), pp. 1079-1081. Cited 198 times.
doi: 10.1016/0038-1098(84)90292-8

View at Publisher

27 Ramesh Babu, N.Ch., Srinivasa Rao, Ch., Naga Raju, G., Ravi Kumar, V., Kityk, I.V., Veeraiah, N.
Influence of yttrium ions on the emission transfer features of Ce $^{3+}$/Yb^{3+} co-doped lithium silicate glasses

(2012) *Optical Materials*, 34 (8), pp. 1381-1388. Cited 17 times.
doi: 10.1016/j.optmat.2012.02.024

View at Publisher

28 Iordanova, R., Dimitriev, Y., Dimitrov, V., Kassabov, S., Klissurski, D.
Glass formation and structure in the V_2O_5-Bi_2O_3-Fe_2O_3 glasses

(1996) *Journal of Non-Crystalline Solids*, 204 (2), pp. 141-150. Cited 75 times.
doi: 10.1016/S0022-3093(96)00416-4

View at Publisher

29 Venkateswara Rao, P., Satyanarayana, T., Srinivasa Reddy, M., Gandhi, Y., Veeraiah, N.
Nickel ion as a structural probe in PbO-Bi2O_3-B $_2O_3$ glass system by means of spectroscopic and dielectric studies

(2008) *Physica B: Condensed Matter*, 403 (19-20), pp. 3751-3759. Cited 31 times.
http://www.journals.elsevier.com/physica-b-condensed-matter/
doi: 10.1016/j.physb.2008.07.001

View at Publisher

30 Issa, S.A.M.
Effective atomic number and mass attenuation coefficient of PbO-BaO-B_2O_3 glass system

(2016) *Radiation Physics and Chemistry*, 120, pp. 33-37. Cited 23 times.
www.elsevier.com/locate/radphyschem
doi: 10.1016/j.radphyschem.2015.11.025

View at Publisher

31 Rada, S., Pascuta, P., Bosca, M., Culea, M., Pop, L., Culea, E.
Structural properties of the boro-bismuthate glasses containing gadolinium ions

(2008) *Vibrational Spectroscopy*, 48 (2), pp. 255-258. Cited 40 times.
doi: 10.1016/j.vibspec.2007.12.005

View at Publisher

32 Su, Q., Lu, Y.
(1985) *Edited by B. JezowskaTrzebiatowska*
J. Legendziewicz, W. Strek. (World Sci. Publ. Co. Ltd)

33 Nachimuthu, P., Jagannathan, R.
(1995) *Phys. Chem. Glas.*, 36, p. 194. Cited 30 times.

34 Satyanarayana, T., Brik, M.G., Venkatramaiah, N., Kityk, I.V., Plucinski, K.J., Ravikumar, V., Veeraiah, N.
Influence of crystallization on the luminescence characteristics of Pr^{3+} ions in PbO-Sb_2O_3-B_2O_3 glass system

(2010) *Journal of the American Ceramic Society*, 93 (7), pp. 2004-2011. Cited 30 times.
doi: 10.1111/j.1551-2916.2010.03696.x

View at Publisher

35 Bhargavi, K., Sudarsan, V., Brik, M.G., Sundara Rao, M., Gandhi, Y., Nageswara Rao, P., Veeraiah, N.
Influence of Al declustering on the photoluminescent properties of Pr^{3+} ions in PbO-SiO_2 glasses

(2013) *Journal of Non-Crystalline Solids*, 362 (1), pp. 201-206. Cited 15 times.
doi: 10.1016/j.jnoncrysol.2012.11.039

View at Publisher

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Chirp Z transform based enhanced frequency resolution for depth resolvable non stationary thermal wave imaging (Article)

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Abstract

View references (28)

This paper proposes a novel post processing modality to enhance depth resolution in frequency modulated thermal wave imaging using chirp Z transform. It explores the spectral zooming feature of the proposed modality to enhance depth resolution and validates it through the experimentation carried over a carbon fiber reinforced plastic and mild steel specimens. Further, defect detection capability of the proposed modality has been compared with that of the other contemporary modalities by taking the defect signal to noise ratio into consideration. © 2017 Author(s).

Indexed keywords

Engineering controlled terms: Carbon | Carbon fiber reinforced plastics | Carbon steel | Defects | Fiber reinforced plastics | Signal to noise ratio | Steel fibers | Steel research | Z transforms

Compendex keywords: Chirp Z transform | Defect detection | Defect signal to noise | Depth resolution | Frequency modulated | Frequency resolutions | Steel specimens | Thermal wave imaging

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References (28)

View in search results format >

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1 Almond, D.P., Lau, S.K.

Defect sizing by transient thermography. I. An analytical treatment

(1994) *Journal of Physics D: Applied Physics*, 27 (5), pp. 1063-1069. Cited 84 times.
doi: 10.1088/0022-3727/27/5/027

View at Publisher

2 Schroeder, J.A., Ahmed, T., Chaudhry, B., Shepard, S.

Non-destructive testing of structural composites and adhesively bonded composite joints: Pulsed thermography

(2002) *Composites Part A: Applied Science and Manufacturing*, 33 (11), pp. 1511-1517. Cited 44 times.
doi: 10.1016/S1359-835X(02)00139-2

View at Publisher

3 Pickering, S., Almond, D.

Matched excitation energy comparison of the pulse and lock-in thermography NDE techniques

(2008) *NDT and E International*, 41 (7), pp. 501-509. Cited 99 times.
doi: 10.1016/j.ndteint.2008.05.007

View at Publisher

4 Balageas, D., Maldague, X., Burleigh, D., Vavilov, V.P., Oswald-Tranta, B., Roche, J.-M., Pradere, C., (...), Carlomagno, G.M.

Thermal (IR) and Other NDT Techniques for Improved Material Inspection

(2016) *Journal of Nondestructive Evaluation*, 35 (1), art. no. 18, pp. 1-17. Cited 23 times.
http://www.kluweronline.com/issn/0195-9298
doi: 10.1007/s10921-015-0331-7

View at Publisher

5 Chatterjee, K., Tuli, S.
(2013) *J. Appl. Phys.*, 114.

6 Sharath, D., Menaka, M., Venkatraman, B., Raj, B.
(2015) *Quant. Infrared Thermogr. J.*, 12, pp. 37-52.

7 Song, H., Lim, H.J., Lee, S., Sohn, H., Yun, W., Song, E.

Automated detection and quantification of hidden voids in triplex bonding layers using active lock-in thermography

(2015) *NDT and E International*, 74, pp. 94-105. Cited 6 times.
doi: 10.1016/j.ndteint.2015.05.004

View at Publisher

8 Busse, G., Wu, D., Karpen, W.

Thermal wave imaging with phase sensitive modulated thermography

(1992) *Journal of Applied Physics*, 71 (8), pp. 3962-3965. Cited 420 times.
doi: 10.1063/1.351366

View at Publisher

9 Maldague, X., Marinetti, S.
Pulse phase infrared thermography

(1996) *Journal of Applied Physics*, 79 (5), pp. 2694-2698. Cited 540 times.
http://scitation.aip.org/content/aip/journal/jap
doi: 10.1063/1.362662

View at Publisher

10 Fernandes, H., Ibarra-Castanedo, C., Zhang, H., Maldague, X.
Thermographic Non-destructive Evaluation of Carbon Fiber-Reinforced Polymer Plates After Tensile Testing

(2015) *Journal of Nondestructive Evaluation*, 34 (4), art. no. 35, pp. 1-10. Cited 17 times.
http://www.kluweronline.com/issn/0195-9298
doi: 10.1007/s10921-015-0303-y

View at Publisher

11 Fernandes, H., Zhang, H., Maldague, X.
An active infrared thermography method for fiber orientation assessment of fiber-reinforced composite materials

(2015) *Infrared Physics and Technology*, 72, art. no. 1837, pp. 286-292. Cited 17 times.
doi: 10.1016/j.infrared.2015.07.021

View at Publisher

12 Mulaveesala, R., Tuli, S.
(2006) *Appl. Phys. Lett.*, 89.

13 Tabatabaei, N., Mandelis, A.
(2009) *Rev. Sci. Instrum.*, 80.

14 Gong, J., Liu, J., Qin, L., Wang, Y.
Investigation of carbon fiber reinforced polymer (CFRP) sheet with subsurface defects inspection using thermal-wave radar imaging (TWRI) based on the multi-transform technique

(2014) *NDT and E International*, 62, pp. 130-136. Cited 23 times.
doi: 10.1016/j.ndteint.2013.12.006

View at Publisher

15 Ghali, V.S., Jonnalagadda, N., Mulaveesala, R.
Three-dimensional pulse compression for infrared nondestructive testing

(2009) *IEEE Sensors Journal*, 9 (7), pp. 832-833. Cited 46 times.
doi: 10.1109/JSEN.2009.2024042

View at Publisher

16 Tabatabaei, N., Mandelis, A., Amaechi, B.T.
(2011) *Appl. Phys. Lett.*, 98.

17 Chatterjee, K., Tuli, S., Pickering, S.G., Almond, D.P.
A comparison of the pulsed, lock-in and frequency modulated thermography nondestructive evaluation techniques

(2011) *NDT and E International*, 44 (7), pp. 655-667. Cited 66 times.
doi: 10.1016/j.ndteint.2011.06.008

View at Publisher

18 Ghali, V.S., Mulaveesala, R.
(2012) *Prog. Electromagn. Res. M*, 26, pp. 11-22.

19 Ghali, V.S., Suresh, B., Hemanth, A.
Data fusion for enhanced defect detectability in non-stationary thermal wave imaging

(2015) *IEEE Sensors Journal*, 15 (12), art. no. 7219361, pp. 6761-6762. Cited 9 times.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7361
doi: 10.1109/JSEN.2015.2472286

View at Publisher

20 Subhani, S.K., Suresh, B., Ghali, V.S.
Orthonormal projection approach for depth-resolvable subsurface analysis in non-stationary thermal wave imaging

(2016) *Insight: Non-Destructive Testing and Condition Monitoring*, 58 (1), pp. 42-45. Cited 4 times.
http://docserver.ingentaconnect.com/deliver/connect/bindt/13542575/v58n1/s9.pdf?expires=1452660012&id=85729530&titleid=41000066&accname=Elsevier+BV&checksum=EFF9F91DD750BD4F027338098EBADDDE
doi: 10.1784/insi.2016.58.1.42

View at Publisher

21 Shouhan, M., Qishuang, A., Xinbo, L.
(2013) *NDT&E Int.*, 54, pp. 1-8.

22 Rabiner, L., Gold, B.
(1975) *Theory and Applications of Digital Signal Processing*. Cited 2554 times.
(Prentice-Hall, New-Jersy)

23 Tabatabaei, N., Mandelis, A.
(2011) *Phys. Rev. Lett.*, 107.

24 Mulaveesala, R., Ghali, V.S.
(2011) *Rev. Sci. Instrum.*, 82.

25 Dua, G., Mulaveesala, R.
Applications of Barker coded infrared imaging method for characterisation of glass fibre reinforced plastic materials

(2013) *Electronics Letters*, 49 (17), pp. 1071-1073. Cited 18 times.
doi: 10.1049/el.2013.1661

View at Publisher

26 Yang, L., Wang, G., Lv, G.
Efficient TOPS mode raw data simulator of extended scenes

(2016) *IET Radar, Sonar and Navigation*, 10 (6), pp. 1065-1070. Cited 2 times.
www.ietdl.org/IET-RSN
doi: 10.1049/iet-rsn.2015.0355

View at Publisher

27 Dua, G., Mulaveesala, R., Siddique, J.A.
(2015) *J. Opt.*, 17.

28 Saintey, M.B., Almond, D.P.

Defect sizing by transient thermography ii: A numerical treatment

(1995) *Journal of Physics D: Applied Physics*, 28 (12), pp. 2539-2546. Cited 47 times.
doi: 10.1088/0022-3727/28/12/023

View at Publisher

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Synthesis and characterization of thiol - Capped silver nanoparticles and their effect on liquid crystals (Article)

Sivaram, K.[a], Rao, M.C.[b], Giridhar, G.[c], Tejaswi, M.[a], Madhav, B.T.P.[d], Pisipati, V.G.K.M.[d], Manepalli, R.K.N.R.[a]

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Abstract

View references (49)

Synthesis and characterization of Liquid Crystalline p-n-decyloxy benzoic acid (10OBA) compound with thiolcapped Ag nanoparticle dispersion was carried out by chemical reduction method. The Polarizing Microscopy (POM), Differential Scanning Calorimeter (DSC) technique are used to measure the Glass transition temperature (T_g) and melting temperature ($T_{m)}$ of the prepared samples. Spectroscopic techniques like X-ray Diffraction spectrometric studies (XRD), Scanning Electron Microscopic studies (SEM), Ultra-Violet Visible (UV) spectroscopy, Fourier Transform Infra Red Spectroscopy (FTIR) were also carried out on to the samples. Textural determinations of the synthesized compounds are recorded by using POM connected with a hot stage and camera. The results showed that the dispersion of thiol-capped Ag nanoparticles in 10OBA exhibited NC phases as that of the pure 10OBA with reduced clearing temperature as expected. The order parameter is estimated from birefringence anisotropy data without considering any internal field model to liquid crystal molecule and with dispersed thiol-capped Ag nanoparticles. It is found that the birefringence anisotropy as well as orientational order parameter of 10OBA increased with dispersed 1 wt% thiol-capped Ag nanoparticles. ï¿½ RASĀYAN. All rights reserved.

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Author keywords

Birefringence and order parameter | DSC | FTIR | Nanodispersion | POM | SEM | Synthesis | UV spectroscopy | XRD

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References (49)

View in search results format >

All | Export | Print | E-mail | Save to PDF | Create bibliography

1 Liang, H.H., Lee, J.Y.
(2011) *Ferroelectrics – Material Aspects (Ed.Lallart, M.), Intech Publisher, Croatia*
J.Y

2 Wu, S.T., Yang, D.K.
(2001) *Reflective Liquid Crystal Displays*. Cited 729 times.
Wiley, New York

3 Tschierske, C.
Liquid crystal engineering - New complex mesophase structures and their relations to polymer morphologies, nanoscale patterning and crystal engineering
(2007) *Chemical Society Reviews*, 36 (12), pp. 1930-1970. Cited 308 times.
doi: 10.1039/b615517k

4 Warenghem, M., Henninot, J.F., Abbate, G.
Non linearly induced self waveguiding structure in dye doped nematic liquid crystals confined in capillaries
(1998) *Optics Express*, 2 (12), pp. 483-490. Cited 72 times.
http://www.opticsexpress.org/view_file.cfm?doc=%23%28%5C%2B%2D%0A&id=%23%28L%23%27%0A

5 Peccianti, M., Assanto, G.
Signal readdressing by steering of spatial solitons in bulk nematic liquid crystals
(2001) *Optics Letters*, 26 (21), pp. 1690-1692. Cited 79 times.

6 Lagerwall, J.P.F., Scalia, G.
Carbon nanotubes in liquid crystals
(2008) *Journal of Materials Chemistry*, 18 (25), pp. 2890-2898. Cited 175 times.
doi: 10.1039/b802707b

7 Lee, W., Wang, C.-Y., Shih, Y.-C.
Effects of carbon nanosolids on the electro-optical properties of a twisted nematic liquid-crystal host
(2004) *Applied Physics Letters*, 85 (4), pp. 513-515. Cited 237 times.
doi: 10.1063/1.1771799

8 Lee, C.-W., Shih, W.-P.
Quantification of ion trapping effect of carbon nanomaterials in liquid crystals
(2010) *Materials Letters*, 64 (3), pp. 466-468. Cited 33 times.
doi: 10.1016/j.matlet.2009.11.049

9 Hari Krishna, B., Sandeep Kumar, K.
(2011) *Chem. Soc. Rev*, 40, p. 306. Cited 2 times.

dosage forms
Parameswara Rao, K. , Rao, M.C.
(2016) International Journal of Chemical Sciences

Schiff base Liquid Crystalline compounds with dispersed citrate capped gold nanoparticles - Optical and textural analysis
Tejaswi, M. , Rao, M.C. , Manepalli, R.K.N.R.
(2017) Rasayan Journal of Chemistry

Design and implementation of new DPFC to control power quality
Srikanth, K.S.
(2016) International Journal of Chemical Sciences

View all related documents based on references

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10 Marambio-Jones, C., Hoek, E.M.V.

A review of the antibacterial effects of silver nanomaterials and potential implications for human health and the environment

(2010) *Journal of Nanoparticle Research*, 12 (5), pp. 1531-1551. Cited 1196 times.
doi: 10.1007/s11051-010-9900-y

11 Pradhan, N., Pal, A., Pal, T.

Silver nanoparticle catalyzed reduction of aromatic nitro compounds

(2002) *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 196 (2-3), pp. 247-257. Cited 537 times.
www.elsevier.com/locate/colsurfa
doi: 10.1016/S0927-7757(01)01040-8

12 Lee, P.C., Meisel, D.

Adsorption and surface-enhanced Raman of dyes on silver and gold sols

(1982) *Journal of Physical Chemistry*, 86 (17), pp. 3391-3395. Cited 3314 times.
doi: 10.1021/j100214a025

13 Shang, L., Dong, S.

Sensitive detection of cysteine based on fluorescent silver clusters

(2009) *Biosensors and Bioelectronics*, 24 (6), pp. 1569-1573. Cited 143 times.
doi: 10.1016/j.bios.2008.08.006

14 Chen, S., Gao, H., Shen, W., Lu, C., Yuan, Q.

Colorimetric detection of cysteine using noncrosslinking aggregation of fluorosurfactant-capped silver nanoparticles

(2014) *Sensors and Actuators, B: Chemical*, 190, pp. 673-678. Cited 29 times.
doi: 10.1016/j.snb.2013.09.036

15 Zhu, J., Song, X., Gao, L., Li, Z., Liu, Z., Ding, S., Zou, S., (...), He, Y.

A highly selective sensor of cysteine with tunable sensitivity and detection window based on dual-emission Ag nanoclusters

(2014) *Biosensors and Bioelectronics*, 53, pp. 71-75. Cited 31 times.
doi: 10.1016/j.bios.2013.09.036

16 Sivasri, J., Rao, M.C., Giridhar, G., Madav, B.T.P., Divakar, T.E., Manepalli, R.K.N.R.

Influence of Fe_3O_4nanoparticles dispersed in liquid crystalline compounds – spectroscopic characterization

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 556-565. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/63_pdf.pdf

17 Jayaprada, P., Tejaswi, M., Giridhar, G., Rao, M.C., Pisipati, V.G.K.M., Manepalli, R.K.N.R.

Synthesis and characterization of schiff base liquid crystals with dispersed ZnO nanoparticles-optical properties

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 588-596. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/67_pdf.pdf

18 Tejaswi, M., Rao, M.C., Datta Prasad, P.V., Giridhar, G., Pisipti, V.G.K.M., Manepalli, R.K.N.R.

Synthesis and characterization of citrate capped gold nanoparticles and their effect on liquid crystals: Optical studies

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 697-705. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/82_pdf.pdf

19 Rao, M.C., Hussain, O.M.

Synthesis and electrochemical properties of Ti doped LiCoO2 thin film cathodes

(2010) *Journal of Alloys and Compounds*, 491 (1-2), pp. 503-506. Cited 41 times.
doi: 10.1016/j.jallcom.2009.10.246

20 Rao, M.C.

Growth and microstructural features of laser ablated LiCoO2 thin films

(2010) *Journal of Crystal Growth*, 312 (19), pp. 2799-2803. Cited 44 times.
doi: 10.1016/j.jcrysgro.2010.06.012

21 Ravindranadh, K., Rao, M.C., Ravikumar, R.
(2015) *J. Luminesce.*, 159, p. 119. Cited 11 times.

22 Rao, M.C., Ramachandra Rao, K.

Thermal evaporated V_2O_5 thin films: Thermodynamic properties

(2014) *International Journal of ChemTech Research*, 6 (7), pp. 3931-3934. Cited 33 times.
http://sphinxsai.com/2014/ch_vol_6_7/7/%283931-3934%29O14.pdf

23 Rao, M.C.

Fabrication of LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin film cells for rechargeable lithium microbatteries

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (1), pp. 85-88. Cited 43 times.
http://oam-rc.inoe.ro/download.php?idu=1453

24 Begum, S.M., Rao, M.C., Ravikumar, R.
(2012) *Spectrochim. Acta Part A: Mol. & Biomol. Spec.*, 98, p. 100. Cited 7 times.

25 Rao, M.C.

Grain size effect on the growth of LiCoO2 thin film cathodes

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (4), pp. 428-431. Cited 40 times.
http://joam.inoe.ro/download.php?idu=2757

26 Rao, M.C., Hussain, O.M.

Spectroscopic investigations on tetravalent doped $LiCoO_2$ thin film cathodes

(2009) *EPJ Applied Physics*, 48 (2), pp. 20503p1-20503p6. Cited 31 times.
doi: 10.1051/epjap/2009142

27 Muntaz Begum, S., Rao, M.C., Ravikumar, R.V.S.S.N.

Cu^{2+} Doped PVA Passivated ZnSe Nanoparticles-Preparation, Characterization and Properties

(2013) *Journal of Inorganic and Organometallic Polymers and Materials*, 23 (2), pp. 350-356. Cited 45 times.
doi: 10.1007/s10904-012-9783-8

28 Rao, M.C.

Microstructural and electrochemical properties of LiNixCo 1-xO2 thin films prepared by pulsed laser deposition

(2010) *Journal of Optoelectronics and Advanced Materials*, 12 (12), pp. 2433-2436. Cited 26 times.
http://joam.inoe.ro/download.php?idu=2672

29 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated amorphous LiCoO 2 thin film cathodes

(2009) *IOP Conference Series: Materials Science and Engineering*, 2, art. no. 012037. Cited 23 times.
doi: 10.1088/1757-899X/2/1/012037

30 Rao, M.C., Hussain, O.M.
Growth and characterization of tetravalent doped LiCoO2 thin film cathodes

(2009) *Indian Journal of Engineering and Materials Sciences*, 16 (5), pp. 335-340. Cited 28 times.

31 Ravindranadh, K., Rao, M.C., Ravikumar, R., Mater, J.
(2015) *Sci: Mater. Elect.*, 26, p. 6667. Cited 4 times.

32 Rao, M.C.
Effect of target composition on the growth of stiochiometric LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin films

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (6), pp. 651-654. Cited 39 times.
http://oam-rc.inoe.ro/download.php?idu=1600

33 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (9), pp. 1109-1113. Cited 37 times.
http://joam.inoe.ro/download.php?idu=2881

34 Rao, M.C.
(2011) *J. Optoelect. Adv. Mater.*, 13 (1-2), p. 72. Cited 7 times.

35 Ravindranadh, K., Babu, B., Reddy, C.V., Shim, J., Rao, M.C., Ravikumar, R.
(2015) *Appl. Mag. Reson.*, 46 (1), p. 1. Cited 21 times.

36 Mc Rao, O.M.
(2011) *Hussain, Res. J. Chem. Sci.*, 1 (7), p. 92. Cited 3 times.

37 Rao, M.C.
Microfabrication of LiCoO 2 thin film cell

(2012) *International Journal of Chemical Sciences*, 10 (2), pp. 1111-1116. Cited 33 times.
http://www.sadgurupublications.com/ContentPaper/2012/61_1581_10(2)2012.pdf

38 Rao, M.C.
Synthesis and characterization of $LiCoO_2$ thin film cathodes grown by pulsed laser deposition

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 511-515. Cited 32 times.
http://oam-rc.inoe.ro/download.php?idu=1866

39 Prasad, P.V., Visweswara Rao, T.K., Satya Kamal, Ch., Rajya Lakshmi, S., Ramachandra, R.K., Sudarsan, V., Rao, M.C., (...), SubbaRao, P.S.V.

Structural and photoluminescence studies of Eu^{3+} doped L-Tartaric single crystal through evaporation technique

(2015) *Journal of Molecular Structure*, 1085, pp. 115-120. Cited 19 times.
www.elsevier.com/inca/publications/store/5/0/0/8/5/0/index.htt
doi: 10.1016/j.molstruc.2014.12.086

40 Rao, M.C.

Spectroscopic investigations on laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (1), pp. 78-81. Cited 29 times.
http://joam.inoe.ro/download.php?idu=2691

41 Rao, M.C., Muntaz Begum, S.K.

Substrate effect on microstructure of LiCoO 2 thin film cathodes

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 508-510. Cited 25 times.
http://oam-rc.inoe.ro/download.php?idu=1865

42 Rao, M.C.
(2013) *Res. J. Rec. Sci*, 2 (3), p. 67. Cited 45 times.

43 Andrieux-Ledier, A., Tremblay, B., Courty, A.

Stability of self-ordered thiol-coated silver nanoparticles: Oxidative environment effects

(2013) *Langmuir*, 29 (43), pp. 13140-13145. Cited 15 times.
doi: 10.1021/la402916b

44 Gray, G.W.
(1962)
Molecular structures and properties of liquid crystals,Academic press

45 Ulman, A.

Formation and structure of self-assembled monolayers

(1996) *Chemical Reviews*, 96 (4), pp. 1533-1554. Cited 6298 times.
http://pubs.acs.org/journal/chreay
doi: 10.1021/cr9502357

46 Love, J.C., Estroff, L.A., Kriebel, J.K., Nuzzo, R.G., Whitesides, G.M.

Self-assembled monolayers of thiolates on metals as a form of nanotechnology

(2005) *Chemical Reviews*, 105 (4), pp. 1103-1169. Cited 5431 times.
doi: 10.1021/cr0300789

47 Park, S.C., Kim, B.J., Hawker, C.J., Kramer, E.J., Bang, J., Ha, J.S.

Controlled ordering of block copolymer thin films by the addition of hydrophilic nanoparticles

(2007) *Macromolecules*, 40 (22), pp. 8119-8124. Cited 61 times.
doi: 10.1021/ma071442z

48 Ramakrishna, M., Rao, N., Prasad, P.V.D., Pisipati, V.G.K.M.
Orientational order parameter in alkoxy benzoic acids-optical studies

(2010) *Molecular Crystals and Liquid Crystals*, 528, pp. 49-63. Cited 20 times.
doi: 10.1080/15421406.2010.504515

49 Wu, S.-T.
Birefringence dispersions of liquid crystals

(1986) *Physical Review A*, 33 (2), pp. 1270-1274. Cited 343 times.
doi: 10.1103/PhysRevA.33.1270

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Schiff base Liquid Crystalline compounds with dispersed citrate capped gold nanoparticles - Optical and textural analysis (Article)

Tejaswi, M.[a], Rao, M.C.[b], Manepalli, R.K.N.R.[a], Madhav, B.T.P.[c], Pardhasaradhi, P.[c], Giridhar, G.[d], Pandian, K.[e], Pisipati, V.G.K.M.[c]

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Abstract

View references (50)

In this paper, 20 µl citrate capped Gold (Au) nanoparticles are dispersed in Schiff base Liquid Crystalline compounds 6O.Om (m = 7 and 9) and characterizations are carried-out to observe the changes occurred with the dispersion of nanoparticles in Liquid Crystalline compounds. The Polarizing Microscopy (POM) technique is used to measure the phase transition temperatures. Differential Scanning Calorimetry (DSC) is used to determine the transition temperatures and enthalpy values. Further characterization is carried-out by Scanning Electron Microscopy (SEM). The nematic transition temperature is decreased by 1 ï¿½C with the dispersion of citrate capped Au nanoparticles into the Liquid Crystalline compounds. Image processing technique of textural analysis is also carried-out to identify the statistical parameters of the images and their transition temperatures. ï¿½ RASĀYAN. All rights reserved.

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References (50)

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1 Rao, D.V., Pardhasaradhi, P., Pisipati, V.G.K.M., Prasad, P.V.D.
Orientational order parameter studies on 3.O m and 3O.O m liquid crystals

(2015) *Phase Transitions*, 88 (2), pp. 137-152. Cited 5 times.
http://www.tandfonline.com/toc/gpht20/current
doi: 10.1080/01411594.2014.961154

2 Sastry, P.S., Srinivasu, C.H., Pardhasaradhi, P.
(2016) *Phase Transit*, 89, p. 37.

3 Sastry, P.S., Pardhasaradhi, P., Srinivasu, C., Pisipati, V.G.K.M., Datta Prasad, P.V.
Synthesis, characterisation and phase transition studies in N-(-4-ethyloxybenzylydene)-4'-alkoxyanilines

(2016) *Liquid Crystals*, 43 (5), pp. 632-638. Cited 2 times.
http://www.tandf.co.uk/journals/titles/02678292.asp
doi: 10.1080/02678292.2015.1131342

4 Manepalli, R.K.N.R., Pardhasaradhi, P., Madhav, B.T.P., Jayaprada, P., Pisipati, V.G.K.M.
Synthesis, characterization and textural analysis to reduce the multiplicative noise in nano disperesed liquid crystalline compounds using HF technique

(2016) *International Journal of Earth Sciences and Engineering*, 9 (1), pp. 25-28.
http://www.cafetinnova.org/ijee.html

5 Androie, K.P., Amer, J.
(2005) *J. Am. Coll. Radio*, 2, p. 543.

6 De Gennes, P.G., Prost, J.
(1993) *The Physics of Liquid Crystals*. Cited 12779 times.
second ed., Clarendon, Oxford

7 Takatoh, K., Hasegawa, M., Koden, M., Itoh, N., Hasegawa, R., Sakamoto, M.
(2004) *Alignment Technologies and Application of Liquid Crystals Devices*. Cited 182 times.
Taylor &Francis, New York

8 Shiraishi, Y., Toshima, N., Maeda, K., Yoshikawa, H., Xu, J., Kobayashi, S.
Frequency modulation response of a liquid-crystal electro-optic device doped with nanoparticles

(2002) *Applied Physics Letters*, 81 (15), pp. 2845-2847. Cited 190 times.
doi: 10.1063/1.1511282

9 Lynch, M.D., Patrick, D.L.
Organizing Carbon Nanotubes with Liquid Crystals

(2002) *Nano Letters*, 2 (11), pp. 1197-1201. Cited 413 times.
doi: 10.1021/nl025694j

10 Dierking, I., Scalia, G., Morales, P.
Liquid crystal-carbon nanotube dispersions

(2005) *Journal of Applied Physics*, 97 (4), art. no. 044309. Cited 293 times.
doi: 10.1063/1.1850606

11 Basu, R., Iannacchione, G.S.
Carbon nanotube dispersed liquid crystal: A nano electromechanical system

(2008) *Applied Physics Letters*, 93 (18), art. no. 183105. Cited 68 times.
doi: 10.1063/1.3005590

12 Lagerwall, J.P.F., Scalia, G.
Carbon nanotubes in liquid crystals

(2008) *Journal of Materials Chemistry*, 18 (25), pp. 2890-2898. Cited 175 times.
doi: 10.1039/b802707b

13 Russell, J.M., Oh, S., LaRue, I., Zhou, O., Samulski, E.T.
Alignment of nematic liquid crystals using carbon nanotube films

(2006) *Thin Solid Films*, 509 (1-2), pp. 53-57. Cited 103 times.
doi: 10.1016/j.tsf.2005.09.099

14 Galewski, Z.
Liquid crystalline properties of 4-halogenobenzylidene-4'-alkoxy-anilines

(1994) *Molecular Crystals and Liquid Crystals Science and Technology. Section A. Molecular Crystals and Liquid Crystals*, 249 (1), pp. 43-49. Cited 22 times.
doi: 10.1080/10587259408038654

15 Yeap, G.-Y., Ha, S.-T., Lim, P.-L., Boey, P.-L., Ito, M.M., Sanehisa, S., Vill, V.
Nematic and smectic a phases in ortho-hydroxy-para- hexadecanoyloxbenzylidene-para-substituted anilines

(2006) *Molecular Crystals and Liquid Crystals*, 452 (1), pp. 63-72. Cited 37 times.
doi: 10.1080/15421400500377750

16 Collings, P.J., Hird, M.
(1998) *Introduction to Liquid Crystals Chemistry and Physics*. Cited 47 times.
London:Taylor and Francis

17 Babu, R., Iannacchione, G.
(2009) *Phys. Rev. E*, 106.

18 Sivasri, J., Rao, M.C., Giridhar, G., Madav, B.T.P., Divakar, T.E., Manepalli, R.K.N.R.
Influence of Fe_3O_4nanoparticles dispersed in liquid crystalline compounds – spectroscopic characterization

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 556-565. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/63_pdf.pdf

19 Jayaprada, P., Tejaswi, M., Giridhar, G., Rao, M.C., Pisipati, V.G.K.M., Manepalli, R.K.N.R.
Synthesis and characterization of schiff base liquid crystals with dispersed ZnO nanoparticles-optical properties

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 588-596. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/67_pdf.pdf

20 Tejaswi, M., Rao, M.C., Datta Prasad, P.V., Giridhar, G., Pisipti, V.G.K.M., Manepalli, R.K.N.R.
Synthesis and characterization of citrate capped gold nanoparticles and their effect on liquid crystals: Optical studies

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 697-705. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/82_pdf.pdf

21 Rao, M.C.
Growth and microstructural features of laser ablated LiCoO2 thin films

(2010) *Journal of Crystal Growth*, 312 (19), pp. 2799-2803. Cited 44 times.
doi: 10.1016/j.jcrysgro.2010.06.012

22 Rao, M.C., Ramachandra Rao, K.
Thermal evaporated V_2O_5 thin films: Thermodynamic properties

(2014) *International Journal of ChemTech Research*, 6 (7), pp. 3931-3934. Cited 33 times.
http://sphinxsai.com/2014/ch_vol_6_7/7/%283931-3934%29O14.pdf

23 Rao, M.C.
Fabrication of LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin film cells for rechargeable lithium microbatteries

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (1), pp. 85-88. Cited 43 times.
http://oam-rc.inoe.ro/download.php?idu=1453

24 Begum, S.M., Rao, M.C., Ravikumar, R.
(2012) *Spectrochim. Acta Part A: Mol. & Biomol. Spec*, 98, p. 100. Cited 7 times.

25 Rao, M.C.
Grain size effect on the growth of LiCoO2 thin film cathodes

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (4), pp. 428-431. Cited 40 times.
http://joam.inoe.ro/download.php?idu=2757

26 Rao, M.C., Hussain, O.M.
Spectroscopic investigations on tetravalent doped $LiCoO_2$ thin film cathodes

(2009) *EPJ Applied Physics*, 48 (2), pp. 20503p1-20503p6. Cited 31 times.
doi: 10.1051/epjap/2009142

27 Muntaz Begum, S., Rao, M.C., Ravikumar, R.V.S.S.N.
Cu^{2+} Doped PVA Passivated ZnSe Nanoparticles-Preparation, Characterization and Properties

(2013) *Journal of Inorganic and Organometallic Polymers and Materials*, 23 (2), pp. 350-356. Cited 45 times.
doi: 10.1007/s10904-012-9783-8

28 Mc Rao, J.
(2010) *Optoelect. & Adv. Mater*, 12, p. 2433.

29 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated amorphous LiCoO 2 thin film cathodes

(2009) *IOP Conference Series: Materials Science and Engineering*, 2, art. no. 012037. Cited 23 times.
doi: 10.1088/1757-899X/2/1/012037

30 Rao, M.C., Hussain, O.M.
Growth and characterization of tetravalent doped LiCoO2 thin film cathodes

(2009) *Indian Journal of Engineering and Materials Sciences*, 16 (5), pp. 335-340. Cited 28 times.

31 Ravindranadh, K., Rao, M.C., Ravikumar, R., Mater, J.
(2015) *Sci: Mater. Elect*, 26, p. 6667. Cited 4 times.

32 Rao, M.C.
Effect of target composition on the growth of stiochiometric LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin films

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (6), pp. 651-654. Cited 39 times.
http://oam-rc.inoe.ro/download.php?idu=1600

33 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (9), pp. 1109-1113. Cited 37 times.
http://joam.inoe.ro/download.php?idu=2881

34 Ravindranadh, K., Babu, B., Reddy, C.V., Shim, J., Rao, M.C., Ravikumar, R.
(2015) *Appl. Mag. Reson*, 46 (1), p. 1. Cited 21 times.

35 Mc Rao, O.M.
(2011) *Hussain, Res. J. Chem. Sci*, 1 (7), p. 92. Cited 3 times.

36 Rao, M.C.
Microfabrication of LiCoO 2 thin film cell

(2012) *International Journal of Chemical Sciences*, 10 (2), pp. 1111-1116. Cited 33 times.
http://www.sadgurupublications.com/ContentPaper/2012/61_1581_10(2)2012.pdf

37 Rao, M.C.
Synthesis and characterization of $LiCoO_2$ thin film cathodes grown by pulsed laser deposition

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 511-515. Cited 32 times.
http://oam-rc.inoe.ro/download.php?idu=1866

38 Rao, M.C.
Spectroscopic investigations on laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (1), pp. 78-81. Cited 29 times.
http://joam.inoe.ro/download.php?idu=2691

39 Ravindranadh, K., Rao, M.C., Ravikumar, R.
(2015) *J. Luminesce*, 159, p. 119. Cited 11 times.

40 Rao, M.C., Muntaz Begum, S.K.
Substrate effect on microstructure of LiCoO 2 thin film cathodes

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 508-510. Cited 25 times.
http://oam-rc.inoe.ro/download.php?idu=1865

41 Rao, M.C., Ravindranadh, K., Satyanarayana, T., Dasaradhudu, Y., Nagarjuna, G., Srinivas, K., Shekhawat, M.S.

Luminescent and gas sensing properties of SnO_2thin films grown by pulsed laser deposition

(2016) *Der Pharma Chemica*, 8 (4), pp. 243-250. Cited 22 times.
http://derpharmachemica.com/vol8-iss4/DPC-2016-8-4-243-250.pdf

42 Rao, M.C.

Raman investigations on laser ablated LiCoO 2 and LiTi xCo 1-xO 2 thin film cathodes

(2010) *Optoelectronics and Advanced Materials, Rapid Communications*, 4 (12), pp. 2088-2091. Cited 25 times.
http://oam-rc.inoe.ro/download.php?idu=1406

43 Sivaram, K., Rao, M.C., Giridhar, G., Tejaswi, M., Madhav, B.T.P., Pisipati, V.G.K.M., Manepalli, R.K.N.R.

Synthesis and characterization of thiol - Capped silver nanoparticles and their effect on liquid crystals

(2017) *Rasayan Journal of Chemistry*, 10 (1), pp. 16-24. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/107_pdf.pdf
doi: 10.7324/RJC.2017.1011539

44 Rao, M.C., Ravindranadh, K., Shekhawat, M.S.

Structural and electrical properties of TiO_2 thin films

(2016) *AIP Conference Proceedings*, 1728, art. no. 020077. Cited 19 times.
http://scitation.aip.org/content/aip/proceeding/aipcp
ISBN: 978-073541375-7
doi: 10.1063/1.4946128

45 Rao, M.C., Ravindranadh, K., Begum, Sk.M., Nirmala, G.

$LiNi_xCo_{1-x}O_2$ cell grown by pulsed laser deposition

(2011) *AIP Conference Proceedings*, 1349 (PART A), pp. 641-642. Cited 16 times.
ISBN: 978-073540905-7
doi: 10.1063/1.3606021

46 Ravindranadh, K., Sridhar Kumar, D., Durga Venkata Prasad, K., Rao, M.C.

Luminescent properties of Cu^{2+} doped SnO_2 thin films by spray pyrolysis

(2016) *International Journal of ChemTech Research*, 9 (4), pp. 598-603. Cited 22 times.
http://sphinxsai.com/2016/ch_vol9_no4/2/(598-603)V9N4CT.pdf

47 Kelker, H., Scheurle, B.

A Liquid-crystalline (Nematic) Phase with a Particularly Low Solidification Point

(1969) *Angewandte Chemie International Edition in English*, 8 (11), pp. 884-885. Cited 107 times.
doi: 10.1002/anie.196908841

48 Rambabu, M., Prasad, K.R.S., Madhav, B.T.P., Venu Gopalarao, M.
(2016) *J. Engg. Appl. Sci*, 11, p. 1.

49 Rambabu, M., Prasad, K.R.S., Venu Gopala Rao, M., Madhav, B.T.P., Pisipati, V.G.K.M.

Thermal and phase behaviour studies of hydrogen-bonded compounds (SA:nOBA) using POM, DSC and image-processing techniques

(2015) *Liquid Crystals Today*, 24 (3), pp. 81-92. Cited 6 times.
http://www.tandfonline.com/loi/tlcy20
doi: 10.1080/1358314X.2015.1039195

50 Madhav, B.T.P., Pardhasaradhi, P., Manepalli, R.K.N.R., Kishore, P.V.V., Pisipati, V.G.K.M. (2015) *Liquid Crystals*, 37, p. 41.

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Schiff base Liquid Crystalline compounds with dispersed citrate capped gold nanoparticles - Optical and textural analysis (Article)

Tejaswi, M.[a], Rao, M.C.[b], Manepalli, R.K.N.R.[a], Madhav, B.T.P.[c], Pardhasaradhi, P.[c], Giridhar, G.[d], Pandian, K.[e], Pisipati, V.G.K.M.[c]

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Abstract

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References (50)

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1 Rao, D.V., Pardhasaradhi, P., Pisipati, V.G.K.M., Prasad, P.V.D.
Orientational order parameter studies on 3.O m and 3O.O m liquid crystals

(2015) *Phase Transitions*, 88 (2), pp. 137-152. Cited 5 times.
http://www.tandfonline.com/toc/gpht20/current
doi: 10.1080/01411594.2014.961154

2 Sastry, P.S., Srinivasu, C.H., Pardhasaradhi, P.
(2016) *Phase Transit*, 89, p. 37.

3 Sastry, P.S., Pardhasaradhi, P., Srinivasu, C., Pisipati, V.G.K.M., Datta Prasad, P.V.
Synthesis, characterisation and phase transition studies in N-(-4-ethyloxybenzylydene)-4'-alkoxyanilines

(2016) *Liquid Crystals*, 43 (5), pp. 632-638. Cited 2 times.
http://www.tandf.co.uk/journals/titles/02678292.asp
doi: 10.1080/02678292.2015.1131342

4 Manepalli, R.K.N.R., Pardhasaradhi, P., Madhav, B.T.P., Jayaprada, P., Pisipati, V.G.K.M.
Synthesis, characterization and textural analysis to reduce the multiplicative noise in nano disperesed liquid crystalline compounds using HF technique

(2016) *International Journal of Earth Sciences and Engineering*, 9 (1), pp. 25-28.
http://www.cafetinnova.org/ijee.html

5 Androie, K.P., Amer, J.
(2005) *J. Am. Coll. Radio*, 2, p. 543.

6 De Gennes, P.G., Prost, J.
(1993) *The Physics of Liquid Crystals*. Cited 12779 times.
second ed., Clarendon, Oxford

7 Takatoh, K., Hasegawa, M., Koden, M., Itoh, N., Hasegawa, R., Sakamoto, M.
(2004) *Alignment Technologies and Application of Liquid Crystals Devices*. Cited 182 times.
Taylor &Francis, New York

8 Shiraishi, Y., Toshima, N., Maeda, K., Yoshikawa, H., Xu, J., Kobayashi, S.
Frequency modulation response of a liquid-crystal electro-optic device doped with nanoparticles

(2002) *Applied Physics Letters*, 81 (15), pp. 2845-2847. Cited 190 times.
doi: 10.1063/1.1511282

9 Lynch, M.D., Patrick, D.L.
Organizing Carbon Nanotubes with Liquid Crystals

(2002) *Nano Letters*, 2 (11), pp. 1197-1201. Cited 413 times.
doi: 10.1021/nl025694j

10 Dierking, I., Scalia, G., Morales, P.
Liquid crystal-carbon nanotube dispersions

(2005) *Journal of Applied Physics*, 97 (4), art. no. 044309. Cited 293 times.
doi: 10.1063/1.1850606

11 Basu, R., Iannacchione, G.S.
Carbon nanotube dispersed liquid crystal: A nano electromechanical system

(2008) *Applied Physics Letters*, 93 (18), art. no. 183105. Cited 68 times.
doi: 10.1063/1.3005590

12 Lagerwall, J.P.F., Scalia, G.
Carbon nanotubes in liquid crystals

(2008) *Journal of Materials Chemistry*, 18 (25), pp. 2890-2898. Cited 175 times.
doi: 10.1039/b802707b

13 Russell, J.M., Oh, S., LaRue, I., Zhou, O., Samulski, E.T.
Alignment of nematic liquid crystals using carbon nanotube films

(2006) *Thin Solid Films*, 509 (1-2), pp. 53-57. Cited 103 times.
doi: 10.1016/j.tsf.2005.09.099

14 Galewski, Z.
Liquid crystalline properties of 4-halogenobenzylidene-4'-alkoxy-anilines

(1994) *Molecular Crystals and Liquid Crystals Science and Technology. Section A. Molecular Crystals and Liquid Crystals*, 249 (1), pp. 43-49. Cited 22 times.
doi: 10.1080/10587259408038654

15 Yeap, G.-Y., Ha, S.-T., Lim, P.-L., Boey, P.-L., Ito, M.M., Sanehisa, S., Vill, V.
Nematic and smectic a phases in ortho-hydroxy-para- hexadecanoyloxbenzylidene-para-substituted anilines

(2006) *Molecular Crystals and Liquid Crystals*, 452 (1), pp. 63-72. Cited 37 times.
doi: 10.1080/15421400500377750

16 Collings, P.J., Hird, M.
(1998) *Introduction to Liquid Crystals Chemistry and Physics*. Cited 47 times.
London:Taylor and Francis

17 Babu, R., Iannacchione, G.
(2009) *Phys. Rev. E*, 106.

18 Sivasri, J., Rao, M.C., Giridhar, G., Madav, B.T.P., Divakar, T.E., Manepalli, R.K.N.R.
Influence of Fe_3O_4nanoparticles dispersed in liquid crystalline compounds – spectroscopic characterization

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 556-565. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/63_pdf.pdf

19 Jayaprada, P., Tejaswi, M., Giridhar, G., Rao, M.C., Pisipati, V.G.K.M., Manepalli, R.K.N.R.
Synthesis and characterization of schiff base liquid crystals with dispersed ZnO nanoparticles-optical properties

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 588-596. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/67_pdf.pdf

20 Tejaswi, M., Rao, M.C., Datta Prasad, P.V., Giridhar, G., Pisipti, V.G.K.M., Manepalli, R.K.N.R.
Synthesis and characterization of citrate capped gold nanoparticles and their effect on liquid crystals: Optical studies

(2016) *Rasayan Journal of Chemistry*, 9 (4), pp. 697-705. Cited 8 times.
http://www.rasayanjournal.co.in/admin/php/upload/82_pdf.pdf

21 Rao, M.C.
Growth and microstructural features of laser ablated LiCoO2 thin films

(2010) *Journal of Crystal Growth*, 312 (19), pp. 2799-2803. Cited 44 times.
doi: 10.1016/j.jcrysgro.2010.06.012

22 Rao, M.C., Ramachandra Rao, K.
Thermal evaporated V_2O_5 thin films: Thermodynamic properties

(2014) *International Journal of ChemTech Research*, 6 (7), pp. 3931-3934. Cited 33 times.
http://sphinxsai.com/2014/ch_vol_6_7/7/%283931-3934%29O14.pdf

23 Rao, M.C.
Fabrication of LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin film cells for rechargeable lithium microbatteries

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (1), pp. 85-88. Cited 43 times.
http://oam-rc.inoe.ro/download.php?idu=1453

24 Begum, S.M., Rao, M.C., Ravikumar, R.
(2012) *Spectrochim. Acta Part A: Mol. & Biomol. Spec*, 98, p. 100. Cited 7 times.

25 Rao, M.C.
Grain size effect on the growth of LiCoO2 thin film cathodes

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (4), pp. 428-431. Cited 40 times.
http://joam.inoe.ro/download.php?idu=2757

26 Rao, M.C., Hussain, O.M.
Spectroscopic investigations on tetravalent doped $LiCoO_2$ thin film cathodes

(2009) *EPJ Applied Physics*, 48 (2), pp. 20503p1-20503p6. Cited 31 times.
doi: 10.1051/epjap/2009142

27 Muntaz Begum, S., Rao, M.C., Ravikumar, R.V.S.S.N.
Cu^{2+} Doped PVA Passivated ZnSe Nanoparticles-Preparation, Characterization and Properties

(2013) *Journal of Inorganic and Organometallic Polymers and Materials*, 23 (2), pp. 350-356. Cited 45 times.
doi: 10.1007/s10904-012-9783-8

28 Mc Rao, J.
(2010) *Optoelect. & Adv. Mater*, 12, p. 2433.

29 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated amorphous LiCoO 2 thin film cathodes

(2009) *IOP Conference Series: Materials Science and Engineering*, 2, art. no. 012037. Cited 23 times.
doi: 10.1088/1757-899X/2/1/012037

30 Rao, M.C., Hussain, O.M.
Growth and characterization of tetravalent doped LiCoO2 thin film cathodes

(2009) *Indian Journal of Engineering and Materials Sciences*, 16 (5), pp. 335-340. Cited 28 times.

31 Ravindranadh, K., Rao, M.C., Ravikumar, R., Mater, J.
(2015) *Sci: Mater. Elect*, 26, p. 6667. Cited 4 times.

32 Rao, M.C.
Effect of target composition on the growth of stiochiometric LiCoO2, LiTixCo1-xO2 and LiNixCo1-xO2 thin films

(2011) *Optoelectronics and Advanced Materials, Rapid Communications*, 5 (6), pp. 651-654. Cited 39 times.
http://oam-rc.inoe.ro/download.php?idu=1600

33 Rao, M.C., Hussain, O.M.
Optical and electrical properties of laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (9), pp. 1109-1113. Cited 37 times.
http://joam.inoe.ro/download.php?idu=2881

34 Ravindranadh, K., Babu, B., Reddy, C.V., Shim, J., Rao, M.C., Ravikumar, R.
(2015) *Appl. Mag. Reson*, 46 (1), p. 1. Cited 21 times.

35 Mc Rao, O.M.
(2011) *Hussain, Res. J. Chem. Sci*, 1 (7), p. 92. Cited 3 times.

36 Rao, M.C.
Microfabrication of LiCoO 2 thin film cell

(2012) *International Journal of Chemical Sciences*, 10 (2), pp. 1111-1116. Cited 33 times.
http://www.sadgurupublications.com/ContentPaper/2012/61_1581_10(2)2012.pdf

37 Rao, M.C.
Synthesis and characterization of $LiCoO_2$ thin film cathodes grown by pulsed laser deposition

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 511-515. Cited 32 times.
http://oam-rc.inoe.ro/download.php?idu=1866

38 Rao, M.C.
Spectroscopic investigations on laser ablated LiNixCo 1-xO2 thin films

(2011) *Journal of Optoelectronics and Advanced Materials*, 13 (1), pp. 78-81. Cited 29 times.
http://joam.inoe.ro/download.php?idu=2691

39 Ravindranadh, K., Rao, M.C., Ravikumar, R.
(2015) *J. Luminesce*, 159, p. 119. Cited 11 times.

40 Rao, M.C., Muntaz Begum, S.K.
Substrate effect on microstructure of LiCoO 2 thin film cathodes

(2012) *Optoelectronics and Advanced Materials, Rapid Communications*, 6 (3-4), pp. 508-510. Cited 25 times.
http://oam-rc.inoe.ro/download.php?idu=1865

41 Rao, M.C., Ravindranadh, K., Satyanarayana, T., Dasaradhudu, Y., Nagarjuna, G., Srinivas, K., Shekhawat, M.S.

Luminescent and gas sensing properties of SnO_2thin films grown by pulsed laser deposition

(2016) *Der Pharma Chemica*, 8 (4), pp. 243-250. Cited 22 times.
http://derpharmachemica.com/vol8-iss4/DPC-2016-8-4-243-250.pdf

42 Rao, M.C.

Raman investigations on laser ablated LiCoO 2 and LiTi xCo 1-xO 2 thin film cathodes

(2010) *Optoelectronics and Advanced Materials, Rapid Communications*, 4 (12), pp. 2088-2091. Cited 25 times.
http://oam-rc.inoe.ro/download.php?idu=1406

43 Sivaram, K., Rao, M.C., Giridhar, G., Tejaswi, M., Madhav, B.T.P., Pisipati, V.G.K.M., Manepalli, R.K.N.R.

Synthesis and characterization of thiol - Capped silver nanoparticles and their effect on liquid crystals

(2017) *Rasayan Journal of Chemistry*, 10 (1), pp. 16-24. Cited 7 times.
http://www.rasayanjournal.co.in/admin/php/upload/107_pdf.pdf
doi: 10.7324/RJC.2017.1011539

44 Rao, M.C., Ravindranadh, K., Shekhawat, M.S.

Structural and electrical properties of TiO_2 thin films

(2016) *AIP Conference Proceedings*, 1728, art. no. 020077. Cited 19 times.
http://scitation.aip.org/content/aip/proceeding/aipcp
ISBN: 978-073541375-7
doi: 10.1063/1.4946128

45 Rao, M.C., Ravindranadh, K., Begum, Sk.M., Nirmala, G.

$LiNi_xCo_{1-x}O_2$ cell grown by pulsed laser deposition

(2011) *AIP Conference Proceedings*, 1349 (PART A), pp. 641-642. Cited 16 times.
ISBN: 978-073540905-7
doi: 10.1063/1.3606021

46 Ravindranadh, K., Sridhar Kumar, D., Durga Venkata Prasad, K., Rao, M.C.

Luminescent properties of Cu^{2+} doped SnO_2 thin films by spray pyrolysis

(2016) *International Journal of ChemTech Research*, 9 (4), pp. 598-603. Cited 22 times.
http://sphinxsai.com/2016/ch_vol9_no4/2/(598-603)V9N4CT.pdf

47 Kelker, H., Scheurle, B.

A Liquid-crystalline (Nematic) Phase with a Particularly Low Solidification Point

(1969) *Angewandte Chemie International Edition in English*, 8 (11), pp. 884-885. Cited 107 times.
doi: 10.1002/anie.196908841

48 Rambabu, M., Prasad, K.R.S., Madhav, B.T.P., Venu Gopalarao, M.
(2016) *J. Engg. Appl. Sci*, 11, p. 1.

49 Rambabu, M., Prasad, K.R.S., Venu Gopala Rao, M., Madhav, B.T.P., Pisipati, V.G.K.M.

Thermal and phase behaviour studies of hydrogen-bonded compounds (SA:nOBA) using POM, DSC and image-processing techniques

(2015) *Liquid Crystals Today*, 24 (3), pp. 81-92. Cited 6 times.
http://www.tandfonline.com/loi/tlcy20
doi: 10.1080/1358314X.2015.1039195

50 Madhav, B.T.P., Pardhasaradhi, P., Manepalli, R.K.N.R., Kishore, P.V.V., Pisipati, V.G.K.M. (2015) *Liquid Crystals*, 37, p. 41.

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Fabrication and characterization of optical sensors using metallic core-shell thin film nanoislands for ozone detection (Article)

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Abstract

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Core-Shell nanostructures play a vital role in the sensor field owing to their performance improvements in sensing characteristics and well-established synthesis procedures. These nanostructures can be ingeniously tuned to achieve tailored properties for a particular application of interest. In this work, an Ag-Au core-shell thin film nanoislands with APTMS (3-Aminopropyl trimethoxysilane) and PVA (Polyvinyl alcohol) binding agents was modeled, synthesized and characterized. The simulation results were used to fabricate the sensor through chemical route. The results of this study confirmed that the APTMS based Ag-Au core-shell thin film nanoislands offered a better performance over the PVA based Ag-Au core-shell thin film nanoislands. Also, the APTMS based Ag-Au core-shell thin film nanoislands exhibited better sensitivity towards ozone sensing over the other types, viz., APTMS/PVA based Au-Ag core-shell and standalone Au/Ag thin film nanoislands. © 2017

Reaxys Database Information

View Compounds

Author keywords

Ag-Au core-shell | Optical sensor | Surface plasmon resonance

Indexed keywords

Engineering controlled terms: Gold | Nanostructures | Optical sensors | Ozone | Polyvinyl alcohols | Shells (structures) | Silver | Silver alloys | Surface plasmon resonance

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References (26)

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1 Borisov, A., Ivanova, O., Krutovertsev, S., Pislyakov, A.
Sensor Sensitivity Study of the Thin and Thick WO_3 Films to Ozone
(2006) *Adv. Sci. Technol.*, 45, pp. 1834-1836.

2 Ermel, M., Oswald, R., Mayer, J.-C., Moravek, A., Song, G., Beck, M., Meixner, F.X., (...), Trebs, I.
Preparation methods to optimize the performance of sensor discs for fast chemiluminescence ozone analyzers
(2013) *Environmental Science and Technology*, 47 (4), pp. 1930-1936. Cited 11 times.
doi: 10.1021/es3040363
View at Publisher

3 Doroodmand, M.M., Nasresfahani, S., Sheikhi, M.H.
Fabrication of ozone gas sensor based on FeOOH/single walled carbon nanotube-modified field effect transistor
(2013) *International Journal of Environmental Analytical Chemistry*, 93 (9), pp. 946-958. Cited 2 times.
doi: 10.1080/03067319.2012.717269
View at Publisher

4 Chung, M.G., Kim, D.H., Lee, H.M., Kim, T., Choi, J.H., Seo, D.K., Yoo, J.-B., (...), Kim, Y.H.
Highly sensitive NO_2 gas sensor based on ozone treated graphene
(2012) *Sensors and Actuators, B: Chemical*, 166-167, pp. 172-176. Cited 130 times.
doi: 10.1016/j.snb.2012.02.036
View at Publisher

5 Bejaoui, A., Guerin, J., Zapien, J.A., Aguir, K.
Theoretical and experimental study of the response of CuO gas sensor under ozone
(2014) *Sensors and Actuators, B: Chemical*, 190, pp. 8-15. Cited 21 times.
doi: 10.1016/j.snb.2013.06.084
View at Publisher

Addanki, S. , Jayachandiran, J. , Pandian, K.
(2015) Sensors and Actuators, B: Chemical

A numerical study of the sensitivity of surface plasmon resonance bimetallic silver-gold alloys using boundary element method

Putra, M.H. , Djuhana, D. , Fauzia, V.
(2017) IOP Conference Series: Materials Science and Engineering

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6 Carotta, M.C., Cervi, A., Fioravanti, A., Gherardi, S., Giberti, A., Vendemiati, B., Vincenzi, D., (...), Sacerdoti, M.

A novel ozone detection at room temperature through UV-LED-assisted ZnO thick film sensors

(2011) *Thin Solid Films*, 520 (3), pp. 939-946. Cited 34 times.
doi: 10.1016/j.tsf.2011.04.173

View at Publisher

7 Hansford, G.M., Freshwater, R.A., Bosch, R.A., Cox, R.A., Jones, R.L., Pratt, K.F.E., Williams, D.E.

A low cost instrument based on a solid state sensor for balloon-borne atmospheric O_3 profile sounding

(2005) *Journal of Environmental Monitoring*, 7 (2), pp. 158-162. Cited 19 times.
doi: 10.1039/b412184h

View at Publisher

8 Le, T., Tao, S.

Intrinsic UV absorption spectrometry observed with a liquid core waveguide as a sensor technique for monitoring ozone in water

(2011) *Analyst*, 136 (16), pp. 3335-3342. Cited 11 times.
doi: 10.1039/c1an15142h

View at Publisher

9 Wongwiriyapan, W., Honda, S.-I., Konishi, H., Mizuta, T., Ikuno, T., Ohmori, T., Ito, T., (...), Katayama, M.

Ultrasensitive ozone detection using single-walled carbon nanotube networks

(2006) *Japanese Journal of Applied Physics, Part 1: Regular Papers and Short Notes and Review Papers*, 45 (4 B), pp. 3669-3671. Cited 33 times.
http://jjap.ipap.jp/link?JJAP/45/3669/pdf
doi: 10.1143/JJAP.45.3669

View at Publisher

10 Muller, J.B.A., Smith, C.E., Newton, M.I., Percival, C.J.

Evaluation of coated QCM for the detection of atmospheric ozone

(2011) *Analyst*, 136 (14), pp. 2963-2968. Cited 4 times.
doi: 10.1039/c1an15106a

View at Publisher

11 Guérin, J., Aguir, K., Bendahan, M., Lambert-Mauriat, C.

Thermal modelling of a WO^3 ozone sensor response

(2005) *Sensors and Actuators, B: Chemical*, 104 (2), pp. 289-293. Cited 41 times.
doi: 10.1016/j.snb.2004.05.019

View at Publisher

12 Thirumalairajan, S., Mastelaro, V.R., Escanhoela, C.A.

In-depth understanding of the relation between $CuAlO_2$ particle size and morphology for ozone gas sensor detection at a nanoscale level

(2014) *ACS Applied Materials and Interfaces*, 6 (23), pp. 21739-21749. Cited 10 times.
http://pubs.acs.org/journal/aamick
doi: 10.1021/am507158z

View at Publisher

13 Wang, Ch.Y., Cimalla, V., Kups, T., Röhlig, C.-C., Stauden, Th., Ambacher, O., Kunzer, M., (...), Wagner, J.

Integration of In2 O3 nanoparticle based ozone sensors with GaInNGaN light emitting diodes

(2007) *Applied Physics Letters*, 91 (10), art. no. 103509. Cited 54 times.
doi: 10.1063/1.2779971

View at Publisher

14 Hawe, E., Fitzpatrick, C., Chambers, P., Lewis, E.

Ozone detection using an integrating sphere as an optical absorption cell

(2007) *Journal of Physics: Conference Series*, 76 (1), art. no. 012041. Cited 3 times.
http://www.iop.org/EJ/journal/conf
doi: 10.1088/1742-6596/76/1/012041

View at Publisher

15 Labidi, A., Gaidi, M., Guérin, J., Bejaoui, A., Maaref, M., Aguir, K.

Alternating current investigation and modeling of the temperature and ozone effects on the grains and the grain boundary contributions to the WO3 sensor responses

(2009) *Thin Solid Films*, 518 (1), pp. 355-361. Cited 16 times.
doi: 10.1016/j.tsf.2009.06.034

View at Publisher

16 Williams, D.E., Henshaw, G.S., Bart, M., Laing, G., Wagner, J., Naisbitt, S., Salmond, J.A.

Validation of low-cost ozone measurement instruments suitable for use in an air-quality monitoring network

(2013) *Measurement Science and Technology*, 24 (6), art. no. 065803. Cited 30 times.
http://iopscience.iop.org/0957-0233/24/6/065803/pdf/0957-0233_24_6_065803.pdf
doi: 10.1088/0957-0233/24/6/065803

View at Publisher

17 Kuzma, A., Weis, M., Daricek, M., Uhrik, J., Horinek, F., Donoval, M., Uherek, F., (...), Donoval, D.

Plasmonic properties of Au-Ag nanoparticles: Distinctiveness of metal arrangements by optical study

(2014) *Journal of Applied Physics*, 115 (5), art. no. 053517. Cited 6 times.
http://scitation.aip.org/content/aip/journal/jap
doi: 10.1063/1.4864428

View at Publisher

18 Singh, P., Thuy, N.T.B., Aoki, Y., Mott, D., Maenosono, S.

Intensification of surface enhanced Raman scattering of thiol-containing molecules using Ag@Au core@shell nanoparticles

(2011) *Journal of Applied Physics*, 109 (9), art. no. 094301. Cited 19 times.
doi: 10.1063/1.3579445

View at Publisher

19 Pal, A., Shah, S., Devi, S.

Synthesis of Au, Ag and Au-Ag alloy nanoparticles in aqueous polymer solution

(2007) *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 302 (1-3), pp. 51-57. Cited 94 times.
www.elsevier.com/locate/colsurfa
doi: 10.1016/j.colsurfa.2007.01.054

View at Publisher

20 Samal, A.K., Polavarapu, L., Rodal-Cedeira, S., Liz-Marzán, L.M., Pérez-Juste, J., Pastoriza-Santos, I.

Size tunable Au@Ag core-shell nanoparticles: Synthesis and surface-enhanced raman scattering properties

(2013) *Langmuir*, 29 (48), pp. 15076-15082. Cited 119 times.
doi: 10.1021/la403707j

View at Publisher

21 Sun, L., Luan, W., Shan, Y.J.

A composition and size controllable approach for Au-Ag alloy nanoparticles

(2012) *Nanoscale Research Letters*, 7. Cited 13 times.
doi: 10.1186/1556-276X-7-225

View at Publisher

22 Addanki, S., Jayachandiran, J., Pandian, K., Nedumaran, D.

Development of optical sensors for the quantitative detection of ozone using gold and silver thin film nanoislands

(2015) *Sensors and Actuators, B: Chemical*, 210, pp. 17-27. Cited 8 times.
doi: 10.1016/j.snb.2014.12.071

View at Publisher

23 Addanki, S., Nedumaran, D.
Enhanced performance of optical ozone sensors using Au@Ag core-shell thin film nanoislands
(2015) *Int. Res. J. Eng. Technol.*, 2 (6), pp. 241-251.

24 Kittler, S., Greulich, C., Köller, M., Epple, M.

Synthesis of PVP-coated Silver nanoparticles and their biological activity towards human mesenchymal stem cells

(2009) *Materialwissenschaft und Werkstofftechnik*, 40 (4), pp. 258-264. Cited 53 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/122350082/PDFSTART
doi: 10.1002/mawe.200800437

View at Publisher

25 Shakila, V., Pandian, K.

Preparation of gold nanoislands on various functionalized polymer-modified glass and ITO for electrochemical characterization of monolayer assembly of alkanethiols

(2007) *Journal of Solid State Electrochemistry*, 11 (2), pp. 296-302. Cited 16 times.
doi: 10.1007/s10008-006-0107-1

View at Publisher

26 Gradess, R., Abargues, R., Habbou, A., Canet-Ferrer, J., Pedrueza, E., Russell, A., Valdés, J.L., (...), Martínez-Pastor, J.P.

Localized surface plasmon resonance sensor based on Ag-PVA nanocomposite thin films

(2009) *Journal of Materials Chemistry*, 19 (48), pp. 9233-9240. Cited 41 times.
doi: 10.1039/b910020b

View at Publisher

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Mixed zinc/manganese on highly reduced graphene oxide: A highly active nanocomposite catalyst for aerial oxidation of benzylic alcohols (Article)

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Abstract

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Nanocomposites of highly reduced graphene oxide (HRG) and ZnO_x nanoparticles doped manganese carbonate containing different percentages of HRG were prepared via a facile co-precipitation method. The prepared sample calcined at 300°C yielded i.e., ZnO_x(1%)–$MnCO_3$/)X%(HRG (where X = 0–7), calcination at 400°C and 500°C, yielded different manganese oxides i.e., ZnO_x(1%)–MnO_2/)X%(HRG and ZnO_x(1%)–Mn_2O_3/)X%(HRG respectively. The prepared catalyst were subjected to catalytic evaluation and a comparative catalytic study between carbonates and oxides for the liquid-phase aerobic oxidation of benzylic alcohols to corresponding aldehydes using molecular oxygen as an eco-friendly oxidant without adding additives or bases. The influence of various parameters such as percentage of HRG, reaction time, catalyst amount, calcination and reaction temperature was systematically examined to optimize reaction conditions using oxidation of benzyl alcohol as a substrate model. It was found that the catalytic performance is remarkably enhanced after using HRG as catalyst co-dopant for the aerobic oxidation of alcohols, possibly owing to the presence of carbon defects and oxygenated functional groups on HRG surface. The as-synthesized catalysts were characterized by SEM, EDX, XRD, Raman, TGA, BET, and FT-IR. Under optimal conditions, the catalyst with composition ZnO_x(1%)–$MnCO_3$/)1%(HRG calcined at 300°C exhibited remarkable specific activity (57.1 $mmol \cdot g^{-1} \cdot h^{-1}$) with 100% conversion of benzyl alcohol and more than 99% product selectivity within extremely short time (7 min). The as-prepared catalyst was re-used up to five consecutive times without significant decrease in its activity and selectivity. To the best of our knowledge, the achieved specific activity is the highest so far compared to the earlier reported catalysts used for the benzyl alcohol oxidation. A wide range of substituted benzylic and aliphatic alcohols were selectively oxidized into their corresponding aldehydes with complete convertibility and selectivity in short reaction times without over-oxidation to the acids. Due to their significant low cost, superior reproducibility, excellent catalytic efficiency, the ZnO_x(1%)–$MnCO_3$/)X%(HRG nanocomposites possess several application prospect in other organic chemistry reactions.

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Assal, M.E. , Kuniyil, M. , Shaik, M.R.
(2017) Journal of Chemistry

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Adil, S.F. , Assal, M.E. , Kuniyil, M.
(2017) Materials Express

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References (116)

View in search results format >

1 Mallat, T., Baiker, A.
Oxidation of alcohols with molecular oxygen on solid catalysts
(2004) *Chemical Reviews*, 104 (6), pp. 3037-3058. Cited 1340 times.
doi: 10.1021/cr0200116
View at Publisher

2 Palmisano, G., García-López, E., Marcì, G., Loddo, V., Yurdakal, S., Augugliaro, V., Palmisano, L.
Advances in selective conversions by heterogeneous photocatalysis
(2010) *Chemical Communications*, 46 (38), pp. 7074-7089. Cited 243 times.
doi: 10.1039/c0cc02087g
View at Publisher

3 Musawir, M., Davey, P.N., Kelly, G., Kozhevnikov, I.V.
Highly efficient liquid-phase oxidation of primary alcohols to aldehydes with oxygen catalysed by Ru-Co oxide
(2003) *Chemical Communications*, 3 (12), pp. 1414-1415. Cited 102 times.
doi: 10.1039/b212585b
View at Publisher

4 Higashimoto, S., Suetsugu, N., Azuma, M., Ohue, H., Sakata, Y.
Efficient and selective oxidation of benzylic alcohol by O_2 into corresponding aldehydes on a TiO_2 photocatalyst under visible light irradiation: Effect of phenyl-ring substitution on the photocatalytic activity
(2010) *Journal of Catalysis*, 274 (1), pp. 76-83. Cited 96 times.
doi: 10.1016/j.jcat.2010.06.006
View at Publisher

5 Zhang, M., Wang, Q., Chen, C., Zang, L., Ma, W., Zhao, J.
Oxygen atom transfer in the photocatalytic oxidation of alcohols by tio_2: Oxygen isotope studies
(2009) *Angewandte Chemie - International Edition*, 48 (33), pp. 6081-6084. Cited 201 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/122296604/PDFSTART
doi: 10.1002/anie.200900322
View at Publisher

6 March, J.
(1992) *Advanced Chemistry: Reactions, Mechanisms, and Structure*. Cited 9889 times.
John Wiley & Sons: Hoboken, NJ, USA

7 Enache, D.I., Edwards, J.K., Landon, P., Solsona-Espriu, B., Carley, A.F., Herzing, A.A., Watanabe, M., (...), Hutchings, G.J.

Solvent-free oxidation of primary alcohols to aldehydes using Au-Pd/TiO_2 catalyst

(2006) *Science*, 311 (5759), pp. 362-365. Cited 1430 times.
doi: 10.1126/science.1120560

View at Publisher

8 Ten Brink, G.-J., Arends, I.W.C.E., Sheldon, R.A.

Green, catalytic oxidation of alcohols in water

(2000) *Science*, 287 (5458), pp. 1636-1639. Cited 952 times.
doi: 10.1126/science.287.5458.1636

View at Publisher

9 Sheldon, R.A., Arends, I.W.C.E., Brink, G.-J.T., Dijksman, A.

Green, catalytic oxidations of alcohols

(2002) *Accounts of Chemical Research*, 35 (9), pp. 774-781. Cited 871 times.
doi: 10.1021/ar010075n

View at Publisher

10 Fox, M.A., Dulay, M.T.

Heterogeneous Photocatalysis

(1993) *Chemical Reviews*, 93 (1), pp. 341-357. Cited 3604 times.
doi: 10.1021/cr00017a016

View at Publisher

11 Yurdakal, S., Palmisano, G., Loddo, V., Augugliaro, V., Palmisano, L.

Nanostructured rutile TiO_2 for selective photocatalytic oxidation of aromatic alcohols to aldehydes in water

(2008) *Journal of the American Chemical Society*, 130 (5), pp. 1568-1569. Cited 290 times.
doi: 10.1021/ja709989e

View at Publisher

12 Zhan, G., Hong, Y., Mbah, V.T., Huang, J., Ibrahim, A.-R., Du, M., Li, Q.

Bimetallic Au-Pd/MgO as efficient catalysts for aerobic oxidation of benzyl alcohol: A green bio-reducing preparation method

(2012) *Applied Catalysis A: General*, 439-440, pp. 179-186. Cited 41 times.
doi: 10.1016/j.apcata.2012.07.005

View at Publisher

13 Dell'Anna, M.M., Mali, M., Mastrorilli, P., Cotugno, P., Monopoli, A.

Oxidation of benzyl alcohols to aldehydes and ketones under air in water using a polymer supported palladium catalyst

(2014) *Journal of Molecular Catalysis A: Chemical*, 386, pp. 114-119. Cited 31 times.
doi: 10.1016/j.molcata.2014.02.001

View at Publisher

14 Kantam, M.L., Reddy, R.S., Pal, U., Sudhakar, M., Venugopal, A., Ratnam, K.J., Figueras, F., (...), Nishina, Y.

Ruthenium/magnesium-lanthanum mixed oxide: An efficient reusable catalyst for oxidation of alcohols by using molecular oxygen

(2012) *Journal of Molecular Catalysis A: Chemical*, 359, pp. 1-7. Cited 15 times.
doi: 10.1016/j.molcata.2012.03.013

View at Publisher

15 Alabbad, S., Adil, S.F., Assal, M.E., Khan, M., Alwarthan, A., Siddiqui, M.R.H.

Gold & silver nanoparticles supported on manganese oxide: Synthesis, characterization and catalytic studies for selective oxidation of benzyl alcohol (Open Access)

(2014) *Arabian Journal of Chemistry*, 7 (6), pp. 1192-1198. Cited 16 times.
http://colleges.ksu.edu.sa/Arabic%20Colleges/CollegeOfScience/ChemicalDept/AJC/default.aspx (ScienceDirect http://www.sciencedirect.com/science/journal/18785352)
doi: 10.1016/j.arabjc.2014.02.007

View at Publisher

16 Yan, Y., Jia, X., Yang, Y.

Palladium nanoparticles supported on CNT functionalized by rare-earth oxides for solvent-free aerobic oxidation of benzyl alcohol

(2016) *Catalysis Today*, Part 2 259 (Part 2), pp. 292-302. Cited 16 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.07.021

View at Publisher

17 Zhou, C., Guo, Z., Dai, Y., Jia, X., Yu, H., Yang, Y.

Promoting role of bismuth on carbon nanotube supported platinum catalysts in aqueous phase aerobic oxidation of benzyl alcohol

(2016) *Applied Catalysis B: Environmental*, 181, pp. 118-126. Cited 22 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2015.07.048

View at Publisher

18 Komiya, N., Nakae, T., Sato, H., Naota, T.

Water-soluble diruthenium complexes bearing acetate and carbonate bridges: Highly efficient catalysts for aerobic oxidation of alcohols in water

(2006) *Chemical Communications*, (46), pp. 4829-4831. Cited 60 times.
doi: 10.1039/b610862h

View at Publisher

19 Xie, M., Dai, X., Meng, S., Fu, X., Chen, S.

Selective oxidation of aromatic alcohols to corresponding aromatic aldehydes using In_2S_3 microsphere catalyst under visible light irradiation

(2014) *Chemical Engineering Journal*, 245, pp. 107-116. Cited 21 times.
doi: 10.1016/j.cej.2014.02.029

View at Publisher

20 Choudhary, V.R., Chaudhari, P.A., Narkhede, V.S.

Solvent-free liquid phase oxidation of benzyl alcohol to benzaldehyde by molecular oxygen using non-noble transition metal containing hydrotalcite-like solid catalysts

(2003) *Catalysis Communications*, 4 (4), pp. 171-175. Cited 151 times.
doi: 10.1016/S1566-7367(03)00027-X

View at Publisher

21 Mahdavi, V., Hasheminasab, H.R.

Vanadium phosphorus oxide catalyst promoted by cobalt doping for mild oxidation of benzyl alcohol to benzaldehyde in the liquid phase

(2014) *Applied Catalysis A: General*, 482, pp. 189-197. Cited 13 times.
http://www.sciencedirect.com/science/journal/0926860X
doi: 10.1016/j.apcata.2014.06.003

View at Publisher

22 Ji, H.-B., Wang, T.-T., Zhang, M.-Y., Chen, Q.-L., Gao, X.-N.
Green oxidation of alcohols by a reusable nickel catalyst in the presence of molecular oxygen

(2007) *Reaction Kinetics and Catalysis Letters*, 90 (2), pp. 251-257. Cited 22 times.
doi: 10.1007/s11144-007-4843-8

View at Publisher

23 Cang, R., Lu, B., Li, X., Niu, R., Zhao, J., Cai, Q.
Iron-chloride ionic liquid immobilized on SBA-15 for solvent-free oxidation of benzyl alcohol to benzaldehyde with H_2O_2

(2015) *Chemical Engineering Science*, 137, pp. 268-275. Cited 23 times.
http://www.journals.elsevier.com/chemical-engineering-science/
doi: 10.1016/j.ces.2015.06.044

View at Publisher

24 Behera, G.C., Parida, K.M.
Liquid phase catalytic oxidation of benzyl alcohol to benzaldehyde over vanadium phosphate catalyst

(2012) *Applied Catalysis A: General*, 413-414, pp. 245-253. Cited 55 times.
doi: 10.1016/j.apcata.2011.11.016

View at Publisher

25 Adil, S.F., Assal, M.E., Khan, M., Al-Warthan, A., Rafiq Siddiqui, M.H.
Nano silver-doped manganese oxide as catalyst for oxidation of benzyl alcohol and its derivatives: Synthesis, characterisation, thermal study and evaluation of catalytic properties

(2013) *Oxidation Communications*, 36 (3), pp. 778-791. Cited 14 times.

26 Öztürk, O.F., Zümreoğlu-Karan, B., Karabulut, S.
Solvent-free oxidation of benzyl alcohol over chromium orthoborate

(2008) *Catalysis Communications*, 9 (7), pp. 1644-1648. Cited 12 times.
doi: 10.1016/j.catcom.2008.01.016

View at Publisher

27 Biradar, A.V., Dongare, M.K., Umbarkar, S.B.
Selective oxidation of aromatic primary alcohols to aldehydes using molybdenum acetylide oxo-peroxo complex as catalyst

(2009) *Tetrahedron Letters*, 50 (24), pp. 2885-2888. Cited 56 times.
doi: 10.1016/j.tetlet.2009.03.178

View at Publisher

28 Sousa, S.C.A., Bernardo, J.R., Florindo, P.R., Fernandes, A.C.
Efficient and selective oxidation of alcohols catalyzed by oxo-rhenium complexes

(2013) *Catalysis Communications*, 40, pp. 134-138. Cited 13 times.
doi: 10.1016/j.catcom.2013.06.012

View at Publisher

29 Goh, T.W., Xiao, C., Maligal-Ganesh, R.V., Li, X., Huang, W.
Utilizing mixed-linker zirconium based metal-organic frameworks to enhance the visible light photocatalytic oxidation of alcohol

(2015) *Chemical Engineering Science*, 124, pp. 45-51. Cited 37 times.
http://www.journals.elsevier.com/chemical-engineering-science/
doi: 10.1016/j.ces.2014.08.052

View at Publisher

30 Adil, S.F., Alabbad, S., Kuniyil, M., Khan, M., Alwarthan, A., Mohri, N., Tremel, W., (...), Siddiqui, M.R.H.

Vanadia supported on nickel manganese oxide nanocatalysts for the catalytic oxidation of aromatic alcohols

(2015) *Nanoscale Research Letters*, 10 (1), pp. 1-9. Cited 11 times.
http://www.springer.com/materials/nanotechnology/journal/11671
doi: 10.1186/s11671-015-0750-5

View at Publisher

31 Tang, Q., Gong, X., Zhao, P., Chen, Y., Yang, Y.

Copper-manganese oxide catalysts supported on alumina: Physicochemical features and catalytic performances in the aerobic oxidation of benzyl alcohol

(2010) *Applied Catalysis A: General*, 389 (1-2), pp. 101-107. Cited 35 times.
doi: 10.1016/j.apcata.2010.09.014

View at Publisher

32 Arena, F., Gumina, B., Lombardo, A.F., Espro, C., Patti, A., Spadaro, L., Spiccia, L.

Nanostructured MnO_x catalysts in the liquid phase selective oxidation of benzyl alcohol with oxygen: Part I. Effects of Ce and Fe addition on structure and reactivity

(2015) *Applied Catalysis B: Environmental*, 162, pp. 260-267. Cited 33 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2014.06.054

View at Publisher

33 Clarke, T.J., Kondrat, S.A., Taylor, S.H.

Total oxidation of naphthalene using copper manganese oxide catalysts

(2015) *Catalysis Today*, Part 2 258, pp. 610-615. Cited 11 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.01.032

View at Publisher

34 Tepluchin, M., Kureti, S., Casapu, M., Ogel, E., Mangold, S., Grunwaldt, J.-D.

Study on the hydrothermal and SO_2 stability of Al_2O_3-supported manganese and iron oxide catalysts for lean CO oxidation

(2015) *Catalysis Today*, Part 2 258, pp. 498-506. Cited 8 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.01.010

View at Publisher

35 Kim, S.C., Park, Y.-K., Nah, J.W.

Property of a highly active bimetallic catalyst based on a supported manganese oxide for the complete oxidation of toluene

(2014) *Powder Technology*, 266, pp. 292-298. Cited 16 times.
www.elsevier.com/locate/powtec
doi: 10.1016/j.powtec.2014.06.049

View at Publisher

36 Ashouri, F., Zare, M., Bagherzade, M.

Manganese and cobalt-terephthalate metal-organic frameworks as a precursor for synthesis of Mn2O3, Mn3O4 and Co3O4 nanoparticles: Active catalysts for olefin heterogeneous oxidation

(2015) *Inorganic Chemistry Communications*, 61, pp. 73-76. Cited 9 times.
http://www.journals.elsevier.com/inorganic-chemistry-communications/
doi: 10.1016/j.inoche.2015.08.019

View at Publisher

37 Piumetti, M., Fino, D., Russo, N.

Mesoporous manganese oxides prepared by solution combustion synthesis as catalysts for the total oxidation of VOCs

(2015) *Applied Catalysis B: Environmental*, 163, pp. 277-287. Cited 86 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2014.08.012

View at Publisher

38 Feng, Z., Xie, Y., Hao, F., Liu, P., Luo, H.

Catalytic oxidation of cyclohexane to KA oil by zinc oxide supported manganese 5,10,15,20-tetrakis(4-nitrophenyl)porphyrin

(2015) *Journal of Molecular Catalysis A: Chemical*, 410, pp. 221-225. Cited 13 times.
doi: 10.1016/j.molcata.2015.09.027

View at Publisher

39 Einaga, H., Yamamoto, S., Maeda, N., Teraoka, Y.

Structural analysis of manganese oxides supported on SiO_2 for benzene oxidation with ozone

(2015) *Catalysis Today*, 242 (PB), pp. 287-293. Cited 17 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2014.05.018

View at Publisher

40 Burange, A.S., Kale, S.R., Jayaram, R.V.

Oxidation of alkyl aromatics to ketones by tert-butyl hydroperoxide on manganese dioxide catalyst

(2012) *Tetrahedron Letters*, 53 (24), pp. 2989-2992. Cited 24 times.
doi: 10.1016/j.tetlet.2012.03.091

View at Publisher

41 Qi, G., Li, W.

NO oxidation to NO_2 over manganese-cerium mixed oxides

(2015) *Catalysis Today*, Part 1 258, pp. 205-213. Cited 33 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.03.020

View at Publisher

42 Yu, W.H., Zhou, C.H., Tong, D.S., Xu, T.N.

Aerobic oxidation of 4-tert-butyltoluene over cobalt and manganese supported hexagonal mesoporous silicas as heterogeneous catalysts

(2012) *Journal of Molecular Catalysis A: Chemical*, 365, pp. 194-202. Cited 12 times.
doi: 10.1016/j.molcata.2012.09.004

View at Publisher

43 Pei, J., Han, X., Lu, Y.

Performance and kinetics of catalytic oxidation of formaldehyde over copper manganese oxide catalyst

(2015) *Building and Environment*, 84, pp. 134-141. Cited 16 times.
http://www.elsevier.com/inca/publications/store/2/9/6/index.htt
doi: 10.1016/j.buildenv.2014.11.002

View at Publisher

44 Rao, C.N.R., Sood, A.K., Subrahmanyam, K.S., Govindaraj, A.
Graphene: The new two-dimensional nanomaterial

(2009) *Angewandte Chemie - International Edition*, 48 (42), pp. 7752-7777. Cited 2518 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/122609581/PDFSTART
doi: 10.1002/anie.200901678

View at Publisher

45 Lee, J.W., Ahn, T., Soundararajan, D., Ko, J.M., Kim, J.-D.
Non-aqueous approach to the preparation of reduced graphene oxide/α-$Ni(OH)_2$ hybrid composites and their high capacitance behavior

(2011) *Chemical Communications*, 47 (22), pp. 6305-6307. Cited 242 times.
doi: 10.1039/c1cc11566a

View at Publisher

46 Yan, J., Fan, Z., Wei, T., Qian, W., Zhang, M., Wei, F.
Fast and reversible surface redox reaction of graphene-MnO_2 composites as supercapacitor electrodes

(2010) *Carbon*, 48 (13), pp. 3825-3833. Cited 824 times.
doi: 10.1016/j.carbon.2010.06.047

View at Publisher

47 Cheng, Q., Tang, J., Ma, J., Zhang, H., Shinya, N., Qin, L.-C.
Graphene and nanostructured MnO_2 composite electrodes for supercapacitors

(2011) *Carbon*, 49 (9), pp. 2917-2925. Cited 442 times.
doi: 10.1016/j.carbon.2011.02.068

View at Publisher

48 Chandra, S., Bag, S., Bhar, R., Pramanik, P.
Sonochemical synthesis and application of rhodium-graphene nanocomposite

(2011) *Journal of Nanoparticle Research*, 13 (7), pp. 2769-2777. Cited 14 times.
doi: 10.1007/s11051-010-0164-3

View at Publisher

49 Sreeprasad, T.S., Maliyekkal, S.M., Lisha, K.P., Pradeep, T.
Reduced graphene oxide-metal/metal oxide composites: Facile synthesis and application in water purification

(2011) *Journal of Hazardous Materials*, 186 (1), pp. 921-931. Cited 228 times.
doi: 10.1016/j.jhazmat.2010.11.100

View at Publisher

50 Fan, X., Jiao, G., Gao, L., Jin, P., Li, X.
The preparation and drug delivery of a graphene-carbon nanotube-Fe_3O_4 nanoparticle hybrid

(2013) *Journal of Materials Chemistry B*, 1 (20), pp. 2658-2664. Cited 56 times.
doi: 10.1039/c3tb00493g

View at Publisher

51 Zhao, L., Li, H., Gao, S., Li, M., Xu, S., Li, C., Guo, W., (...), Yang, B.

MgO nanobelt-modified graphene-tantalum wire electrode for the simultaneous determination of ascorbic acid, dopamine and uric acid

(2015) *Electrochimica Acta*, 168, art. no. 24741, pp. 191-198. Cited 37 times.
http://www.journals.elsevier.com/electrochimica-acta/
doi: 10.1016/j.electacta.2015.03.215

View at Publisher

52 Al-Marri, A.H., Khan, M., Shaik, M.R., Mohri, N., Adil, S.F., Kuniyil, M., Alkhathlan, H.Z., (...), Siddiqui, M.R.H.

Green synthesis of Pd@graphene nanocomposite: Catalyst for the selective oxidation of alcohols (Open Access)

(2016) *Arabian Journal of Chemistry*, 9 (6), pp. 835-845. Cited 5 times.
http://colleges.ksu.edu.sa/Arabic%20Colleges/CollegeOfScience/ChemicalDept/AJC/default.aspx (ScienceDirect http://www.sciencedirect.com/science/journal/18785352)
doi: 10.1016/j.arabjc.2015.12.007

View at Publisher

53 Mahyari, M., Shaabani, A.

Graphene oxide-iron phthalocyanine catalyzed aerobic oxidation of alcohols

(2014) *Applied Catalysis A: General*, 469, pp. 524-531. Cited 48 times.
doi: 10.1016/j.apcata.2013.09.024

View at Publisher

54 Kadam, M.M., Dhopte, K.B., Jha, N., Gaikar, V.G., Nemade, P.R.

Synthesis, characterization and application of γ-MnO_2/graphene oxide for the selective aerobic oxidation of benzyl alcohols to corresponding carbonyl compounds

(2016) *New Journal of Chemistry*, 40 (2), pp. 1436-1442. Cited 15 times.
www.rsc.org/njc
doi: 10.1039/c5nj03140k

View at Publisher

55 Zahed, B., Hosseini-Monfared, H.

A comparative study of silver-graphene oxide nanocomposites as a recyclable catalyst for the aerobic oxidation of benzyl alcohol: Support effect

(2015) *Applied Surface Science*, 328, pp. 536-547. Cited 43 times.
http://www.journals.elsevier.com/applied-surface-science/
doi: 10.1016/j.apsusc.2014.12.078

View at Publisher

56 Yu, X., Huo, Y., Yang, J., Chang, S., Ma, Y., Huang, W.

Reduced graphene oxide supported Au nanoparticles as an efficient catalyst for aerobic oxidation of benzyl alcohol

(2013) *Applied Surface Science*, 280, pp. 450-455. Cited 51 times.
doi: 10.1016/j.apsusc.2013.05.008

View at Publisher

57 Li, F., Guo, Y., Wu, T., Liu, Y., Wang, W., Gao, J.

Platinum nano-catalysts deposited on reduced graphene oxides for alcohol oxidation

(2013) *Electrochimica Acta*, 111, pp. 614-620. Cited 18 times.
http://www.journals.elsevier.com/electrochimica-acta/
doi: 10.1016/j.electacta.2013.08.058

View at Publisher

58 Jha, A., Mhamane, D., Suryawanshi, A., Joshi, S.M., Shaikh, P., Biradar, N., Ogale, S., (...), Rode, C.V.

Triple nanocomposites of $CoMn_2O_4$, Co $_3O_4$ and reduced graphene oxide for oxidation of aromatic alcohols

(2014) *Catalysis Science and Technology*, 4 (6), pp. 1771-1778. Cited 25 times.
http://www.rsc.org/Publishing/Journals/CY/about.asp
doi: 10.1039/c3cy01025b

View at Publisher

59 Wu, S., He, Q., Zhou, C., Qi, X., Huang, X., Yin, Z., Yang, Y., (...), Zhang, H.

Synthesis of Fe $_3O_4$ and Pt nanoparticles on reduced graphene oxide and their use as a recyclable catalyst

(2012) *Nanoscale*, 4 (7), pp. 2478-2483. Cited 89 times.
doi: 10.1039/c2nr11992g

View at Publisher

60 Yang, M.-Q., Zhang, N., Xu, Y.-J.

Synthesis of fullerene-, carbon nanotube-, and graphene-TiO_2 nanocomposite photocatalysts for selective oxidation: A comparative study

(2013) *ACS Applied Materials and Interfaces*, 5 (3), pp. 1156-1164. Cited 193 times.
doi: 10.1021/am3029798

View at Publisher

61 Wang, J., Kondrat, S.A., Wang, Y., Brett, G.L., Giles, C., Bartley, J.K., Lu, L., (...), Hutchings, G.J.

Au-Pd nanoparticles dispersed on composite titania/graphene oxide-supports as a highly active oxidation catalyst (Open Access)

(2015) *ACS Catalysis*, 5 (6), pp. 3575-3587. Cited 37 times.
http://pubs.acs.org/page/accacs/about.html
doi: 10.1021/acscatal.5b00480

View at Publisher

62 Assal, M.E., Kuniyil, M., Shaik, M.R., Khan, M., Al-Warthan, A., Siddiqui, M.R.H., Adil, S.F.

Synthesis, Characterization, and Relative Study on the Catalytic Activity of Zinc Oxide Nanoparticles Doped $MnCO_3$, -MnO_2, and -Mn_2O_3 Nanocomposites for Aerial Oxidation of Alcohols (Open Access)

(2017) *Journal of Chemistry*, 2017, art. no. 2937108. Cited 2 times.
http://www.hindawi.com/journals/chem/contents/
doi: 10.1155/2017/2937108

View at Publisher

63 Wang, H., Hu, Y.H.

Effect of oxygen content on structures of graphite oxides

(2011) *Industrial and Engineering Chemistry Research*, 50 (10), pp. 6132-6137. Cited 72 times.
doi: 10.1021/ie102572q

View at Publisher

64 Yang, S., Lin, Y., Song, X., Zhang, P., Gao, L.

Covalently Coupled Ultrafine H-TiO2 Nanocrystals/Nitrogen-Doped Graphene Hybrid Materials for High-Performance Supercapacitor

(2015) *ACS Applied Materials and Interfaces*, 7 (32), pp. 17884-17892. Cited 39 times.
http://pubs.acs.org/journal/aamick
doi: 10.1021/acsami.5b04368

View at Publisher

65 Mirza-Aghayan, M., Kashef-Azar, E., Boukherroub, R.

Graphite oxide: An efficient reagent for oxidation of alcohols under sonication

(2012) *Tetrahedron Letters*, 53 (37), pp. 4962-4965. Cited 37 times.
doi: 10.1016/j.tetlet.2012.07.016

View at Publisher

66 Zhang, S., Zhu, L., Song, H., Chen, X., Wu, B., Zhou, J., Wang, F.

How graphene is exfoliated from graphitic materials: Synergistic effect of oxidation and intercalation processes in open, semi-closed, and closed carbon systems

(2012) *Journal of Materials Chemistry*, 22 (41), pp. 22150-22154. Cited 23 times.
doi: 10.1039/c2jm35139k

View at Publisher

67 Zhong, J., Bin, D., Ren, F., Wang, C., Zhai, C., Yang, P., Du, Y.

Graphene nanosheet-supported Pd nano-leaves with highly efficient electrocatalytic performance for formic acid oxidation

(2016) *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 488, pp. 1-6. Cited 10 times.
www.elsevier.com/locate/colsurfa
doi: 10.1016/j.colsurfa.2015.09.069

View at Publisher

68 Adil, S.F., Assal, M.E., Kuniyil, M., Khan, M., Shaik, M.R., Alwarthan, A., Labis, J.P., (...), Siddiqui, M.R.H.

Synthesis and comparative catalytic study of zinc oxide (ZnO_x) nanoparticles promoted $MnCO_3$, $MnO_2$and $Mn_2O_3$for selective oxidation of benzylic alcohols using molecular oxygen

(2017) *Materials Express*, 7 (2), pp. 79-92. Cited 3 times.
http://www.ingentaconnect.com/search/download?pub=infobike%3a%2f%2fasp%2fme%2f2017%2f00000007%2f00000002%2fart00001&mimetype=application%2fpdf
doi: 10.1166/mex.2017.1357

View at Publisher

69 Sharma, P., Darabdhara, G., Reddy, T.M., Borah, A., Bezboruah, P., Gogoi, P., Hussain, N., (...), Das, M.R.

Synthesis, characterization and catalytic application of Au NPs-reduced graphene oxide composites material: An eco-friendly approach

(2013) *Catalysis Communications*, 40, pp. 139-144. Cited 36 times.
doi: 10.1016/j.catcom.2013.06.021

View at Publisher

70 Santra, S., Hota, P.K., Bhattacharyya, R., Bera, P., Ghosh, P., Mandal, S.K.

Palladium nanoparticles on graphite oxide: A recyclable catalyst for the synthesis of biaryl cores

(2013) *ACS Catalysis*, 3 (12), pp. 2776-2789. Cited 60 times.
doi: 10.1021/cs400468h

View at Publisher

71 Stankovich, S., Dikin, D.A., Piner, R.D., Kohlhaas, K.A., Kleinhammes, A., Jia, Y., Wu, Y., (...), Ruoff, R.S.

Synthesis of graphene-based nanosheets via chemical reduction of exfoliated graphite oxide

(2007) *Carbon*, 45 (7), pp. 1558-1565. Cited 8077 times.
doi: 10.1016/j.carbon.2007.02.034

View at Publisher

72 Lerf, A., He, H., Forster, M., Klinowski, J.
Structure of graphite oxide revisited

(1998) *Journal of Physical Chemistry B*, 102 (23), pp. 4477-4482. Cited 1839 times.

View at Publisher

73 Wang, Z.-L., Xu, D., Huang, Y., Wu, Z., Wang, L.-M., Zhang, X.-B.
Facile, mild and fast thermal-decomposition reduction of graphene oxide in air and its application in high-performance lithium batteries

(2012) *Chemical Communications*, 48 (7), pp. 976-978. Cited 157 times.
doi: 10.1039/c2cc16239c

View at Publisher

74 Metin, Ö., Kayhan, E., Özkar, S., Schneider, J.J.
Palladium nanoparticles supported on chemically derived graphene: An efficient and reusable catalyst for the dehydrogenation of ammonia borane

(2012) *International Journal of Hydrogen Energy*, 37 (10), pp. 8161-8169. Cited 85 times.
doi: 10.1016/j.ijhydene.2012.02.128

View at Publisher

75 Geng, L., Wu, S., Zou, Y., Jia, M., Zhang, W., Yan, W., Liu, G.
Correlation between the microstructures of graphite oxides and their catalytic behaviors in air oxidation of benzyl alcohol

(2014) *Journal of Colloid and Interface Science*, 421, pp. 71-77. Cited 23 times.
doi: 10.1016/j.jcis.2014.01.031

View at Publisher

76 Wang, Y., Zhao, Y., He, W., Yin, J., Su, Y.
Palladium nanoparticles supported on reduced graphene oxide: Facile synthesis and highly efficient electrocatalytic performance for methanol oxidation

(2013) *Thin Solid Films*, 544, pp. 88-92. Cited 18 times.
http://www.journals.elsevier.com/journal-of-the-energy-institute
doi: 10.1016/j.tsf.2013.04.119

View at Publisher

77 Hou, S., Su, S., Kasner, M.L., Shah, P., Patel, K., Madarang, C.J.
Formation of highly stable dispersions of silane-functionalized reduced graphene oxide

(2010) *Chemical Physics Letters*, 501 (1-3), pp. 68-74. Cited 117 times.
doi: 10.1016/j.cplett.2010.10.051

View at Publisher

78 Kadam, M.M., Sravani, M.B., Gaikar, V.G., Jha, N.
Synthesis and fabrication of graphene oxide thin film

(2013) *AIP Conference Proceedings*, 1538, pp. 249-252. Cited 3 times.
ISBN: 978-073541162-3
doi: 10.1063/1.4810067

View at Publisher

79 Sitko, R., Turek, E., Zawisza, B., Malicka, E., Talik, E., Heimann, J., Gagor, A., (...), Wrzalik, R.
Adsorption of divalent metal ions from aqueous solutions using graphene oxide

(2013) *Dalton Transactions*, 42 (16), pp. 5682-5689. Cited 242 times.
doi: 10.1039/c3dt33097d

View at Publisher

80 Miao, M.Y., Feng, J.T., Jin, Q., He, Y.F., Liu, Y.N., Du, Y.Y., Zhang, N., (...), Li, D.Q.

Hybrid Ni-Al layered double hydroxide/graphene composite supported gold nanoparticles for aerobic selective oxidation of benzyl alcohol

(2015) *RSC Advances*, 5 (45), pp. 36066-36074. Cited 17 times.
http://pubs.rsc.org/en/journals/journalissues
doi: 10.1039/c5ra05436b

View at Publisher

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Document details

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Fabrication of ozone sensors on porous glass substrates using gold and silver thin films nanoislands (Article)

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Abstract

View references (23)

Porous glass has a vital role to enhance the optical properties in the sensors. In this paper, we reported a simple sensor developed on a porous glass substrate. Initially, we simulated the design in COMSOL Multiphysics and MATLAB environment. Using the simulation results as guidelines, we fabricated the porous formation on a glass plate by immersing in the HF (Hydrogen Fluoride) solution. Then, we fabricated the sensor on the porous glass plate with gold, silver nanoparticles and characterized the sensor using UV- Visible Spectroscopy and AFM. The outcome of this study revealed that gold and silver thin film nanoislands coated on the porous glass substrate exhibited high-performance enhancement in terms of optical, sensitivity, resistivity and surface morphology characteristics towards ozone sensing than the gold and silver thin film nanoislands coated on a non-porous glass plate. Further, of the two binding agents and two metallic nanoislands, the APTMS (Aminopropyl trimethoxysilane) based gold thin film nanoislands coated on the porous glass substrate exhibited better ozone sensing property than the other three sensors. © 2017

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View Compounds

Author keywords

Optical sensor | Ozone detection | Porous glass | Surface plasmon resonance (SPR)

Indexed keywords

Engineering controlled terms: Fabrication | Glass | Gold | Gold coatings | Hydrofluoric acid | MATLAB | Optical properties | Optical sensors | Ozone | Porous plates | Silver | Surface plasmon resonance | Thin films | Ultraviolet visible spectroscopy

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References (23)

View in search results format >

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1 Huang, X., Li, X., Li, Y., Yang, J., Tao, C.
Trace dissolved ammonia sensor based on porous polyelectrolyte membrane-coated thin-core fiber modal interferometer
(2016) *Sensors and Actuators, B: Chemical*, 226, pp. 7-13. Cited 4 times.
doi: 10.1016/j.snb.2015.11.078
View at Publisher

2 Zhu, Y., Wang, Y., Duan, G., Zhang, H., Li, Y., Liu, G., Xu, L., (...), Cai, W.
In situ growth of porous ZnO nanosheet-built network film as high-performance gas sensor
(2015) *Sensors and Actuators, B: Chemical*, 221, art. no. 18692, pp. 350-356. Cited 21 times.
doi: 10.1016/j.snb.2015.06.115
View at Publisher

3 Balde, M., Vena, A., Sorli, B.
Fabrication of porous anodic aluminium oxide layers on paper for humidity sensors
(2015) *Sensors and Actuators, B: Chemical*, 220, pp. 829-839. Cited 11 times.
doi: 10.1016/j.snb.2015.05.053
View at Publisher

4 Izumi, K., Utiyama, M., Maruo, Y.Y.
Colorimetric NOx sensor based on a porous glass-based NO2 sensing chip and a permanganate oxidizer
(2015) *Sensors and Actuators, B: Chemical*, 216, pp. 128-133. Cited 7 times.
doi: 10.1016/j.snb.2015.04.029
View at Publisher

5 Wang, H., Yuan, L., Kim, C.-W., Lan, X., Huang, J., Ma, Y., Xiao, H.
Integrated chemical vapor sensor based on thin wall capillary coupled porous glass microsphere optical resonator
(2015) *Sensors and Actuators, B: Chemical*, 216, art. no. 18309, pp. 332-336. Cited 4 times.
doi: 10.1016/j.snb.2015.04.012
View at Publisher

6 Chen, S.W., Khor, O.K., Liao, M.W., Chung, C.K.
Sensitivity evolution and enhancement mechanism of porous anodic aluminum oxide humidity sensor using magnetic field
(2014) *Sensors and Actuators, B: Chemical*, 199, pp. 384-388. Cited 18 times.
doi: 10.1016/j.snb.2014.03.057
View at Publisher

7 Ensafi, A.A., Abarghoui, M.M., Rezaei, B.
Electrochemical determination of hydrogen peroxide using copper/porous silicon based non-enzymatic sensor

(2014) *Sensors and Actuators, B: Chemical*, 196, pp. 398-405. Cited 55 times.
doi: 10.1016/j.snb.2014.02.028

View at Publisher

8 Over, B., Rathke, B., Will, S.
Investigations on particle diffusion in porous glass by angle-dependent dynamic light scattering

(2016) *Journal of Molecular Liquids*, 222, pp. 972-980. Cited 2 times.
doi: 10.1016/j.molliq.2016.07.028

View at Publisher

9 Agarwal, S., Prajapati, Y.K., Maurya, J.B.
Effect of metallic adhesion layer thickness on surface roughness for sensing application

(2016) *IEEE Photonics Technology Letters*, 28 (21), art. no. 7530856, pp. 2415-2418. Cited 2 times.
doi: 10.1109/LPT.2016.2597856

View at Publisher

10 Agarwal, S., Prajapati, Y.K., Singh, V.
Influence of metal roughness on SPR sensor performance

(2017) *Optics Communications*, 383, pp. 113-118.
doi: 10.1016/j.optcom.2016.08.072

View at Publisher

11 Belaqziz, M., Amjoud, M., Gaddari, A., Rhouta, B., Mezzane, D.
Enhanced room temperature ozone response of SnO2 thin film sensor

(2014) *Superlattices and Microstructures*, 71, pp. 185-189. Cited 7 times.
doi: 10.1016/j.spmi.2014.03.040

View at Publisher

12 Hattori, A., Tachibana, H., Yoshiike, N., Yoshida, A.
Ozone sensor made by dip coating method

(1999) *Sensors and Actuators, A: Physical*, 77 (2), pp. 120-125. Cited 13 times.
doi: 10.1016/S0924-4247(99)00077-1

View at Publisher

13 Ebeling, D., Patel, V., Findlay, M., Stetter, J.
Electrochemical ozone sensor and instrument with characterization of the electrode and gas flow effects

(2009) *Sensors and Actuators, B: Chemical*, 137 (1), pp. 129-133. Cited 13 times.
doi: 10.1016/j.snb.2008.10.038

View at Publisher

14 Korotcenkov, G., Cho, B.K., Gulina, L., Tolstoy, V.
Ozone sensors based on SnO2 films modified by SnO2-Au nanocomposites synthesized by the SILD method

(2009) *Sensors and Actuators, B: Chemical*, 138 (2), pp. 512-517. Cited 30 times.
doi: 10.1016/j.snb.2009.01.058

View at Publisher

15 Atashbar, M.Z., Gong, B., Sun, H.T., Wlodarski, W., Lamb, R.
Investigation on ozone-sensitive In_2O_3 thin films

(1999) *Thin Solid Films*, 354 (1), pp. 222-226. Cited 75 times.
doi: 10.1016/S0040-6090(99)00405-8

View at Publisher

16 Carotta, M.C., Cervi, A., Fioravanti, A., Gherardi, S., Giberti, A., Vendemiati, B., Vincenzi, D., (...), Sacerdoti, M.
A novel ozone detection at room temperature through UV-LED-assisted ZnO thick film sensors

(2011) *Thin Solid Films*, 520 (3), pp. 939-946. Cited 34 times.
doi: 10.1016/j.tsf.2011.04.173

View at Publisher

17 Wagner, Th., Hennemann, J., Kohl, C.-D., Tiemann, M.
Photocatalytic ozone sensor based on mesoporous indium oxide: Influence of the relative humidity on the sensing performance

(2011) *Thin Solid Films*, 520 (3), pp. 918-921. Cited 23 times.
doi: 10.1016/j.tsf.2011.04.181

View at Publisher

18 Hersch, P., Deuringer, R.
Galvanic Monitoring of Ozone in Air

(1963) *Analytical Chemistry*, 35 (7), pp. 897-899. Cited 18 times.
doi: 10.1021/ac60200a038

View at Publisher

19 Hansford, G.M., Freshwater, R.A., Bosch, R.A., Cox, R.A., Jones, R.L., Pratt, K.F.E., Williams, D.E.
A low cost instrument based on a solid state sensor for balloon-borne atmospheric O_3 profile sounding

(2005) *Journal of Environmental Monitoring*, 7 (2), pp. 158-162. Cited 19 times.
doi: 10.1039/b412184h

View at Publisher

20 Muller, J.B.A., Smith, C.E., Newton, M.I., Percival, C.J.
Evaluation of coated QCM for the detection of atmospheric ozone

(2011) *Analyst*, 136 (14), pp. 2963-2968. Cited 4 times.
doi: 10.1039/c1an15106a

View at Publisher

21 Lee, D., Jung, J., Bilby, D., Kwon, M.S., Yun, J., Kim, J.
A novel optical ozone sensor based on purely organic phosphor

(2015) *ACS Applied Materials and Interfaces*, 7 (5), pp. 2993-2997. Cited 12 times.
http://pubs.acs.org/journal/aamick
doi: 10.1021/am5087165

View at Publisher

22 Addanki, S., Jayachandiran, J., Pandian, K., Nedumaran, D.

Development of optical sensors for the quantitative detection of ozone using gold and silver thin film nanoislands

(2015) *Sensors and Actuators, B: Chemical*, 210, pp. 17-27. Cited 8 times.
doi: 10.1016/j.snb.2014.12.071

View at Publisher

23 Addanki, S., Nedumaran, D.

Fabrication and characterization of optical sensors using metallic core-shell thin film nanoislands for ozone detection

(2017) *Optics Communications*, 394, pp. 62-68. Cited 2 times.
doi: 10.1016/j.optcom.2017.03.018

View at Publisher

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Structural and ionic conductivity studies on plasticized pan-sodium flouride polymer electrolytes for electrochemical cell applications (Article)

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Abstract

View references (36)

Ion conducting gel polymer electrolytes based on poly acrylonitrle (PAN) complexed with different weight percent ratios of Sodium Fluoride (NaF) salt were prepared by using solution cast technique. Structural characterization was performed using X-ray diffraction (XRD) technique and Fourier transforms infrared (FTIR) spectroscope technique. From the X-rd results increase in amorphous phase with the increase of dopant salt concentration was observed. Fourier transform infrared (FTIR) spectroscopic analysis confirmed the complexation of the salt with the polymer matrix. Electrical conductivity was measured that the magnitude of ionic conductivity increased with the increase in the salt concentration as well as temperature. The surface morphology was observed by using Scanning Electron Microscope (SEM), the optical band gap measured from UV-Vis Spectroscopy. The sample containing 30 wt% of NaF exhibited the highest conductivity of $1.82x10^{-4}$ S cm^{-1} at 303K and $2.96x10^{-3}$ S cm^{-1} at 373K. The temperature dependence of ionic conductivity of these films followed Arrhenius relation. Transference number measurements were carried out to investigate the nature of the charge transport species in the polymer electrolyte systems. The transference number data showed that the charge transports in these systems are predominantly due to ions. Using these polymer electrolyte films, electrochemical cells were fabricated and their discharge characteristics were studied. Various cell parameters, such as open circuit voltage, short circuit current, power density and energy density were determined.

Reaxys Database Information

View Compounds

Author keywords

Gel polymer electrolyte | Ionic conductivity | Plasticizer | Sodium fluoride | Transference numbers

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References (36)

1 Abraham, K.M., Jiang, Z., Carroll, B.
Highly Conductive PEO-like Polymer Electrolytes
(1997) *Chemistry of Materials*, 9 (9), pp. 1978-1988. Cited 313 times.
http://pubs.acs.org/journal/cmatex
doi: 10.1021/cm970075a
View at Publisher

2 Shirakawa, H., Louis, E.J., MacDiarmid, A.G., Chiang, C.K., Heeger, A.J.
Synthesis of electrically conducting organic polymers: Halogen derivatives of polyacetylene, $(CH)_x$
(1977) *Journal of the Chemical Society, Chemical Communications*, (16), pp. 578-580. Cited 2102 times.
doi: 10.1039/C39770000578
View at Publisher

3 Chitra, M., Mathewkesavan, K., Rajendran, S.
Structural and electrochemical analysis of PMMA based gel electrolyte membranes"
(2014) *International Journal of Electro Chemistry.*, 7, pp. 1-7.

4 White, M.
Thin polymer films
(1973) *Thin Solid Films*, 18 (2), pp. 157-172. Cited 26 times.
doi: 10.1016/0040-6090(73)90095-3
View at Publisher

5 Vijay Kumar, K., Suneeta Sundari, G.
Conductivity studies of (PEO +$KHCO_3$) solid electrolyte system and its application as an electrochemical cell
(2010) *Journal of Engineering Science and Technology*, 5 (2), pp. 130-139. Cited 14 times.
http://jestec.taylors.edu.my/Vol%205%20Issue2%20March%2010/Vol_5_2_130_139_K.%20VIJAY%20KUMAR.pdf

6 Babu, J.R., Kumar, K.V.
Studies on structural and electrical properties of $NaHCO_3$ doped PVA films for electrochemical cell applications
(2015) *International Journal of ChemTech Research*, 7 (1), pp. 171-180. Cited 3 times.
http://sphinxsai.com/2015/ch_vol7_no1/2/(171-180)%20014.pdf

7 Bruce Wagner, J., Wagner, C.
Electrical conductivity measurements on cuprous halides
(1957) *The Journal of Chemical Physics*, 26 (6), pp. 1602-1606. Cited 62 times.
View at Publisher

8 Woolfran, M.M.
(1997) , pp. 108-112.
"An Introduction to X-Ray crystallography Cambridge", Newyork

9 Azaroff, L.V.
Introduction to X-Ray spectrometric analysis
(1978) *Newyork*, pp. 485-492.

10 Lasseques, J.C.
(1992) *Solid Membranes and Gel Materials and Devices*, pp. 20-25.
Cambridge university press, Cambridge

11 Billmeyer, F.
(1984) *Text Book of Polymer Science*, pp. 371-390. Cited 2081 times.
(Wiley Singapore

12 Ratner, M.A., Shriver, D.F.
Ion Transport in Solvent-Free Polymers

(1988) *Chemical Reviews*, 88 (1), pp. 109-124. Cited 869 times.
doi: 10.1021/cr00083a006

View at Publisher

13 Hodge, R.M., Edward, G.H., Simon, G.P.
Water absorption and states of water in semicrystalline poly(vinyl alcohol) films

(1996) *Polymer*, 37 (8), pp. 1371-1376. Cited 418 times.
http://www.journals.elsevier.com/polymer/
doi: 10.1016/0032-3861(96)81134-7

View at Publisher

14 Polu, A.R., Kumar, R., Kumar, K.V.
Ionic conductivity and electrochemical cell studies of new Mg^{2+} ion conducting PVA/PEG based polymer blend electrolytes

(2012) *Advanced Materials Letters*, 3 (5), pp. 406-409. Cited 10 times.
http://amlett.org/uploads/82436470.pdf
doi: 10.5185/amlett.2012.6375

View at Publisher

15 Krishna Jyothi, N., Vijaya Kumar, K., Narayana Murthy, P.
FTIR, XRD and DC conductivity studies of proton conducting gel polymer electrolytes based on polyacrylonitrile (PAN)

(2014) *International Journal of ChemTech Research*, 6 (13), pp. 5214-5219. Cited 6 times.
http://sphinxsai.com/2014/ch_vol6_no13/1/(5214-5219)%20014.pdf

16 Chen, H.-W., Chang, F.-C.
Interaction mechanism of a novel polymer electrolyte composed of poly(acrylonitrile), lithium triflate, and mineral clay

(2001) *Journal of Polymer Science, Part B: Polymer Physics*, 39 (20), pp. 2407-2419. Cited 23 times.
doi: 10.1002/polb.1212

View at Publisher

17 Osman, Z., Md Isa, K.B., Ahmad, A., Othman, L.
A comparative study of lithium and sodium salts in PAN-based ion conducting polymer electrolytes

(2010) *Ionics*, 16 (5), pp. 431-435. Cited 25 times.
doi: 10.1007/s11581-009-0410-9

View at Publisher

18 Zhang, S., Lee, J.Y., Hong, L.
Visualization of particle distribution in composite polymer electrolyte systems

(2004) *Journal of Power Sources*, 126 (1-2), pp. 125-133. Cited 27 times.
doi: 10.1016/j.jpowsour.2003.08.011

View at Publisher

19 Gurusiddappa, J., Madhuri, W., Padma Suvarna, P., Priya Dasan, K.
"Conductivity and Dielectric Behavior of Polyethylene Oxide-Lithium Per chlorate Solid Polymer Electrolyte Films
(2016) *Indian Journal of Advances in Chemical Science.*, 4, pp. 14-19. Cited 5 times.

20 Wagner, J.B., Wagner, C.J.
Wagners Polarization method
(1957) *Chem. Rev.*, 20, pp. 1597-1602. Cited 55 times.

21 Elahi, M., Souri, D.
Study of optical absorption and optical band gap determination of thin amorphous TeO_2-V_2O_5-MoO_3 blown films

(2006) *Indian Journal of Pure and Applied Physics*, 44 (6), pp. 468-472. Cited 26 times.

22 Maragani, N., Vijaya Kumar, K.
Structural and A.C.Conductivity studies of (PAN+NaF) gel polymer electrolyte system with ZrO_2nano filler for an electrochemical cell applications

(2017) *Rasayan Journal of Chemistry*, 10 (4), pp. 1218-1225.
http://www.rasayanjournal.co.in/admin/php/upload/267_pdf.pdf
doi: 10.7324/RJC.2017.1041723

View at Publisher

23 Krishna Jyothi, N., Vijayakumar, K.
Ionic conductivity and battery characteristic studies of a new PAN-based Na+ ion conducting gel polymer electrolyte system
(2008) *Bull. Matter. Sci.*, 31, pp. 807-814.

24 Pan, W., Zou, H.
Characterization of PAN/ATO nanocomposites prepared by solution blending

(2008) *Bulletin of Materials Science*, 31 (5), pp. 807-811. Cited 12 times.
http://www.ias.ac.in/matersci/bmsoct2008/807.pdf
doi: 10.1007/s12034-008-0128-8

View at Publisher

25 Saroj, A.L., Singh, R.K.

Thermal, dielectric and conductivity studies on PVA/Ionic liquid [EMIM][$EtSO_4$] based polymer electrolytes

(2012) *Journal of Physics and Chemistry of Solids*, 73 (2), pp. 162-168. Cited 43 times.
doi: 10.1016/j.jpcs.2011.11.012

View at Publisher

26 Miyamoto, T., Shibayama, K.

Free-volume model for ionic conductivity in polymers

(1973) *Journal of Applied Physics*, 44 (12), pp. 5372-5376. Cited 307 times.
doi: 10.1063/1.1662158

View at Publisher

27 Chetia, J.R., Maullick, M., Dutta, A., Dass, N.N.

Role of poly(2-dimethylaminoethylmethacerylate) salt as solid state ionics

(2004) *Materials Science and Engineering B: Solid-State Materials for Advanced Technology*, 107 (2), pp. 134-138. Cited 23 times.
doi: 10.1016/j.mseb.2003.10.113

View at Publisher

28 Sreepathi Rao, S., Jaipal Reddy, M., Narasimha Reddy, K., Subba Rao, U.V.

A new Na+ ion conducting polymer electrolyte based on (PEO+NaYF4) and its use as an electrochemical cell

(1994) *Solid State Ionics*, 74 (3-4), pp. 225-228. Cited 19 times.
doi: 10.1016/0167-2738(94)90214-3

View at Publisher

29 Naresh Kumar, K., Sreekanth, T., Jaipal Reddy, M., Subba Rao, U.V.

Study of transport and electrochemical cell characteristics of PVP:$NaClO_3$ polymer electrolyte system

(2001) *Journal of Power Sources*, 101 (1), pp. 130-133. Cited 29 times.
doi: 10.1016/S0378-7753(01)00658-9

View at Publisher

30 Mohamed, N.S., Zakaria, M.Z., Ali, A.M.M., Arof, A.K.

Characteristics of poly (ethylene oxide)-NaI polymer electrolyte and electrochemical cell performances

(1997) *Journal of Power Sources*, 66 (1-2), pp. 169-172. Cited 26 times.
doi: 10.1016/S0378-7753(96)02541-4

View at Publisher

31 Chandra, A.

Synthesis and ion transport characterization of hot-pressed Ag^+ ion conducting glass-polymer electrolytes

(2013) *Indian Journal of Physics*, 87 (7), pp. 643-649. Cited 9 times.
doi: 10.1007/s12648-013-0272-x

View at Publisher

32 Bhide, A., Hariharan, K.
Ionic transport studies on $(PEO)_6$:$NaPO_3$ polymer electrolyte plasticized with PEG_{400}

(2007) *European Polymer Journal*, 43 (10), pp. 4253-4270. Cited 75 times.
doi: 10.1016/j.eurpolymj.2007.07.038

View at Publisher

33 Bhargav, P.B., Mohan, V.M., Sharma, A.K., Rao, V.V.R.N.
Structural and electrical studies of sodium iodide doped poly(vinyl alcohol) polymer electrolyte films for their application in electrochemical cells

(2007) *Ionics*, 13 (3), pp. 173-178. Cited 41 times.
doi: 10.1007/s11581-007-0102-2

View at Publisher

34 Maragani, N., Krishna Jyothi, N., Vijaya Kumar, K.
Structural, thermal and battery characteristic properties of $Nh_4cf_3so_4$ doped pan films for electrochemical cell applications

(2016) *International Journal of ChemTech Research*, 9 (5), pp. 432-438.
http://www.sphinxsai.com/2016/ch_vol9_no5/2/(432-438)V9N5CT.pdf

35 Sreepathi Rao, S., Satyanarayana Rao, K.V., Shareefuddin, Md., Subba Rao, U.V., Chandra, S.
Ionic conductivity and battery characteristic studies on PEO+$AgNO_3$ polymer electrolyte

(1994) *Solid State Ionics*, 67 (3-4), pp. 331-334. Cited 60 times.
doi: 10.1016/0167-2738(94)90026-4

View at Publisher

36 Jaipal Reddy, M., Sreekanth, T., Chandrashekar, M., Subba Rao, U.V.
Ion transport and electrochemical cell characteristic studies of a new (PVP + $NaNO_3$) polymer electrolyte system

(2000) *Journal of Materials Science*, 35 (11), pp. 2841-2845. Cited 33 times.
doi: 10.1023/A:1004707521250

View at Publisher

Document details

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Modeling of Ionospheric Time Delays Based on a Multishell Spherical Harmonics Function Approach (Article)

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Abstract

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Ionospheric delay is the primary source of error in the functional performance of global navigation satellite system (GNSS) receiver position and time determination. An accurate assessment and modeling of the ionospheric time delay error can improve the overall positioning accuracy. Concerning the equatorial and low-latitude region, the ionosphere is triggered by the equatorial electrodynamics introducing large-scale spatiotemporal as well as vertical gradients in the distribution of electron density over the region. The traditional employment of ionospheric thin-shell models with single-shell approximations, which assumes the electron density of ionosphere to be compressed to a thin layer at a fixed altitude above the earth, may not be appropriate for the low and equatorial latitude region. In this paper, a multishell approximation is proposed based on the spherical harmonics function and a dense network of GNSS experimental total electron content (TEC) data over in India. Further, the performance of the proposed model is evaluated; the ionospheric vertical delay estimation is improved by 24.13% as compared to the single-shell model. The results may be useful and show significant improvement in the context of ionospheric delay modeling of satellite navigation systems in the low-latitude region. © 2008-2012 IEEE.

Author keywords

Global navigation satellite system (GNSS) | ionospheric delay | spherical harmonics function (SHF) | total electron content (TEC)

Indexed keywords

Engineering controlled terms: Carrier concentration | Communication satellites | Electron density measurement | Electrons | Harmonic analysis | Harmonic functions | Ionosphere | Ionospheric measurement | Navigation systems | Radio navigation | Satellite navigation aids | Satellites | Spheres | Time delay

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References (38)

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1 Misra, P., Enge, P.
(2001) *Global Positioning System Signals, Measurements and Performance*, 1, pp. 137-140. Cited 2 times.
Princeton, MA, USA: Ganga-Jumuna Press

2 Langley, R.B.
Propagation of the GPS signals
(1996) *Lect. Notes Earth Sci.*, 60, pp. 103-140. Cited 29 times.

3 Klobuchar, J.
Ionospheric effects on GPS
(1996) *Global Positioning System: Theory and Applications*, 1, pp. 485-515. Cited 349 times.
Reston, VA, USA: Amer. Inst. Aeronaut. Astronaut.

4 Rama Rao, P.V.S., Jayachandran, P.T., Sri Ram, P.
Ionospheric irregularities: The role of the equatorial ionization anomaly

(1997) *Radio Science*, 32 (4), pp. 1551-1557. Cited 18 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1944-799X
doi: 10.1029/97RS00665

View at Publisher

5 Shukla, A.K., Das, S., Nagori, N., Sivaraman, M.R., Bandyopadhyay, K.
Two-shell ionospheric model for Indian Region: A novel approach

(2009) *IEEE Transactions on Geoscience and Remote Sensing*, 47 (8), art. no. 4914832, pp. 2407-2412. Cited 15 times.
doi: 10.1109/TGRS.2009.2017520

View at Publisher

6 Schaer, S.
(1999) *Mapping and Predicting the Earth's Ionosphere Using the Global Positioning System (Geodätisch-geophysikalische Arbeiten in der Schweiz)*, 59.
Zürich, Switzerland: ETH Zurich

7 EL-ARINI, M.B., CONKER, R.S., ALBERTSON, T.W., REAGAN, J.K., KLOBUCHAR, J.A., DOHERTY, P.H.
Comparison of Real-Time Ionospheric Algorithms for a GPS Wide-Area Augmentation System (WAAS)

(1994) *Navigation*, 41 (4), pp. 393-414. Cited 42 times.
doi: 10.1002/j.2161-4296.1994.tb01887.x

View at Publisher

8 COSTER, A.J., GAPOSCHKIN, E.M., THORNTON, L.E.
Real-Time Ionospheric Monitoring System Using GPS

(1992) *Navigation*, 39 (2), pp. 191-204. Cited 32 times.
doi: 10.1002/j.2161-4296.1992.tb01874.x

View at Publisher

9 Komjathy, A.
(1997) *Global Ionospheric Total Electron Content Mapping Using the Global Positioning System*. Cited 148 times.
Ph. D. dissertation, Dept. Geodesy and Geomatics Eng., Univ. New Brunswick, Fredericton, NB, Canada

10 Alizadeh, M.M., Schuh, H., Todorova, S., Schmidt, M.
Global Ionosphere Maps of VTEC from GNSS, satellite altimetry, and formosat-3/COSMIC data

(2011) *Journal of Geodesy*, 85 (12), pp. 975-987. Cited 22 times.
doi: 10.1007/s00190-011-0449-z

View at Publisher

11 Schmidt, M., Bilitza, D., Shum, C.K., Zeilhofer, C.
Regional 4-D modeling of the ionospheric electron density

(2008) *Advances in Space Research*, 42 (4), pp. 782-790. Cited 43 times.
doi: 10.1016/j.asr.2007.02.050

View at Publisher

12 Zeilhofer, C.
(2008) *Multi-dimensional B-Spline Modeling of Spatio-temporal Ionospheric Signals (Deutsche Geodätische Kommission Bei der Bayerischen Akademie der Wissenschaften)*. Cited 12 times.
Munich, Germany: Beck

13 Nohutcu, M., Karslioglu, M.O., Schmidt, M.
B-spline modeling of VTEC over Turkey using GPS observations

(2010) *Journal of Atmospheric and Solar-Terrestrial Physics*, 72 (7-8), pp. 617-624. Cited 21 times.
doi: 10.1016/j.jastp.2010.02.022

View at Publisher

14 Liu, J., Chen, R., An, J., Wang, Z., Hyyppa, J.
Spherical cap harmonic analysis of the Arctic ionospheric TEC for one solar cycle

(2014) *Journal of Geophysical Research: Space Physics*, 119 (1), pp. 601-619. Cited 14 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2013JA019501

View at Publisher

15 El-Arini, M.Bakry, Hegarty, Christopher J., Fernow, James P., Klobuchar, John A.
Development of an error budget for a GPS wide-area augmentation system (WAAS)

(1994) *Proceedings of the National Technical Meeting, Institute of Navigation*, pp. 927-936. Cited 7 times.

16 Skone, S.H.
(1998) *Wide Area Ionosphere Grid Modelling in the Auroral Region*. Cited 49 times.
Ph. D. dissertation, Dept. Geomatics Eng., UCGE Report 20123 Univ. Calgary, Calgary, AB, Canada

17 Liao, X., Gao, Y.
High-precision ionospheric TEC recovery using a regional-area GPS network

(2001) *Navigation, Journal of the Institute of Navigation*, 48 (2), pp. 101-111. Cited 8 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2161-4296
doi: 10.1002/j.2161-4296.2001.tb00232.x

View at Publisher

18 Conker, Robert S., El-Arini, M.Bakry, Albertson, Thomas W., Klobuchar, John A., Doherty, Patricia H.
Description and assessment of real-time algorithms to estimate the ionospheric error bounds for WAAS

(1997) *Navigation, Journal of the Institute of Navigation*, 44 (1), pp. 77-87. Cited 13 times.

View at Publisher

19 Blanch, J., Walter, T., Enge, P.
Adapting kriging to theWAAS MOPS ionospheric grid
(2003) *Proc. Nat. Tech. Meeting Inst. Navig.*, pp. 848-853. Cited 8 times.
Anaheim, CA, USA, Jan.

20 Walter, T.
Robust detection of ionosphere irregularities
(2000) *Proc. Inst. Navig. Annu. Meeting*, pp. 209-218. Cited 50 times.
Salt Lake City, UT, USA, Sep.

21 De Santis, A., De Franceschi, G., Kerridge, D.J.
Regional spherical modeling of 2-D functions: The case of the critical frequency of the F_2 ionospheric layer

(1994) *Computers and Geosciences*, 20 (5), pp. 849-871. Cited 7 times.
doi: 10.1016/0098-3004(94)90117-1

View at Publisher

22 Lejeune, R., El-Arini, B.M.
An ionospheric grid algorithm forWAAS based on the minimum mean square error estimator
(1999) *Proc. Int. Ionospheric Effects Symp.*. Cited 2 times.
Alexandria, VA, USA

23 Sarma, A.D., Prasad, N., Madhu, T.
Investigation of suitability of grid-based ionospheric models for GAGAN

(2006) *Electronics Letters*, 42 (8), pp. 55-56. Cited 16 times.
doi: 10.1049/el:20063036

View at Publisher

24 Shukla, A.K., Nagori, N., Das, S., Jain, N., Sivaraman, M., Bandyopadhyay, K.
Statistical comparison of various interpolation algorithms for grid-based single shell ionospheric model over Indian region
(2008) *J. Global Positioning Syst.*, 7 (1), pp. 72-79. Cited 5 times.

25 Rama Rao, P.V.S., Niranjan, K., Prasad, D.S.V.V.D., Gopi Krishna, S., Uma, G.
On the validity of the ionospheric pierce point (IPP) altitude of 350 km in the Indian equatorial and low-latitude sector

(2006) *Annales Geophysicae*, 24 (8), pp. 2159-2168. Cited 64 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.5194/angeo-24-2159-2006

View at Publisher

26 Ratnam, D.V., Sarma, A.D.
Modelling of low-latitude ionosphere using GPS data with SHF model
(2012) *IEEE Trans. Geosci. Remote Sens.*, 50 (3), pp. 972-980. Cited 9 times.
Mar.

27 Komjathy, A.
A new ionospheric model for wide area differential GPS: The multiple shell approach
(2002) *Proc. Nat. Tech. Meeting Inst. Navig.*, pp. 460-466. Cited 21 times.

28 Sakai, T., Yoshihara, T., Saito, S., Matsunaga, K., Hoshinoo, K., Walter, T.
Modeling vertical structure of ionosphere for SBAS
(2009) *Proc. Inst. Navig. Annu. Meeting*, pp. 1257-1267.
Savannah, GA, USA, Sep.

29 Hansen, Andrew J., Walter, Todd, Enge, Per
Ionospheric correction using tomography

(1997) *Proceedings of ION GPS*, 1, pp. 249-257. Cited 23 times.

30 Schaer, S., Beutler, G., Rothacher, M., Springer, T.A.
Daily global ionosphere maps based on GPS carrier phase data routinely produced by the code analysis center
(1996) *Proc. IGS Anal. Center Workshop*, pp. 181-192. Cited 36 times.
Silver Spring, MD, USA, Mar. 19-21

31 Langley, R., Fedrizzi, M., Paula, E., Santos, M., Komjathy, A.
Mapping the low latitude ionosphere with GPS
(2002) *GPS World*, 13 (2), pp. 41-46. Cited 56 times.

32 Menke, W.
(1984) *Geophysical Data Analysis: Discrete Inverse Theory*. Cited 2262 times.
New York, NY, USA: Academic

33 Uwamahoro, J.C., Habarulema, J.B.

Modelling total electron content during geomagnetic storm conditions using empirical orthogonal functions and neural networks

(2015) *Journal of Geophysical Research: Space Physics*, 120 (12), pp. 11000-11012. Cited 7 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2015JA021961

View at Publisher

34 Panda, S.K., Gedam, S.S., Rajaram, G.

Study of Ionospheric TEC from GPS observations and comparisons with IRI and SPIM model predictions in the low latitude anomaly Indian subcontinental region

(2015) *Advances in Space Research*, 55 (8), pp. 1948-1964. Cited 14 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2014.09.004

View at Publisher

35 Basu, S., Basu, S.
Effects of large magnetic storms on communication and GPS navigation systems at middle and equatorial latitudes
(2002) *Proc. Int. Union Radio Sci. Gener. Assembly Sci. Symp.*
Maastricht, The Netherlands, Aug. 17-24

36 Srinivas, V.S., Sarma, A.D., Achanta, H.K.

Modeling of Ionospheric Time Delay Using Anisotropic IDW with Jackknife Technique

(2016) *IEEE Transactions on Geoscience and Remote Sensing*, 54 (1), art. no. 7210187, pp. 513-519. Cited 2 times.
doi: 10.1109/TGRS.2015.2461017

View at Publisher

37 Tsurutani, B., Mannucci, A., Iijima, B., Abdu, M.A., Sobral, J.H.A., Gonzalez, W., Guarnieri, F., (...), Vasyliunas, V.M.

Global dayside ionospheric uplift and enhancement associated with interplanetary electric fields

(2004) *Journal of Geophysical Research: Space Physics*, 109 (A8), art. no. A08302. Cited 239 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2003JA010342

View at Publisher

38 Abdu, M.A.

Electrodynamics of ionospheric weather over low latitudes

(2016) *Geoscience Letters*, 3 (1), art. no. 11. Cited 4 times.
geoscienceletters.springeropen.com/
doi: 10.1186/s40562-016-0043-6

View at Publisher

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Computational Analysis of Breast Cancer GWAS Loci Identifies the Putative Deleterious Effect of STXBP4 and ZNF404 Gene Variants (Article)

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Abstract

View references (38)

The genome-wide association studies (GWAS) have enabled us in identifying different breast cancer (BC) susceptibility loci. However, majority of these are non-coding variants with no annotated biological function. We investigated such 78 noncoding genome wide associated SNPs of BC and further expanded the list to 2,162 variants with strong linkage-disequilibrium (LD, r^2 ≥0.8). Using multiple publically available algorithms such as CADD, GWAVA, and FATHMM, we classified all these variants into deleterious, damaging, or benign categories. Out of total 2,241 variants, 23 (1.02%) variants were extreme deleterious (rank 1), 70 (3.12%) variants were deleterious (rank 2), and 1,937 (86.43%) variants were benign (rank 3). The results show 14% of lead or associated variants are under strong negative selection (GERP++ RS ≥2), and ~22% are under balancing selection (Tajima's D score >2) in CEU population of 1KGP—the regions being positively selected (GERP++ RS <0) in mammalian evolution. The expression quantitative trait loci of highest deleteriously ranked genes were tested on relevant adipose and breast tissues, the results of which were extended for protein expression on breast tissues. From the concordance analysis of ranking system of GWAVA, CADD, and FATHMM, eQTL and protein expression, we identified the deleterious SNPs localized in STXBP4 and ZNF404 genes which might play a role in BC development by dysregulating its gene expression. This simple approach will be easier to implement and to prioritize large scale GWAS data for variety of diseases and link to the potentially unrecognized functional roles of genes. J. Cell. Biochem. 118: 4296–4307, 2017. © 2017 Wiley Periodicals, Inc. © 2017 Wiley Periodicals, Inc.

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BREAST CANCER | CADD | COMPUTATIONAL ANALYSIS | eQTL | FATHMM | GWAS

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References (38)

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1 Ahmed, S., Thomas, G., Ghoussaini, M., Healey, C.S., Humphreys, M.K., Platte, R., Morrison, J., (...), Easton, D.F.

Newly discovered breast cancer susceptibility loci on 3p24 and 17q23.2

(2009) *Nature Genetics*, 41 (5), pp. 585-590. Cited 338 times.
doi: 10.1038/ng.354

View at Publisher

2 Antoniou, A.C., Wang, X., Fredericksen, Z.S., McGuffog, L., Tarrell, R., Sinilnikova, O.M., Healey, S., (...), Couch, F.J.

A locus on 19p13 modifies risk of breast cancer in BRCA1 mutation carriers and is associated with hormone receptor-negative breast cancer in the general population

(2010) *Nature Genetics*, 42 (10), pp. 885-892. Cited 209 times.
doi: 10.1038/ng.669

View at Publisher

3 Apostolou, P., Fostira, F.

Hereditary breast cancer: The Era of new susceptibility genes (Open Access)

(2013) *BioMed Research International*, 2013, art. no. 747318. Cited 68 times.
doi: 10.1155/2013/747318

View at Publisher

4 Cai, Q., Zhang, B., Sung, H., Low, S.-K., Kweon, S.-S., Lu, W., Shi, J., (...), Zheng, W.

Genome-wide association analysis in East Asians identifies breast cancer susceptibility loci at 1q32.1, 5q14.3 and 15q26.1

(2014) *Nature Genetics*, 46 (8), pp. 886-890. Cited 52 times.
http://www.nature.com/ng/index.html
doi: 10.1038/ng.3041

View at Publisher

5 Caswell, J.L., Camarda, R., Zhou, A.Y., Huntsman, S., Hu, D., Brenner, S.E., Zaitlen, N., (...), Ziv, E.

Multiple breast cancer risk variants are associated with differential transcript isoform expression in tumors

(2015) *Human Molecular Genetics*, 24 (25), pp. 7421-7431. Cited 6 times.
http://hmg.oxfordjournals.org/
doi: 10.1093/hmg/ddv432

View at Publisher

6 Cooper, G.M., Stone, E.A., Asimenos, G., Green, E.D., Batzoglou, S., Sidow, A.

Distribution and intensity of constraint in mammalian genomic sequence

(2005) *Genome Research*, 15 (7), pp. 901-913. Cited 577 times.
http://www.genome.org/cgi/reprint/15/7/901
doi: 10.1101/gr.3577405

View at Publisher

7 Easton, D.F., Pooley, K.A., Dunning, A.M., Pharoah, P.D.P., Thompson, D., Ballinger, D.G., Struewing, J.P., (...), Webb, P.

Genome-wide association study identifies novel breast cancer susceptibility loci

(2007) *Nature*, 447 (7148), pp. 1087-1093. Cited 1618 times.
http://www.nature.com/nature/index.html
doi: 10.1038/nature05887

View at Publisher

8 Davydov, E.V., Goode, D.L., Sirota, M., Cooper, G.M., Sidow, A., Batzoglou, S.

Identifying a high fraction of the human genome to be under selective constraint using GERP++ (Open Access)

(2010) *PLoS Computational Biology*, 6 (12), art. no. e1001025. Cited 430 times.
http://www.ploscompbiol.org/article/fetchObjectAttachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pcbi.1001025&representation=PDF
doi: 10.1371/journal.pcbi.1001025

View at Publisher

9 Fletcher, O., Johnson, N., Orr, N., Hosking, F.J., Gibson, L.J., Walker, K., Zelenika, D., (...), Peto, J.

Novel breast cancer susceptibility locus at 9q31.2: Results: of a genome-wide association study

(2011) *Journal of the National Cancer Institute*, 103 (5), pp. 425-435. Cited 150 times.
doi: 10.1093/jnci/djq563

View at Publisher

10 Ghoussaini, M., Fletcher, O., Michailidou, K., Turnbull, C., Schmidt, M.K., Dicks, E., Dennis, J., (...), Easton, D.F.

Genome-wide association analysis identifies three new breast cancer susceptibility loci

(2012) *Nature Genetics*, 44 (3), pp. 312-318. Cited 164 times.
doi: 10.1038/ng.1049

View at Publisher

11 Gutierrez-Achury, J., Romanos, J., Bakker, S.F., Kumar, V., De Haas, E.C., Trynka, G., Ricaño-Ponce, I., (...), Wijmenga, C.

Contrasting the genetic background of type 1 diabetes and celiac disease autoimmunity

(2015) *Diabetes Care*, 38, pp. S37-S44. Cited 14 times.
http://care.diabetesjournals.org/content/diacare/38/Supplement_2/S37.full.pdf
doi: 10.2337/dcs15-2007

View at Publisher

12 Haiman, C.A., Chen, G.K., Blot, W.J., Strom, S.S., Berndt, S.I., Kittles, R.A., Rybicki, B.A., (...), Henderson, B.E.

Genome-wide association study of prostate cancer in men of African ancestry identifies a susceptibility locus at 17q21

(2011) *Nature Genetics*, 43 (6), pp. 570-573. Cited 121 times.
doi: 10.1038/ng.839

View at Publisher

13 Haiman, C.A., Han, Y., Feng, Y., Xia, L., Hsu, C., Sheng, X., Pooler, L.C., (...), Stram, D.O.

Genome-Wide Testing of Putative Functional Exonic Variants in Relationship with Breast and Prostate Cancer Risk in a Multiethnic Population (Open Access)

(2013) *PLoS Genetics*, 9 (3), art. no. e1003419. Cited 34 times.
http://www.plosgenetics.org/article/fetchObjectAttachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pgen.1003419&representation=PDF
doi: 10.1371/journal.pgen.1003419

View at Publisher

14 Hrdlickova, B., de Almeida, R.C., Borek, Z., Withoff, S.

Genetic variation in the non-coding genome: Involvement of micro-RNAs and long non-coding RNAs in disease (Open Access)

(2014) *Biochimica et Biophysica Acta - Molecular Basis of Disease*, 1842 (10), pp. 1910-1922. Cited 68 times.
www.elsevier.com/locate/bbadis
doi: 10.1016/j.bbadis.2014.03.011

View at Publisher

15 Kircher, M., Witten, D.M., Jain, P., O'roak, B.J., Cooper, G.M., Shendure, J.

A general framework for estimating the relative pathogenicity of human genetic variants

(2014) *Nature Genetics*, 46 (3), pp. 310-315. Cited 1180 times.
http://www.nature.com/ng/index.html
doi: 10.1038/ng.2892

View at Publisher

16 Li, Y., Peart, M.J., Prives, C.

Stxbp4 regulates ΔNp63 stability by suppression of RACK1-dependent degradation

(2009) *Molecular and Cellular Biology*, 29 (14), pp. 3953-3963. Cited 26 times.
http://mcb.asm.org/cgi/reprint/29/14/3953
doi: 10.1128/MCB.00449-09

View at Publisher

17 Marx, V.

Proteomics: An atlas of expression

(2014) *Nature*, 509 (7502), pp. 645-649. Cited 6 times.
http://www.nature.com/nature/index.html
doi: 10.1038/509645a

View at Publisher

18 Matheny, K.E., Barbieri, C.E., Sniezek, J.C., Arteaga, C.L., Pietenpol, J.A.

Inhibition of epidermal growth factor receptor signaling decreases p63 expression in head and neck squamous carcinoma cells

(2003) *Laryngoscope*, 113 (6), pp. 936-939. Cited 45 times.
doi: 10.1097/00005537-200306000-00004

View at Publisher

19 Mesbah-Uddin, Md., Elango, R., Banaganapalli, B., Shaik, N.A., Al-Abbasi, F.A.
In-silico analysis of inflammatory bowel disease (IBD) GWAS loci to novel connections (Open Access)

(2015) *PLoS ONE*, 10 (3), art. no. e0119420. Cited 5 times.
http://www.plosone.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pone.0119420&representation=PDF
doi: 10.1371/journal.pone.0119420

View at Publisher

20 Michailidou, K., Hall, P., Gonzalez-Neira, A., Ghoussaini, M., Dennis, J., Milne, R.L., Schmidt, M.K., (...), Easton, D.F.
Large-scale genotyping identifies 41 new loci associated with breast cancer risk

(2013) *Nature Genetics*, 45 (4), pp. 353-361. Cited 511 times.
doi: 10.1038/ng.2563

View at Publisher

21 Nguyen, B.-C., Lefort, K., Mandinova, A., Antonini, D., Devgan, V., Gatta, G.D., Koster, M.I., (...), Dotto, G.P.
Cross-regulation between Notch and p63 in keratinocyte commitment to differentiation

(2006) *Genes and Development*, 20 (8), pp. 1028-1042. Cited 242 times.
http://www.genesdev.org/cgi/reprint/20/8/1028
doi: 10.1101/gad.1406006

View at Publisher

22 Othman, E.Q.G., Kaur, G., Mutee, A.F., Muhammad, T.S.T., Tan, M.L.
Immunohistochemical expression of MAP1LC3A and MAP1LC3B protein in breast carcinoma tissues

(2009) *Journal of Clinical Laboratory Analysis*, 23 (4), pp. 249-258. Cited 14 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/122518788/PDFSTART
doi: 10.1002/jcla.20309

View at Publisher

23 Pasche, B., Yi, N.
Candidate gene association studies: Successes and failures

(2010) *Current Opinion in Genetics and Development*, 20 (3), pp. 257-261. Cited 10 times.
doi: 10.1016/j.gde.2010.03.006

View at Publisher

24 Pharoah, P.D.P., Dunning, A.M., Ponder, B.A.J., Easton, D.F.
Association studies for finding cancer-susceptibility genetic variants

(2004) *Nature Reviews Cancer*, 4 (11), pp. 850-860. Cited 374 times.
doi: 10.1038/nrc1476

View at Publisher

25 Shihab, H.A., Rogers, M.F., Gough, J., Mort, M., Cooper, D.N., Day, I.N.M., Gaunt, T.R., (...), Campbell, C.
An integrative approach to predicting the functional effects of non-coding and coding sequence variation

(2015) *Bioinformatics*, 31 (10), pp. 1536-1543. Cited 68 times.
http://bioinformatics.oxfordjournals.org/
doi: 10.1093/bioinformatics/btv009

View at Publisher

26 Stacey, S.N., Manolescu, A., Sulem, P., Rafnar, T., Gudmundsson, J., Gudjonsson, S.A., Masson, G., (...), Stefansson, K.

Common variants on chromosomes 2q35 and 16q12 confer susceptibility to estrogen receptor-positive breast cancer

(2007) *Nature Genetics*, 39 (7), pp. 865-869. Cited 545 times.
doi: 10.1038/ng2064

View at Publisher

27 Stacey, S.N., Manolescu, A., Sulem, P., Thorlacius, S., Gudjonsson, S.A., Jonsson, G.F., Jakobsdottir, M., (...), Stefansson, K.

Common variants on chromosome 5p12 confer susceptibility to estrogen receptor-positive breast cancer

(2008) *Nature Genetics*, 40 (6), pp. 703-706. Cited 344 times.
doi: 10.1038/ng.131

View at Publisher

28 Swetzig, W.M., Wang, J., Das, G.M.

Estrogen receptor alpha (ERα/ESR1) mediates the p53-independent overexpression of MDM4/MDMX and MDM2 in human breast cancer

(2016) *Oncotarget*, 7 (13), pp. 16049-16069. Cited 3 times.
http://www.impactjournals.com/oncotarget/index.php?journal=oncotarget&page=article&op=download&path%5B%5D=7533&path%5B%5D=21745
doi: 10.18632/oncotarget.7533

View at Publisher

29 Tajima, F.

Statistical method for testing the neutral mutation hypothesis by DNA polymorphism

(1989) *Genetics*, 123 (3), pp. 585-595. Cited 7520 times.

View at Publisher

30 Thomas, G., Jacobs, K.B., Kraft, P., Yeager, M., Wacholder, S., Cox, D.G., Hankinson, S.E., (...), Hunter, D.J.

A multistage genome-wide association study in breast cancer identifies two new risk alleles at 1p11.2 and 14q24.1 (RAD51L1)

(2009) *Nature Genetics*, 41 (5), pp. 579-584. Cited 390 times.
doi: 10.1038/ng.353

View at Publisher

31 Turnbull, C., Ahmed, S., Morrison, J., Pernet, D., Renwick, A., Maranian, M., Seal, S., (...), Easton, D.F.

Genome-wide association study identifies five new breast cancer susceptibility loci

(2010) *Nature Genetics*, 42 (6), pp. 504-507. Cited 450 times.
doi: 10.1038/ng.586

View at Publisher

32 Van Den Broeck, T., Joniau, S., Clinckemalie, L., Helsen, C., Prekovic, S., Spans, L., Tosco, L., (...), Claessens, F.

The role of single nucleotide polymorphisms in predicting prostate cancer risk and therapeutic decision making (Open Access)

(2014) *BioMed Research International*, 2014, art. no. 627510. Cited 19 times.
http://www.hindawi.com/journals/biomed/
doi: 10.1155/2014/627510

View at Publisher

33 Walsh, T., Lee, M.K., Casadei, S., Thornton, A.M., Stray, S.M., Pennil, C., Nord, A.S., (...), King, M.-C.
Detection of inherited mutations for breast and ovarian cancer using genomic capture and massively parallel sequencing

(2010) *Proceedings of the National Academy of Sciences of the United States of America*, 107 (28), pp. 12629-12633. Cited 278 times.
http://www.pnas.org/content/107/28/12629.full.pdf
doi: 10.1073/pnas.1007983107

View at Publisher

34 Ward, L.D., Kellis, M.
HaploReg: A resource for exploring chromatin states, conservation, and regulatory motif alterations within sets of genetically linked variants (Open Access)

(2012) *Nucleic Acids Research*, 40 (D1), pp. D930-D934. Cited 840 times.
doi: 10.1093/nar/gkr917

View at Publisher

35 Welter, D., MacArthur, J., Morales, J., Burdett, T., Hall, P., Junkins, H., Klemm, A., (...), Parkinson, H.
The NHGRI GWAS Catalog, a curated resource of SNP-trait associations (Open Access)

(2014) *Nucleic Acids Research*, 42 (D1), pp. D1001-D1006. Cited 1172 times.
doi: 10.1093/nar/gkt1229

View at Publisher

36 Xu, Y., Yan, C., Hao, Z., Zhou, J., Fan, S., Tai, S., Yang, C., (...), Liang, C.
Association between BHMT gene rs3733890 polymorphism and cancer risk: Evidence from a meta-analysis (Open Access)

(2016) *OncoTargets and Therapy*, 9, pp. 5225-5233. Cited 2 times.
https://www.dovepress.com/getfile.php?fileID=32002
doi: 10.2147/OTT.S103901

View at Publisher

37 Yang, L., Hamilton, S.R., Sood, A., Kuwai, T., Ellis, L., Sanguino, A., Lopez-Berestein, G., (...), Boyd, D.D.
The previously undescribed ZKSCAN3 (ZNF306) is a novel "driver" of colorectal cancer progression

(2008) *Cancer Research*, 68 (11), pp. 4321-4330. Cited 22 times.
http://cancerres.aacrjournals.org/cgi/reprint/68/11/4321
doi: 10.1158/0008-5472.CAN-08-0407

View at Publisher

38 Wei, Z., Qiuyin, C., Signorello, L.B., Jirong, L., Hargreaves, M.K., Deming, S.L., Guoliang, L., (...), Blot, W.J.
Evaluation of 11 breast cancer susceptibility loci in African-American women

(2009) *Cancer Epidemiology Biomarkers and Prevention*, 18 (10), pp. 2761-2764. Cited 67 times.
http://cebp.aacrjournals.org/content/18/10/2761.full.pdf+html
doi: 10.1158/1055-9965.EPI-09-0624

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Distribution of CYP2C8 and CYP2C9 amino acid substitution alleles in South Indian diabetes patients: A genotypic and computational protein phenotype study (Article)

Rao, D.K.[a], Murthy, D.K.[a], Shaik, N.S.[b], Banaganapalli, B.[c], Konda, K.[a], Rao, H.P.[a], Ganti, E.[d], Ahmed Awan, Z.[e], A El-Harouni, A.[c], Elango, R.[c], Ali Khan, I.[f], Shaik, N.A.[bc]

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Abstract

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The CYP2C8 and CYP2C9 are two major isoforms of the cytochrome P450 enzyme family, which is involved in drug response, detoxification, and disease development. This study describes the differential distribution of amino acid substitution variants of CYP2C8 (*2-I269F & *3-R139K) and CYP2C9 (*2-C144R & *3-L359A) genes in 234 type 2 diabetes mellitus (T2DM) patients and 218 healthy controls from Andhra Pradesh, South India. Single locus genotype analysis has revealed that homozygous recessive genotypes of 2C8*2-TT (P ≤.03), 2C9*2-TT (P ≤.02), and heterozygous 2C9*3-AC (P ≤.006) are seen to be increasingly present in the case group, indicating a significant level of their association with diabetes in Andhra population. The statistical significance of these recessive genotypes has persisted even under their corresponding allelic forms (P ≤.01). Genotype association results were further examined by computational protein structure and stability analysis to assess the deleteriousness of the amino acid changes. The mutant CYP 2C8 and 2C9 (both *2 and *3) proteins showed structural drifts at both amino acid residue (range 0.43Å-0.77Å), and polypeptide chain levels (range 0.68Å-1.81Å) compared to their wild-type counterparts. Furthermore, the free energy value differences (range –0.915 to –1.38 Kcal/mol) between mutant and native protein structures suggests the deleterious and destabilizing potential of amino acid substitution polymorphisms of CYP genes. The present study confirms the variable distribution of CYP2C8 (*2 and *3) and CYP2C9 (*2 and *3) allelic polymorphisms among South Indian diabetic populations and further warrants the serious attention of CYP gene family, as a putative locus for disease risk assessment and therapy. © 2017 John Wiley & Sons Australia, Ltd

Author keywords

CYP2C8 CYP2C9 South India T2DM

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EMTREE drug terms: amino acid, cytochrome P450 2C8, cytochrome P450 2C9, glucose, hemoglobin A1c, high density lipoprotein cholesterol, insulin, low density lipoprotein cholesterol, malonaldehyde, polypeptide, triacylglycerol

EMTREE medical terms:

adult | allele | amino acid substitution | Article | body mass | cholesterol blood level | clinical feature | controlled study | cross-sectional study | diabetic patient | dyslipidemia | female | genetic association | genetic polymorphism | genetic risk | genetic variation | genotype | glucose level | glucose metabolism | heterozygosity | homeostasis model assessment | homozygosity | human | India | insulin level | major clinical study | male | non insulin dependent diabetes mellitus | phenotype | protein stability | protein structure | triacylglycerol blood level | wild type

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Publisher: Blackwell Publishing

References (51)

1 Alikhan, I., Poornima, S., Jahan, P., Rao, P., Hasan, Q.

Type 2 diabetes mellitus and the association of candidate genes in asian indian population from Hyderabad, India

(2015) *Journal of Clinical and Diagnostic Research*, 9 (11), pp. GC01-GC05. Cited 4 times.
http://jcdr.net/articles/PDF/6855/14471_CE[Ra]_Aarti_F(P)_PF1(EKAK)_PFA(AK)_PF2(PAG).pdf
doi: 10.7860/JCDR/2015/14471.6855

View at Publisher

2 Chiou, T.T.Y., Lee, J.-J., Wang, M.-C., Chung, M.-S., Pan, L.-L., Hsieh, C.-J., Huang, S.-T., (...), Liu, R.-T.

Genetic disposition and modifiable factors independently associated with anemia in patients with type 2 diabetes mellitus

(2015) *Diabetes Research and Clinical Practice*, 108 (1), pp. 164-169. Cited 3 times.
www.elsevier.com/locate/diabres
doi: 10.1016/j.diabres.2014.12.012

View at Publisher

3 Pearson, J.F., Bachireddy, C., Shyamprasad, S., Goldfine, A.B., Brownstein, J.S.

Association between fine particulate matter and diabetes prevalence in the U.S.

(2010) *Diabetes Care*, 33 (10), pp. 2196-2201. Cited 126 times.
http://care.diabetesjournals.org/content/33/10/2196.full.pdf+html
doi: 10.2337/dc10-0698

View at Publisher

4 Prasad, R.B., Groop, L.

Genetics of type 2 diabetes—pitfalls and possibilities

(2015) *Genes*, 6 (1), pp. 87-123. Cited 80 times.
http://www.mdpi.com/2073-4425/6/1/87/pdf
doi: 10.3390/genes6010087

View at Publisher

5 Gervasini, G., Luna, E., García-Cerrada, M., García-Pino, G., Cubero, J.J.

Risk factors for post-transplant diabetes mellitus in renal transplant: Role of genetic variability in the CYP450-mediated arachidonic acid metabolism

(2016) *Molecular and Cellular Endocrinology*, 419, pp. 158-164. Cited 7 times.
www.elsevier.com/locate/mce
doi: 10.1016/j.mce.2015.10.009

View at Publisher

6 Visscher, P.M., Brown, M.A., McCarthy, M.I., Yang, J.

Five years of GWAS discovery (Open Access)

(2012) *American Journal of Human Genetics*, 90 (1), pp. 7-24. Cited 980 times.
doi: 10.1016/j.ajhg.2011.11.029

View at Publisher

7 Cederbaum, A.I.

Molecular mechanisms of the microsomal mixed function oxidases and biological and pathological implications (Open Access)

(2015) *Redox Biology*, 4, pp. 60-73. Cited 30 times.
http://www.journals.elsevier.com/redox-biology
doi: 10.1016/j.redox.2014.11.008

View at Publisher

8 Lynch, T., Price, A.

The effect of cytochrome P450 metabolism on drug response, interactions, and adverse effects

(2007) *American Family Physician*, 76 (3), pp. 391-396. Cited 300 times.
http://www.aafp.org/afp/20070801/391.pdf

View at Publisher

9 Wilkinson, G.R.

Drug therapy: Drug metabolism and variability among patients in drug response

(2005) *New England Journal of Medicine*, 352 (21), pp. 2211-2221+2259. Cited 706 times.
doi: 10.1056/NEJMra032424

View at Publisher

10 Daily, E.B., Aquilante, C.L.

Cytochrome P450 2C8 pharmacogenetics: A review of clinical studies

(2009) *Pharmacogenomics*, 10 (9), pp. 1489-1510. Cited 80 times.
http://www.futuremedicine.com/doi/pdf/10.2217/pgs.09.82
doi: 10.2217/pgs.09.82

View at Publisher

11 Jaakkola, T., Laitila, J., Neuvonen, P.J., Backman, J.T.
Pioglitazone is metabolised by CYP2C8 and CYP3A4 in vitro: Potential for interactions with CYP2C8 inhibitors

(2006) *Basic and Clinical Pharmacology and Toxicology*, 99 (1), pp. 44-51. Cited 103 times.
doi: 10.1111/j.1742-7843.2006.pto_437.x

View at Publisher

12 Swen, J.J., Wessels, J.A.M., Krabben, A., Assendelft, W.J.J., Guchelaar, H.-J.
Effect of CYP2C9 polymorphisms on prescribed dose and time-to-stable dose of sulfonylureas in primary care patients with Type 2 diabetes mellitus

(2010) *Pharmacogenomics*, 11 (11), pp. 1517-1523. Cited 18 times.
doi: 10.2217/pgs.10.121

View at Publisher

13 Weise, A., Prause, S., Eidens, M., Weber, M.M., Kann, P.H., Forst, T., Pfützner, A.
Prevalence of CYP450 gene variations in patients with type 2 diabetes

(2010) *Clinical Laboratory*, 56 (7-8), pp. 311-318. Cited 9 times.

14 Rehman, A., Setter, S.M., Vue, M.H.
Drug-induced glucose alterations part 2: Drug-induced hyperglycemia

(2011) *Diabetes Spectrum*, 24 (4), pp. 234-238. Cited 14 times.
http://spectrum.diabetesjournals.org/content/24/4/234.full.pdf+html
doi: 10.2337/diaspect.24.4.234

View at Publisher

15 Dai, D., Zeldin, D.C., Blaisdell, J.A., Chanas, B., Coulter, S.J., Ghanayem, B.I., Goldstein, J.A.
Polymorphisms in human CYP2C8 decrease metabolism of the anticancer drug paclitaxel and arachidonic acid

(2001) *Pharmacogenetics*, 11 (7), pp. 597-607. Cited 367 times.
doi: 10.1097/00008571-200110000-00006

View at Publisher

16 Semiz, S., Dujic, T., Causevic, A.
Pharmacogenetics and personalized treatment of type 2 diabetes

(2013) *Biochemia Medica*, 23 (2), pp. 154-171. Cited 22 times.
http://www.biochemia-medica.com/system/files/Semiz%20S.%20et%20al.-Pharmacogenetics%20of%20oral%20antidiabetics_0.pdf
doi: 10.11613/BM.2013.020

View at Publisher

17 Yasar, U., Lundgren, S., Eliasson, E., Bennet, A., Wiman, B., De Faire, U., Rane, A.
Linkage between the CYP2C8 and CYP2C9 genetic polymorphisms

(2002) *Biochemical and Biophysical Research Communications*, 299 (1), pp. 25-28. Cited 114 times.
doi: 10.1016/S0006-291X(02)02592-5

View at Publisher

18 Lee, J.-I., Chaves-Gnecco, D., Amico, J.A., Kroboth, P.D., Wilson, J.W., Frye, R.F.
Application of semisimultaneous midazolam administration for hepatic and intestinal cytochrome P450 3A phenotyping

(2002) *Clinical Pharmacology and Therapeutics*, 72 (6), pp. 718-728. Cited 75 times.
doi: 10.1067/mcp.2002.129068

View at Publisher

19 Miners, J.O., Birkett, D.J.
Cytochrome P4502C9: An enzyme of major importance in human drug metabolism

(1998) *British Journal of Clinical Pharmacology*, 45 (6), pp. 525-538. Cited 662 times.
doi: 10.1046/j.1365-2125.1998.00721.x

View at Publisher

20 Rettie, A.E., Jones, J.P.
Clinical and toxicological relevance of CYP2C9: Drug-drug interactions and pharmacogenetics

(2005) *Annual Review of Pharmacology and Toxicology*, 45, pp. 477-494. Cited 178 times.
doi: 10.1146/annurev.pharmtox.45.120403.095821

View at Publisher

21 Zhang, J., Tian, L., Zhang, Y., Shen, J.
The influence of VKORC1 gene polymorphism on warfarin maintenance dosage in pediatric patients: A systematic review and meta-analysis

(2015) *Thrombosis Research*, 136 (5), pp. 955-961. Cited 6 times.
www.elsevier.com/locate/thromres
doi: 10.1016/j.thromres.2015.09.018

View at Publisher

22 Yasar, Ü., Bennet, A.M., Eliasson, E., Lundgren, S., Wiman, B., De Faire, U., Rane, A.
Allelic variants of cytochromes P450 2C modify the risk for acute myocardial infarction

(2003) *Pharmacogenetics*, 13 (12), pp. 715-720. Cited 96 times.
doi: 10.1097/00008571-200312000-00002

View at Publisher

23 Yu, B.-N., Luo, C.-H., Wang, D., Wang, A., Li, Z., Zhang, W., Mo, W., (...), Zhou, H.-H.
CYP2C9 allele variants in Chinese hypertension patients and healthy controls

(2004) *Clinica Chimica Acta*, 348 (1-2), pp. 57-61. Cited 40 times.
doi: 10.1016/j.cccn.2004.04.028

View at Publisher

24 Tranah, G.J., Chan, A.T., Giovannucci, E., Ma, J., Fuchs, C., Hunter, D.J.
Epoxide hydrolase and CYP2C9 polymorphisms, cigarette smoking, and risk of colorectal carcinoma in the Nurses' Health Study and the Physicians' Health Study

(2005) *Molecular Carcinogenesis*, 44 (1), pp. 21-30. Cited 32 times.
doi: 10.1002/mc.20112

View at Publisher

25 Mohan, V., Sandeep, S., Deepa, R., Shah, B., Varghese, C.
Epidemiology of type 2 diabetes: Indian scenario

(2007) *Indian Journal of Medical Research*, 125 (3), pp. 217-230. Cited 390 times.
http://icmr.nic.in/ijmr/2007/March/0302.pdf

View at Publisher

26 Holliday, E.G.

Hints of unique genetic effects for type 2 diabetes in India

(2013) *Diabetes*, 62 (5), pp. 1369-1370. Cited 8 times.
http://diabetes.diabetesjournals.org/content/62/5/1369.full.pdf+html
doi: 10.2337/db12-1836

View at Publisher

27 Liu, J., Zhang, H.-X.

Polymorphism in the 11q24.1 genomic region is associated with myopia: A comprehensive genetic study in Chinese and Japanese populations

(2014) *Molecular Vision*, 20, pp. 352-358. Cited 5 times.
http://www.molvis.org/molvis/v20/352/mv-v20-352.pdf

View at Publisher

28 Sokolova, E.A., Bondar, I.A., Shabelnikova, O.Y., Pyankova, O.V., Filipenko, M.L.

Replication of KCNJ11 (p.E23K) and ABCC8 (p.S1369A) association in Russian diabetes mellitus 2 type cohort and meta-analysis (Open Access)

(2015) *PLoS ONE*, 10 (5), art. no. e0124662. Cited 11 times.
http://www.plosone.org/article/fetchObject.action?uri=info:doi/10.1371/journal.pone.0124662&representation=PDF
doi: 10.1371/journal.pone.0124662

View at Publisher

29 Klose, T.S., Blaisdell, J.A., Goldstein, J.A.

Gene structure of CYP2C8 and extrahepatic distribution of the human CYP2Cs

(1999) *Journal of Biochemical and Molecular Toxicology*, 13 (6), pp. 289-295. Cited 139 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-0461
doi: 10.1002/(SICI)1099-0461(1999)13:6<289::AID-JBT1>3.0.CO;2-N

View at Publisher

30 Knüpfer, H., Schmidt, R., Stanitz, D., Brauckhoff, M., Schönfelder, M., Preiss, R.

CYP2C and IL-6 expression in breast cancer

(2004) *Breast*, 13 (1), pp. 28-34. Cited 27 times.
http://www.elsevier-international.com/journals/brst/
doi: 10.1016/j.breast.2003.07.002

View at Publisher

31 Nishimura, M., Yaguti, H., Yoshitsugu, H., Naito, S., Satoh, T.

Tissue distribution of mRNA expression of human cytochrome P450 isoforms assessed by high-sensitivity real-time reverse transcription PCR

(2003) *Yakugaku Zasshi*, 123 (5), pp. 369-375. Cited 200 times.
http://yakushi.pharm.or.jp/FULL_TEXT/123_5/pdf/369.pdf
doi: 10.1248/yakushi.123.369

View at Publisher

32 Thum, T., Borlak, J.

Gene expression in distinct regions of the heart

(2000) *Lancet*, 355 (9208), pp. 979-983. Cited 139 times.
http://www.journals.elsevier.com/the-lancet/
doi: 10.1016/S0140-6736(00)99016-0

View at Publisher

33 Rendic, S., Di Carlo, F.J.

Human cytochrome P450 enzymes: A status report summarizing their reactions, substrates, inducers, and inhibitors

(1997) *Drug Metabolism Reviews*, 29 (1-2), pp. 413-580. Cited 961 times.
doi: 10.3109/03602539709037591

View at Publisher

34 Totah, R.A., Rettie, A.E.

Cytochrome P450 2C8: Substrates, inhibitors, pharmacogenetics, and clinical relevance

(2005) *Clinical Pharmacology and Therapeutics*, 77 (5), pp. 341-352. Cited 169 times.
doi: 10.1016/j.clpt.2004.12.267

View at Publisher

35 Polasek, T.M., Elliot, D.J., Lewis, B.C., Miners, J.O.

Mechanism-based inactivation of human cytochrome P4502C8 by drugs in vitro

(2004) *Journal of Pharmacology and Experimental Therapeutics*, 311 (3), pp. 996-1007. Cited 76 times.
doi: 10.1124/jpet.104.071803

View at Publisher

36 Arun Kumar, A.S., Chakradhara Rao, U.S., Umamaheswaran, G., Ramu, P., Kesavan, R., Shewade, D.G., Balachandar, J., (...), Adithan, C.

Haplotype structures of common variants of CYP2C8, CYP2C9, and ADRB1 genes in a South Indian population

(2011) *Genetic Testing and Molecular Biomarkers*, 15 (6), pp. 407-413. Cited 13 times.
doi: 10.1089/gtmb.2010.0170

View at Publisher

37 Muthiah, Y.D., Lee, W.L., Teh, L.K., Ong, C.E., Salleh, M.Z., Ismail, R.

A simple multiplex PCR method for the concurrent detection of three CYP2C8 variants

(2004) *Clinica Chimica Acta*, 349 (1-2), pp. 191-198. Cited 13 times.
doi: 10.1016/j.cccn.2004.06.024

View at Publisher

38 Crespi, C.L., Miller, V.P.

The R144C change in the CYP2C9*2 allele alters interaction of the ctochrome P450 with NADPH:cytochrome P450 oxidoreductase

(1997) *Pharmacogenetics*, 7 (3), pp. 203-210. Cited 227 times.
doi: 10.1097/00008571-199706000-00005

View at Publisher

39 Jose, R., Chandrasekaran, A., Sam, S.S., Gerard, N., Chanolean, S., Abraham, B.K., Satyanarayanamoorthy, K., (...), Rajagopal, K.

CYP2C9 and CYP2C19 genetic polymorphisms: Frequencies in the south Indian population

(2005) *Fundamental and Clinical Pharmacology*, 19 (1), pp. 101-105. Cited 80 times.
doi: 10.1111/j.1472-8206.2004.00307.x

View at Publisher

40 Kimura, M., Ieiri, I., Mamiya, K., Urae, A., Higuchi, S.
Genetic polymorphism of cytochrome P450s, CYP2C19, and CYP2C9 in a Japanese population

(1998) *Therapeutic Drug Monitoring*, 20 (3), pp. 243-247. Cited 168 times.
doi: 10.1097/00007691-199806000-00001

View at Publisher

41 Yoon, Y.-R., Shon, J.-H., Kim, M.-K., Lim, Y.-C., Lee, H.-R., Park, J.-Y., Cha, I.-J., (...), Shin, J.-G.
Frequency of cytochrome P450 2C9 mutant alleles in a Korean population

(2001) *British Journal of Clinical Pharmacology*, 51 (3), pp. 277-280. Cited 112 times.
doi: 10.1046/j.1365-2125.2001.00340.x

View at Publisher

42 Rettie, A.E., Wienkers, L.C., Gonzalez, F.J., Tragcr, W.F., Korzekwa, K.R.
Impaired (S)-warfarin metabolism catalysed by the R144c allelic variant of CYP2c9

(1994) *Pharmacogenetics*, 4 (1), pp. 39-42. Cited 439 times.
doi: 10.1097/00008571-199402000-00005

View at Publisher

43 Wennerholm, A., Johansson, I., Hidestrand, M., Bertilsson, L., Gustafsson, L.L., Ingelman-Sundberg, M.
Characterization of the CYP2D6*29 allele commonly present in a black Tanzanian population causing reduced catalytic activity

(2001) *Pharmacogenetics*, 11 (5), pp. 417-427. Cited 56 times.
doi: 10.1097/00008571-200107000-00005

View at Publisher

44 Mukherjee, S., Maitra, A.
Molecular & genetic factors contributing to insulin resistance in polycystic ovary syndrome

(2010) *Indian Journal of Medical Research*, 131 (6), pp. 743-760. Cited 44 times.
http://icmr.nic.in/ijmr/2010/june/0603.pdf

View at Publisher

45 Woodcroft, K.J., Novak, R.F.
Insulin differentially affects xenobiotic-enhanced, cytochrome P-450 (CYP)2E1, CYP2B, CYP3A, and CYP4A expression in primary cultured rat hepatocytes

(1999) *Journal of Pharmacology and Experimental Therapeutics*, 289 (2), pp. 1121-1127. Cited 61 times.

View at Publisher

46 Rao, D.K., Shaik, N.A., Imran, A., Murthy, D.K., Ganti, E., Chinta, C., Rao, H., (...), Al-Aama, J.Y.
Variations in the GST activity are associated with single and combinations of GST genotypes in both male and female diabetic patients

(2014) *Molecular Biology Reports*, 41 (2), pp. 841-848. Cited 8 times.
doi: 10.1007/s11033-013-2924-5

View at Publisher

47 Khan, I.A., Vattam, K.K., Jahan, P., Hasan, Q., Rao, P.

Importance of glucokinase -258G/A polymorphism in Asian Indians with post-transplant and type 2 diabetes mellitus

(2016) *Intractable and Rare Diseases Research*, 5 (1), pp. 25-30. Cited 6 times.
http://www.irdrjournal.com/action/downloaddoc.php?docid=1044
doi: 10.5582/irdr.2015.01040

View at Publisher

48 Alharbi, K.K., Hussain, T., Alharbi, F.K., Tabassum, S.N., Mohammed, A.A., Gambhir, D., Ali Khan, I.

Apolipoprotein C3 gene variants and risk of developing type 2 diabetes in saudi subjects

(2015) *Metabolic Syndrome and Related Disorders*, 13 (7), pp. 298-303. Cited 7 times.
www.liebertonline.com/met/
doi: 10.1089/met.2015.0022

View at Publisher

49 Lapolla, A., Piarulli, F., Sartore, G., Ceriello, A., Ragazzi, E., Reitano, R., Baccarin, L., (...), Fedele, D.

Advanced glycation end products and antioxidant status in type 2 diabetic patients with and without peripheral artery disease

(2007) *Diabetes Care*, 30 (3), pp. 670-676. Cited 70 times.
http://care.diabetesjournals.org/cgi/reprint/30/3/670.pdf
doi: 10.2337/dc06-1508

View at Publisher

50 Khan, I.A., Movva, S., Shaik, N.A., Chava, S., Jahan, P., Mukkavali, K.K., Kamineni, V., (...), Rao, P.

Investigation of Calpain 10 (rs2975760) gene polymorphism in Asian Indians with Gestational Diabetes Mellitus (Open Access)

(2014) *Meta Gene*, 2 (1), pp. 299-306. Cited 19 times.
http://www.journals.elsevier.com/meta-gene/
doi: 10.1016/j.mgene.2014.03.001

View at Publisher

51 Seng, K.C., Gin, G.G., Sangkar, J.V., Phipps, M.E.

Frequency of cytochrome P450 2C9 (CYP2C9) alleles in three ethnic groups in Malaysia

(2003) *Asia-Pacific Journal of Molecular Biology and Biotechnology*, 11 (2), pp. 83-91. Cited 18 times.
http://www.msmbb.org.my/apjhome.htm

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Document details

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Population genetic structure of cotton pink bollworm, Pectinophora gossypiella (Saunders) (Lepidoptera: Gelechiidae) using mitochondrial cytochrome oxidase I (COI) gene sequences from India (Article)

Sridhar, J.[a], Chinna Babu Naik, V.[b], Ghodke, A.[b], Kranthi, S.[b], Kranthi, K.R.[b], Singh, B.P.[a], Choudhary, J.S.[c], Krishna, M.S.R.[d]

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Abstract

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Pink bollworm (PBW), Pectinophora gossypiella is one of the most destructive pest's globally inflicting huge economic losses in cotton even during later stages of crop growth. In the present investigation, the population genetic structure, distribution, and genetic diversity of P. gossypiella in cotton growing zones of India using partial mitochondrial DNA cytochrome oxidase-I (COI) gene was addressed. The overall haplotype (Hd), number of nucleotide differences (K), and nucleotide diversity (π) were 0.3028, 0.327, and 0.00047, respectively which suggest that entire population exhibited low level of genetic diversity. Zone-wise clustering of population revealed that central zone recorded low level of Hd (0.2730) as compared to north (0.3619) and south (0.3028) zones. The most common haplotype (H1) reported in all 19 locations could be proposed as ancestral/original haplotype. This haplotype with one mutational step formed star-like phylogeny connected with 11 other haplotypes. The phylogenetic relationship studies revealed that most haplotypes of populations are closely related to each other. Haplotype 5 was exclusively present in Dharwad (South zone) shared with populations of Hanumangarh and Bathinda (North zone). The result indicated that there is no isolation by distance effect among the Indian populations of PBW. The present study reports a low genetic diversity among PBW populations of India and H1, as ancestral haplotype from which other haplotypes have evolved suggests that the migration and dispersal over long distance and invasiveness are major factors. © 2016 Informa UK Limited, trading as Taylor & Francis Group.

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genetic variability | haplotypes | mitochondrial COI | Pectinophora gossypiella | population structure

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References (46)

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1 Armstrong, K.F., Ball, S.L.
DNA barcodes for biosecurity: Invasive species identification

(2005) *Philosophical Transactions of the Royal Society B: Biological Sciences*, 360 (1462), pp. 1813-1823. Cited 306 times.
http://rstb.royalsocietypublishing.org/
doi: 10.1098/rstb.2005.1713

View at Publisher

2 Avise, J.C.
(2000) *Phylogeography: the history and formation of species*. Cited 4143 times.
Cambridge: Harvard University Press

3 Bandelt, H.-J., Forster, P., Röhl, A.
Median-joining networks for inferring intraspecific phylogenies

(1999) *Molecular Biology and Evolution*, 16 (1), pp. 37-48. Cited 5391 times.
http://mbe.oxfordjournals.org/
doi: 10.1093/oxfordjournals.molbev.a026036

View at Publisher

4 Bartlett, A.C.
Isozyme polymorphism in populations of the pink bollworm
(1981) *Ann Entomol Soc Am*, 74, pp. 9-13. Cited 14 times.

5 Bermingham, E., Lessios, H.A.
Rate variation of protein and mitochondrial DNA evolution as revealed by sea urchins separated by the Isthmus of Panama

(1993) *Proceedings of the National Academy of Sciences of the United States of America*, 90 (7), pp. 2734-2738. Cited 108 times.
www.pnas.org
doi: 10.1073/pnas.90.7.2734

View at Publisher

6 Chakravarthy, V.S.K., Reddy, T.P., Reddy, V.D., Rao, K.V.
Current status of genetic engineering in cotton (Gossypium hirsutum L): An assessment

(2014) *Critical Reviews in Biotechnology*, 34 (2), pp. 144-160. Cited 6 times.
http://www.tandf.co.uk/journals/titles/07388551.asp
doi: 10.3109/07388551.2012.743502

View at Publisher

7 Cheema, M.A., Muzaffar, N., Ghani, M.A.
Investigations on phenology, distribution, host range and evaluation of predators of Pectinophora gossypiella (Saunders) in Pakistan
(1980) *Pakistan Cottons*, 24, pp. 139-176. Cited 9 times.

8 Chinna Babu Naik, V., Bajaj, S., Kadu, S., Kranthi, S., Kranthi, K.R.
Mass rearing of pink bollworm in the lab
(2010) *CICR Newslett*, 26, p. 4.

9 Chinna Babu Naik, V., Jyothi, D., Dhabade, P.L., Kranthi, S.
Pink bollworm Pectinophora gossypiella (Saunders) infestation on Bt and non Bt hybrids in India in 2011-2012
(2014) *Curr Cotton J*, 6, pp. 37-40.

10 Dhurua, S., Gujar, G.T.
Field-evolved resistance to Bt toxin Cry1Ac in the pink bollworm, Pectinophora gossypiella (Saunders) (Lepidoptera: Gelechiidae), from India

(2011) *Pest Management Science*, 67 (8), pp. 898-903. Cited 140 times.
doi: 10.1002/ps.2127

View at Publisher

11 Duan, Y., Wu, Y.-Q., Luo, L.-Z., Miao, J., Gong, Z.-J., Jiang, Y.-L., Li, T.
Genetic diversity and population structure of Sitodiplosis mosellana in Northern China (Open Access)

(2013) *PLoS ONE*, 8 (11), art. no. e78415. Cited 7 times.
http://www.plosone.org/article/fetchObject.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0078415&representation=PDF
doi: 10.1371/journal.pone.0078415

View at Publisher

12 Eshleman, J.A., Malhi, R.S., Johnson, J.R., Kaestle, F.A., Lorenz, J., Smith, D.G.
Mitochondrial DNA and prehistoric settlements: Native migrations on the western edge of North America

(2004) *Human Biology*, 76 (1), pp. 55-75. Cited 20 times.

View at Publisher

13 Excoffier, L., Lischer, H.E.L.
Arlequin suite ver 3.5: A new series of programs to perform population genetics analyses under Linux and Windows

(2010) *Molecular Ecology Resources*, 10 (3), pp. 564-567. Cited 6128 times.
doi: 10.1111/j.1755-0998.2010.02847.x

View at Publisher

14 Felsenstein, J.
Confidence limits on phylogenies: an approach using the bootstrap
(1985) *Evolution*, 39, pp. 783-791. Cited 27070 times.

15 Folmer, O., Black, M., Hoeh, W., Lutz, R., Vrijenhoek, R.
DNA primers for amplification of mitochondrial cytochrome c oxidase subunit I from diverse metazoan invertebrates.

(1994) *Molecular marine biology and biotechnology*, 3 (5), pp. 294-299. Cited 6866 times.

16 Galtier, N., Nabholz, B., GlÉmin, S., Hurst, G.D.D.
Mitochondrial DNA as a marker of molecular diversity: A reappraisal

(2009) *Molecular Ecology*, 18 (22), pp. 4541-4550. Cited 459 times.
doi: 10.1111/j.1365-294X.2009.04380.x

View at Publisher

17 Hayden, E.J., Ferrada, E., Wagner, A.
Cryptic genetic variation promotes rapid evolutionary adaptation in an RNA enzyme

(2011) *Nature*, 474 (7349), pp. 92-95. Cited 116 times.
doi: 10.1038/nature10083

View at Publisher

18 Henry, J.M., Raina, A.K., Ridgway, R.L.
Isolation of high-molecular-weight DNA from insects

(1990) *Analytical Biochemistry*, 185 (1), pp. 147-150. Cited 31 times.
doi: 10.1016/0003-2697(90)90270-J

View at Publisher

19 Jensen, J.L., Bohonak, A.J., Kelley, S.T.
Isolation by distance, web service

(2005) *BMC Genetics*, 6. Cited 1042 times.
http://www.biomedcentral.com/1471-2156/6/13
doi: 10.1186/1471-2156-6-13

View at Publisher

20 Karthikeyan, K.A.M., Vijayakumar, I., Suresh, P., Janarthanan, S.
Molecular variation in the natural populations of pink bollworm, Pectinophora gossypiella (Saunders)
(2007) *Entomon*, 32, pp. 245-250.

21 Kranthi, K.R., Jadhav, D.R., Kranthi, S., Wanjari, R.R., Ali, S.S., Russell, D.A.
Insecticide resistance in five major insect pests of cotton in India

(2002) *Crop Protection*, 21 (6), pp. 449-460. Cited 237 times.
doi: 10.1016/S0261-2194(01)00131-4

View at Publisher

22 Kranthia, K.R., Jadhava, D.R., Wanjaria, R.R., Shakir Alia, S., Russella, D.

Carbamate and organophosphate resistance in cotton pests in India, 1995 to 1999

(2001) *Bulletin of Entomological Research*, 91 (1), pp. 37-46. Cited 89 times.

23 Kranthi, S., Kranthi, K.R., Bharose, A.A., Syed, S.N., Dhawad, C.S., Wadaskar, R.M., Behere, G.T., (...), Patil, E.K.

Cytochrome oxidase I sequence of Helicoverpa (Noctuidae: Lepidoptera) species in India - Its utility as a molecular tool

(2006) *Indian Journal of Biotechnology*, 5 (2), pp. 195-199. Cited 5 times.

24 Kremer, A., Ronce, O., Robledo-Arnuncio, J.J., Guillaume, F., Bohrer, G., Nathan, R., Bridle, J.R., (...), Schueler, S.

Long-distance gene flow and adaptation of forest trees to rapid climate change

(2012) *Ecology Letters*, 15 (4), pp. 378-392. Cited 219 times.
doi: 10.1111/j.1461-0248.2012.01746.x

View at Publisher

25 Leducq, J.-B., Llaurens, V., Castric, V., Saumitou-Laprade, P., Hardy, O.J., Vekemans, X.

Effect of balancing selection on spatial genetic structure within populations: Theoretical investigations on the self-incompatibility locus and empirical studies in Arabidopsis halleri

(2011) *Heredity*, 106 (2), pp. 319-329. Cited 14 times.
doi: 10.1038/hdy.2010.68

View at Publisher

26 Librado, P., Rozas, J.

DnaSP v5: A software for comprehensive analysis of DNA polymorphism data

(2009) *Bioinformatics*, 25 (11), pp. 1451-1452. Cited 7426 times.
doi: 10.1093/bioinformatics/btp187

View at Publisher

27 Liu, Y., Hou, M., Wu, K.

Genetic variation of mitochondrial DNA in Chinese populations of pectinophora gossypiella (Lepidoptera: Gelechiidae)

(2010) *Environmental Entomology*, 39 (4), pp. 1344-1351.
doi: 10.1603/EN09355

View at Publisher

28 Liu, Y.-D., Wu, K.-M., Guo, Y.-Y.

Population structure and introduction history of the pink bollworm, Pectinophora gossypiella, in China

(2009) *Entomologia Experimentalis et Applicata*, 130 (2), pp. 160-172. Cited 8 times.
doi: 10.1111/j.1570-7458.2008.00800.x

View at Publisher

29 Mantel, N.

The Detection of Disease Clustering and a Generalized Regression Approach

(1967) *Cancer Research*, 27, pp. 209-220. Cited 7608 times.

30 McKern, J.A., Szalanski, A.L.

Genetic variation of the lesser peach tree borer, Synanthedon pictipes (Lepidoptera: Sesiidae) in Arkansas

(2008) *Journal of Agricultural and Urban Entomology*, 25 (1), pp. 25-35. Cited 2 times.
doi: 10.3954/1523-5475-25.1.25

View at Publisher

31 Mopper, S.

Adaptive genetic structure in phytophagous insect populations

(1996) *Trends in Ecology and Evolution*, 11 (6), pp. 235-238. Cited 132 times.
doi: 10.1016/0169-5347(96)10036-7

View at Publisher

32 Pauls, S.U., Nowak, C., Bálint, M., Pfenninger, M.

The impact of global climate change on genetic diversity within populations and species

(2013) *Molecular Ecology*, 22 (4), pp. 925-946. Cited 169 times.
doi: 10.1111/mec.12152

View at Publisher

33 Peccoud, J., Simon, J.-C., McLaughlin, H.J., Moran, N.A.

Post-Pleistocene radiation of the pea aphid complex revealed by rapidly evolving endosymbionts

(2009) *Proceedings of the National Academy of Sciences of the United States of America*, 106 (38), pp. 16315-16320. Cited 59 times.
http://www.pnas.org/content/106/38/16315.full.pdf
doi: 10.1073/pnas.0905129106

View at Publisher

34 Prabhakar, C.S., Mehta, P.K., Sood, P., Singh, S.K., Sharma, P., Sharma, P.N.

Population genetic structure of the melon fly, Bactrocera cucurbitae (Coquillett) (Diptera: Tephritidae) based on mitochondrial cytochrome oxidase (COI) gene sequences

(2012) *Genetica*, 140 (1-3), pp. 83-91. Cited 19 times.
doi: 10.1007/s10709-012-9660-y

View at Publisher

35 Prabhakar, C.S., Sood, P., Mehta, P.K., Sharma, P.N.

Population genetic structure of the pumpkin fruit fly, Bactrocera tau (Walker) (Diptera: Tephritidae) in Himachal Pradesh, India

(2013) *Biochemical Systematics and Ecology*, 51, pp. 291-296. Cited 7 times.
doi: 10.1016/j.bse.2013.09.008

View at Publisher

36 Raboudi, F., Makni, H., Makni, M.

Genetic diversity of potato aphid, Macrosiphum euphorbiae, populations in Tunisia detected by RAPD

(2011) *African Entomology*, 19 (1), pp. 133-140. Cited 8 times.
doi: 10.4001/003.019.0116

View at Publisher

37 Mehboob-Ur-Rahman, Shaheen, T., Tabbasam, N., Iqbal, M.A., Ashraf, M., Zafar, Y., Paterson, A.H.
Cotton genetic resources. A review

(2012) *Agronomy for Sustainable Development*, 32 (2), pp. 419-432. Cited 20 times.
doi: 10.1007/s13593-011-0051-z

View at Publisher

38 Slatkin, M., Hudson, R.R.
Pairwise comparisons of mitochondrial DNA sequences in stable and exponentially growing populations

(1991) *Genetics*, 129 (2), pp. 555-562. Cited 1497 times.

View at Publisher

39 Tamura, K., Peterson, D., Peterson, N., Stecher, G., Nei, M., Kumar, S.
MEGA5: Molecular evolutionary genetics analysis using maximum likelihood, evolutionary distance, and maximum parsimony methods

(2011) *Molecular Biology and Evolution*, 28 (10), pp. 2731-2739. Cited 27433 times.
doi: 10.1093/molbev/msr121

View at Publisher

40 Tanaka, M., Cabrera, V.M., González, A.M., Larruga, J.M., Takeyasu, T., Fuku, N., Guo, L.-J., (...), Shimodaira, H.
Mitochondrial genome variation in Eastern Asia and the peopling of Japan

(2004) *Genome Research*, 14 (10 A), pp. 1832-1850. Cited 349 times.

View at Publisher

41 Wang, J., Miller, E.D., Simmons, G.S., Miller, T.A., Tabashnik, B.E., Park, Y.
Piggybac-like elements in the pink bollworm, pectinophora gossypiella

(2010) *Insect Molecular Biology*, 19 (2), pp. 177-184. Cited 15 times.
doi: 10.1111/j.1365-2583.2009.00964.x

View at Publisher

42 Wang, J., Simmons, G.S., Miller, T.A., Tabashnik, B.E., Park, Y.
Global variation in the piggyBac-like element of pink bollworm, Pectinophora gossypiella

(2011) *Journal of Asia-Pacific Entomology*, 14 (1), pp. 131-135.
doi: 10.1016/j.aspen.2010.09.006

View at Publisher

43 Wu, H.-H., Huang, M.-S., Wan, P., Wyckhuys, K.A.G., Wu, K.-M.
Emergence, Mating and Oviposition Behavior of the Chinese Population in Pink Bollworm, Pectinophora gossypiella (Lepidoptera: Gelechiidae)

(2013) *Journal of Integrative Agriculture*, 12 (4), pp. 653-662. Cited 2 times.
doi: 10.1016/S2095-3119(13)60283-X

View at Publisher

44 Wu, Z.-Z., Li, H.-M., Bin, S.-Y., Ma, J., He, H.-L., Li, X.-F., Gong, F.-L., (...), Lin, J.-T.
Sequence analysis of mitochondrial ND1 gene can reveal the genetic structure and origin of Bactrocera dorsalis s.s.

(2014) *BMC Evolutionary Biology*, 14 (1), art. no. 55. Cited 4 times.
doi: 10.1186/1471-2148-14-55

View at Publisher

45 Wu, K.-M., Lu, Y.-H., Feng, H.-Q., Jiang, Y.-Y., Zhao, J.-Z.

Suppression of cotton bollworm in multiple crops in China in areas with BT toxin-containing cotton

(2008) *Science*, 321 (5896), pp. 1676-1678. Cited 387 times.
doi: 10.1126/science.1160550

View at Publisher

46 Wu, H., Wu, K., Wang, D., Guo, Y.

Flight potential of pink bollworm, Pectinophora gossypiella Saunders (Lepidoptera: Gelechiidae)

(2006) *Environmental Entomology*, 35 (4), pp. 887-893. Cited 27 times.
https://ee.oxfordjournals.org/
doi: 10.1603/0046-225X-35.4.887

View at Publisher

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Document details

Nanomaterials
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Influence of synthesis temperature on the growth and surface morphology of Co_3O_4 nanocubes for supercapacitor applications (Article)

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Abstract

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A facile hydrothermal route to control the crystal growth on the synthesis of Co_3O_4 nanostructures with cube-like morphologies has been reported and tested its suitability for supercapacitor applications. The chemical composition and morphologies of the as-prepared Co_3O_4 nanoparticles were extensively characterized using X-ray diffraction (XRD) and transmission electron microscopy (TEM). Varying the temperature caused considerable changes in the morphology, the electrochemical performance increased with rising temperature, and the redox reactions become more reversible. The results showed that the Co_3O_4 synthesized at a higher temperature (180 °C) demonstrated a high specific capacitance of 833 F/g. This is attributed to the optimal temperature and the controlled growth of nanocubes.

Reaxys Database Information

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Author keywords

Capacitors | Co_3O_4 nanostructures | Morphology | Synthesis | Temperature

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Simple synthesis of graphene nanocomposites MgO–rGO and Fe2O3–rGO for multifunctional applications

Abdel-Aal, S.K. , Ionov, A. , Mozhchil, R.N.
(2018) Applied Physics A: Materials Science and Processing

High-performance asymmetric supercapacitors based on the surfactant/ionic liquid complex intercalated reduced graphene oxide composites

Lin, J.-H. , Shi, B.-W. , Chen, Z.-C.
(2018) Applied Sciences (Switzerland)

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(2007) Materials Letters

Preparation and characterization of hollow Co3O4spheres

Zhao, W. , Liu, Y. , Li, H.

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Document Type: Article
Publisher: MDPI AG

References (42)

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1 Iijima, S.
Helical microtubules of graphitic carbon

(1991) *Nature*, 354 (6348), pp. 56-58. Cited 31564 times.
doi: 10.1038/354056a0

View at Publisher

2 Wang, X., Chen, X., Gao, L., Zheng, H., Zhang, Z., Qian, Y.
One-dimensional arrays of Co3O4 nanoparticles: Synthesis, characterization, and optical and electrochemical properties

(2004) *Journal of Physical Chemistry B*, 108 (42), pp. 16401-16404. Cited 203 times.
doi: 10.1021/jp048016p

View at Publisher

3 Hochbaum, A.I., Yang, P.
Semiconductor nanowires for energy conversion

(2010) *Chemical Reviews*, 110 (1), pp. 527-546. Cited 999 times.
http://pubs.acs.org/doi/pdfplus/10.1021/cr900075v
doi: 10.1021/cr900075v

View at Publisher

4 Li, Y., Hasin, P., Wu, Y.
Ni_xCo_3
(2010) *Adv. Mater*, 22, pp. 1926-1929.

5 Schmidt, V., Wittemann, J.V., Senz, S., Gósele, U.
Silicon nanowires: A review on aspects of their growth and their electrical properties

(2009) *Advanced Materials*, 21 (25-26), pp. 2681-2702. Cited 403 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/122421500/PDFSTART
doi: 10.1002/adma.200803754

View at Publisher

6 Yang, P., Yan, R., Fardy, M.
Semiconductor nanowire: Whats Next?

(2010) *Nano Letters*, 10 (5), pp. 1529-1536. Cited 546 times.
doi: 10.1021/nl100665r

View at Publisher

(2008) Materials Letters

A simple method to the fabrication of rectangular Co3O4nanosheets

Ni, X. , Song, J. , Li, D.
(2007) Chemistry Letters

View all related documents based on references

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7 Kaviyarasu, K., Fuku, X., Mola, G.T., Manikandan, E., Kennedy, J., Maaza, M.

Photoluminescence of well-aligned ZnO doped CeO_2 nanoplatelets by a solvothermal route

(2016) *Materials Letters*, 183, pp. 351-354. Cited 43 times.
http://www.journals.elsevier.com/materials-letters/
doi: 10.1016/j.matlet.2016.07.143

View at Publisher

8 Fang, F., Kennedy, J., Manikandan, E., Futter, J., Markwitz, A.

Morphology and characterization of TiO_2 nanoparticles synthesized by arc discharge

(2012) *Chemical Physics Letters*, 521, pp. 86-90. Cited 39 times.
doi: 10.1016/j.cplett.2011.11.046

View at Publisher

9 Kaviyarasu, K., Geetha, N., Kanimozhi, K., Maria Magdalane, C., Sivaranjani, S., Ayeshamariam, A., Kennedy, J., (...), Maaza, M.

In vitro cytotoxicity effect and antibacterial performance of human lung epithelial cells A549 activity of Zinc oxide doped TiO_2 nanocrystals: Investigation of bio-medical application by chemical method

(2017) *Materials Science and Engineering C*, 74, pp. 325-333. Cited 44 times.
doi: 10.1016/j.msec.2016.12.024

View at Publisher

10 Li, W.-Y., Xu, L.-N., Chen, J.

Co_3O_4 nanomaterials in lithium-ion batteries and gas sensors

(2005) *Advanced Functional Materials*, 15 (5), pp. 851-857. Cited 901 times.
doi: 10.1002/adfm.200400429

View at Publisher

11 Maruyama, T., Arai, S.

Electrochromic properties of cobalt oxide thin films prepared by chemical vapor deposition

(1996) *Journal of the Electrochemical Society*, 143 (4), pp. 1383-1386. Cited 177 times.
http://jes.ecsdl.org/content/by/year
doi: 10.1149/1.1836646

View at Publisher

12 Weichel, S., Møller, P.J.

Annealing-induced microfaceting of the CoO(100) surface investigated by LEED and STM

(1998) *Surface Science*, 399 (2-3), pp. 219-224. Cited 47 times.
http://www.journals.elsevier.com/surface-science-including-surface-science-letters/
doi: 10.1016/S0039-6028(97)00820-0

View at Publisher

13 Ramachandran, K., Oriakhi, C.O., Lerner, M.M., Koch, V.R.

Intercalation chemistry of cobalt and nickel dioxides: A facile route to new compounds containing organocations

(1996) *Materials Research Bulletin*, 31 (7), pp. 767-772. Cited 38 times.
doi: 10.1016/0025-5408(96)00070-0

View at Publisher

14 Poizot, P., Laruelle, S., Grugeon, S., Dupont, L., Tarascon, J.-M.
Nano-sized transition-metal oxides as negative-electrode materials for lithium-ion batteries

(2000) *Nature*, 407 (6803), pp. 496-499. Cited 5486 times.
doi: 10.1038/35035045

View at Publisher

15 Sugimoto, T., Matijević, E.
Colloidal cobalt hydrous oxides. Preparation and properties of monodispersed Co_3O_4

(1979) *Journal of Inorganic and Nuclear Chemistry*, 41 (2), pp. 165-172. Cited 73 times.
doi: 10.1016/0022-1902(79)80506-0

View at Publisher

16 Lakshmi, B.B., Patrissi, C.J., Martin, C.R.
Sol-Gel Template Synthesis of Semiconductor Oxide Micro- and Nanostructures

(1997) *Chemistry of Materials*, 9 (11), pp. 2544-2550. Cited 673 times.
http://pubs.acs.org/journal/cmatex
doi: 10.1021/cm970268y

View at Publisher

17 Yin, J.S., Wang, Z.L.
Synthesis of cobalt oxide nanocrystal self-assembled materials

(1999) *Journal of Materials Research*, 14 (2), pp. 503-508. Cited 19 times.
doi: 10.1557/JMR.1999.0072

View at Publisher

18 Tarasevich, M.R., Efremov, B.N., Trasatti, S.
Electrodes of Conductive Metallic Oxides, Part A; Elsevier: Amsterdam
The Netherlands, 1980; Chapter, 5, pp. 461-462.

19 Hamdani, M., Koenig, J.F., Chartier, P.

(1988) *Journal of Applied Electrochemistry*, 18 (4), pp. 568-576. Cited 71 times.
doi: 10.1007/BF01022252

20 Singh, R.N., Koenig, J.-F., Poillerat, G., Chartier, P.
Electrochemical Studies on Protective Thin Co_3O_4 and $NiCo_2O_4$ Films Prepared on Titanium by Spray Pyrolysis for Oxygen Evolution

(1990) *Journal of the Electrochemical Society*, 137 (5), pp. 1408-1413. Cited 217 times.
doi: 10.1149/1.2086682

View at Publisher

21 Cheng, C.-S., Serizawa, M., Sakata, H., Hirayama, T.
Electrical conductivity of Co_3O_4 films prepared by chemical vapour deposition

(1998) *Materials Chemistry and Physics*, 53 (3), pp. 225-230. Cited 117 times.
http://www.journals.elsevier.com/materials-chemistry-and-physics
doi: 10.1016/S0254-0584(98)00044-3

View at Publisher

22 El Baydi, M., Poillerat, G., Rehspringer, J.-L., Gautier, J.L., Koenig, J.-F., Chartier, P.
A sol-gel route for the preparation of Co_3O_4 catalyst for oxygen electrocatalysis in alkaline medium

(1994) *Journal of Solid State Chemistry*, 109 (2), pp. 281-288. Cited 160 times.
doi: 10.1006/jssc.1994.1105

View at Publisher

23 Wang, R.M., Liu, C.M., Zhang, H.Z., Chen, C.P., Guo, L., Xu, H.B., Yang, S.H.
Porous nanotubes of Co $_3$O $_4$: Synthesis, characterization, and magnetic properties

(2004) *Applied Physics Letters*, 85 (11), pp. 2080-2082. Cited 101 times.
doi: 10.1063/1.1789577

View at Publisher

24 Liu, Y., Wang, G., Xu, C., Wang, W.
Fabrication of Co_3O_4 nanorods by calcination of precursor powders prepared in a novel inverse microemulsion

(2002) *Chemical Communications*, (14), pp. 1486-1487. Cited 86 times.

View at Publisher

25 Shao, W., Yan, M.
Solvothermal synthesis of cobalt oxides nanocrystals

(2017) *AIP Conference Proceedings*, 1846, art. no. 030004.
http://scitation.aip.org/content/aip/proceeding/aipcp
ISBN: 978-073541518-8
doi: 10.1063/1.4983602

View at Publisher

26 Xu, R., Zeng, C.
Mechanistic investigation on salt-mediated formation of free-standing Co_3O_4 nanocubes at 95°C

(2003) *Journal of Physical Chemistry B*, 107 (4), pp. 926-930. Cited 135 times.
doi: 10.1021/jp021094x

View at Publisher

27 Furlanetto, G., Formaro, L.
Precipitation of spherical Co_3O_4 particles

(1995) *Journal of Colloid And Interface Science*, 170 (1), pp. 169-175. Cited 44 times.
doi: 10.1006/jcis.1995.1085

View at Publisher

28 Feng, C., Wang, H., Zhang, J., Hu, W., Zou, Z., Deng, Y.
One-pot facile synthesis of cobalt oxide nanocubes and their magnetic properties

(2014) *Journal of Nanoparticle Research*, 16 (5), art. no. 2413. Cited 7 times.
doi: 10.1007/s11051-014-2413-3

View at Publisher

29 Feng, J., Zeng, H.C.
Size-controlled growth of Co_3O_4 nanocubes

(2003) *Chemistry of Materials*, 15 (14), pp. 2829-2835. Cited 223 times.
doi: 10.1021/cm020940d

View at Publisher

30 Dong, X.-C., Xu, H., Wang, X.-W., Huang, Y.-X., Chan-Park, M.B., Zhang, H., Wang, L.-H., (...), Chen, P.
3D graphene-cobalt oxide electrode for high-performance supercapacitor and enzymeless glucose detection

(2012) *ACS Nano*, 6 (4), pp. 3206-3213. Cited 927 times.
doi: 10.1021/nn300097q

View at Publisher

31 Wang, G., Cao, D., Yin, C., Gao, Y., Yin, J., Cheng, L.
Nickel foam supported-Co3O4 nanowire arrays for H2O2 electroreduction

(2009) *Chemistry of Materials*, 21 (21), pp. 5112-5118. Cited 100 times.
http://pubs.acs.org/doi/pdfplus/10.1021/cm901928b
doi: 10.1021/cm901928b

View at Publisher

32 Xu, J., Cai, J., Wang, J., Zhang, L., Fan, Y., Zhang, N., Zhou, H., (...), Cao, C.-N.
Facile synthesis of hierarchically porous Co_3O_4 nanowire arrays with enhanced electrochemical catalysis

(2012) *Electrochemistry Communications*, 25 (1), pp. 119-123. Cited 19 times.
doi: 10.1016/j.elecom.2012.09.029

View at Publisher

33 Gaddsden, J.A.
(1975) *Infrared Spectra of Minerals and Related Inorganic Compounds*, pp. 1-277. Cited 804 times.
Butterworths: London, UK

34 Meng, Y., Chen, D., Jiao, X.
Fabrication and characterization of mesoporous Co3O4 core/mesoporous silica shell nanocomposites

(2006) *Journal of Physical Chemistry B*, 110 (31), pp. 15212-15217. Cited 45 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp0626465

View at Publisher

35 Xu, Z.P., Zeng, H.C.
Interconversion of Brucite-like and Hydrotalcite-like Phases in Cobalt Hydroxide Compounds
(1999) *Chem. Mater*, 11, pp. 67-74. Cited 166 times.

36 Wahab, R., Ansari, S.G., Kim, Y.S., Song, M., Shin, H.-S.
The role of pH variation on the growth of zinc oxide nanostructures

(2009) *Applied Surface Science*, 255 (9), pp. 4891-4896. Cited 79 times.
doi: 10.1016/j.apsusc.2008.12.037

View at Publisher

37 Wang, L., Fu, J., Zhang, Y., Liu, X., Yin, Y., Dong, L., Chen, S.
Mesoporous β-$Co(OH)_2$ nanowafers and nanohexagonals obtained synchronously in one solution and their electrochemical hydrogen storage properties (Open Access)

(2016) *Progress in Natural Science: Materials International*, 26 (6), pp. 555-561. Cited 8 times.
http://www.sciencedirect.com/science/journal/aip/10020071
doi: 10.1016/j.pnsc.2016.11.015

View at Publisher

38 Minakshi, M.
Lithium intercalation into amorphous $FePO_4$ cathode in aqueous solutions

(2010) *Electrochimica Acta*, 55 (28), pp. 9174-9178. Cited 23 times.
doi: 10.1016/j.electacta.2010.09.011

View at Publisher

39 Minakshi, M., Singh, P., Mitchell, D.R.G., Issa, T.B., Prince, K.
A study of lithium insertion into MnO2 containing TiS2 additive a battery material in aqueous LiOH solution

(2007) *Electrochimica Acta*, 52 (24), pp. 7007-7013. Cited 20 times.
doi: 10.1016/j.electacta.2007.05.018

View at Publisher

40 Kötz, R., Carlen, M.
Principles and applications of electrochemical capacitors

(2000) *Electrochimica Acta*, 45 (15-16), pp. 2483-2498. Cited 2859 times.

View at Publisher

41 Barmi, M.J., Minakshi, M.
Tuning the Redox Properties of the Nanostructured $CoMoO_4$ Electrode: Effects of Surfactant Content and Synthesis Temperature

(2016) *ChemPlusChem*, 81 (9), pp. 964-977. Cited 15 times.
http://onlinelibrary.wiley.com/journal/10.1002/%28ISSN%292192-6506/
doi: 10.1002/cplu.201600294

View at Publisher

42 Gong, X., Yu, Y., Gao, X., Qiao, Y., Xu, M., Wu, H.
Formation of anhydro-sugars in the primary volatiles and solid residues from cellulose fast pyrolysis in a wire-mesh reactor

(2014) *Energy and Fuels*, 28 (8), pp. 5204-5211. Cited 16 times.
http://pubs.acs.org/journal/enfuem
doi: 10.1021/ef501112q

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Document details

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Spectroscopic properties of Dy^{3+} doped MgO-LiF-CdO-P_2O_5 glasses (Article)

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Abstract

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Spectroscopic properties of 60 P_2O_5 – 20 CdO – x MgO – (20-x) LiF – y Dy_2O_3+ x=5,10,15 and y = 0.01, 0.03, 0.05, 0.08 and 0.1 glasses were studied. Their characteristic bands were observed in optical absorption spectra from ground state $^6H_{15/2}$ to different excited states. By using Judd–Ofelt (J–O) intensity parameters Ω_λ (λ=2,4 and 6) various spectroscopic parameters have been evaluated to characterize the absorption and luminescence spectra of these glasses. For an excitation maximum at 348nm, emission spectra show three emission bands in visible region at 483nm, 573nm and 662nm corresponding to $^4F_{9/2}\rightarrow{}^6H_{15/2}$, $^4F_{9/2}\rightarrow{}^6H_{13/2}$, and $^4F_{9/2}\rightarrow{}^6H_{11/2}$ transitions respectively which are shown by energy level diagram. The relative emission intensity ratio can be tuned by varying the concentrations of activator and/or composition of glass matrix.

Author keywords

Judd-Ofelt parameters | Luminescence | Phosphate glass | White light emission

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References (21)

View in search results format

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1 Carnall, W.T., Goodman, G.L., Rajnak, K., Rana, R.S.
A systematic analysis of the spectra of the lanthanides doped into single crystal LaF_3

(1989) *The Journal of Chemical Physics*, 90 (7), pp. 3443-3457. Cited 728 times.
doi: 10.1063/1.455853

View at Publisher

2 Tanner, P.A., Ravi Kanth Kumar, V.V., Jayasankar, C.K., Reid, M.F.
Analysis of spectral data and comparative energy level parametrizations for Ln^{3+} in cubic elpasolite crystals

(1994) *Journal of Alloys and Compounds*, 215 (1-2), pp. 349-370. Cited 120 times.
doi: 10.1016/0925-8388(94)90865-6

View at Publisher

3 Krämer, K.W., Güdel, H.U., Schwartz, R.N.
Infrared-to-visible upconversion in Energy-level and line-strength calculations

(1997) *Physical Review B - Condensed Matter and Materials Physics*, 56 (21), pp. 13830-13840. Cited 42 times.
doi: 10.1103/PhysRevB.56.13830

View at Publisher

4 Pugh, V.J., Richardson, F.S., Gruber, J.B., Seltzer, M.D.
Characterization and analysis of the 4f-electronic states of trivalent holmium in yttrium scandium gallium garnet

(1997) *Journal of Physics and Chemistry of Solids*, 58 (1), pp. 85-101. Cited 16 times.
doi: 10.1016/S0022-3697(96)00100-X

View at Publisher

5 Antic-Fidancev, E., Lemaitre-Blaise, M., Latroche, M., Porcher, P., Coutures, J., Coutures, J.P.
Optical study of a new phase $LaGa_3O_6$:RE^{3+} (RE = Pr, Nd, Eu) in the La_2O_3-Ga_2O_3 system

(1997) *Journal of Alloys and Compounds*, 250 (1-2), pp. 342-346.
doi: 10.1016/S0925-8388(96)02547-9

View at Publisher

6 Görller-Walrand, C., Binnemans, K.
Chapter 167 Spectral intensities of f-f transitions

(1998) *Handbook on the Physics and Chemistry of Rare Earths*, 25, pp. 101-264. Cited 318 times.
doi: 10.1016/S0168-1273(98)25006-9

View at Publisher

7 Wang, C.C.
(1970) *Phys. Rev. B*, 2 (6).

8 Paulose, P.I., Jose, G., Thomas, V., Unnikrishnan, N.V., Warrier, M.K.R.
Sensitized fluorescence of Ce^{3+}/Mn^{2+} system in phosphate glass

(2003) *Journal of Physics and Chemistry of Solids*, 64 (5), pp. 841-846. Cited 499 times.
doi: 10.1016/S0022-3697(02)00416-X

View at Publisher

9 Nogami, M., Enomoto, T., Hayakawa, T.
Enhanced fluorescence of Eu3+ induced by energy transfer from nanosized SnO2 crystals in glass

(2002) *Journal of Luminescence*, 97 (3-4), pp. 147-152. Cited 161 times.
doi: 10.1016/S0022-2313(02)00217-X

View at Publisher

10 Zhu, C., Yang, Y., Liang, X., Yuan, S., Chen, G.
Rare earth ions doped full-color luminescence glasses for white LED

(2007) *Journal of Luminescence*, 126 (2), pp. 707-710. Cited 88 times.
doi: 10.1016/j.jlumin.2006.10.028

View at Publisher

11 Giridhar, G., Rangacharyulu, M., Ravi Kumar, P.R.V.S.S.N.
(2008) *Electron. Adv. Mater. Rapid Commun*, p. 2.

12 Kumar, V.R., Giridhar, G., Veeraiah, N.
Concentration dependence of luminescence efficiency of Dy^{3+} ions in strontium zinc phosphate glasses mixed with Pb_3O_4

(2017) *Luminescence*, 32 (1), pp. 71-77. Cited 7 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1522-7243
doi: 10.1002/bio.3150

View at Publisher

13 Ravi kumar, V., Giridhar, G., Veeraiah, N.
Influence of modifier oxide on emission features of Dy^{3+} ion in Pb_3O_4 –ZnO–P_2O_5 glasses

(2016) *Optical Materials*, 60, pp. 594-600. Cited 12 times.
doi: 10.1016/j.optmat.2016.09.022

View at Publisher

14 Suresh Kumar, J., Pavani, K., Mohan Babu, A., Kumar Giri, N., Rai, S.B., Moorthy, L.R.
Fluorescence characteristics of Dy^{3+} ions in calcium fluoroborate glasses

(2010) *Journal of Luminescence*, 130 (10), pp. 1916-1923. Cited 115 times.
doi: 10.1016/j.jlumin.2010.05.006

View at Publisher

15 Jamison, S.P., Reeves, R.J.
Site-selective laser and Zeeman infrared spectroscopy of Dy3+ centers in SrF2:Dy3+

(2003) *Physical Review B - Condensed Matter and Materials Physics*, 67 (11), art. no. 115110, pp. 1151101-11511016. Cited 8 times.

16 Amjad, R.J., Sahar, M.R., Ghoshal, S.K., Dousti, M.R., Arifin, R.
Synthesis and characterization of Dy^{3+} doped zinc-lead-phosphate glass

(2013) *Optical Materials*, 35 (5), pp. 1103-1108. Cited 40 times.
doi: 10.1016/j.optmat.2012.12.024

View at Publisher

17 Reddy Prasad, V., Babu, S., Ratnakaram, Y.C.
Concentration dependent luminescence properties of Dy^{3+} doped lead free zinc phosphate glasses for visible applications

(2016) *Indian Journal of Physics*, 90 (10), pp. 1173-1182. Cited 2 times.
http://link.springer.com/journal/volumesAndIssues/12648
doi: 10.1007/s12648-016-0851-8

View at Publisher

18 Linganna, K., Srinivasa Rao, C., Jayasankar, C.K., Quan, J.
(2013) *Spec. & Rad. Trans*, 118, p. 40.

19 Jørgensen, C.K., Reisfeld, R.
Judd-Ofelt parameters and chemical bonding

(1983) *Journal of The Less-Common Metals*, 93 (1), pp. 107-112. Cited 444 times.
doi: 10.1016/0022-5088(83)90454-X

View at Publisher

20 Jayasimhadri, M., Jang, K., Lee, H.S., Chen, B., Yi, S.-S., Jeong, J.-H.
White light generation from Dy3+ -doped ZnO- B2 O3 - P2 O5 glasses

(2009) *Journal of Applied Physics*, 106 (1), art. no. 013105. Cited 80 times.
doi: 10.1063/1.3159899

View at Publisher

21 Seneschal, K., Smektala, F., Jiang, S., Luo, T., Bureau, B., Lucas, J., Peyghambarian, N.
Alkaline-free phosphate glasses for ultra compact optical fiber amplifiers at 1.5 μm

(2003) *Journal of Non-Crystalline Solids*, 324 (1-2), pp. 179-186. Cited 29 times.
doi: 10.1016/S0022-3093(03)00323-5

View at Publisher

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Extracellular L-asparaginase from streptomyces labedae VSM-6: Isolation, production and optimization of culture conditions using RSM (Article)

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Abstract

View references (53)

Objective: The present study was intended to isolate actinomycetes VSM-6 from deep sea sediment samples of Bay of Bengal that is potent to produce L - asparaginase. Materials and Methods: The identification of the isolate was executed by polyphasic taxonomy. Optimization was carried out one factor at a time (O-F-A-T) for the production of the L - asparaginase. RSM was pledged to optimize the L - asparaginase production by S.labedae VSM-6. Central composite design was applied to study the influence of the variables and their interactive effects on the production of L - asparaginase. Unstructured Kinetic modelling for L - asparaginase production was adopted using Leudeking-Piret (LILP) and Logistic Incorporated Modified Leudeking-Piret (LIMLP) models. Results: Optimization using One-Factor-At-A-time registered a turnout of 8.92 IU/ml of L - asparaginase production. But results obtained from the statistical design are in agreement with the experimental results. The model followed the second order polynomial equation and the model adequacy was determined by the P value (<0.0001), Coefficient determination (R2) with a value of 0.9942 and the adjusted R^2 = 0.9087 which determines that the model was significant. The experimental values are in compliance with the model anticipated values and catalogued an escalation in yield of L - asparaginase (10.17 IU/ml) by RSM. Unstructured Kinetic modelling for L - asparaginase production adopting Leudeking-Piret (LILP) and Logistic Incorporated Modified Leudeking-Piret (LIMLP) models showed L - asparaginase production of (10.17 IU/ml), closer to model anticipated value (10.23 IU/ml) so unstructured models provided a better approximation for L - asparaginase production by S.labedae VSM-6. Conclusion: From our study we have reported for the first time the production of L - asparaginase from S.labedae VSM-6 using central composite design and kinetic modelling.

Reaxys Database Information

View Compounds

Author keywords

Central Composite Design | Kinetic Modelling | L - asparaginase | Optimization | Response Surface Methodology | Statistical Analysis | Streptomyces labedae

Indexed keywords

EMTREE drug terms: asparaginase | nitrogen

EMTREE medical terms:

Article | bacterial strain | bacterium culture | bacterium identification | bacterium isolate | bacterium isolation | biochemical composition | carbon source | controlled study | enzyme synthesis | India | nonhuman | pH measurement | process optimization | response surface method | scanning electron microscopy | screening test | sediment | standardization | Streptomyces | Streptomyces labedae | temperature measurement | validation process

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Chemicals and CAS Registry Numbers:

asparaginase, 9015-68-3, 1349719-22-7; nitrogen, 7727-37-9

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References (53)

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1 El-Bessoumy, A.A., Sarhan, M., Mansour, J.

Production, isolation, and purification of L-asparaginase from Pseudomonas Aeruginosa 50071 using solid-state fermentation

(2004) *Journal of Biochemistry and Molecular Biology*, 37 (4), pp. 387-393. Cited 90 times.

View at Publisher

2 Capizzi, R.L., Bertino, J.R., Skeel, R.T., Creasey, W.A., Zanes, R., Olayon, C., Peterson, R.G., (...), Handschumacher, R.E.

L-asparaginase: clinical, biochemical, pharmacological, and immunological studies.

(1971) *Annals of Internal Medicine*, 74 (6), pp. 893-901. Cited 136 times.

View at Publisher

3 Hutson, R.G., Kitoh, T., Moraga Amador, D.A., Cosic, S., Schuster, S.M., Kilberg, M.S.

Amino acid control of asparagine synthetase: Relation to asparaginase resistance in human leukemia cells

(1997) *American Journal of Physiology - Cell Physiology*, 272 (5 41-5), pp. C1691-C1699. Cited 90 times.

View at Publisher

4 Asselin, B.L., Frantz, C.N., Cohen, H.J., Ryan, D., Sallan, S.E., Bernal, S.D., Leavitt, P.

In Vitro and in Vivo Killing of Acute Lymphoblastic Leukemia Cells by L-Asparaginase1

(1989) *Cancer Research*, 49 (15), pp. 4363-4368. Cited 98 times.

5 Mohan Kumar, N.S., Shimray, C.A., Indrani, D., Manonmani, H.K.

Reduction of Acrylamide Formation in Sweet Bread with l-Asparaginase Treatment

(2014) *Food and Bioprocess Technology*, 7 (3), pp. 741-748. Cited 23 times.
doi: 10.1007/s11947-013-1108-6

View at Publisher

6 Keating, M.J., Holmes, R., Lerner, S., Ho, D.H.
L-asparaginase and PEG asparaginase- past, present, and future

(1993) *Leukemia and Lymphoma*, 10 (S1), pp. 153-157. Cited 134 times.
doi: 10.3109/10428199309149129

View at Publisher

7 Narta, U.K., Kanwar, S.S., Azmi, W.
Pharmacological and clinical evaluation of l-asparaginase in the treatment of leukemia

(2007) *Critical Reviews in Oncology/Hematology*, 61 (3), pp. 208-221. Cited 152 times.
doi: 10.1016/j.critrevonc.2006.07.009

View at Publisher

8 Zuo, S., Zhang, T., Jiang, B., Mu, W.
Recent research progress on microbial l-asparaginases

(2014) *Applied Microbiology and Biotechnology*, 99 (3), pp. 1069-1079. Cited 19 times.
link.springer.de/link/service/journals/00253/index.htm
doi: 10.1007/s00253-014-6271-9

View at Publisher

9 Mostafa, S.A.
Activity of L-asparaginase in cells of Streptomyces karnatakensis.

(1979) *Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene. Zweite naturwissenschaftliche Abteilung: Mikrobiologie der Landwirtschaft der Technologie und des Umweltschutzes*, 134 (4), pp. 343-351. Cited 9 times.
doi: 10.1016/S0323-6056(79)80007-5

View at Publisher

10 Abdel-Fatah, M.K.
Studies on the asparaginolytic enzymes of Streptomycetes.II. Purification and characterization of L-asparaginase from Streptomyces longsporusflavus (F-15) strain
(1996) *Egypt J Microbiology*, 31, pp. 303-322. Cited 4 times.

11 Narayana, K.J.P., Kumar, K.G., Vijayalakshmi, M.
L-asparaginase production by Streptomyces albidoflavus

(2008) *Indian Journal of Microbiology*, 48 (3), pp. 331-336. Cited 59 times.
doi: 10.1007/s12088-008-0018-1

View at Publisher

12 Amena, S., Vishalakshi, N., Prabhakar, M., Dayanand, A., Lingappa, K.
Production, purification and characterization of L-asparaginase from Streptomyces gulbargensis

(2010) *Brazilian Journal of Microbiology*, 41 (1), pp. 173-178. Cited 55 times.
http://www.scielo.br/pdf/bjm/v41n1/v41n1a25.pdf
doi: 10.1590/S1517-83822010000100025

View at Publisher

13 Kavitha, A., Vijayalakshmi, M.

Optimization and Purification of L-Asparaginase Produced by Streptomyces tendae TK-VL_333

(2010) *Zeitschrift fur Naturforschung - Section C Journal of Biosciences*, 65 (7-8), pp. 528-531. Cited 12 times.
doi: 10.1515/znc-2010-7-817

View at Publisher

14 Kavitha, A., Vijayalakshmi, M.
A study on L-asparaginase of Nocardia levis MK-VL-113
(2012) *Sci. World. J*, pp. 1-5. Cited 3 times.

15 Patil, M.D., Shinde, K.D., Patel, G., Chisti, Y., Banerjee, U.C.

Use of response surface method for maximizing the production of arginine deiminase by Pseudomonas putida (Open Access)

(2016) *Biotechnology Reports*, 10, pp. 29-37. Cited 13 times.
http://www.journals.elsevier.com/biotechnology-reports/
doi: 10.1016/j.btre.2016.03.002

View at Publisher

16 Islam, R., Sparling, R., Cicek, N., Levin, D.B.

Optimization of influential nutrients during direct cellulose fermentation into hydrogen by clostridium thermocellum

(2015) *International Journal of Molecular Sciences*, 16 (2), pp. 3116-3132. Cited 8 times.
http://www.mdpi.com/1422-0067/16/2/3116/pdf
doi: 10.3390/ijms16023116

View at Publisher

17 Dubey, S., Singh, A., Banerjee, U.C.

Response surface methodology of nitrilase production by recombinant Escherichia coli

(2011) *Brazilian Journal of Microbiology*, 42 (3), pp. 1085-1092. Cited 5 times.
http://www.scielo.br/pdf/bjm/v42n3/v42n3a29.pdf

View at Publisher

18 Ghevariya, C.M., Bhatt, J.K., Dave, B.P.

Enhanced chrysene degradation by halotolerant Achromobacter xylosoxidans using Response Surface Methodology

(2011) *Bioresource Technology*, 102 (20), pp. 9668-9674. Cited 41 times.
doi: 10.1016/j.biortech.2011.07.069

View at Publisher

19 Kim, J.K., Oh, B.R., Shin, H.-J., Eom, C.-Y., Kim, S.W.

Statistical optimization of enzymatic saccharification and ethanol fermentation using food waste

(2008) *Process Biochemistry*, 43 (11), pp. 1308-1312. Cited 68 times.
doi: 10.1016/j.procbio.2008.07.007

View at Publisher

20 Sudhir, A.P., Dave, B.R., Trivedi, K.A., Subramanian, R.B.
Production and amplification of an L-asparaginase gene from actinomycete isolate Streptomyces ABR2

(2012) *Annals of Microbiology*, 62 (4), pp. 1609-1614. Cited 11 times.
doi: 10.1007/s13213-011-0417-0

View at Publisher

21 You, K.M., Park, Y.K.
A new method for the selective isolation of actinomycetes from soil

(1996) *Biotechnology Techniques*, 10 (7), pp. 541-546. Cited 12 times.
doi: 10.1007/BF00159521

View at Publisher

22 Shirling, E.B., Gottlieb, D.
Methods for characterization of Streptomyces species
(1966) *Int J Syst Bacteriology*, 16 (3), pp. 313-340. Cited 3125 times.

23 Cowan, S.T.
(1974) *Cowan and Steel's Manual for the Identification of Medical Bacteria*. Cited 3627 times.
second ed. Cambridge, Univ. Press.

24 Gordon, R.E.
Some criteria for the recognition of Nocardia madurae (Vincent) Blanchard.

(1966) *Journal of general microbiology*, 45 (2), pp. 355-364. Cited 91 times.
doi: 10.1099/00221287-45-2-355

View at Publisher

25 JONES, K.L.
Fresh isolates of actinomycetes in which the presence of sporogenous

(1949) *Journal of bacteriology*, 57 (2), pp. 141-145. Cited 299 times.

26 Waksman, S.A.
(1961) *The Actinomycetes. Vol. II. Classification, Identification and Descriptions of Genera and Species*. Cited 123 times.
The Williams and Wilkins Co, Baltimore.

27 Isik, K.
Nocardia salmonicida nom. rev., a fish pathogen

(1999) *International Journal of Systematic Bacteriology*, 49 (2), pp. 833-837. Cited 60 times.
doi: 10.1099/00207713-49-2-833

View at Publisher

28 Nilsson, W.B., Strom, M.S.
Detection and identification of bacterial pathogens of fish in kidney tissue using terminal restriction fragment length polymorphism (T-RFLP) analysis of 16s rRNA genes

(2002) *Diseases of Aquatic Organisms*, 48 (3), pp. 175-185. Cited 37 times.

View at Publisher

29 Gulati, R., Saxena, R.K., Gupta, R.

A rapid plate assay for screening L-asparaginase producing micro-organisms

(1997) *Letters in Applied Microbiology*, 24 (1), pp. 23-26. Cited 132 times.
http://www3.interscience.wiley.com/journal/117997861/home
doi: 10.1046/j.1472-765X.1997.00331.x

View at Publisher

30 Imada, A., Igarasi, S., Nakahama, K., Isono, M.

Asparaginase and glutaminase activities of micro organisms

(1973) *Journal of General Microbiology*, 76 (1), pp. 85-99. Cited 193 times.
doi: 10.1099/00221287-76-1-85

View at Publisher

31 Eslahi, N., Dadashian, F., Nejad, N.H.

Optimization of enzymatic hydrolysis of wool fibers for nanoparticles production using response surface methodology

(2013) *Advanced Powder Technology*, 24 (1), pp. 416-426. Cited 27 times.
doi: 10.1016/j.apt.2012.09.004

View at Publisher

32 Haq, N., Muhammad, A.S., Sabiha, T.A.
Extraction optimization of phenolic antioxidants from microwave treated nelumbo nucifera seed flour
(2017) *Free. Radic. Antioxidants*, 7 (1), pp. 63-73. Cited 4 times.

33 Priyanka, C., Daljit, S.A.
Antioxidant potential of Penicillium citrinum and its optimization through different statistical approaches
(2011) *Free Radicals and Antioxidants*, 1 (4), pp. 48-55. Cited 2 times.

34 Managamuri, U., Vijayalakshmi, M., Ganduri, V.S.R.K., Babu, S., Poda, S.

Optimization of culture conditions by response surface methodology and unstructured kinetic modeling for L-asparaginase production by Pseudonocardia endophytica VUK-10

(2017) *Journal of Applied Pharmaceutical Science*, 7 (1), pp. 42-50.
www.japsonline.com/index.php
doi: 10.7324/JAPS.2017.70106

View at Publisher

35 Remya, M., Vijayakumar, R.
Isolation and characterization of marine antagonistic actinomycetes from west coast of India
(2008) *Facta Universitatis*, 15 (1), pp. 13-19. Cited 58 times.

36 Ndonde, M.J.M., Semu, E.

Preliminary characterization of some Streptomyces species from four Tanzanian soils and their antimicrobial potential against selected plant and animal pathogenic bacteria

(2000) *World Journal of Microbiology and Biotechnology*, 16 (7), pp. 595-599. Cited 21 times.
doi: 10.1023/A:1008916418258

View at Publisher

37 Tresner, H.D., Hayes, J.A., Backus, E.J.
Differential tolerance of streptomycetes to sodium chloride as a taxonomic aid.

(1968) *Applied microbiology*, 16 (8), pp. 1134-1136. Cited 87 times.

38 Pridham, T.G., Gottlieb, D.
The Utilization of Carbon Compounds by Some Actinomycetales as an Aid for Species Determination

(1948) *Journal of bacteriology*, 56 (1), pp. 107-114. Cited 532 times.

39 PRIDHAM, T.G., HESSELTINE, C.W., BENEDICT, R.G.
A guide for the classification of streptomycetes according to selected groups; placement of strains in morphological sections.

(1958) *Applied microbiology*, 6 (1), pp. 52-79. Cited 133 times.

40 Ushakiranmayi, M., Vijayalakshmi, M., Sudhakar, P., Dayanand, A.
Optimization of the cultural parameters for improved production of antimicrobial metabolites by Streptomyces gulbargensis das 131
(2014) *British J Pharm Res*, 4 (9), pp. 1130-1145.

41 Meena, B., Anburajan, L., Sathish, T., Vijaya, R.R., Dharani, G., Kumar, N.V.V.
L-asparaginase from S. Griseus NIOT-VKMA 29: Optimization of process variables using factorial designs and molecular characterization of L-asparaginase gene
(2015) *Sci Rep*, 5, pp. 1-12.

42 Saleem Basha, N., Rekha, R., Komala, M., Ruby, S.
Production of extracellular anti-leukaemic enzyme L-asparaginase from marine actinomycetes by solid-state and submerged fermentation: Purification and characterisation

(2009) *Tropical Journal of Pharmaceutical Research*, 8 (4), pp. 353-360. Cited 41 times.
http://www.tjpr.org/vol8_no4/2009_8_4_10_Basha.pdf

43 Mostafa, S.A., Salama, M.S.
L-asparaginase-producing Streptomyces from the soil of Kuwait.

(1979) *Zentralblatt für Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene. Zweite naturwissenschaftliche Abteilung: Mikrobiologie der Landwirtschaft der Technologie und des Umweltschutzes*, 134 (4), pp. 325-334. Cited 21 times.
doi: 10.1016/S0323-6056(79)80005-1

View at Publisher

44 Selvam, K., Vishnupriya, B.
Partial purification and cytotoxic activity of L-asparaginase from Streptomyces's acrimycini NGP
(2013) *Int J Res Pharm Biomed Sci*, 4, pp. 859-869. Cited 9 times.

45 Abdel-Fatah, M.K.
Studies on the asparaginolytic enzymes of Streptomycetes 1-Culture conditions for the production of L-asparaginase enzyme from Streptomyces longsporusflavus (F-15) strain
(1997) *Egypt J Microbiology*, 30, pp. 247-260. Cited 6 times.

46 Mukherjee, J., Majumdar, S., Scheper, T.
Studies on nutritional and oxygen requirements for production of L- asparaginase by Enterobacter aerogenes

(2000) *Applied Microbiology and Biotechnology*, 53 (2), pp. 180-184. Cited 61 times.
link.springer.de/link/service/journals/00253/index.htm
doi: 10.1007/s002530050006

View at Publisher

47 Geckil, H., Gencer, S., Ates, B., Ozer, U., Uckun, M., Yilmaz, I.
Effect of Vitreoscilla hemoglobin on production of a chemotherapeutic enzyme, L-asparaginase, by Pseudomonas aeruginosa

(2006) *Biotechnology Journal*, 1 (2), pp. 203-208. Cited 14 times.
doi: 10.1002/biot.200500048

View at Publisher

48 Maladkar, N.K., Singh, V.K., Naik, S.R.
Fermentative production and isolation of L-asparaginase from Erwinia carotovora, EC-113

(1993) *Hindustan Antibiotics Bulletin*, 35 (1-2), pp. 77-86. Cited 42 times.

49 Kiranmayi, M.U., Poda, S., Vijayalakshmi, M.
Production and optimization of L-asparaginase by an actinobacterium isolated from Nizampatnam mangrove ecosystem

(2014) *Journal of Environmental Biology*, 35 (5), pp. 799-805. Cited 7 times.
http://www.jeb.co.in/journal_issues/201409_sep14/paper_04.pdf

50 Abdel-All, S.M., Abdel-Fatah, M.K., Khalil, A.R.A., Mohamed, N.G.
Studies on the asparaginolytic activity of the brown pigmented Streptomyces's
(1998) *J Drug Res*, 22, pp. 171-194. Cited 4 times.

51 Das, B., Roy, A.P., Bhattacharjee, S., Chakraborty, S., Bhattacharjee, C.
Lactose hydrolysis by β-galactosidase enzyme: Optimization using response surface methodology

(2015) *Ecotoxicology and Environmental Safety*, 121, pp. 244-252. Cited 13 times.
http://www.elsevier.com/inca/publications/store/6/2/2/8/1/9/index.htt
doi: 10.1016/j.ecoenv.2015.03.024

View at Publisher

52 Garlapati, V.K., Roy, L.
Utilization of response surface methodology for modeling and optimization of tablet compression process

(2017) *Journal of Young Pharmacists*, 9 (3), pp. 417-421.
http://www.jyoungpharm.org/sites/default/files/10.5530jyp.2017.9.82.pdf
doi: 10.5530/jyp.2017.9.82

View at Publisher

53 Lee, H.V., Yunus, R., Juan, J.C., Taufiq-Yap, Y.H.
Process optimization design for jatropha-based biodiesel production using response surface methodology

(2011) *Fuel Processing Technology*, 92 (12), pp. 2420-2428. Cited 76 times.
doi: 10.1016/j.fuproc.2011.08.018

View at Publisher

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Edge reflection type SAW resonators on silicon substrate using ZnO thin films (Conference Paper)

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Abstract

View references (7)

A compact SAW resonator on silicon substrate has been proposed based on complete reflection property of shear horizontal surface waves at free edges and the Love wave generation capability of ZnO film in conjunction with IDT, the proposed device was fabricated and characterized. Love waves are excited in the overlaid ZnO film on silicon substrate and vertical grooves are micromachined into silicon substrate to form free edges of the device in order to facilitate the total reflection of Love waves. The phase velocity and electromechanical coupling coefficient dispersion characteristics of various layered configurations with respect to thickness of ZnO were obtained through finite element simulations. Edge reflection type SAW resonators were designed using equivalent circuit method for fabrication process and the devices were characterized for S11 parameters. Q factor of 498.5 at resonance frequency of 261.72 MHz was achieved for ZnO/IDT/Si configured SAW resonator on silicon substrate. © 2017 IEEE.

Reaxys Database Information

View Compounds

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Edge Reflection | Resonator | Saw | Vertical Grooves | Zno

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References (7)

View in search results format

1 Nordin, A.N., Zaghloul, M.E.

Modeling and fabrication of CMOS surface acoustic wave resonators

(2007) *IEEE Transactions on Microwave Theory and Techniques*, 55 (5), pp. 992-1001. Cited 30 times.
doi: 10.1109/TMTT.2007.895408

View at Publisher

2 Kino, G.S., Wagers, R.S.

Theory of interdigital couplers on nonpiezoelectric substrates

(1973) *Journal of Applied Physics*, 44 (4), pp. 1480-1488. Cited 188 times.
doi: 10.1063/1.1662397

View at Publisher

3 Moreira, F., El Hakiki, M., Elmazria, O., Sarry, F., Le Brizoual, L., Alnot, P.

Theoretical and experimental identification of love wave frequency peaks in layered structure ZnO/Quartz SAW device

(2008) *IEEE Sensors Journal*, 8 (8), art. no. 4567521, pp. 1399-1403. Cited 7 times.
doi: 10.1109/JSEN.2008.920704

View at Publisher

4 Krishnamoorthy, S., Iliadis, A.A.

Development of high frequency ZnO/SiO_2/Si Love mode surface acoustic wave devices

(2006) *Solid-State Electronics*, 50 (6), pp. 1113-1118. Cited 39 times.
doi: 10.1016/j.sse.2006.04.033

View at Publisher

5 Kadota, M., Ago, J., Horiuchi, H., Ikeura, M.

Very small IF resonator filters using reflection of shear horizontal wave at free edges of substrate

(2002) *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 49 (9), pp. 1269-1279. Cited 19 times.
doi: 10.1109/TUFFC.2002.1041544

View at Publisher

6 Le Brizoual, L., Elmazria, O., Zhgoon, S., Soussou, A., Sarry, F., Djouadi, M.A.

AlN/ZnO/diamond waveguiding layer acoustic wave structure: Theoretical and experimental results

(2010) *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, 57 (8), art. no. 5529470, pp. 1818-1824. Cited 10 times.
doi: 10.1109/TUFFC.2010.1620

View at Publisher

7 Nakahata, H., Hachigo, A., Higaki, K., Fujii, S., Shikata, S.-I., Fujimori, N.

Theoretical Study on SAW Characteristics of Layered Structures Including a Diamond Layer

(1995) *IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control*, 42 (3), pp. 362-375. Cited 165 times.
doi: 10.1109/58.384444

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Performance evaluation of linear time-series ionospheric Total Electron Content model over low latitude Indian GPS stations (Article)

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Abstract

View references (39)

Precise modeling of the ionospheric Total Electron Content (TEC) is a critical aspect of Positioning, Navigation, and Timing (PNT) services intended for the Global Navigation Satellite Systems (GNSS) applications as well as Earth Observation System (EOS), satellite communication, and space weather forecasting applications. In this paper, linear time series modeling has been carried out on ionospheric TEC at two different locations at Koneru Lakshmaiah University (KLU), Guntur (geographic 16.44° N, 80.62° E; geomagnetic 7.55° N) and Bangalore (geographic 12.97° N, 77.59° E; geomagnetic 4.53° N) at the northern low-latitude region, for the year 2013 in the 24th solar cycle. The impact of the solar and geomagnetic activity on periodic oscillations of TEC has been investigated. Results confirm that the correlation coefficient of the estimated TEC from the linear model TEC and the observed GPS-TEC is around 93%. Solar activity is the key component that influences ionospheric daily averaged TEC while periodic component reveals the seasonal dependency of TEC. Furthermore, it is observed that the influence of geomagnetic activity component on TEC is different at both the latitudes. The accuracy of the model has been assessed by comparing the International Reference Ionosphere (IRI) 2012 model TEC and TEC measurements. Moreover, the absence of winter anomaly is remarkable, as determined by the Root Mean Square Error (RMSE) between the linear model TEC and GPS-TEC. On the contrary, the IRI2012 model TEC evidently failed to predict the absence of winter anomaly in the Equatorial Ionization Anomaly (EIA) crest region. The outcome of this work will be useful for improving the ionospheric now-casting models under various geophysical conditions. © 2017 COSPAR

Author keywords

GNSS India IRI Modeling TEC

Indexed keywords

Engineering controlled terms: Earth (planet) Geomagnetism Ionosphere Mean square error Models Satellite communication systems Solar energy Weather forecasting

Compendex keywords: Earth observation systems Equatorial ionization anomaly Global Navigation Satellite Systems GNSS India International reference ionospheres Ionospheric total electron content Space weather forecasting

Engineering main heading: Global positioning system

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ECR/2015/000410	Science and Engineering Research Board	SERB	See opportunities by SERB
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References (39)

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1 Adeniyi, J.O., Doherty, P.H., Oladipo, O.A., Bolaji, O.

Magnetic storm effects on the variation of TEC over Ilorin an equatorial station

(2014) *Radio Science*, 49 (12), pp. 1245-1253. Cited 3 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1944-799X
doi: 10.1002/2014RS005404

View at Publisher

2 Afraimovich, E.L., Astafyeva, E.I., Zhivetiev, I.V.

Solar activity and global electron content

(2006) *Doklady Earth Sciences*, 409 (6), pp. 921-924. Cited 24 times.
doi: 10.1134/S1028334X06060195

View at Publisher

3 Aggarwal, M., Joshi, H.P., Iyer, K.N., Kwak, Y.-S., Lee, J.J., Chandra, H., Cho, K.S.

Day-to-day variability of equatorial anomaly in GPS-TEC during low solar activity period

(2012) *Advances in Space Research*, 49 (12), pp. 1709-1720. Cited 15 times.
doi: 10.1016/j.asr.2012.03.005

View at Publisher

4 Akala, A.O., Seemala, G.K., Doherty, P.H., Valladares, C.E., Carrano, C.S., Espinoza, J., Oluyo, S.

Comparison of equatorial GPS-TEC observations over an African station and an American station during the minimum and ascending phases of solar cycle 24

(2013) *Annales Geophysicae*, 31 (11), pp. 2085-2096. Cited 20 times.
doi: 10.5194/angeo-31-2085-2013

View at Publisher

5 Akala, A.O., Somoye, E.O., Adewale, A.O., Ojutalayo, E.W., Karia, S.P., Idolor, R.O., Okoh, D., (...), Doherty, P.H.

Comparison of GPS-TEC observations over Addis Ababa with IRI-2012 model predictions during 2010-2013

(2015) *Advances in Space Research*, 56 (8), pp. 1686-1698. Cited 7 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2015.07.017

View at Publisher

6 Arikan, F., Sezen, U., Gulyaeva, T.L., Cilibas, O.

Online, automatic, ionospheric maps: IRI-PLAS-MAP

(2015) *Advances in Space Research*, 55 (8), pp. 2106-2113. Cited 10 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2014.10.016

View at Publisher

7 Araujo-Pradere, E.A., Fuller-Rowell, T.J., Codrescu, M.V., Bilitza, D.

Characteristics of the ionospheric variability as a function of season, latitude, local time, and geomagnetic activity

(2005) *Radio Science*, 40 (5), art. no. RS5009, pp. 1-15. Cited 27 times.
doi: 10.1029/2004RS003179

View at Publisher

8 Araujo-Pradere, E.A., Fuller-Rowell, T.J., Spencer, P.S.J.

Consistent features of TEC changes during ionospheric storms

(2006) *Journal of Atmospheric and Solar-Terrestrial Physics*, 68 (16), pp. 1834-1842. Cited 17 times.
doi: 10.1016/j.jastp.2006.06.004

View at Publisher

9 Bagiya, M.S., Joshi, H.P., Iyer, K.N., Aggarwal, M., Ravindran, S., Pathan, B.M.

TEC variations during low solar activity period (2005-2007) near the equatorial ionospheric anomaly crest region in India

(2009) *Annales Geophysicae*, 27 (3), pp. 1047-1057. Cited 100 times.
doi: 10.5194/angeo-27-1047-2009

View at Publisher

10 Bilitza, D.

International Reference Ionosphere 2000

(2001) *Radio Science*, 36 (2), pp. 261-275. Cited 928 times.
doi: 10.1029/2000RS002432

View at Publisher

11 Chen, Y., Liu, L., Wan, W., Yue, X., Su, S.-Y.

Solar activity dependence of the topside ionosphere at low latitudes

(2009) *Journal of Geophysical Research: Space Physics*, 114 (8), art. no. A08306. Cited 30 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2008JA013957.

View at Publisher

12 Dashora, N., Suresh, S.

Characteristics of low-latitude TEC during solar cycles 23 and 24 using global ionospheric maps (GIMs) over Indian sector

(2015) *Journal of Geophysical Research: Space Physics*, 120 (6), pp. 5176-5193. Cited 10 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2014JA020559

View at Publisher

13 Forbes, J.M., Palo, S.E., Zhang, X.

Variability of the ionosphere

(2000) *Journal of Atmospheric and Solar-Terrestrial Physics*, 62 (8), pp. 685-693. Cited 270 times.
http://www.journals.elsevier.com/journal-of-atmospheric-and-solar-terrestrial-physics/
doi: 10.1016/S1364-6826(00)00029-8

View at Publisher

14 Gulyaeva, T.L.

Storm time behavior of topside scale height inferred from the ionosphere-plasmasphere model driven by the F2 layer peak and GPS-TEC observations

(2011) *Advances in Space Research*, 47 (6), pp. 913-920. Cited 33 times.
doi: 10.1016/j.asr.2010.10.025

View at Publisher

15 Jakowski, N., Hoque, M.M., Mayer, C.

A new global TEC model for estimating transionospheric radio wave propagation errors

(2011) *Journal of Geodesy*, 85 (12), pp. 965-974. Cited 55 times.
doi: 10.1007/s00190-011-0455-1

View at Publisher

16 Jee, G., Lee, H.-B., Kim, Y.H., Chung, J.-K., Cho, J.

Assessment of GPS global ionosphere maps (GIM) by comparison between CODE GIM and TOPEX/Jason TEC data: Ionospheric perspective

(2010) *Journal of Geophysical Research: Space Physics*, 115 (10), art. no. A10319. Cited 45 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2010JA015432

View at Publisher

17 Kumar, S., Priyadarshi, S., Krishna, S.G., Singh, A.K.

GPS-TEC variations during low solar activity period (2007-2009) at Indian low latitude stations

(2012) *Astrophysics and Space Science*, 339 (1), pp. 165-178. Cited 23 times.
doi: 10.1007/s10509-011-0973-6

View at Publisher

18 Kumar, S., Patel, K., Singh, A.K.

TEC variation over an equatorial and anomaly crest region in India during 2012 and 2013

(2016) *GPS Solutions*, 20 (4), pp. 617-626. Cited 5 times.
http://springerlink.metapress.com/app/home/journal.asp?wasp=p81lujwvrkdxjxhpyddj&referrer=parent&backto=browsepublicationsresults,201,541;
doi: 10.1007/s10291-015-0470-4

View at Publisher

19 Lean, J.L., Meier, R.R., Picone, J.M., Emmert, J.T.
Ionospheric total electron content: Global and hemispheric climatology

(2011) *Journal of Geophysical Research: Space Physics*, 116 (10), art. no. A10318. Cited 33 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2011JA016567

View at Publisher

20 Li, S., Peng, J., Xu, W., Qin, K.
Time series modeling and analysis of trends of daily averaged ionospheric total electron content

(2013) *Advances in Space Research*, 52 (5), pp. 801-809. Cited 6 times.
doi: 10.1016/j.asr.2013.05.032

View at Publisher

21 Liu, L., Wan, W., Ning, B.
Statistical modeling of ionospheric foF2 over Wuhan

(2004) *Radio Science*, 39 (2), pp. RS2013 1-RS2013 10. Cited 54 times.

22 Liu, L., Wan, W., Ning, B., Pirog, O.M., Kurkin, V.I.
Solar activity variations of the ionospheric peak electron density

(2006) *Journal of Geophysical Research: Space Physics*, 111 (8), art. no. A08304. Cited 133 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2006JA011598

View at Publisher

23 Liu, L., Zhao, B., Wan, W., Ning, B., Zhang, M.-L., He, M.
Seasonal variations of the ionospheric electron densities retrieved from constellation observing system for meteorology, ionosphere, and climate mission radio occultation measurements

(2009) *Journal of Geophysical Research: Space Physics*, 114 (2), art. no. A02302. Cited 77 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2008JA013819

View at Publisher

24 Liu, L.B., Wan, W.X., Chen, Y.D., Le, H.J.
Solar activity effects of the ionosphere: A brief review

(2011) *Chinese Science Bulletin*, 56 (12), pp. 1202-1211. Cited 96 times.
doi: 10.1007/s11434-010-4226-9

View at Publisher

25 Madhav Haridas, M.K., Manju, G.
On the response of the ionospheric F region over Indian low-latitude station Gadanki to the annular solar eclipse of 15 January 2010

(2012) *Journal of Geophysical Research: Space Physics*, 117 (1), art. no. A01302. Cited 7 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2011JA016695

View at Publisher

26 Menke, W.
Geophysical Data Analysis: Discrete Inverse Theory
(1984) . Cited 2262 times.
Academic, San Diego New York

27 Okoh, D., McKinnell, L.-A., Cilliers, P., Okere, B., Okonkwo, C., Rabiu, B.
IRI-vTEC versus GPS-vTEC for Nigerian SCINDA GPS stations

(2015) *Advances in Space Research*, 55 (8), pp. 1941-1947. Cited 5 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2014.06.037

View at Publisher

28 Richards, P., Fennelly, J., Torr, D.
EUVAC: a solar EUV flux model for aeronomic calculations
(1994) *J. Geophys. Res.: Space Phys.*, 99, pp. 8981-8992. Cited 549 times.

29 Rishbeth, H., Müller-Wodarg, I.C.F., Zou, L., Fuller-Rowell, T.J., Millward, G.H., Moffett, R.J., Idenden, D.W., (...), Aylward, A.D.
Annual and semiannual variations in the ionospheric F2-layer: II. Physical discussion

(2000) *Annales Geophysicae*, 18 (8), pp. 945-956. Cited 143 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.1007/s00585-000-0945-6

View at Publisher

30 Sezen, U., Sahin, O., Arikan, F., Arikan, O.
Estimation of hmF2 and foF2 communication parameters of ionosphere F2-layer using GPS data and IRI-plas model

(2013) *IEEE Transactions on Antennas and Propagation*, 61 (10), art. no. 6570763, pp. 5264-5273. Cited 9 times.
doi: 10.1109/TAP.2013.2275153

View at Publisher

31 She, C., Wan, W., Xu, G.
Climatological analysis and modeling of the ionospheric global electron content

(2008) *Chinese Science Bulletin*, 53 (2), pp. 282-288. Cited 9 times.
doi: 10.1007/s11434-007-0519-z

View at Publisher

32 Sharma, K., Dabas, R.S., Ravindran, S.
Study of total electron content variations over equatorial and low latitude ionosphere during extreme solar minimum

(2012) *Astrophysics and Space Science*, 341 (2), pp. 277-286. Cited 7 times.
doi: 10.1007/s10509-012-1133-3

View at Publisher

33 Stankov, S.M., Stegen, K., Warnant, R.
Seasonal variations of storm-time TEC at European middle latitudes

(2010) *Advances in Space Research*, 46 (10), pp. 1318-1325. Cited 21 times.
doi: 10.1016/j.asr.2010.07.017

View at Publisher

34 Tariku, Y.A.
Patterns of GPS-TEC variation over low-latitude regions (African sector) during the deep solar minimum (2008 to 2009) and solar maximum (2012 to 2013) phases

(2015) *Earth, Planets and Space*, 67 (1), art. no. 35. Cited 12 times.
http://rd.springer.com/journal/40623
doi: 10.1186/s40623-015-0206-2

View at Publisher

35 Wu, C.-C., Fry, C.D., Liu, J.-Y., Liou, K., Tseng, C.-L.
Annual TEC variation in the equatorial anomaly region during the solar minimum: September 1996-August 1997

(2004) *Journal of Atmospheric and Solar-Terrestrial Physics*, 66 (3-4), pp. 199-207. Cited 58 times.
doi: 10.1016/j.jastp.2003.09.017

View at Publisher

36 Wu, C.-C., Liou, K., Shan, S.-J., Tseng, C.-L.
Variation of ionospheric total electron content in Taiwan region of the equatorial anomaly from 1994 to 2003

(2008) *Advances in Space Research*, 41 (4), pp. 611-616. Cited 30 times.
doi: 10.1016/j.asr.2007.06.013

View at Publisher

37 Wu, Y.W., Liu, R.Y., Zhang, B.C., Wu, Z.S., Ping, J.S., Liu, J.M., Hu, Z.J.
Variations of the ionospheric TEC using simultaneous measurements from the China Crustal Movement Observation Network

(2012) *Annales Geophysicae*, 30 (10), pp. 1423-1433. Cited 9 times.
doi: 10.5194/angeo-30-1423-2012

View at Publisher

38 Yenen, S.D., Gulyaeva, T.L., Arikan, F., Arikan, O.
Association of ionospheric storms and substorms of Global Electron Content with proxy AE index

(2015) *Advances in Space Research*, 56 (7), pp. 1343-1353. Cited 2 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2015.06.025

View at Publisher

39 Yu, Y., Wan, W., Liu, L.
A global ionospheric TEC perturbation index
(2009) *Chin. J. Geophys.*, 52, pp. 907-912. Cited 3 times.

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Document details

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Modeling and analysis of GPS-TEC low latitude climatology during the 24th solar cycle using empirical orthogonal functions (Article)

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Abstract

View references (51)

The Total Electron Content (TEC) is an essential component describing the temporal and spatial characteristics of the ionosphere. In this paper, an empirical orthogonal function (EOF) model is constructed by using ground based Global Navigational Satellite System (GNSS) TEC observation data at the Bangalore International GNSS Service (IGS) station (geographic – 13.02° N, 77.57° E; geomagnetic latitude 4.4° N) during an extended period (2009–2016) in the 24th solar cycle. EOF model can be decomposed into base functions and its corresponding coefficients. These decomposed modes well represented the influence of solar and geomagnetic activity towards TEC. The first three EOFs modes constitute about 98% of the total variance of the observed data sets. The Fourier Series Analysis (FSA) is carried out to characterize the solar-cycle, annual and semi-annual dependences by modulating the first three EOF coefficients with solar (F10.7) and geomagnetic (Ap and Dst) indices. The TEC model is validated during daytime and nighttime conditions as well as under different solar activity and geomagnetic conditions. A positive correlation (0.85) of averaged daily GPS-TEC with averaged daily F10.7 strongly supports those time-varying characteristics of the ionosphere features depends on the solar activity. Further, the validity and reliability of EOF model is verified by comparing with the GPS-TEC data, and standard global ionospheric models (International Reference Ionosphere, IRI2016 and Standard Plasmasphere-Ionosphere Model, SPIM). The performances of the standard ionospheric models are marked to be relatively better during High Solar Activity (HSA) periods as compared to the Low Solar Activity (LSA) periods. © 2017 COSPAR

Author keywords

EOF FSA GNSS TEC

Indexed keywords

Engineering controlled terms: Fourier series, Geomagnetism, Ionosphere, Ionospheric measurement, Magnetosphere, Solar energy, Solar radiation

Compendex keywords: Empirical Orthogonal Function, Fourier series analysis, Geomagnetic conditions, GNSS, International reference ionospheres, Navigational satellites, Time-varying characteristics, Total electron content

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Olawepo, A.O. , Adeniyi, J.O. , Oluwadare, E.J.
(2017) Advances in Space Research

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Zheng, J. , Zhao, B. , Xiong, B.
(2016) Advances in Space Research

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References (51)

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1 A, E., Zhang, D.-H., Xiao, Z., Hao, Y.-Q., Ridley, A.J., Moldwin, M.

Modeling ionospheric foF2 by using empirical orthogonal function analysis

(2011) *Annales Geophysicae*, 29 (8), pp. 1501-1515. Cited 12 times.
doi: 10.5194/angeo-29-1501-2011

View at Publisher

2 Ercha, A., Zhang, D., Ridley, A.J., Xiao, Z., Hao, Y.

A global model: Empirical orthogonal function analysis of total electron content 1999-2009 data

(2012) *Journal of Geophysical Research: Space Physics*, 117 (3), art. no. A03328. Cited 34 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2011JA017238

View at Publisher

3 Abdu, M.A.

Equatorial ionosphere-thermosphere system: Electrodynamics and irregularities

(2005) *Advances in Space Research*, 35 (5), pp. 771-787. Cited 49 times.
doi: 10.1016/j.asr.2005.03.150

View at Publisher

4 Araujo-Pradere, E.A., Fuller-Rowell, T.J., Codrescu, M.V., Bilitza, D.

Characteristics of the ionospheric variability as a function of season, latitude, local time, and geomagnetic activity

(2005) *Radio Science*, 40 (5), art. no. RS5009, pp. 1-15. Cited 27 times.
doi: 10.1029/2004RS003179

View at Publisher

5 Bagiya, M.S., Joshi, H.P., Iyer, K.N., Aggarwal, M., Ravindran, S., Pathan, B.M.

TEC variations during low solar activity period (2005-2007) near the equatorial ionospheric anomaly crest region in India

(2009) *Annales Geophysicae*, 27 (3), pp. 1047-1057. Cited 100 times.
doi: 10.5194/angeo-27-1047-2009

View at Publisher

6 Bilitza, D., Reinisch, B.W.
International Reference Ionosphere 2007: Improvements and new parameters

(2008) *Advances in Space Research*, 42 (4), pp. 599-609. Cited 670 times.
doi: 10.1016/j.asr.2007.07.048

View at Publisher

7 Bilitza, D., Williamson, R.
Towards a better representation of the IRI topside based on isis and Alouette data

(2000) *Advances in Space Research*, 25 (1), pp. 149-152. Cited 24 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/S0273-1177(99)00912-6

View at Publisher

8 Bilitza, D., Reinisch, B.W., Radicella, S.M., Pulinets, S., Gulyaeva, T., Triskova, L.
Improvements of the International Reference Ionosphere model for the topside electron density profile

(2006) *Radio Science*, 41 (5), art. no. RS5S15. Cited 55 times.
doi: 10.1029/2005RS003370

View at Publisher

9 Bilitza, D., Brown, S.A., Wang, M.Y., Souza, J.R., Roddy, P.A.
Measurements and IRI model predictions during the recent solar minimum

(2012) *Journal of Atmospheric and Solar-Terrestrial Physics*, 86, pp. 99-106. Cited 54 times.
doi: 10.1016/j.jastp.2012.06.010

View at Publisher

10 Bilitza, D., Altadill, D., Zhang, Y., Mertens, C., Truhlik, V., Richards, P., McKinnell, L.-A., (...), Reinisch, B.
The International Reference Ionosphere 2012 - A model of international collaboration

(2014) *Journal of Space Weather and Space Climate*, 4, art. no. A07. Cited 226 times.
http://www.swsc-journal.org/
doi: 10.1051/swsc/2014004

View at Publisher

11 Bouya, Z., Terkildsen, M., Neudegg, D.
Regional GPS-based iono spheric TEC model over Australia using spherical cap harmonic analysis
(2010) *In: Proceedings of 38th COSPAR Scientific Assembly, Bremen, Germany*, 38, p. 4. Cited 8 times.

12 Chen, Z., Zhang, S.-R., Coster, A.J., Fang, G.
EOF analysis and modeling of GPS TEC climatology over North America

(2015) *Journal of Geophysical Research: Space Physics*, 120 (4), pp. 3118-3129. Cited 14 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2014JA020837

View at Publisher

13 Dabas, R.S., Das, R.M., Vohra, V.K., Devasia, C.V.
Space weather impact on the equatorial and low latitude F-region ionosphere over India

(2006) *Annales Geophysicae*, 24 (1), pp. 97-105. Cited 18 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.5194/angeo-24-97-2006

View at Publisher

14 Kumar Dabbakuti, J.R.K., Venkata Ratnam, D.
Characterization of ionospheric variability in TEC using EOF and wavelets over low-latitude GNSS stations

(2016) *Advances in Space Research*, 57 (12), pp. 2427-2443.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2016.03.029

View at Publisher

15 Dabbakuti, J.R.K.K., Devanaboyina, V.R., Kanchumarthi, S.R.
Analysis of local ionospheric variability based on SVD and MDS at low-latitude GNSS stations 6. Geodesy (Open Access)

(2016) *Earth, Planets and Space*, 68 (1), art. no. 94.
http://rd.springer.com/journal/40623
doi: 10.1186/s40623-016-0478-1

View at Publisher

16 Dashora, N., Suresh, S.
Characteristics of low-latitude TEC during solar cycles 23 and 24 using global ionospheric maps (GIMs) over Indian sector

(2015) *Journal of Geophysical Research: Space Physics*, 120 (6), pp. 5176-5193. Cited 10 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2014JA020559

View at Publisher

17 Fejer, B.G.
Low latitude ionospheric electrodynamics

(2011) *Space Science Reviews*, 158 (1), pp. 145-166. Cited 56 times.
doi: 10.1007/s11214-010-9690-7

View at Publisher

18 Fejer, B.G., De Paula, E., Heelis, R., Hanson, W.
Global equatorial ionospheric vertical plasma drifts measured by the AE-E satellite
(1995) *J. Geophys. Res.: Space Phys.*, 100 (A4), pp. 5769-5776. Cited 135 times.

19 Fuller-Rowell, T.J.
The "thermospheric spoon": A mechanism for the semiannual density variation

(1998) *Journal of Geophysical Research: Space Physics*, 103 (A3), art. no. 97JA03335, pp. 3951-3956. Cited 98 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-8996

20 Gopi, S.
Rinex GPS-TEC Program, Version 1.45
(2010) . Cited 3 times.
Boston College Chestnut Hill

21 Gulyaeva, T.L.
Regional analytical model of ionospheric total electron content: Monthly mean and standard deviation

(1999) *Radio Science*, 34 (6), pp. 1507-1512. Cited 18 times.
doi: 10.1029/1999RS900080

View at Publisher

22 Gulyaeva, T.L.
Storm time behavior of topside scale height inferred from the ionosphere-plasmasphere model driven by the F2 layer peak and GPS-TEC observations

(2011) *Advances in Space Research*, 47 (6), pp. 913-920. Cited 33 times.
doi: 10.1016/j.asr.2010.10.025

View at Publisher

23 Habarulema, J.B., McKinnell, L.-A., Opperman, B.D.L.
Regional GPS TEC modeling; Attempted spatial and temporal extrapolation of TEC using neural networks

(2011) *Journal of Geophysical Research: Space Physics*, 116 (4), art. no. A04314. Cited 25 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2010JA016269

View at Publisher

24 Jakobsen, J., Knudsen, P., Jensen, A.B.O.
Analysis of local ionospheric time varying characteristics with singular value decomposition

(2010) *Journal of Geodesy*, 84 (7), pp. 449-456. Cited 2 times.
doi: 10.1007/s00190-010-0378-2

View at Publisher

25 Kumar, S., Priyadarshi, S., Krishna, S.G., Singh, A.K.
GPS-TEC variations during low solar activity period (2007-2009) at Indian low latitude stations

(2012) *Astrophysics and Space Science*, 339 (1), pp. 165-178. Cited 23 times.
doi: 10.1007/s10509-011-0973-6

View at Publisher

26 Kumar, S., Tan, E.L., Murti, D.S.
Impacts of solar activity on performance of the IRI-2012 model predictions from low to mid latitudes

(2015) *Earth, Planets and Space*, 67 (1), art. no. 67. Cited 17 times.
http://rd.springer.com/journal/40623
doi: 10.1186/s40623-015-0205-3

View at Publisher

27 Langley, R.
Propagation of the GPS signals
(1996) *GPS for Geodesy*, pp. 103-140. Cited 29 times.
A. Kleusberg P. Teunissen Springer Berlin Heidelberg, New York

28 Langley, R., Fedrizzi, M., Paula, E., Santos, M., Komjathy, A.
Mapping the low latitude ionosphere with GPS
(2002) *GPS World*, 13 (2), pp. 41-46. Cited 56 times.

29 Mao, T., Wan, W., Yue, X., Sun, L., Zhao, B., Guo, J.
An empirical orthogonal function model of total electron content over China
(2008) *Radio Sci.*, 43 (2), p. RS2009. Cited 43 times.

30 Mendillo, M.
Storms in the ionosphere: Patterns and processes for total electron content

(2006) *Reviews of Geophysics*, 44 (4), art. no. RG4001. Cited 209 times.
doi: 10.1029/2005RG000193

View at Publisher

31 Menke, W.
Geophysical Data Analysis: Discrete Inverse Theory
(1984) . Cited 2262 times.
Academic San Diego, New York

32 Mukhtarov, P., Pancheva, D., Andonov, B., Pashova, L.
Global TEC maps based on GNNS data: 2. Model evaluation

(2013) *Journal of Geophysical Research: Space Physics*, 118 (7), pp. 4609-4617. Cited 8 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/jgra.50412

View at Publisher

33 Olwendo, O.J., Baki, P., Mito, C., Doherty, P.
Characterization of ionospheric GPS Total Electron Content (GPS-TEC) in low latitude zone over the Kenyan region during a very low solar activity phase

(2012) *Journal of Atmospheric and Solar-Terrestrial Physics*, 84-85, pp. 52-61. Cited 22 times.
doi: 10.1016/j.jastp.2012.06.003

View at Publisher

34 Opperman, B.D.L., Cilliers, P.J., McKinnell, L.-A., Haggard, R.
Development of a regional GPS-based ionospheric TEC model for South Africa

(2007) *Advances in Space Research*, 39 (5), pp. 808-815. Cited 39 times.
doi: 10.1016/j.asr.2007.02.026

View at Publisher

35 Panda, S.K., Gedam, S.S., Rajaram, G.
Study of Ionospheric TEC from GPS observations and comparisons with IRI and SPIM model predictions in the low latitude anomaly Indian subcontinental region

(2015) *Advances in Space Research*, 55 (8), pp. 1948-1964. Cited 14 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2014.09.004

View at Publisher

36 Rama Rao, P.V.S., Gopi Krishna, S., Niranjan, K., Prasad, D.S.V.V.D.
Temporal and spatial variations in TEC using simultaneous measurements from the Indian GPS network of receivers during the low solar activity period of 2004–2005

(2006) *Annales Geophysicae*, 24 (12), pp. 3279-3292. Cited 135 times.

View at Publisher

37 Rishbeth, H.
How the thermospheric circulation affects the ionospheric F2-layer

(1998) *Journal of Atmospheric and Solar-Terrestrial Physics*, 60 (14), pp. 1385-1402. Cited 255 times.
http://www.journals.elsevier.com/journal-of-atmospheric-and-solar-terrestrial-physics/
doi: 10.1016/S1364-6826(98)00062-5

View at Publisher

38 Rishbeth, H.
The equatorial F-layer: Progress and puzzles

(2000) *Annales Geophysicae*, 18 (7), pp. 730-739. Cited 127 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.1007/s00585-000-0730-6

View at Publisher

39 Sayin, I., Arikan, F., Arikan, O.
Regional TEC mapping with random field priors and kriging
(2008) *Radio Sci.*, 43 (5), p. RS5012. Cited 34 times.

40 Sharma, K., Dabas, R.S., Ravindran, S.
Study of total electron content variations over equatorial and low latitude ionosphere during extreme solar minimum

(2012) *Astrophysics and Space Science*, 341 (2), pp. 277-286. Cited 7 times.
doi: 10.1007/s10509-012-1133-3

View at Publisher

41 Singh, A.K., Siingh, D., Singh, R.P., Mishra, S.
Electrodynamical coupling of earth's atmosphere and ionosphere: An overview
(Open Access)

(2011) *International Journal of Geophysics*, 2011, art. no. 971302. Cited 12 times.
doi: 10.1155/2011/971302

View at Publisher

42 Uwamahoro, J.C., Habarulema, J.B.
Modelling total electron content during geomagnetic storm conditions using empirical orthogonal functions and neural networks

(2015) *Journal of Geophysical Research: Space Physics*, 120 (12), pp. 11000-11012. Cited 7 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2015JA021961

View at Publisher

43 Venkatesh, K., Fagundes, P.R., Seemala, G.K., De Jesus, R., De Abreu, A.J., Pillat, V.G.
On the performance of the IRI-2012 and NeQuick2 models during the increasing phase of the unusual 24th solar cycle in the Brazilian equatorial and low-latitude sectors

(2014) *Journal of Geophysical Research: Space Physics*, 119 (6), pp. 5087-5105. Cited 12 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2014JA019960

View at Publisher

44 Yu, T., Wan, W., Liu, L., Zhao, B.
Global scale annual and semi-annual variations of daytime NmF2 in the high solar activity years

(2004) *Journal of Atmospheric and Solar-Terrestrial Physics*, 66 (18), pp. 1691-1701. Cited 35 times.
doi: 10.1016/j.jastp.2003.09.018

View at Publisher

45 Zakharenkova, I.E., Cherniak, I.V., Krankowski, A., Shagimuratov, I.I.

Vertical TEC representation by IRI 2012 and IRI Plas models for European midlatitudes

(2015) *Advances in Space Research*, 55 (8), pp. 2070-2076. Cited 21 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2014.07.027

View at Publisher

46 Zhang, S.-R., Holt, J.M.

Ionospheric climatology and variability from long-term and multiple incoherent scatter radar observations: Variability

(2008) *Annales Geophysicae*, 26 (6), pp. 1525-1537. Cited 17 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.5194/angeo-26-1525-2008

View at Publisher

47 Zhang, D.H., Xiao, Z.

Study of the ionospheric total electron content response to the great flare on 15 April 2001 using the International GPS Service network for the whole sunlit hemisphere

(2003) *Journal of Geophysical Research: Space Physics*, 108 (A8), art. no. 1330. Cited 27 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1029/2002JA009822

View at Publisher

48 Zhang, S.-R., Oliver, W.L., Holt, J.M., Fukao, S.

Solar EUV flux, exospheric temperature and thermospheric wind inferred from incoherent scatter measurements of the electron density profile at Millstone Hill and Shigaraki

(2002) *Geophysical Research Letters*, 29 (9), pp. 72-1 - 72-4. Cited 8 times.

49 Zhang, M.-L., Liu, C., Wan, W., Liu, L., Ning, B.

A global model of the ionospheric F2 peak height based on EOF analysis

(2009) *Annales Geophysicae*, 27 (8), pp. 3203-3212. Cited 32 times.
doi: 10.5194/angeo-27-3203-2009

View at Publisher

50 Zhao, B., Wan, W., Liu, L., Yue, X., Venkatraman, S.

Statistical characteristics of the total ion density in the topside ionosphere during the period 1996-2004 using empirical orthogonal function (EOF) analysis

(2005) *Annales Geophysicae*, 23 (12), pp. 3615-3631. Cited 50 times.
http://www.copernicus.org/site/EGU/annales/23/12/3615.htm
doi: 10.5194/angeo-23-3615-2005

View at Publisher

51 Zhao, B., Wan, W., Liu, L., Mao, T., Ren, Z., Wang, M., Christensen, A.B.

Features of annual and semiannual variations derived from the global ionospheric maps of total electron content

(2007) *Annales Geophysicae*, 25 (12), pp. 2513-2527. Cited 46 times.

View at Publisher

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Spectroscopic studies of Pr^{3+} doped lithium lead alumino borate glasses for visible reddish orange luminescent device applications (Article)

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Abstract

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Lithium Lead Alumino Borate (LiPbAlB) glasses doped with Pr^{3+} ions were prepared via melt quenching technique to study their luminescence behavior using absorption, excitation, photoluminescence (PL) and decay spectral studies. A broad hump observed in XRD confirms the amorphous nature of the as-prepared glass. The glass transition temperature (T_g) and thermal stability (ΔT) were measured from Differential Scanning Calorimetry (DSC). FT-IR and Raman studies were performed to understand the network functional groups involved in the host glass. Various radiative parameters for the prominent fluorescent levels of Pr^{3+} were evaluated with in the frame work of Judd-Ofelt theory. PL and confocal images recorded under 445ï¿½nm Continuous Wave (CW) diode laser excitation were used to understand the visible emission characteristic features of the as-prepared glasses. The decay profiles of $^1D_2$ï¿½→ï¿½$^3H_4$ show single exponential for lower concentration and non-exponential for higher concentration resulting decrease in experimental lifetime (τ_{exp}) with increase in concentration. Such decrease in τ_{exp} and decay conversion from single to non-exponential with increase in rare earth ion concentration has been attributed to the cross-relaxation processes and subsequent concentration quenching observed. From the emission cross-sections, branching ratios, quantum efficiency, CIE coordinates and confocal images, it was concluded that 1ï¿½mol % Pr^{3+} ion concentration is optimum in LiPbAlB glasses to develop visible reddish orange luminescent devices. ï¿½ 2017 Elsevier B.V.

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References (68)

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1 Wang, Z., Guo, H., Xiao, X., Xu, Y., Cui, X., Lu, M., Peng, B., (...), Gu, S.

Synthesis and spectroscopy of high concentration dysprosium doped GeS_2[sbnd]Ga_2S_3[sbnd]CdI_2chalcohalide glasses and fiber fabrication

(2017) *Journal of Alloys and Compounds*, 692, pp. 1010-1017. Cited 9 times.
doi: 10.1016/j.jallcom.2016.09.085

View at Publisher

2 Jha, K., Jayasimhadri, M.

Structural and emission properties of Eu^{3+}-doped alkaline earth zinc-phosphate glasses for white LED applications

(2017) *Journal of the American Ceramic Society*, 100 (4), pp. 1402-1411. Cited 14 times.
http://www.blackwellpublishing.com/aims.asp?ref=0002-7820
doi: 10.1111/jace.14668

View at Publisher

3 Annapurna Devi, C.B., Mahamuda, S., Venkateswarlu, M., Swapna, K., Srinivasa Rao, A., Vijaya Prakash, G.

Dy^{3+} ions doped single and mixed alkali fluoro tungsten tellurite glasses for LASER and white LED applications

(2016) *Optical Materials*, 62, pp. 569-577. Cited 12 times.
doi: 10.1016/j.optmat.2016.11.016

View at Publisher

4 Mahamuda, Sk., Swapna, K., Srinivasa Rao, A., Sasikala, T., Rama Moorthy, L.

Reddish-orange emission from Pr^{3+} doped zinc alumino bismuth borate glasses

(2013) *Physica B: Condensed Matter*, 428, pp. 36-42. Cited 26 times.
http://www.journals.elsevier.com/physica-b-condensed-matter/
doi: 10.1016/j.physb.2013.07.010

View at Publisher

Spectroscopic studies of Sm^{3+}ions activated lithium lead alumino borate glasses for visible luminescent device applications

Deopa, N. , Rao, A.S.
(2017) Optical Materials

Spectroscopic study of Pr^{3+}ions doped Zinc Lead Tungsten Tellurite glasses for visible photonic device applications

Sharma, R. , Rao, A.S. , Deopa, N.
(2018) Optical Materials

Photoluminescence investigations on Sm^{3+}ions doped borate glasses for tricolor w-LEDs and lasers

Deopa, N. , Rao, A.S. , Choudhary, A.
(2018) Materials Research Bulletin

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5 Kang, S., Wang, X., Xu, W., Wang, X., He, D., Hu, L.

Effect of B_2O_3 content on structure and spectroscopic properties of neodymium-doped calcium aluminate glasses

(2017) *Optical Materials*, 66, pp. 287-292. Cited 6 times.
doi: 10.1016/j.optmat.2017.02.021

View at Publisher

6 Suresh Kumar, J., Pavani, K., Sasikala, T., Sreenivasa Rao, A., Giri, N.K., Rai, S.B., Rama Moorthy, L.

Photoluminescence and energy transfer properties of Sm^{3+} doped CFB glasses

(2011) *Solid State Sciences*, 13 (8), pp. 1548-1553. Cited 34 times.
doi: 10.1016/j.solidstatesciences.2011.05.020

View at Publisher

7 Pisarski, W.A., Pisarska, J., Dominiak-Dzik, G., Ryba-Romanowski, W.

Transition metal (Cr3+) and rare earth (Eu3+, Dy3+) ions used as a spectroscopic probe in compositional-dependent lead borate glasses

(2009) *Journal of Alloys and Compounds*, 484 (1-2), pp. 45-49. Cited 38 times.
doi: 10.1016/j.jallcom.2009.05.039

View at Publisher

8 Lakshminarayana, G., Qiu, J.

Photoluminescence of Pr^{3+}, Sm^{3+} and Dy^{3+}-doped SiO_2-Al_2O_3-BaF_2-GdF_3 glasses

(2009) *Journal of Alloys and Compounds*, 476 (1-2), pp. 470-476. Cited 46 times.
doi: 10.1016/j.jallcom.2008.09.015

View at Publisher

9 Liu, S., Zhao, G., Lin, X., Ying, H., Liu, J., Wang, J., Han, G.

White luminescence of Tm- Dy ions co-doped aluminoborosilicate glasses under UV light excitation

(2008) *Journal of Solid State Chemistry*, 181 (10), pp. 2725-2730. Cited 60 times.
http://www.elsevier.com/inca/publications/store/6/2/2/8/9/8/index.htt
doi: 10.1016/j.jssc.2008.06.027

View at Publisher

10 Lozykowski, H.J., Jadwisienczak, W.M., Brown, I.

Cathodoluminescence of GaN doped with Sm and Ho

(1999) *Solid State Communications*, 110 (5), pp. 253-258. Cited 37 times.
doi: 10.1016/S0038-1098(99)00077-0

View at Publisher

11 Lozykowski, H.J., Jadwisienczak, W.M., Brown, I.

Photoluminescence and cathodoluminescence of GaN doped with Pr

(2000) *Journal of Applied Physics*, 88 (1), pp. 210-222. Cited 88 times.
http://scitation.aip.org/content/aip/journal/jap
doi: 10.1063/1.373645

View at Publisher

12 Choi, Y.G., Heo, J.

1.3 μm emission and multiphonon relaxation phenomena in PbO-Bi_2O_3-Ga_2O_3 glasses doped with rare-earths

(1997) *Journal of Non-Crystalline Solids*, 217 (2-3), pp. 199-207. Cited 94 times.

View at Publisher

13 Lakshminarayana, G., Buddhudu, S.
Spectral analysis of Eu3+ and Tb3+:B2O3-ZnO-PbO glasses

(2007) *Materials Chemistry and Physics*, 102 (2-3), pp. 181-186. Cited 42 times.
doi: 10.1016/j.matchemphys.2006.11.020

View at Publisher

14 Arunkumar, S., Marimuthu, K.
Concentration effect of Sm3+ ions in B2O 3-PbO-PbF2-Bi2O3-ZnO glasses - Structural and luminescence investigations

(2013) *Journal of Alloys and Compounds*, 565, pp. 104-114. Cited 63 times.
doi: 10.1016/j.jallcom.2013.02.151

View at Publisher

15 Peng, M., Wondraczek, L.
Hotoluminescence of Sr2P2O7: Bi 2+ as a red phosphor for additive light generation

(2010) *Optics Letters*, 35 (15), pp. 2544-2546. Cited 82 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww.opticsinfobase.org%2FDirectPDFAccess%2F3E1148DA-BDB9-137E-C6550D55F3D8188D_203950.pdf%3Fda%3D1%26id%3D203950%26seq%3D0%26mobile%3Dno&org=Elsevier%20Inc
doi: 10.1364/OL.35.002544

View at Publisher

16 Peng, M., Zollfrank, C., Wondraczek, L.
Origin of broad NIR photoluminescence in bismuthate glass and Bi-doped glasses at room temperature

(2009) *Journal of Physics Condensed Matter*, 21 (28), art. no. 285106. Cited 110 times.
doi: 10.1088/0953-8984/21/28/285106

View at Publisher

17 Lucacel, R.C., Marcus, C., Timar, V., Ardelean, I.
FT-IR and Raman spectroscopic studies on B_2O_3-PbO-Ag_2O glasses dopped with manganese ions

(2007) *Solid State Sciences*, 9 (9), pp. 850-854. Cited 46 times.
doi: 10.1016/j.solidstatesciences.2007.07.006

View at Publisher

18 Ganguli, M., Rao, K.J.
Structural Role of PbO in Li_2O-PbO-B_2O_3 Glasses

(1999) *Journal of Solid State Chemistry*, 145 (1), pp. 65-76. Cited 92 times.
doi: 10.1006/jssc.1999.8221

View at Publisher

19 Lakshminarayana, G., Yang, R., Mao, M., Qiu, J.
Spectral analysis of RE^{3+} (RE = Sm, Dy, and Tm): P_2O_5-Al_2O_3-Na_2O glasses

(2009) *Optical Materials*, 31 (10), pp. 1506-1512. Cited 40 times.
doi: 10.1016/j.optmat.2009.02.010

View at Publisher

20 Swapna, K., Mahamuda, S., Srinivasa Rao, A., Shakya, S., Sasikala, T., Haranath, D., Vijaya Prakash, G.
Optical studies of Sm^{3+} ions doped Zinc Alumino Bismuth Borate glasses

(2014) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 125, pp. 53-60. Cited 43 times.
doi: 10.1016/j.saa.2014.01.025

View at Publisher

21 Pan, A., Ghosh, A.
Dynamics of lithium ions in bismuthate glasses

(2000) *Journal of Chemical Physics*, 112 (3), pp. 1503-1509. Cited 40 times.
http://scitation.aip.org/content/aip/journal/jcp
doi: 10.1063/1.480717

View at Publisher

22 Griscon, D.L.
(1978) *Borate Glasses, Structure, Properties, Application*. Cited 166 times.
I.D. Pye V.D. Frechette N.J. Kreidl Plenum New York

23 Wei, K., Machewirth, D.P., Wenzel, J., Snitzer, E., Sigel Jr., G.H.
Pr^{3+}-doped GeGaS glasses for 1.3 μm optical fiber amplifiers

(1995) *Journal of Non-Crystalline Solids*, 182 (3), pp. 257-261. Cited 199 times.
doi: 10.1016/0022-3093(94)00513-3

View at Publisher

24 Varsanyi, F.
Surface lasers

(1971) *Applied Physics Letters*, 19 (6), pp. 169-171. Cited 57 times.
doi: 10.1063/1.1653870

View at Publisher

25 Hegarty, J., Huber, D.L., Yen, W.M.
Fluorescence quenching by cross relaxation in LaF3:Pr3+

(1982) *Physical Review B*, 25 (9), pp. 5638-5645. Cited 101 times.
doi: 10.1103/PhysRevB.25.5638

View at Publisher

26 Judd, B.R.
Optical absorption intensities of rare-earth ions

(1962) *Physical Review*, 127 (3), pp. 750-761. Cited 5553 times.
doi: 10.1103/PhysRev.127.750

View at Publisher

27 Opelt, G.S.
Intensities of crystal spectra of rare-earth ions

(1962) *The Journal of Chemical Physics*, 37 (3), pp. 511-520. Cited 5055 times.

View at Publisher

28 Mahamuda, S., Swapna, K., Srinivasa Rao, A., Jayasimhadri, M., Sasikala, T., Pavani, K., Rama Moorthy, L.

Spectroscopic properties and luminescence behavior of Nd^{3+} doped zinc alumino bismuth borate glasses

(2013) *Journal of Physics and Chemistry of Solids*, 74 (9), pp. 1308-1315. Cited 33 times.
doi: 10.1016/j.jpcs.2013.04.009

View at Publisher

29 Mahamuda, S., Swapna, K., Packiyaraj, P., Srinivasa Rao, A., Vijaya Prakash, G.

Visible red, NIR and Mid-IR emission studies of Ho^{3+} doped Zinc Alumino Bismuth Borate glasses

(2013) *Optical Materials*, 36 (2), pp. 362-371. Cited 31 times.
doi: 10.1016/j.optmat.2013.09.023

View at Publisher

30 Swapna, K., Mahamuda, S., Rao, A.S., Sasikala, T., Packiyaraj, P., Moorthy, L.R., Prakash, G.V.

Luminescence characterization of Eu^{3+} doped Zinc Alumino Bismuth Borate glasses for visible red emission applications

(2014) *Journal of Luminescence*, 156, pp. 80-86. Cited 34 times.
doi: 10.1016/j.jlumin.2014.07.022

View at Publisher

31 Swapna, K., Mahamuda, S., Rao, A.S., Sasikala, T., Moorthy, L.R.

Visible luminescence characteristics of Sm3+ doped Zinc Alumino Bismuth Borate glasses

(2014) *Journal of Luminescence*, 146, pp. 288-294. Cited 33 times.
doi: 10.1016/j.jlumin.2013.09.035

View at Publisher

32 Goldner, P., Auzel, F.

Application of standard and modified Judd-Ofelt theories to a praseodymium-doped fluorozirconate glass

(1996) *Journal of Applied Physics*, 79 (10), pp. 7972-7977. Cited 114 times.
http://scitation.aip.org/content/aip/journal/jap
doi: 10.1063/1.362347

View at Publisher

33 Karunakaran, R.T., Marimuthu, K., Surendra Babu, S., Arumugam, S.

Structural, optical and thermal investigations on Dy^{3+} doped NaF-Li_2O-B_2O_3 glasses

(2009) *Physica B: Condensed Matter*, 404 (21), pp. 3995-4000. Cited 32 times.
doi: 10.1016/j.physb.2009.07.160

View at Publisher

34 Hrubý, A.

Evaluation of glass-forming tendency by means of DTA

(1972) *Czechoslovak Journal of Physics*, 22 (11), pp. 1187-1193. Cited 645 times.
doi: 10.1007/BF01690134

View at Publisher

35 Rao, A.S., Ahammed, Y.N., Reddy, R.R., Rao, T.V.R.

Spectroscopic studies of Nd^{3+}-doped alkali fluoroborophosphate glasses

(1998) *Optical Materials*, 10 (4), pp. 245-252. Cited 71 times.
doi: 10.1016/S0925-3467(97)00055-4

View at Publisher

36 Jha, K., Jayasimhadri, M.
Spectroscopic investigation on thermally stable Dy^{3+}doped zinc phosphate glasses for white light emitting diodes

(2016) *Journal of Alloys and Compounds*, Part A 688, pp. 833-840. Cited 28 times.
doi: 10.1016/j.jallcom.2016.07.024

View at Publisher

37 Annapoorani, K., Basavapoornima, C., Suriya Murthy, N., Marimuthu, K.
Investigations on structural and luminescence behavior of Er^{3+} doped Lithium Zinc borate glasses for lasers and optical amplifier applications

(2016) *Journal of Non-Crystalline Solids*, 447, pp. 273-282. Cited 22 times.
http://www.journals.elsevier.com/journal-of-non-crystalline-solids/
doi: 10.1016/j.jnoncrysol.2016.06.021

View at Publisher

38 Ebendorff-Heidepriem, H., Seeber, W., Ehrt, D.
Dehydration of phosphate glasses

(1993) *Journal of Non-Crystalline Solids*, 163 (1), pp. 74-80. Cited 75 times.
doi: 10.1016/0022-3093(93)90647-G

View at Publisher

39 Kale, B.B., Jha, A., Apte, S.K., Adhyapak, P.V., Amalnerkar, D.P.
Removal of OH impurities from GeS2 by reactive atmosphere and its glass preparation

(2003) *Materials Chemistry and Physics*, 78 (2), pp. 330-336. Cited 13 times.
doi: 10.1016/S0254-0584(01)00551-X

View at Publisher

40 Suratwala, T.I., Steele, R.A., Wilke, G.D., Campbell, J.H., Takeuchi, K.
Effects of OH content, water vapor pressure, and temperature on sub-critical crack growth in phosphate glass

(2000) *Journal of Non-Crystalline Solids*, 263, pp. 213-227. Cited 87 times.
doi: 10.1016/S0022-3093(99)00680-8

View at Publisher

41 Som, T., Karmakar, B.
Nephelauxetic effect of low phonon antimony oxide glass in absorption and photoluminescence of rare-earth ions

(2011) *Spectrochimica Acta - Part A: Molecular and Biomolecular Spectroscopy*, 79 (5), pp. 1766-1782. Cited 34 times.
doi: 10.1016/j.saa.2011.05.054

View at Publisher

42 Suhasini, T., Jamalaiah, B.C., Chengaiah, T., Suresh Kumar, J., Rama Moorthy, L.
An investigation on visible luminescence of Ho^{3} activated LBTAF glasses

(2012) *Physica B: Condensed Matter*, 407 (3), pp. 523-527. Cited 20 times.
doi: 10.1016/j.physb.2011.11.029

View at Publisher

43 Saravanan, S., Rajesh, S., Palani, R.
Thermal and structural properties of mixed alkali and transition metal ions in sodium borate glass
(2015) *Int. J. Recent Res. Rev.*, 8, pp. 1-9. Cited 2 times.

44 Padmaja, G., Kistaiah, P.
Infrared and raman spectroscopic studies on alkali borate glasses: Evidence of mixed alkali effect

(2009) *Journal of Physical Chemistry A*, 113 (11), pp. 2397-2404. Cited 67 times.
http://pubs.acs.org/doi/pdfplus/10.1021/jp809318e
doi: 10.1021/jp809318e

View at Publisher

45 Carnall, W.T., Fields, P.R., Rajnak, K.
Electronic energy levels in the trivalent lanthanide aquo ions. I. Pr 3+, Nd3+, Pm3+, Sm3+, Dy 3+, Ho3+, Er3+, and Tm3+

(1968) *The Journal of Chemical Physics*, 49 (10), pp. 4403-4406. Cited 93 times.

View at Publisher

46 Venkateswarlu, M., Prasad, M.V.V.K.S., Swapna, K., Mahamuda, S., Rao, A.S., Babu, A.M., Haranath, D.
Pr^{3+} doped lead tungsten tellurite glasses for visible red lasers

(2014) *Ceramics International*, 40 (4), pp. 6261-6269. Cited 22 times.
doi: 10.1016/j.ceramint.2013.11.084

View at Publisher

47 Jorgensen, C.K.
The nephelauxetic series
(1962) *Prog. Inorg. Chem.*, 4, p. 73. Cited 442 times.

48 Saisudha, M.B., Ramakrishna, J.
Optical absorption of Nd^{3+}, Sm^{3+} and Dy^{3+} in bismuth borate glasses with large radiative transition probabilities

(2002) *Optical Materials*, 18 (4), pp. 403-417. Cited 77 times.
doi: 10.1016/S0925-3467(01)00181-1

View at Publisher

49 Mahamuda, S., Swapna, K., Venkateswarlu, M., Srinivasa Rao, A., Shakya, S., Vijaya Prakash, G.
Spectral characterisation of Sm^{3+} ions doped Oxy-fluoroborate glasses for visible orange luminescent applications

(2014) *Journal of Luminescence*, 154, pp. 410-424. Cited 36 times.
doi: 10.1016/j.jlumin.2014.05.017

View at Publisher

50 Babu, P., Jayasankar, C.K.
Spectroscopic properties of Dy^{3+} ions in lithium borate and lithium fluoroborate glasses

(2000) *Optical Materials*, 15 (1), pp. 65-79. Cited 116 times.
doi: 10.1016/S0925-3467(00)00015-X

View at Publisher

51 Takebe, H., Nageno, Y., Morinaga, K.
Compositional Dependence of Judd-Ofelt Parameters in Silicate, Borate, and Phosphate Glasses

(1995) *Journal of the American Ceramic Society*, 78 (5), pp. 1161-1168. Cited 108 times.
doi: 10.1111/j.1151-2916.1995.tb08463.x

View at Publisher

52 Brahmachary, K., Rajesh, D., Babu, S., Ratnakaram, Y.C.

Investigations on spectroscopic properties of Pr^{3+} and Nd^{3+} doped zinc-alumino-sodium-phosphate (ZANP) glasses

(2014) *Journal of Molecular Structure*, 1064 (1), pp. 6-14. Cited 15 times.
doi: 10.1016/j.molstruc.2014.01.056

View at Publisher

53 Mahato, K.K., Rai, D.K., Rai, S.B.

Optical studies of Sm^{3+} doped oxyfluoroborate glass

(1998) *Solid State Communications*, 108 (9), pp. 671-676. Cited 82 times.
doi: 10.1016/S0038-1098(98)00442-6

View at Publisher

54 Xiong, F.-B., Luo, Z.-D., Huang, Y.-D.

Spectroscopic properties of Pr^{3+} in anisotropic $PbWO_4$ crystal

(2005) *Applied Physics B: Lasers and Optics*, 80 (3), pp. 321-328. Cited 23 times.
doi: 10.1007/s00340-004-1716-y

View at Publisher

55 Kumar, M.V.V., Gopal, K.R., Reddy, R.R., Reddy, G.V.L., Hussain, N.S., Jamalaiah, B.C.

Application of modified Judd-Ofelt theory and the evaluation of radiative properties of Pr^{3+}-doped lead telluroborate glasses for laser applications

(2013) *Journal of Non-Crystalline Solids*, 364 (1), pp. 20-27. Cited 22 times.
doi: 10.1016/j.jnoncrysol.2012.11.049

View at Publisher

56 Binnemans, K., Van Deun, R., Görller-Walrand, C., Adam, J.L.

Spectroscopic properties of trivalent lanthanide ions in fluorophosphate glasses

(1998) *Journal of Non-Crystalline Solids*, 238 (1-2), pp. 11-29. Cited 122 times.
http://www.journals.elsevier.com/journal-of-non-crystalline-solids/
doi: 10.1016/S0022-3093(98)00540-7

View at Publisher

57 Murthy, D.V.R., Jamalaiah, B.C., Sasikala, T., Rama Moorthy, L., Jayasimhadri, M., Jang, K., Lee, H.S., (...), Jeong, J.H.

Optical absorption and emission characteristics of Pr^{3+}-doped RTP glasses

(2010) *Physica B: Condensed Matter*, 405 (4), pp. 1095-1100. Cited 19 times.
doi: 10.1016/j.physb.2009.11.012

View at Publisher

58 Naresh, V., Ham, B.S.

Influence of multiphonon and cross relaxations on $^3P_0$ and $^1D_2$ emission levels of Pr^{3+} doped borosilicate glasses for broad band signal amplification

(2016) *Journal of Alloys and Compounds*, 664, pp. 321-330. Cited 14 times.
doi: 10.1016/j.jallcom.2015.12.246

View at Publisher

59 Dexter, D.L.

A theory of sensitized luminescence in solids

(1953) *The Journal of Chemical Physics*, 21 (5), pp. 836-850. Cited 5703 times.
doi: 10.1063/1.1699044

View at Publisher

60 Dexter, D.L., Schulman, J.H.
Theory of concentration quenching in inorganic phosphors

(1954) *The Journal of Chemical Physics*, 22 (6), pp. 1063-1070. Cited 958 times.
doi: 10.1063/1.1740265

View at Publisher

61 Cases, R., Chamarro, M.A., Alcala, R., Rodriguez, V.D.
Optical properties of Nd^{3+} and Dy^{3+} ions in ZnF_{22} based glasses

(1991) *Journal of Luminescence*, 48-49 (PART 2), pp. 509-514. Cited 81 times.
doi: 10.1016/0022-2313(91)90181-T

View at Publisher

62 Peakcock, R.D.
The intensities of lanthanide f-f transitions
(1975) *Struct-Bond*, 22, pp. 83-122. Cited 787 times.

63 Krupke, W.F.
Induced-Emission Cross Sections in Neodymium Laser Glasses

(1974) *IEEE Journal of Quantum Electronics*, 10 (4), pp. 450-457. Cited 407 times.
doi: 10.1109/JQE.1974.1068162

View at Publisher

64 Lakshminarayana, G., Kaky, K.M., Baki, S.O., Ye, S., Lira, A., Kityk, I.V., Mahdi, M.A.
Concentration dependent structural, thermal, and optical features of Pr^{3+}-doped multicomponent tellurite glasses

(2016) *Journal of Alloys and Compounds*, 686, pp. 769-784. Cited 24 times.
doi: 10.1016/j.jallcom.2016.06.069

View at Publisher

65 Jamalaiah, B.C., Vijaya Kumar, M.V., Rama Gopal, K.
Fluorescence properties and energy transfer mechanism of Sm3+ ion in lead telluroborate glasses

(2011) *Optical Materials*, 33 (11), pp. 1643-1647. Cited 36 times.
doi: 10.1016/j.optmat.2011.04.030

View at Publisher

66 Inokuti, M., Hirayama, F.
Influence of energy transfer by the exchange mechanism on donor luminescence

(1965) *The Journal of Chemical Physics*, 43 (6), pp. 1978-1989. Cited 1681 times.
doi: 10.1063/1.1697063

View at Publisher

67 Lim, K.-S., Vijaya, N., Kesavulu, C.R., Jayasankar, C.K.
Structural and luminescence properties of Sm3+ ions in zinc fluorophosphate glasses

(2013) *Optical Materials*, 35 (8), pp. 1557-1563. Cited 38 times.
doi: 10.1016/j.optmat.2013.03.026

View at Publisher

68 Billmeyer, F.W., Saltzman, M.
Principles of Colour Technology
(1981) . Cited 670 times.
Wiley New York

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Global and Planetary Change
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Perceptible changes in Indian summer monsoon rainfall in relation to Indian Monsoon Index (Article)

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Abstract

View references (32)

The changes in the summer monsoon rainfall over 30 meteorological subdivisions of India with respect to changes in circulation and the Indian Monsoon Index (IMI) have been studied for the period 1953–2012. The relationship between the IMIs in different months and whole season and the corresponding summer monsoon rainfall is studied and tested. The positive and negative extremes are evaluated basing on the normalized values of the deviations from the mean of the IMI. Composite rainfall distributions over India and the zonal wind distributions in the lower and upper troposphere of IMI's both positive and negative extremes are evaluated separately and discussed. In the recent three decades of global warming, the negative values of IMI in July and August lead to weakening of the monsoon system over India. It is observed that the rainfall variations in the Northeast India are different from the rest of India except Tamil Nadu in general. © 2017 Elsevier B.V.

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Global warming | Indian Monsoon Index | Summer monsoon rainfall

Indexed keywords

Engineering controlled terms: Atmospheric thermodynamics | Global warming

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References (32)

View in search results format >

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1 Abish, B., Joseph, P.V., Johannessen, O.M.
Weakening trend of the tropical easterly jet stream of the boreal summer monsoon season 1950-2009
(2013) *Journal of Climate*, 26 (23), pp. 9408-9414. Cited 18 times.
http://journals.ametsoc.org/doi/pdf/10.1175/JCLI-D-13-00440.1
doi: 10.1175/JCLI-D-13-00440.1
View at Publisher

2 Aravequia, J.A., Rao, V.B., Bonatti, J.P.
The role of moist baroclinic instability in the growth and structure of monsoon depressions
(1995) *Journal of the Atmospheric Sciences*, 52 (24), pp. 4393-4409. Cited 7 times.
doi: 10.1175/1520-0469(1995)052<4393:TROMBI>2.0.CO;2
View at Publisher

3 Cadet, D., Desbois, M.
Low-level air flow over the western Indian Ocean as seen from METEOSAT [6]
(1979) *Nature*, 278 (5704), pp. 538-540. Cited 8 times.
doi: 10.1038/278538a0
View at Publisher

4 Cadet, D., Reverdin, G.
Water vapour transport over the Indian Ocean during summer 1975 (Arabian Sea).
(1981) *Tellus*, 33 (5), pp. 476-487. Cited 63 times.

5 Ding, Y.H.
Advanced Synoptic Meteorology
(2005) , 2005, p. 585. Cited 59 times.
China Meteorological Press

6 Findlater, J.
A major low-level air current near the Indian Ocean during the northern summer

(1969) *Quarterly Journal of the Royal Meteorological Society*, 95 (404), pp. 362-380. Cited 315 times.
doi: 10.1002/qj.49709540409

View at Publisher

7 Joseph, P.V.
Monsoon variability in relation to equa-torial trough activity over Indian and west Pacific oceans
(1990) *Mausam*, 41 (2), pp. 291-296. Cited 21 times.

8 Joseph, P.V., Raman, P.L.
Existence of low-level westerly jet-stream over peninsular India during July
(1966) *Indian J. Meteorol. Hydrol. Geophys.*, 17, pp. 407-410. Cited 68 times.

9 Joseph, P.V., Sijikumar, S.
Intraseasonal variability of the low-level jet stream of the Asian summer monsoon

(2004) *Journal of Climate*, 17 (7), pp. 1449-1458. Cited 124 times.
doi: 10.1175/1520-0442(2004)017<1449:IVOTLJ>2.0.CO;2

View at Publisher

10 Joseph, P.V., Simon, A.
Weakening trend of the southwest monsoon current through peninsular India from 1950 to the present

(2005) *Current Science*, 89 (4), pp. 687-694. Cited 41 times.
http://www.ias.ac.in/currsci/aug252005/687.pdf

View at Publisher

11 Joseph, P.V., Simon, A.
Weakening trend of monsoon low level jet stream through India 1950–2003
(2005) *CLIVAR Exchanges*, 10 (3), pp. 27-30. Cited 7 times.

12 Koteswaram, P.
The easterly jet stream in the tropics
(1958) *Tellus*, 10, pp. 43-57. Cited 98 times.

13 Krishnamurti, T.N., Bhalme, H.N.
OSCILLATIONS OF A MONSOON SYSTEM - 1. OBSERVATIONAL ASPECTS.

(1976) *Journal of the Atmospheric Sciences*, 33 (10), pp. 1937-1954. Cited 382 times.

View at Publisher

14 Mishra, S.K., Salvekar, P.S.
Role of baroclinic instability in the development of monsoon disturbances.

(1980) *Journal of the Atmospheric Sciences*, 37 (2), pp. 383-394. Cited 29 times.
doi: 10.1175/1520-0469(1980)037<0383:ROBIIT>2.0.CO;2

View at Publisher

15 Mishra, A.K., Gnanaseelan, C., Seetaramayya, P.
A study of rainfall along the west coast of India in relation to low level jet and air-sea interactions over the Arabian Sea

(2004) *Current Science*, 87 (4), pp. 475-485. Cited 5 times.

View at Publisher

16 Moorthi, S., Arakawa, A.
Baroclinic instability with cumulus heating.

(1985) *Journal of the Atmospheric Sciences*, 42 (19), pp. 2007-2031. Cited 35 times.
doi: 10.1175/1520-0469(1985)042<2007:BIWCH>2.0.CO;2

View at Publisher

17 Naidu, C.V., Krishna, K.M., Rao, S.R., Bhanu Kumar, O.S.R.U., Durgalakshmi, K., Ramakrishna, S.S.V.S.
Variations of Indian summer monsoon rainfall induce the weakening of easterly jet stream in the warming environment?

(2011) *Global and Planetary Change*, 75 (1-2), pp. 21-30. Cited 13 times.
doi: 10.1016/j.gloplacha.2010.10.001

View at Publisher

18 Naidu, C.V., Durgalakshmi, K., Satyanarayana, G.C., Rao, L.M., Ramakrishna, S.S.V.S., Mohan, J.R., Ratna, K.N.
An observational evidence of climate change during global warming era

(2011) *Global and Planetary Change*, 79 (1-2), pp. 11-19. Cited 6 times.
doi: 10.1016/j.gloplacha.2011.07.010

View at Publisher

19 Naidu, C.V., Satyanarayana, G.C., Malleswara Rao, L., Durgalakshmi, K., Dharma Raju, A., Vinay Kumar, P., Jeevana Mounika, G.
Anomalous behavior of Indian summer monsoon in the warming environment

(2015) *Earth-Science Reviews*, 150, pp. 243-255. Cited 5 times.
http://www.sciencedirect.com/science/journal/00128252
doi: 10.1016/j.earscirev.2015.08.004

View at Publisher

20 Naidu, C.V., Dharma Raju, A., Satyanarayana, G.C., Vinay Kumar, P., Chiranjeevi, G., Suchitra, P.
An observational evidence of decrease in Indian summer monsoon rainfall in the recent three decades of global warming era

(2015) *Global and Planetary Change*, 127, pp. 91-102. Cited 7 times.
http://www.sciencedirect.com/science/journal/09218181
doi: 10.1016/j.gloplacha.2015.01.010

View at Publisher

21 Puranik, S.S., Sinha Ray, K.C., Sen, P.N., Pradeep Kumar, P.
An index for predicting the onset of monsoon over Kerala

(2013) *Current Science*, 105 (7), pp. 954-961. Cited 8 times.
http://www.currentscience.ac.in/Volumes/105/07/0954.pdf

View at Publisher

22 Rajeevan, M.
Inter-relationship between NW Pacific typhoon activity and Indian summer monsoon on inter-annual and intra-seasonal time-scales
(1993) *Mausam*, 44, pp. 109-111. Cited 8 times.

23 Ramesh Kumar, M.R., Shenoi, S.S.C., Schluessel, P.
On the role of the cross equatorial flow on summer monsoon rainfall over India using NCEP/NCAR reanalysis data

(1999) *Meteorology and Atmospheric Physics*, 70 (3-4), pp. 201-213. Cited 22 times.
http://link.springer-ny.com/link/service/journals/00703/index.htm
doi: 10.1007/s007030050034

View at Publisher

24 Sathiyamoorthy, V.
Large scale reduction in the size of the Tropical Easterly Jet

(2005) *Geophysical Research Letters*, 32 (14), pp. 1-4. Cited 30 times.
doi: 10.1029/2005GL022956

View at Publisher

25 Shukla, J.
Barotropic-Baroclinic instability of mean zonal wind during summer monsoon

(1977) *Pure and Applied Geophysics PAGEOPH*, 115 (5-6), pp. 1449-1461. Cited 20 times.
doi: 10.1007/BF00874418

View at Publisher

26 Shukla, J.
CISK barotropic–baroclinic instability and the growth of monsoon depressions
(1978) *J. Atmos. Sci.*, 35, pp. 495-508. Cited 47 times.

27 Sikka, D.R.
Some aspects of the life history, structure and movement of monsoon depressions

(1977) *Pure and Applied Geophysics PAGEOPH*, 115 (5-6), pp. 1501-1529. Cited 104 times.
doi: 10.1007/BF00874421

View at Publisher

28 Rao, B.R.S., Rao, D.V.B., Rao, V.B.
Decreasing trend in the strength of Tropical Easterly Jet during the Asian summer monsoon season and the number of tropical cyclonic systems over Bay of Bengal

(2004) *Geophysical Research Letters*, 31 (14), pp. L14103 1-3. Cited 45 times.
doi: 10.1029/2004GL019817

View at Publisher

29 Subbaramayya, I., Naidu, C.V.
Spatial variations and trends in the Indian monsoon rainfall

(1992) *International Journal of Climatology*, 12 (6), pp. 597-609. Cited 25 times.
doi: 10.1002/joc.3370120606

View at Publisher

30 Subbaramayya, I., Vivekananda Babu, S., Naidu, C.V.
A note on the normal dates of onset of summer monsoon over south peninsular India

(1988) *Meteorological Magazine*, 117 (1397), pp. 371-377. Cited 5 times.

31 Swapna, P., Ramesh Kumar, M.R.
Role of low-level flow on the summer monsoon rainfall over the Indian subcontinent during two contrasting monsoon years
(2002) *J. Indian Geophys. Union*, 2002 (6), pp. 123-137. Cited 13 times.

32 Wang, B., Fan, Z.
Choice of South Asian Summer Monsoon Indices

(1999) *Bulletin of the American Meteorological Society*, 80 (4), pp. 629-638. Cited 395 times.
http://ams.allenpress.com
doi: 10.1175/1520-0477(1999)080<0629:COSASM>2.0.CO;2

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Journal of Young Pharmacists
Volume 9, Issue 4, October-December 2017, Pages 537-544

In vitro anti-cancer activity of rosuvastatin and ketorolac nanoformulations against DDX3 (Article)

Bheemanapally, K.[a], Thimmaraju, M.K.[b], Kasagoni, S.[b], Thatikonda, P.[b], Akula, S.[a], Kodamala, K.R.[c], Kakarla, L.[c], Gummadi, S.B.[d], Nemani, H.[e], Botlagunta, M.[cf]

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Abstract

View references (56)

Background: DDX3 is the human RNA helicase and enhanced expression of DDX3 protein was found in several cancers including leukemia. Statin family of drugs shown to inhibit the growth of acute myeloid leukemia cells. Objective: In this paper we report the molecular interaction of Rosuvastatin Calcium (RST) salt with DDX3 by Molecular docking. Molecular dynamics simulation (MDS) using Desmond further confirmed that the RST forms strong intra and inter molecular hydrogen bond network with DDX3 as similar to Ketorolac salt, a known inhibitor of DDX3. Materials and methods: To validate the biological activity, RST and KT nanoemulsions were prepared using propylene glycol monocaprylate (type II) NF, glycerol monolinoleate EP, Lauroyl macrogol-6 glycerides EP and poloxamer 188 to improve the bioavailability in rats. Solution state stability study was performed at various pH for 24 h to determine the integrity of RST and KT in nanoemulsion formulations. The prepared formulations have been evaluated for permeability across porcine buccal membrane. The RST and KT nanoemulsions were evaluated for anticancer activity using K-562 leukaemia cancer cell lines. Results: It showed both the nanoemulsions inhibited the growth of the cancer cell and also reduced the expression of DDX3 protein. Bioavailability study in rats revealed that nanoemulsion formulations have exhibited higher systemic concentrations. Conclusion: In summary, taken together, our result demonstrates, for the first time, inhibition of DDX3 expression by RST nanoemulsions indicates that this nanoformulation can be used as an ideal drug candidate to treat DDX3 associated blood cancer.

Reaxys Database Information

View Compounds

Author keywords

DDX3 | Ketorolac salt | Molecular docking and anti cancer activity | Nanoformulations | Rosuvastatin

Indexed keywords

EMTREE drug terms: glycerol derivative | glycerol monolinoleate EP | ketorolac | lauroyl macrogol 6 glyceride EP | macrogol derivative | propanediol derivative | propylene glycol monocaprylate NF | protein DDX3 | RNA helicase | rosuvastatin | unclassified drug

EMTREE medical terms:

animal experiment | antineoplastic activity | area under the curve | Article | biological activity | blood sampling | cancer inhibition | concentration (parameters) | controlled study | drug bioavailability | drug blood level | drug formulation | drug stability | human | human cell | hydrogen bond | in vitro study | K-562 cell line | male | maximum plasma concentration | molecular docking | molecular dynamics | molecular interaction | mouth mucosa | nanoemulsion | nanoformulation | nonhuman | pH | pig | priority journal | protein expression | rat | time to maximum plasma concentration

Chemicals and CAS Registry Numbers:

interferon induced helicase C domain containing protein 1; ketorolac, 74103-06-3; RNA helicase; rosuvastatin, 147098-18-8, 147098-20-2

Manufacturers:

Drug manufacturer:

Nosch, India

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RA-2012-14-GE-ANP-2088	University Grants Commission	UGC	
	BASF Corporation		
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Publisher: EManuscript Services

References (56)

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1 Umate, P.

Genome-wide analysis of lipoxygenase gene family in arabidopsis and rice

(2011) *Plant Signaling and Behavior*, 6 (3), pp. 335-338. Cited 29 times.
http://www.landesbioscience.com/journals/psb/Umate3PSB6-3.pdf
doi: 10.4161/psb.6.3.13546

View at Publisher

2 Kim, Y.-S., Lee, S.-G., Park, S.H., Song, K.

Gene structure of the human DDX3 and chromosome mapping of its related sequences

(2001) *Molecules and Cells*, 12 (2), pp. 209-214. Cited 30 times.

3 Högbom, M., Collins, R., van den Berg, S., Jenvert, R.-M., Karlberg, T., Kotenyova, T., Flores, A., (...), Schiavone, L.H.

Crystal Structure of Conserved Domains 1 and 2 of the Human DEAD-box Helicase DDX3X in Complex with the Mononucleotide AMP

(2007) *Journal of Molecular Biology*, 372 (1), pp. 150-159. Cited 77 times.
doi: 10.1016/j.jmb.2007.06.050

View at Publisher

4 Gee, S.L., Conboy, J.G.

Mouse erythroid cells express multiple putative RNA helicase genes exhibiting high sequence conservation from yeast to mammals

(1994) *Gene*, 140 (2), pp. 171-177. Cited 37 times.
doi: 10.1016/0378-1119(94)90541-X

View at Publisher

5 Botlagunta, M., Vesuna, F., Mironchik, Y., Raman, A., Lisok, A., Winnard Jr., P., Mukadam, S., (...), Raman, V.

Oncogenic role of DDX3 in breast cancer biogenesis

(2008) *Oncogene*, 27 (28), pp. 3912-3922. Cited 101 times.
doi: 10.1038/onc.2008.33

View at Publisher

6 Sun, M., Song, L., Li, Y., Zhou, T., Jope, R.S.

Identification of an antiapoptotic protein complex at death receptors

(2008) *Cell Death and Differentiation*, 15 (12), pp. 1887-1900. Cited 64 times.
doi: 10.1038/cdd.2008.124

View at Publisher

7 Celià-Terrassa, T., Meca-Cortés, Ó., Mateo, F., De Paz, A.M., Rubio, N., Arnal-Estapé, A., Ell, B.J., (...), Thomson, T.M.

Epithelial-mesenchymal transition can suppress major attributes of human epithelial tumor-initiating cells

(2012) *Journal of Clinical Investigation*, 122 (5), pp. 1849-1868. Cited 221 times.
http://www.jci.org/articles/view/59218/pdf
doi: 10.1172/JCI59218

View at Publisher

8 Sarrió, D., Rodriguez-Pinilla, S.M., Hardisson, D., Cano, A., Moreno-Bueno, G., Palacios, J.

Epithelial-mesenchymal transition in breast cancer relates to the basal-like phenotype

(2008) *Cancer Research*, 68 (4), pp. 989-997. Cited 629 times.
http://cancerres.aacrjournals.org/cgi/reprint/68/4/989
doi: 10.1158/0008-5472.CAN-07-2017

View at Publisher

9 Talbot, L.J., Bhattacharya, S.D., Kuo, P.C.

Epithelial-mesenchymal transition, the tumor microenvironment, and metastatic behavior of epithelial malignancies

(2012) *International Journal of Biochemistry and Molecular Biology*, 3 (2), pp. 117-136. Cited 100 times.
http://www.ijbmb.org/files/IJBMB1203006.pdf

10 Teicher, B.A., Dupuis, N.P., Robinson, M.F., Kusumoto, T., Liu, M., Menon, K.

Reduced oxygenation in a rat mammary carcinoma post-radiation and reoxygenation with a perflubron emulsion/carbogen breathing

(1994) *In Vivo*, 8 (1), pp. 125-131. Cited 17 times.

11 Reynolds, T.Y., Rockwell, S., Glazer, P.M.
Genetic instability induced by the tumor microenvironment

(1996) *Cancer Research*, 56 (24), pp. 5754-5757. Cited 340 times.

12 Brizel, D.M., Scully, S.P., Harrelson, J.M., Layfield, L.J., Bean, J.M., Prosnitz, L.R., Dewhirst, M.W.
Tumor oxygenation predicts for the likelihood of distant metastases in human soft tissue sarcoma

(1996) *Cancer Research*, 56 (5), pp. 941-943. Cited 1023 times.

13 Semenza, G.L.
HIF-1: Mediator of physiological and pathophysiological responses to hypoxia

(2000) *Journal of Applied Physiology*, 88 (4), pp. 1474-1480. Cited 1191 times.

View at Publisher

14 Semenza, G.L.
O2-regulated gene expression: Transcriptional control of cardiorespiratory physiology by HIF-1

(2004) *Journal of Applied Physiology*, 96 (3), pp. 1173-1177. Cited 203 times.
doi: 10.1152/japplphysiol.00770.2003

View at Publisher

15 Botlagunta, M., Krishnamachary, B., Vesuna, F., Winnard Jr., P.T., Bol, G.M., Patel, A.H., Raman, V.
Expression of DDX3 is directly modulated by hypoxia inducible factor-1 alpha in breast epithelial cells (Open Access)

(2011) *PLoS ONE*, 6 (3), art. no. e17563. Cited 22 times.
http://www.plosone.org/article/fetchObjectAttachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0017563&representation=PDF
doi: 10.1371/journal.pone.0017563

View at Publisher

16 Chang, P.-C., Chi, C.-W., Chau, G.-Y., Li, F.-Y., Tsai, Y.-H., Wu, J.-C., Wu Lee, Y.-H.
DDX3, a DEAD box RNA helicase, is deregulated in hepatitis virus-associated hepatocellular carcinoma and is involved in cell growth control

(2006) *Oncogene*, 25 (14), pp. 1991-2003. Cited 88 times.
doi: 10.1038/sj.onc.1209239

View at Publisher

17 Chao, C.-H., Chen, C.-M., Cheng, P.-L., Shih, J.-W., Tsou, A.-P., Lee, Y.-H.W.
DDX3, a DEAD box RNA helicase with tumor growth-suppressive property and transcriptional regulation activity of the $p21^{waf1/cip1}$ promoter, is a candidate tumor suppressor

(2006) *Cancer Research*, 66 (13), pp. 6579-6588. Cited 114 times.
doi: 10.1158/0008-5472.CAN-05-2415

View at Publisher

18 Garbelli, A., Beermann, S., Di Cicco, G., Dietrich, U., Maga, G.
A motif unique to the human dead-box protein DDX3 is important for nucleic acid binding, ATP hydrolysis, RNA/DNA unwinding and HIV-1 replication (Open Access)

(2011) *PLoS ONE*, 6 (5), art. no. e19810. Cited 29 times.
http://www.plosone.org/article/fetchObjectAttachment.action?uri=info%3Adoi%2F10.1371%2Fjournal.pone.0019810&representation=PDF
doi: 10.1371/journal.pone.0019810

View at Publisher

19 Yedavalli, V.S.R.K., Neuveut, C., Chi, Y.-H., Kleiman, L., Jeang, K.-T.
Requirement of DDX3 DEAD box RNA helicase for HIV-1 Rev-RRE export function (Open Access)

(2004) *Cell*, 119 (3), pp. 381-392. Cited 316 times.
doi: 10.1016/j.cell.2004.09.029

View at Publisher

20 Kondaskar, A., Kondaskar, S., Kumar, R., Fishbein, J.C., Muvarak, N., Lapidus, R.G., Sadowska, M., (...), Hosmane, R.S.
Novel, broad spectrum anticancer agents containing the tricyclic 5:7:5-fused diimidazodiazepine ring system

(2011) *ACS Medicinal Chemistry Letters*, 2 (3), pp. 252-256. Cited 19 times.
doi: 10.1021/ml100281b

View at Publisher

21 Yedavalli, V.S.R.K., Zhang, N., Cai, H., Zhang, P., Starost, M.F., Hosmane, R.S., Jeang, K.-T.
Ring expanded nucleoside analogues inhibit RNA helicase and intracellular human immunodeficiency virus type 1 replication

(2008) *Journal of Medicinal Chemistry*, 51 (16), pp. 5043-5051. Cited 51 times.
doi: 10.1021/jm800332m

View at Publisher

22 Hosmane, R., Raman, V., Kumar, R.
(2009) *Fused di Imidazodiazepine Compounds and Methods of Use and Manufacture Thereof*
USA

23 Maga, G., Falchi, F., Garbelli, A., Belfiore, A., Witvrouw, M., Manetti, F., Botta, M.
Pharmacophore modeling and molecular docking led to the discovery of inhibitors of human immunodeficiency virus-1 replication targeting the human cellular aspartic acid-glutamic acid-alanine-aspartic acid box polypeptide 3

(2008) *Journal of Medicinal Chemistry*, 51 (21), pp. 6635-6638. Cited 50 times.
doi: 10.1021/jm8008844

View at Publisher

24 Kondaskar, A., Kondaskar, S., Kumar, R., Fishbein, J.C., Muvarak, N., Lapidus, R.G., Sadowska, M., (...), Hosmane, R.S.
Novel, broad spectrum anticancer agents containing the tricyclic 5:7:5-fused diimidazodiazepine ring system

(2011) *ACS Medicinal Chemistry Letters*, 2 (3), pp. 252-256. Cited 19 times.
doi: 10.1021/ml100281b

View at Publisher

25 Gazzerro, P., Proto, M.C., Gangemi, G., Malfitano, A.M., Ciaglia, E., Pisanti, S., Santoro, A., (...), Bifulco, M.
Pharmacological actions of statins: A critical appraisal in the management of cancer

(2012) *Pharmacological Reviews*, 64 (1), pp. 102-146. Cited 167 times.
http://pharmrev.aspetjournals.org/content/64/1/102.full.pdf+html
doi: 10.1124/pr.111.004994

View at Publisher

26 Evans, W.E., McLeod, H.L.
Pharmacogenomics - Drug disposition, drug targets, and side effects

(2003) *New England Journal of Medicine*, 348 (6), pp. 538-549. Cited 1307 times.
doi: 10.1056/NEJMra020526

View at Publisher

27 Kinch, M.S., Haynesworth, A., Kinch, S.L., Hoyer, D.
An overview of FDA-approved new molecular entities: 1827-2013

(2014) *Drug Discovery Today*, 19 (8), pp. 1033-1039. Cited 67 times.
www.elsevier.com/locate/drugdiscov
doi: 10.1016/j.drudis.2014.03.018

View at Publisher

28 Kinch, M.S., Merkel, J., Umlauf, S.
Trends in pharmaceutical targeting of clinical indications: 1930-2013

(2014) *Drug Discovery Today*, 19 (11), pp. 1682-1685. Cited 17 times.
www.elsevier.com/locate/drugdiscov
doi: 10.1016/j.drudis.2014.05.021

View at Publisher

29 Thimmaraju, M.K., Ramagiri, V., Bheemanapally, K., Bojja, S., Kola, V., Nerella, R., Botlagunta, M.
Preparation and characterization of rosuvastatin calcium nanoemulsions

(2013) *Latin American Journal of Pharmacy*, 32 (10), pp. 1445-1451. Cited 2 times.
http://www.latamjpharm.org/trabajos/32/10/LAJOP_32_10_1_3_Q24P5P72RP.pdf

30 Samal, S.K., Routray, S., Veeramachaneni, G.K., Dash, R., Botlagunta, M.
Ketorolac salt is a newly discovered DDX3 inhibitor to treat oral cancer

(2015) *Scientific Reports*, 5, art. no. 9982. Cited 20 times.
www.nature.com/srep/index.html
doi: 10.1038/srep09982

View at Publisher

31 Guo, Z., Mohanty, U., Noehre, J., Sawyer, T.K., Sherman, W., Krilov, G.
Probing theα-helical structural stability of stapled p53 peptides: Molecular dynamics simulations and analysis: Research article

(2010) *Chemical Biology and Drug Design*, 75 (4), pp. 348-359. Cited 207 times.
doi: 10.1111/j.1747-0285.2010.00951.x

View at Publisher

32 Maple, J.R., Cao, Y., Damm, W., Halgren, T.A., Kaminski, G.A., Zhang, L.Y., Friesner, R.A.
A polarizable force field and continuum solvation methodology for modeling of protein-ligand interactions

(2005) *Journal of Chemical Theory and Computation*, 1 (4), pp. 694-715. Cited 87 times.
doi: 10.1021/ct049855i

View at Publisher

33 Krajewski, W.W., Collins, R., Holmberg-Schiavone, L., Jones, T.A., Karlberg, T., Mowbray, S.L.
Crystal Structures of Mammalian Glutamine Synthetases Illustrate Substrate-Induced Conformational Changes and Provide Opportunities for Drug and Herbicide Design

(2008) *Journal of Molecular Biology*, 375 (1), pp. 217-228. Cited 63 times.
doi: 10.1016/j.jmb.2007.10.029

View at Publisher

34 Sherman, W., Beard, H.S., Farid, R.
Use of an induced fit receptor structure in virtual screening

(2006) *Chemical Biology and Drug Design*, 67 (1), pp. 83-84. Cited 195 times.
doi: 10.1111/j.1747-0285.2005.00327.x

View at Publisher

35 Sandri, G., Rossi, S., Ferrari, F., Bonferoni, M.C., Muzzarelli, C., Caramella, C.
Assessment of chitosan derivatives as buccal and vaginal penetration enhancers

(2004) *European Journal of Pharmaceutical Sciences*, 21 (2-3), pp. 351-359. Cited 116 times.
www.elsevier.com/locate/ejps
doi: 10.1016/j.ejps.2003.10.028

View at Publisher

36 Lefebvre, D.E., Venema, K., Gombau, L., Valerio, L.G., Raju, J., Bondy, G.S., Bouwmeester, H., (...), Stone, V.
Utility of models of the gastrointestinal tract for assessment of the digestion and absorption of engineered nanomaterials released from food matrices

(2015) *Nanotoxicology*, 9 (4), pp. 523-542. Cited 25 times.
doi: 10.3109/17435390.2014.948091

View at Publisher

37 Patel, V.F., Liu, F., Brown, M.B.
Modeling the oral cavity: In vitro and in vivo evaluations of buccal drug delivery systems

(2012) *Journal of Controlled Release*, 161 (3), pp. 746-756. Cited 57 times.
doi: 10.1016/j.jconrel.2012.05.026

View at Publisher

38 Manganaro, A.M., Wertz, P.W.
The effects of permeabilizers on the in vitro penetration of propranolol through porcine buccal epithelium

(1996) *Military Medicine*, 161 (11), pp. 669-672. Cited 28 times.

View at Publisher

39 Squier, C.A.
The permeability of oral mucosa

(1991) *Critical Reviews in Oral Biology and Medicine*, 2 (1), pp. 13-32. Cited 144 times.
doi: 10.1177/10454411910020010301

View at Publisher

40 Liu, C., Constantinides, P.P., Li, Y.
Research and development in drug innovation: Reflections from the 2013 bioeconomy conference in China, lessons learned and future perspectives
(2014) *Acta Pharm Sin B.*, 4 (2), pp. 112-119. Cited 2 times.

41 Hartung, T.
Food for thought; Look back in anger - What clinical studies tell us about preclinical work

(2013) *Altex*, 30 (3), pp. 275-291. Cited 70 times.
http://www.altex.ch/resources/raltex_2013_3_275_291_FFTHartung.pdf

View at Publisher

42 Brown, W.V., Bays, H.E., Hassman, D.R., McKenney, J., Chitra, R., Hutchinson, H., Miller, E.
Efficacy and safety of rosuvastatin compared with pravastatin and simvastatin in patients with hypercholesterolemia: A randomized, double-blind, 52-week trial

(2002) *American Heart Journal*, 144 (6), pp. 1036-1043. Cited 151 times.
http://www.elsevier.com/inca/publications/store/6/2/3/2/7/2/index.htt
doi: 10.1067/mhj.2002.129312

View at Publisher

43 Jones, P.H., Davidson, M.H., Stein, E.A., Bays, H.E., McKenney, J.M., Miller, E., Cain, V.A., (...), Blasetto, J.W.

Comparison of the efficacy and safety of rosuvastatin versus atorvastatin, simvastatin, and pravastatin across doses (STELLAR* trial)

(2003) *American Journal of Cardiology*, 92 (2), pp. 152-160. Cited 1094 times.
www.elsevier.com/locate/amjcard
doi: 10.1016/S0002-9149(03)00530-7

View at Publisher

44 Martin, P.D., Warwick, M.J., Dane, A.L., Hill, S.J., Giles, P.B., Phillips, P.J., Lenz, E.

Metabolism, Excretion, and Pharmacokinetics of Rosuvastatin in Healthy Adult Male Volunteers

(2003) *Clinical Therapeutics*, 25 (11), pp. 2822-2835. Cited 175 times.
www.elsevier.com/locate/clinthera
doi: 10.1016/S0149-2918(03)80336-3

View at Publisher

45 Bergman, E., Matsson, E.M., Hedeland, M., Bondesson, U., Knutson, L., Lennernäs, H.

Effect of a single gemfibrozil dose on the pharmacokinetics of rosuvastatin in bile and plasma in healthy volunteers.

(2010) *Journal of clinical pharmacology*, 50 (9), pp. 1039-1049. Cited 14 times.

View at Publisher

46 Kamel, A.O., Mahmoud, A.A.

Enhancement of human oral bioavailability and in vitro antitumor activity of rosuvastatin via spray dried self-nanoemulsifying drug delivery system

(2013) *Journal of Biomedical Nanotechnology*, 9 (1), pp. 26-39. Cited 17 times.
http://docserver.ingentaconnect.com/deliver/connect/asp/15507033/v9n1/s2.pdf?expires=1366424157&id=73858836&titleid=11665&accname=Elsevier+BV&checksum=EDDC56B14B85221B19F18388869E8D9A
doi: 10.1166/jbn.2013.1469

View at Publisher

47 El Sharkawi, F.Z., El Shemy, H.A., Khaled, H.M.

Possible anticancer activity of rosuvastatine, doxazosin, repaglinide and oxcarbazepin

(2014) *Asian Pacific Journal of Cancer Prevention*, 15 (1), pp. 199-203. Cited 20 times.
http://www.apocpcontrol.org/paper_file/issue_abs/Volume15_No1/199-203%2010.2%20Fathia%20Zaky%20El%20Sharkawi.pdf
doi: 10.7314/APJCP.2014.15.1.199

View at Publisher

48 Erbaş, H., Bal, O., Çakır, E.

Effect of rosuvastatin on arginase enzyme activity and polyamine production in experimental breast cancer

(2015) *Balkan Medical Journal*, 32 (1), pp. 89-95. Cited 7 times.
http://www.balkanmedicaljournal.org/sayilar/80/buyuk/89-95.pdf
doi: 10.5152/balkanmedj.2015.15611

View at Publisher

49 Nielsen, S.F., Nordestgaard, B.G., Bojesen, S.E.

Statin use and reduced cancer-related mortality

(2012) *New England Journal of Medicine*, 367 (19), pp. 1792-1802. Cited 389 times.
http://www.nejm.org/doi/pdf/10.1056/NEJMoa1201735
doi: 10.1056/NEJMoa1201735

View at Publisher

50 Bartfield, J.M., Kern, A.M., Raccio-Robak, N., Snyder, H.S., Baevsky, R.H.
Ketorolac TVomethamine Use in a University-based Emergency Department

(1994) *Academic Emergency Medicine*, 1 (6), pp. 532-538. Cited 16 times.
doi: 10.1111/j.1553-2712.1994.tb02548.x

View at Publisher

51 Wong, H.Y., Carpenter, R.L., Kopacz, D.J., Fragen, R.J., Thompson, G., Maneatis, T.J., Bynum, L.J.
A randomized, double-blind evaluation of ketorolac tromethamine for postoperative analgesia in ambulatory surgery patients

(1993) *Anesthesiology*, 78 (1), pp. 6-14. Cited 57 times.
doi: 10.1097/00000542-199301000-00003

View at Publisher

52 Mulshine, J.L., Atkinson, J.C., Greer, R.O., Papadimitrakopoulou, V.A., Van Waes, C., Rudy, S., Martin, J.W., (...), Cavanaugh Jr., P.F.
Randomized, Double-Blind, Placebo-Controlled Phase IIB Trial of the Cyclooxygenase Inhibitor Ketorolac as an Oral Rinse in Oropharyngeal Leukoplakia

(2004) *Clinical Cancer Research*, 10 (5), pp. 1565-1573. Cited 59 times.
doi: 10.1158/1078-0432.CCR-1020-3

View at Publisher

53 Vyas, T.K., Shahiwala, A., Amiji, M.M.
Improved oral bioavailability and brain transport of Saquinavir upon administration in novel nanoemulsion formulations

(2008) *International Journal of Pharmaceutics*, 347 (1-2), pp. 93-101. Cited 143 times.
doi: 10.1016/j.ijpharm.2007.06.016

View at Publisher

54 Kuo, F., Subramanian, B., Kotyla, T., Wilson, T.A., Yoganathan, S., Nicolosi, R.J.
Nanoemulsions of an anti-oxidant synergy formulation containing gamma tocopherol have enhanced bioavailability and anti-inflammatory properties

(2008) *International Journal of Pharmaceutics*, 363 (1-2), pp. 206-213. Cited 47 times.
doi: 10.1016/j.ijpharm.2008.07.022

View at Publisher

55 Kakumanu, S., Tagne, J.B., Wilson, T.A., Nicolosi, R.J.
A nanoemulsion formulation of dacarbazine reduces tumor size in a xenograft mouse epidermoid carcinoma model compared to dacarbazine suspension

(2011) *Nanomedicine: Nanotechnology, Biology, and Medicine*, 7 (3), pp. 277-283. Cited 35 times.
doi: 10.1016/j.nano.2010.12.002

View at Publisher

56 Han, M., He, C.-X., Fang, Q.-L., Yang, X.-C., Diao, Y.-Y., Xu, D.-H., He, Q.-J., (...), Gao, J.-Q.
A novel camptothecin derivative incorporated in nano-carrier induced distinguished improvement in solubility, stability and anti-tumor activity both in vitro and in vivo

(2009) *Pharmaceutical Research*, 26 (4), pp. 926-935. Cited 41 times.
doi: 10.1007/s11095-008-9795-9

View at Publisher

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Simultaneous weak measurement of angular and spatial Goos-Hänchen and Imbert-Fedorov shifts (Article)

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Abstract

View references (35)

We propose and demonstrate the weak measurement scheme to simultaneously measure the amplified angular and spatial contributions to the Goos-Hänchen (GH) and Imbert-Fedorov (IF) shifts, due to transmission through a glass plate. We have studied two cases of post-selection using a polarizer in the first case and a quarter-wave plate (QWP)-polarizer combination in the second case. The two cases are analyzed theoretically using Jones calculus of polarization formalism and the results are verified experimentally. In the first case of post-selection, the projection of the polarizer at Δ away from the crossed position amplifies the angular GH and IF shifts, while in the second case of post-selection, the projection of QWP at ±Δ and polarizer kept fixed measures the polarization ellipticity in the beam and thus amplifies the spatial shift along with the angular shift simultaneously, for Δ ≪ 1. © 2017 IOP Publishing Ltd.

Author keywords

beam shift | polarization | spin-hall effect | weak measurements

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References (35)

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1 Baida, F.I., Van Labeke, D., Marie Vigoureux, J.-.

Numerical study of the displacement of a three dimensional gaussian beam transmitted at total internal reflection. Near-field ap

(2000) *Journal of the Optical Society of America A: Optics and Image Science, and Vision*, 17 (5), pp. 858-866. Cited 32 times.
doi: 10.1364/JOSAA.17.000858

View at Publisher

2 Taya, S.A., El-Farram, E.J., El-Agez, T.M.

Goos-Hänchen shift as a probe in evanescent slab waveguide sensors

(2012) *AEU - International Journal of Electronics and Communications*, 66 (3), pp. 204-210. Cited 18 times.
doi: 10.1016/j.aeue.2011.07.004

View at Publisher

3 Yin, X., Hesselink, L.

Goos-Hänchen shift surface plasmon resonance sensor

(2006) *Applied Physics Letters*, 89 (26), art. no. 261108. Cited 122 times.
doi: 10.1063/1.2424277

View at Publisher

4 Fedoseyev, V.G.
Spin-independent transverse shift of the center of gravity of a reflected and of a refracted light beam
(2008) *J. Phys.*, 41.

5 Merano, M., Hermosa, N., Woerdman, J.P., Aiello, A.

How orbital angular momentum affects beam shifts in optical reflection

(2010) *Physical Review A - Atomic, Molecular, and Optical Physics*, 82 (2), art. no. 023817. Cited 91 times.
http://oai.aps.org/oai?verb=GetRecord&Identifier=oai:aps.org:PhysRevA.82.023817&metadataPrefix=oai_apsmeta_2
doi: 10.1103/PhysRevA.82.023817

View at Publisher

6 Löffler, W., Aiello, A., Woerdman, J.P.

Observation of orbital angular momentum sidebands due to optical reflection

(2012) *Physical Review Letters*, 109 (11), art. no. 113602. Cited 18 times.
http://oai.aps.org/filefetch?identifier=10.1103/PhysRevLett.109.113602&component=fulltext&description=markup&format=xml
doi: 10.1103/PhysRevLett.109.113602

View at Publisher

7 Bliokh, K.Yu.

Geometrical optics of beams with vortices: Berry phase and orbital angular momentum hall effect

(2006) *Physical Review Letters*, 97 (4), art. no. 043901. Cited 107 times.
http://oai.aps.org/oai?verb=GetRecord&Identifier=oai:aps.org:PhysRevLett.97.043901&metadataPrefix=oai_apsmeta_2
doi: 10.1103/PhysRevLett.97.043901

View at Publisher

8 Dennis, M.R., Götte, J.B.
Topological aberration of optical vortex beams: Determining dielectric interfaces by optical singularity shifts

(2012) *Physical Review Letters*, 109 (18), art. no. 183903. Cited 41 times.
http://oai.aps.org/filefetch?identifier=10.1103/PhysRevLett.109.183903&component=fulltext&description=markup&format=xml
doi: 10.1103/PhysRevLett.109.183903

View at Publisher

9 Li, C.-F.
Negative lateral shift of a light beam transmitted through a dielectric slab and interaction of boundary effects

(2003) *Physical Review Letters*, 91 (13). Cited 169 times.
doi: 10.1103/PhysRevLett.91.133903

View at Publisher

10 Chen, X., Li, C.-F.
Lateral shift of the transmitted light beam through a left-handed slab

(2004) *Physical Review E - Statistical, Nonlinear, and Soft Matter Physics*, 69 (6 2), art. no. 066617, pp. 066617-1-066617-6. Cited 72 times.
doi: 10.1103/PhysRevE.69.066617

View at Publisher

11 Jin, M., Bai, M.
On the Transmitted Beam Shift Through FSS Structure by Phase Analysis

(2014) *IEEE Antennas and Wireless Propagation Letters*, 13, art. no. 6804645, pp. 840-843. Cited 6 times.
www.ieee.org
doi: 10.1109/LAWP.2014.2319583

View at Publisher

12 Smith, A.R., Yang, R., Yang, H., Dick, A., Neugebauer, J., Lambrecht, W.R.L.
Recent advances in atomic-scale spin-polarized scanning tunneling microscopy

(2005) *Microscopy Research and Technique*, 66 (2-3), pp. 72-84. Cited 5 times.
doi: 10.1002/jemt.20147

View at Publisher

13 Goos, F., Hänchen, H.

(1947) *Annalen der Physik*, 436 (7-8), pp. 333-346. Cited 691 times.
doi: 10.1002/andp.19474360704

14 Imbert, C.
Calculation and experimental proof of the transverse shift induced by total internal reflection of a circularly polarized light beam

(1972) *Physical Review D*, 5 (4), pp. 787-796. Cited 296 times.
doi: 10.1103/PhysRevD.5.787

View at Publisher

15 Aiello, A., Woerdman, J.P.
Role of beam propagation in Goos-Hänchen and Imbert-Fedorov shifts

(2008) *Optics Letters*, 33 (13), pp. 1437-1439. Cited 173 times.
http://ol.osa.org/DirectPDFAccess/2FCADBC1-BDB9-137E-CBBBA53D4F37621A_164821.pdf?da=1&id=164821&seq=0&CFID=11233888&CFTOKEN=42283123
doi: 10.1364/OL.33.001437

View at Publisher

16 Bliokh, K.Y., Aiello, A.
Goos-Hänchen and Imbert-Fedorov beam shifts: An overview

(2013) *Journal of Optics (United Kingdom)*, 15 (1), art. no. 014001. Cited 137 times.
http://iopscience.iop.org/2040-8986/15/1/014001/pdf/2040-8986_15_1_014001.pdf
doi: 10.1088/2040-8978/15/1/014001

View at Publisher

17 Gilles, H., Girard, S., Hamel, J.
Simple technique for measuring the Goos-Hänchen effect with polarization modulation and a position-sensitive detector

(2002) *Optics Letters*, 27 (16), pp. 1421-1423. Cited 56 times.

View at Publisher

18 Merano, M., Aiello, A., 'T Hooft, G.W., Van Exter, M.P., Eliel, E.R., Woerdman, J.P.
Observation of Goos-Hänchen shifts in metallic reflection

(2007) *Optics Express*, 15 (24), pp. 15928-15934. Cited 126 times.
http://www.opticsexpress.org/DirectPDFAccess/A33C5AA4-BDB9-137E-CEFD392A327D6608_144915.pdf?da=1&id=144915&seq=0&CFID=4949129&CFTOKEN=
doi: 10.1364/OE.15.015928

View at Publisher

19 Prajapati, C., Pidishety, S., Viswanathan, N.K.
Polarimetric measurement method to calculate optical beam shifts

(2014) *Optics Letters*, 39 (15), pp. 4388-4391. Cited 13 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F82840987-B4B5-A62C-CA56
4388%2Epdf%3Fda%3D1%26id%3D296182%26seq%3D0%26mobile%3Dno&org=Elsevier%20Inc
doi: 10.1364/OL.39.004388

View at Publisher

20 Aharonov, Y., Albert, D.Z., Vaidman, L.
How the result of a measurement of a component of the spin of a spin-1/2 particle can turn out to be 100

(1988) *Physical Review Letters*, 60 (14), pp. 1351-1354. Cited 1045 times.
doi: 10.1103/PhysRevLett.60.1351

View at Publisher

21 Brunner, N., Simon, C.
Measuring small longitudinal phase shifts: Weak measurements or standard interferometry?

(2010) *Physical Review Letters*, 105 (1), art. no. 010405. Cited 126 times.
http://oai.aps.org/oai?verb=GetRecord&Identifie=oai:aps.org:PhysRevLett.105.010405&metadataPrefix=oai_apsmeta_2
doi: 10.1103/PhysRevLett.105.010405

View at Publisher

22 Magaña-Loaiza, O.S., Mirhosseini, M., Rodenburg, B., Boyd, R.W.
Amplification of angular rotations using weak measurements

(2014) *Physical Review Letters*, 112 (20), art. no. 200401. Cited 46 times.
http://harvest.aps.org/bagit/articles/10.1103/PhysRevLett.112.200401/apsxml
doi: 10.1103/PhysRevLett.112.200401

View at Publisher

23 Ritchie, N.W.M., Story, J.G., Hulet, R.G.
Realization of a measurement of a weak value

(1991) *Physical Review Letters*, 66 (9), pp. 1107-1110. Cited 307 times.
doi: 10.1103/PhysRevLett.66.1107

View at Publisher

24 Bliokh, K.Y., Samlan, C.T., Prajapati, C., Puentes, G., Viswanathan, N.K., Nori, F.
Spin-hall effect and circular birefringence of a uniaxial crystal plate

(2016) *Optica*, 3 (10), pp. 1039-1047. Cited 15 times.
https://www.osapublishing.org/optica/viewmedia.cfm?uri=optica-3-10-1039&seq=0
doi: 10.1364/OPTICA.3.001039

View at Publisher

25 Hosten, O., Kwiat, P.
Observation of the spin hall effect of light via weak measurements

(2008) *Science*, 319 (5864), pp. 787-790. Cited 692 times.
doi: 10.1126/science.1152697

View at Publisher

26 Dixon, P.B., Starling, D.J., Jordan, A.N., Howell, J.C.
Ultrasensitive beam deflection measurement via interferometric weak value amplification

(2009) *Physical Review Letters*, 102 (17), art. no. 173601. Cited 306 times.
http://oai.aps.org/oai?verb=GetRecord&Identifier=oai:aps.org:PhysRevLett.102.173601&metadataPrefix=oai_apsmeta_2
doi: 10.1103/PhysRevLett.102.173601

View at Publisher

27 Brunner, N., Acín, A., Collins, D., Gisin, N., Scarani, V.
Optical telecom networks as weak quantum measurements with postselection

(2003) *Physical Review Letters*, 91 (18). Cited 52 times.
doi: 10.1103/PhysRevLett.91.180402

View at Publisher

28 Kocsis, S., Braverman, B., Ravets, S., Stevens, M.J., Mirin, R.P., Shalm, L.K., Steinberg, A.M.
Observing the average trajectories of single photons in a two-slit interferometer

(2011) *Science*, 332 (6034), pp. 1170-1173. Cited 254 times.
http://www.sciencemag.org/content/332/6034/1170.full.pdf
doi: 10.1126/science.1202218

View at Publisher

29 Dennis, M.R., Götte, J.B.
The analogy between optical beam shifts and quantum weak measurements

(2012) *New Journal of Physics*, 14, art. no. 073013. Cited 54 times.
http://iopscience.iop.org/1367-2630/14/7/073013/pdf/1367-2630_14_7_073013.pdf
doi: 10.1088/1367-2630/14/7/073013

View at Publisher

30 Götte, J.B., Dennis, M.R.
Generalized shifts and weak values for polarization components of reflected light beams

(2012) *New Journal of Physics*, 14, art. no. 073016. Cited 41 times.
http://iopscience.iop.org/1367-2630/14/7/073016/pdf/1367-2630_14_7_073016.pdf
doi: 10.1088/1367-2630/14/7/073016

View at Publisher

31 Töppel, F., Ornigotti, M., Aiello, A.

Goos-Hänchen and Imbert-Fedorov shifts from a quantum-mechanical perspective (Open Access)

(2013) *New Journal of Physics*, 15, art. no. 113059. Cited 23 times.
http://iopscience.iop.org/1367-2630/15/11/113059/pdf/1367-2630_15_11_113059.pdf
doi: 10.1088/1367-2630/15/11/113059

View at Publisher

32 Jayaswal, G., Mistura, G., Merano, M.

Weak measurement of the Goos-Hänchen shift

(2013) *Optics Letters*, 38 (8), pp. 1232-1234. Cited 40 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2FDBE537D7%2DE462%2D11BC%2DA9AD204EF5004BC4%5F251792%2Fol
doi: 10.1364/OL.38.001232

View at Publisher

33 Jayaswal, G., Mistura, G., Merano, M.

Observation of the Imbert-Fedorov effect via weak value amplification

(2014) *Optics Letters*, 39 (8), pp. 2266-2269. Cited 30 times.
http://www.opticsinfobase.org/view_article.cfm?gotourl=http%3A%2F%2Fwww%2Eopticsinfobase%2Eorg%2FDirectPDFAccess%2F25B4A97C-FBAD-19F1-C60
2266%2Epdf%3Fda%3D1%26id%3D282554%26seq%3D0%26mobile%3Dno&org=
doi: 10.1364/OL.39.002266

View at Publisher

34 Goswami, S., Dhara, S., Pal, M., Nandi, A., Panigrahi, P.K., Ghosh, N.

Optimized weak measurements of Goos- Hänchen and Imbert-Fedorov shifts in partial reflection

(2016) *Optics Express*, 24 (6), pp. 6041-6051. Cited 8 times.
https://www.osapublishing.org/view_article.cfm?gotourl=https%3A%2F%2Fwww%2Eosapublishing%2Eorg%2FDirectPDFAccess%2FE4632BC3-F80B-24AB-D3
6041%2Epdf%3Fda%3D1%26id%3D337123%26seq%3D0%26mobile%3Dno&org=
doi: 10.1364/OE.24.006041

View at Publisher

35 Prajapati, C.

Numerical calculation of beam shifts for higher-order Laguerre-Gaussian beams upon transmission

(2017) *Optics Communications*, 389, pp. 290-296. Cited 4 times.
doi: 10.1016/j.optcom.2016.12.059

View at Publisher

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Short-term forecasting of ionospheric total electron content over a low-latitude global navigation satellite system station (Article)

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Abstract

View references (37)

The prediction and forecasting of ionospheric delay at equatorial and low-latitude regions is an essential contribution for improving the global positioning system services. In this study, hybrid auto-regressive integrated moving average (ARIMA) models are implemented based on wavelet transform (WT) and empirical mode decomposition (EMD) for 1 h ahead forecast of ionospheric total electron content (TEC). The performance of ARIMA and hybrid models, WT and EMD in combination with ARIMA (WARIMA and EARIMA) is evaluated during various seasons and March geomagnetic storm conditions in 2013 and 2015. The proposed models are validated with empirical global TEC models and results show that the EARIMA has less error measurements compared with ARIMA and WARIMA models. The EARIMA ionospheric forecasting model can be useful for developing an early warning ionospheric space weather system over low latitudes. © The Institution of Engineering and Technology 2017.

Indexed keywords

Engineering controlled terms: Geomagnetism, Global positioning system, Ionosphere, Navigation systems, Signal processing, Wavelet decomposition, Wavelet transforms, Weather forecasting

Compendex keywords: Auto regressive integrated moving average models, Empirical Mode Decomposition, Equatorial and low latitudes, Global Navigation Satellite Systems, Ionospheric forecasting, Ionospheric total electron content, Prediction and forecasting, Short-term forecasting

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References (37)

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1 Warnant, R., Kutiev, I., Marinov, P., Bavier, M., Lejeune, S.
Ionospheric and geomagnetic conditions during periods of degraded GPS position accuracy: 1. Monitoring variability in TEC which degrades the accuracy of Real-Time Kinematic GPS applications
(2007) *Advances in Space Research*, 39 (5), pp. 875-880. Cited 5 times.
doi: 10.1016/j.asr.2006.03.044
View at Publisher

2 Basu, S., Groves, K.M., Quinn, J.M., Doherty, P.
A comparison of TEC fluctuations and scintillations at Ascension Island
(1999) *Journal of Atmospheric and Solar-Terrestrial Physics*, 61 (16), pp. 1219-1226. Cited 128 times.
doi: 10.1016/S1364-6826(99)00052-8
View at Publisher

3 Coster, A., Foster, J., Erickson, P.
Monitoring the ionosphere with GPS: Space weather
(2003) *GPS World*, 14 (5), pp. 42-47. Cited 73 times.
http://www.gpsworld.com/

4 Brunini, C.
Global ionospheric model from GPS measurements
(1998) *Fac. de Cienc. Astron. Geofis*, p. 191. Cited 17 times.
PhD thesis in Astronomy, Universidad Nacional de La Plata, La Plata, Argentina

5 Zolesi, B., Cander, L.R.
Ionospheric prediction and forecasting
(2014) *Ionospheric Prediction and Forecasting*, pp. 1-240. Cited 35 times.
http://dx.doi.org/10.1007/978-3-642-38430-1
ISBN: 978-364238430-1; 978-364238429-5
doi: 10.1007/978-3-642-38430-1
View at Publisher

6 Sur, D., Paul, A.
Comparison of standard TEC models with a Neural Network based TEC model using multistation GPS TEC around the northern crest of Equatorial Ionization Anomaly in the Indian longitude sector during the low and moderate solar activity levels of the 24th solar cycle
(2013) *Advances in Space Research*, 52 (5), pp. 810-820. Cited 13 times.
doi: 10.1016/j.asr.2013.05.020
View at Publisher

7 Huang, Z., Li, Q.B., Yuan, H.

Forecasting of ionospheric vertical TEC 1-h ahead using a genetic algorithm and neural network

(2015) *Advances in Space Research*, 55 (7), pp. 1775-1783. Cited 5 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2015.01.026

View at Publisher

8 Liu, L., Chen, J., Wu, P.
Accuracy analysis by using Warima model to forecast TEC in China
(2015) *Int. Conf. on Intelligent Earth Observing and Applications*
Int. Society for Optics and Photonics

9 Erdoğan, H., Arslan, N.

Identification of vertical total electron content by time series analysis

(2009) *Digital Signal Processing: A Review Journal*, 19 (4), pp. 740-749. Cited 9 times.
doi: 10.1016/j.dsp.2008.07.002

View at Publisher

10 Krankowski, A., Kosek, W., Baran, L.W., Popinski, W.

Wavelet analysis and forecasting of VTEC obtained with GPS observations over European latitudes

(2005) *Journal of Atmospheric and Solar-Terrestrial Physics*, 67 (12 SPEC. ISS.), pp. 1147-1156. Cited 29 times.
doi: 10.1016/j.jastp.2005.03.004

View at Publisher

11 Koutroumbas, K., Tsagouri, I., Belehaki, A.

Time series autoregression technique implemented on-line in DIAS system for ionospheric forecast over Europe

(2008) *Annales Geophysicae*, 26 (2), pp. 371-386. Cited 26 times.
http://www.ann-geophys.net/volumes_and_issues.html
doi: 10.5194/angeo-26-371-2008

View at Publisher

12 Elmunim, N.A., Abdullah, M., Hasbi, A.M., Bahari, S.A.

Comparison of statistical Holt-Winter models for forecasting the ionospheric delay using GPS observations

(2015) *Indian Journal of Radio and Space Physics*, 44 (1), pp. 28-34. Cited 8 times.
http://nopr.niscair.res.in/bitstream/123456789/31324/1/IJRSP%2044(1)%2028-34.pdf

13 Xiaodong, R., Fengbo, W., Xiaohong, Z.
Short-term TEC prediction of ionosphere based on ARIMA model
(2016) *J. Geod. Geoinf. Sci.*, 1 (1), pp. 1-14.

14 Dabas, R.S., Singh, L., Garg, S.C., Das, R.M., Sharma, K., Vohra, V.K.

Growth and decay of a post-sunset equatorial anomaly at low latitudes: Control of ExB, neutral winds and daytime electrojet strength

(2006) *Journal of Atmospheric and Solar-Terrestrial Physics*, 68 (14), pp. 1622-1632. Cited 6 times.
doi: 10.1016/j.jastp.2006.05.020

View at Publisher

15 Paul, A., Das, A., DasGupta, A.

Characteristics of SBAS grid sizes around the northern crest of the equatorial ionization anomaly

(2011) *Journal of Atmospheric and Solar-Terrestrial Physics*, 73 (13), pp. 1715-1722. Cited 13 times.
doi: 10.1016/j.jastp.2011.03.008

View at Publisher

16 Takahashi, H., Costa, S., Otsuka, Y., Shiokawa, K., Monico, J.F.G., Paula, E., Nogueira, P., (...), Gatto, R.

Diagnostics of equatorial and low latitude ionosphere by TEC mapping over Brazil

(2014) *Advances in Space Research*, 54 (3), pp. 385-394. Cited 13 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2014.01.032

View at Publisher

17 Ghaffari Razin, M.R., Voosoghi, B.

Modeling of ionosphere time series using wavelet neural networks (case study: N-W of Iran)

(2016) *Advances in Space Research*, 58 (1), pp. 74-83. Cited 7 times.
http://www.journals.elsevier.com/advances-in-space-research/
doi: 10.1016/j.asr.2016.04.006

View at Publisher

18 Huang, N.E., Shen, Z., Long, S.R., Wu, M.C., Snin, H.H., Zheng, Q., Yen, N.-C., (...), Liu, H.H.

The empirical mode decomposition and the Hubert spectrum for nonlinear and non-stationary time series analysis

(1998) *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 454 (1971), pp. 903-995. Cited 10850 times.
http://rspa.royalsocietypublishing.org/
doi: 10.1098/rspa.1998.0193

View at Publisher

19 Tsolis, G.S., Xenos, T.D.

Seismo-ionospheric coupling correlation analysis of earthquakes in Greece, using empirical mode decomposition

(2009) *Nonlinear Processes in Geophysics*, 16 (1), pp. 123-130. Cited 11 times.
http://www.nonlin-processes-geophys.net/volumes_and_issues.html
doi: 10.5194/npg-16-123-2009

View at Publisher

20 Ratnam, D.V., Sivavaraprasad, G., Lee, J.

Automatic ionospheric scintillation detector for global navigation satellite system receivers

(2015) *IET Radar, Sonar and Navigation*, 9 (6), pp. 702-711. Cited 8 times.
www.ietdl.org/IET-RSN
doi: 10.1049/iet-rsn.2014.0232

View at Publisher

21 Bilitza, D., Altadill, D., Zhang, Y., Mertens, C., Truhlik, V., Richards, P., McKinnell, L.-A., (...), Reinisch, B.

The International Reference Ionosphere 2012 - A model of international collaboration

(2014) *Journal of Space Weather and Space Climate*, 4, art. no. A07. Cited 226 times.
http://www.swsc-journal.org/
doi: 10.1051/swsc/2014004

View at Publisher

22 Jakowski, N., Hoque, M.M., Mayer, C.
A new global TEC model for estimating transionospheric radio wave propagation errors

(2011) *Journal of Geodesy*, 85 (12), pp. 965-974. Cited 55 times.
doi: 10.1007/s00190-011-0455-1

View at Publisher

23 Langley, R., Fedrizzi, M., Paula, E.
Mapping the low latitude ionosphere with GPS
(2002) *GPS World*, 13 (2), pp. 41-46. Cited 56 times.

24 Sarma, A.D., Venkata Ratnam, D., Krishna Reddy, D.
Modelling of low-latitude ionosphere using modified planar fit method for GAGAN

(2009) *IET Radar, Sonar and Navigation*, 3 (6), pp. 609-619. Cited 28 times.
doi: 10.1049/iet-rsn.2009.0022

View at Publisher

25 Daubechies, I.
Ten lectures on wavelets, society for industrial and applied mathematics
(1992) . Cited 11010 times.
SIAM

26 Mandrikova, O.V., Fetisova Glushkova, N.V., Al-Kasasbeh, R.T., Klionskiy, D.M., Geppener, V.V., Ilyash, M.Y.
Ionospheric parameter modelling and anomaly discovery by combining the wavelet transform with autoregressive models

(2015) *Annals of Geophysics*, 58 (5), art. no. A0550. Cited 4 times.
http://www.annalsofgeophysics.eu/index.php/annals/article/download/6729/6545
doi: 10.4401/ag-6729

View at Publisher

27 Mallat, S.G.
Multiresolution approximations and wavelet orthonormal bases of $I^2(r)$

(1989) *Transactions of the American Mathematical Society*, 315 (1), pp. 69-87. Cited 1562 times.
doi: 10.1090/S0002-9947-1989-1008470-5

View at Publisher

28 Mallat, S.G.
A Theory for Multiresolution Signal Decomposition: The Wavelet Representation

(1989) *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 11 (7), pp. 674-693. Cited 13427 times.
doi: 10.1109/34.192463

View at Publisher

29 Shukla, S.K., Tiwari, A.K.
Efficient algorithms for discrete wavelet transform: with applications to denoising and fuzzy inference systems
(2013) . Cited 17 times.
Springer Science and Business Media

30 Yadav, K.S., Karia, S.P., Pathak, K.N.

Removal of solar radiation effect based on nonlinear data processing technique for Seismo-Ionospheric Anomaly before few earthquakes

(2016) *Geomatics, Natural Hazards and Risk*, 7 (3), pp. 1147-1161.
http://www.tandfonline.com/toc/tgnh20/current
doi: 10.1080/19475705.2015.1021864

View at Publisher

31 Mallat, S.
A wavelet tour of signal processing
(1999) . Cited 12241 times.
Academic Press, San Diego, CA, USA, 2nd edn

32 Mendes Jr., O., Domingues, M.O., Mendes da Costa, A., Clúa de Gonzalez, A.L.

Wavelet analysis applied to magnetograms: Singularity detections related to geomagnetic storms

(2005) *Journal of Atmospheric and Solar-Terrestrial Physics*, 67 (17-18 SPEC. ISS.), pp. 1827-1836. Cited 33 times.
doi: 10.1016/j.jastp.2005.07.004

View at Publisher

33 Box, G.E.P., Jenkins, G.M.
Time series analysis forecasting and control
(1976) . Cited 14639 times.
Holden-Day, San Francisco, 1st edn

34 Akaike, H.

A New Look at the Statistical Model Identification

(1974) *IEEE Transactions on Automatic Control*, 19 (6), pp. 716-723. Cited 23396 times.
doi: 10.1109/TAC.1974.1100705

View at Publisher

35 Olwendo, O.J., Yamazaki, Y., Cilliers, P.J., Baki, P., Doherty, P.

A study on the variability of ionospheric total electron content over the East African low-latitude region and storm time ionospheric variations

(2016) *Radio Science*, 51 (9), pp. 1503-1518.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1944-799X
doi: 10.1002/2015RS005785

View at Publisher

36 Wu, C.C., Liou, K., Lepping, R.P.
The first super geomagnetic storm of solar cycle 24: 'the St. Patrick's day event (17 March 2015)'
(2016) *Earth Planets Space*, 68 (151), pp. 1-12.

37 Spogli, L., Cesaroni, C., Di Mauro, D., Pezzopane, M., Alfonsi, L., Musicò, E., Povero, G., (...), Floury, N.

Formation of ionospheric irregularities over Southeast Asia during the 2015 St. Patrick's Day storm

(2016) *Journal of Geophysical Research: Space Physics*, 121 (12), pp. 12,211-12,233. Cited 8 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2169-9402
doi: 10.1002/2016JA023222

View at Publisher

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Document details

Journal of Chemical Sciences
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A novel synthesis of chromone based unnatural α -amino acid derivatives (Article)

Kandula, V.[ab], Gudipati, R.[a], Chatterjee, A.[b], Kaliyaperumala, M.[a], Yennam, S.[a], Behera, M.[a]

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Abstract

View references (41)

An efficient method for the preparation of chromone based α -amino acid derivatives by alkylation of glycinate schiff base with 3-bromomethyl chromone as well as 2-bromomethyl chromone has been described. Using this method, 2-amino-3-(4-oxo-2-chromenyl)propanoic acid and 2-amino-3-(4-oxo-3-chromenyl)propanoic acid, two novel chromone-amino acid conjugates have been prepared. Furthermore, the separation of chromone amino acid enantiomers by chiral column chromatography was accomplished. Graphical Abstract : Synopsis: An efficient method for the preparation of chromone based α -amino acid derivatives by alkylation of glycinate schiff base with 3-bromomethyl chromone as well as 2-bromomethyl chromone has been described. These conjugates can be considered as analogues of phenyl alanine where phenyl group has been replaced by chromone moiety.[Figure not available: see fulltext.]. © 2017, Indian Academy of Sciences.

Reaxys Database Information

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Author keywords

alkylation Chromone glycine derivatives hybrid molecules isoflavones unnatural aminoacids

Indexed keywords

Engineering controlled terms: Alkylation Amino acids Chromatography Column chromatography Flavonoids Saturated fatty acids Stereochemistry

Compendex keywords: Alpha-amino acids Amino acid conjugates Amino acid enantiomers Chromones Glycine derivatives Hybrid molecules Isoflavones Phenyl-alanine

Engineering main heading: Propionic acid

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References (41)

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1 Li, N.-G., Shi, Z.-H., Tang, Y.-P., Ma, H.-Y., Yang, J.-P., Li, B.-Q., Wang, Z.-J., (...), Duana, J.-A.
Synthetic strategies in the construction of chromones

(2010) *Journal of Heterocyclic Chemistry*, 47 (4), pp. 785-799. Cited 27 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/123539193/PDFSTART
doi: 10.1002/jhet.393

View at Publisher

2 Leahy, J.J.J., Golding, B.T., Griffin, R.J., Hardcastle, I.R., Richardson, C., Rigoreau, L., Smith, G.C.M.
Identification of a highly potent and selective DNA-dependent protein kinase (DNA-PK) inhibitor (NU7441) by screening of chromenone libraries

(2004) *Bioorganic and Medicinal Chemistry Letters*, 14 (24), pp. 6083-6087. Cited 211 times.
doi: 10.1016/j.bmcl.2004.09.060

View at Publisher

3 Griffin, R.J., Fontana, G., Golding, B.T., Guiard, S., Hardcastle, I.R., Leahy, J.J.J., Martin, N., (...), Smith, G.C.M.
Selective benzopyranone and pyrimido[2,1-α]isoquinolin-4-one inhibitors of DNA-dependent protein kinase: Synthesis, structure-activity studies, and radiosensitization of a human tumor cell line in vitro

(2005) *Journal of Medicinal Chemistry*, 48 (2), pp. 569-585. Cited 112 times.
doi: 10.1021/jm049526a

View at Publisher

4 Kim, H.P., Son, K.H., Chang, H.W., Kang, S.S.
Anti-inflammatory plant flavonoids and cellular action mechanisms

(2004) *Journal of Pharmacological Sciences*, 96 (3), pp. 229-245. Cited 516 times.
doi: 10.1254/jphs.CRJ04003X

View at Publisher

5 Bhat, A.S., Whetstone, J.L., Brueggemeier, R.W.
Novel synthetic routes suitable for constructing benzopyrone combinatorial libraries

(1999) *Tetrahedron Letters*, 40 (13), pp. 2469-2472. Cited 56 times.
doi: 10.1016/S0040-4039(99)00279-8

View at Publisher

6 Marie-Laure, L., Mahesh, U., Grace, Y.J.C., Shao, Q.Y.
Developing site-Specific immobilization strategies of peptides in a microarray Bioorg
(2004) *Med. Chem*, 12, p. 2079.

Synthetic strategies in the construction of chromones
Li, N.-G. , Shi, Z.-H. , Tang, Y.-P.
(2010) Journal of Heterocyclic Chemistry

View all related documents based on references

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Authors › Keywords ›

7 Krishnamachari, V., Levine, L.H., Zhou, C., Paré, P.W.

In vitro flavon-3-ol oxidation mediated by a B ring hydroxylation pattern

(2004) *Chemical Research in Toxicology*, 17 (6), pp. 795-804. Cited 40 times.
doi: 10.1021/tx034242z

View at Publisher

8 Marder, M., Viola, H., Bacigaluppo, J.A., Colombo, M.I., Wasowski, C., Wolfman, C., Medina, J.H., (...), Paladini, A.C.

Detection of benzodiazepine receptor ligands in small libraries of flavone derivatives synthesized by solution phase combinatorial chemistry

(1998) *Biochemical and Biophysical Research Communications*, 249 (2), pp. 481-485. Cited 60 times.
http://www.sciencedirect.com/science/journal/0006291X
doi: 10.1006/bbrc.1998.9146

View at Publisher

9 Hoult, J.R.S., Moroney, M.A., Payá, M.

Actions of flavonoids and coumarins on lipoxygenase and cyclooxygenase

(1994) *Methods in Enzymology*, 234 (C), pp. 443-454. Cited 119 times.
doi: 10.1016/0076-6879(94)34115-X

View at Publisher

10 Parmar, V.S., Bracke, M.E., Philippe, J., Wengel, J., Jain, S.C., Olsen, C.E., Bisht, K.S., (...), Mareel, M.M.

Anti-invasive activity of alkaloids and polyphenolics in vitro

(1997) *Bioorganic and Medicinal Chemistry*, 5 (8), pp. 1609-1619. Cited 52 times.
doi: 10.1016/S0968-0896(97)00091-6

View at Publisher

11 Galietta, L.J.V., Springsteel, M.F., Eda, M., Niedzinski, E.J., By, K., Haddadin, M.J., Kurth, M.J., (...), Verkman, A.S.

Novel CFTR Chloride Channel Activators Identified by Screening of Combinatorial Libraries Based on Flavone and Benzoquinolizinium Lead Compounds

(2001) *Journal of Biological Chemistry*, 276 (23), pp. 19723-19728. Cited 159 times.
doi: 10.1074/jbc.M101892200

View at Publisher

12 Horton, D.A., Bourne, G.T., Smythe, M.L.

The combinatorial synthesis of bicyclic privileged structures or privileged substructures

(2003) *Chemical Reviews*, 103 (3), pp. 893-930. Cited 2083 times.
doi: 10.1021/cr020033s

View at Publisher

13 Protti, S., Mezzetti, A., Lapouge, C., Cornard, J.-P.

Photochemistry of metal complexes of 3-hydroxyflavone: Towards a better understanding of the influence of solar light on the metal-soil organic matter interactions

(2007) *Photochemical and Photobiological Sciences*, 7 (1), pp. 109-119. Cited 33 times.
doi: 10.1039/b709682h

View at Publisher

14 Kotha, S.
The building block approach to unusual α-amino acid derivatives and peptides

(2003) *Accounts of Chemical Research*, 36 (5), pp. 342-351. Cited 146 times.
doi: 10.1021/ar020147q

View at Publisher

15 Dougherty, D.A.
Unnatural amino acids as probes of protein structure and function

(2000) *Current Opinion in Chemical Biology*, 4 (6), pp. 645-652. Cited 169 times.
http://www.elsevier.com/locate/cbi
doi: 10.1016/S1367-5931(00)00148-4

View at Publisher

16 Rossi, E., Pirovano, V., Negrato, M., Abbiati, G., Dell'Acqua, M.
Synthesis of constrained analogues of tryptophan

(2015) *Beilstein Journal of Organic Chemistry*, 11, pp. 1997-2006. Cited 8 times.
http://www.beilstein-journals.org/bjoc/content/pdf/1860-5397-11-216.pdf
doi: 10.3762/bjoc.11.216

View at Publisher

17 Craik, D.J., Fairlie, D.P., Liras, S., Price, D.
The Future of Peptide-based Drugs

(2013) *Chemical Biology and Drug Design*, 81 (1), pp. 136-147. Cited 561 times.
doi: 10.1111/cbdd.12055

View at Publisher

18 Góngora-Benítez, M., Tulla-Puche, J., Albericio, F.
Multifaceted roles of disulfide bonds. peptides as therapeutics

(2014) *Chemical Reviews*, 114 (2), pp. 901-926. Cited 128 times.
doi: 10.1021/cr400031z

View at Publisher

19 Vagner, J., Qu, H., Hruby, V.J.
Peptidomimetics, a synthetic tool of drug discovery

(2008) *Current Opinion in Chemical Biology*, 12 (3), pp. 292-296. Cited 248 times.
doi: 10.1016/j.cbpa.2008.03.009

View at Publisher

20 Liskamp, R.M.J., Rijkers, D.T.S., Kruijtzer, J.A.W., Kemmink, J.
Peptides and Proteins as a Continuing Exciting Source of Inspiration for Peptidomimetics

(2011) *ChemBioChem*, 12 (11), pp. 1626-1653. Cited 107 times.
doi: 10.1002/cbic.201000717

View at Publisher

21 Hanessian, S., Auzzas, L.
The practice of ring constraint in peptidomimetics using bicyclic and polycyclic amino acids

(2008) *Accounts of Chemical Research*, 41 (10), pp. 1241-1251. Cited 94 times.
doi: 10.1021/ar8000052

View at Publisher

22 Stevenazzi, A., Marchini, M., Sandrone, G., Vergani, B., Lattanzio, M.
Amino acidic scaffolds bearing unnatural side chains: An old idea generates new and versatile tools for the life sciences (Open Access)

(2014) *Bioorganic and Medicinal Chemistry Letters*, 24 (23), pp. 5349-5356. Cited 32 times.
http://www.journals.elsevier.com/bioorganic-and-medicinal-chemistry-letters/
doi: 10.1016/j.bmcl.2014.10.016

View at Publisher

23 O'Donnell, M.J.
The preparation of optically active α-amino acids from the benzophenone imines of glycine derivatives

(2001) *Aldrichimica Acta*, 34 (1), pp. 3-15. Cited 296 times.

View at Publisher

24 Hashimoto, T., Maruoka, K.
Recent development and application of chiral phase-transfer catalysts

(2007) *Chemical Reviews*, 107 (12), pp. 5656-5682. Cited 477 times.
doi: 10.1021/cr068368n

View at Publisher

25 Kotha, S., Goyal, D., Chavan, A.S.
Diversity-oriented approaches to unusual α-amino acids and peptides: Step economy, atom economy, redox economy, and beyond

(2013) *Journal of Organic Chemistry*, 78 (24), pp. 12288-12313. Cited 52 times.
doi: 10.1021/jo4020722

View at Publisher

26 Ball, J.B., Hughes, R.A., Alewood, P.F., Andrews, P.R.
β-turn topography

(1993) *Tetrahedron*, 49 (17), pp. 3467-3478. Cited 133 times.
doi: 10.1016/S0040-4020(01)90207-8

View at Publisher

27 Lesma, G., Colombo, A., Sacchetti, A., Silvani, A.
A new spirocyclic proline-based lactam as efficient type II′ β-turn inducing peptidomimetic

(2008) *Tetrahedron Letters*, 49 (52), pp. 7423-7425. Cited 13 times.
doi: 10.1016/j.tetlet.2008.10.072

View at Publisher

28 Marcelino, A.M.C., Gierasch, L.M.
Roles of β-turns in protein folding: From peptide models to protein engineering

(2008) *Biopolymers*, 89 (5), pp. 380-391. Cited 78 times.
doi: 10.1002/bip.20960

View at Publisher

29 Wallén, E.A.A., Dahlén, K., Morten Grøtli, T., Luthman, K.
Synthesis of 3-aminomethyl-2-aryl-8-bromo-6-chlorochromones

(2007) *Organic Letters*, 9 (3), pp. 389-391. Cited 26 times.
doi: 10.1021/ol062478z

View at Publisher

30 Fridén-Saxin, M., Seifert, T., Malo, M., Da Silva Andersson, K., Pemberton, N., Dyrager, C., Friberg, A., (...), Luthman, K.

Chroman-4-one and chromone based somatostatin β-turn mimetics

(2016) *European Journal of Medicinal Chemistry*, 114, pp. 59-64. Cited 5 times.
http://www.journals.elsevier.com/european-journal-of-medicinal-chemistry/
doi: 10.1016/j.ejmech.2016.02.046

View at Publisher

31 Fridén-Saxin, M., Seifert, T., Hansen, L.K., GrØotli, M., Erdelyi, M., Luthman, K.

Proline-mediated formation of novel chroman-4-one tetrahydropyrimidines
(Open Access)

(2012) *Tetrahedron*, 68 (35), pp. 7035-7040. Cited 9 times.
doi: 10.1016/j.tet.2012.06.077

View at Publisher

32 Teimouri, M.B., Akbari-Moghaddam, P., Golbaghi, G.

Pseudo-five-component reaction between 3-formylchromones, Meldrum's acid, isocyanides and primary arylamines: Diversity-oriented synthesis of novel chromone-containing peptidomimetics

(2011) *ACS Combinatorial Science*, 13 (6), pp. 659-666. Cited 23 times.
doi: 10.1021/co200125a

View at Publisher

33 Tietze, L.F., Bell, H.P., Chandrasekhar, S.

Natural product hybrids as new leads for drug discovery

(2003) *Angewandte Chemie - International Edition*, 42 (34), pp. 3996-4028. Cited 291 times.
doi: 10.1002/anie.200200553

View at Publisher

34 Mehta, G., Singh, V.

Hybrid systems through natural product leads: An approach towards new molecular entities

(2002) *Chemical Society Reviews*, 31 (6), pp. 324-334. Cited 159 times.
doi: 10.1039/b204748a

View at Publisher

35 Decker, M.

Hybrid molecules incorporating natural products: Applications in cancer therapy, neurodegenerative disorders and beyond

(2011) *Current Medicinal Chemistry*, 18 (10), pp. 1464-1475. Cited 93 times.
doi: 10.2174/092986711795328355

View at Publisher

36 Jones Jr., W.D.

Aminolysis and hydrolysis of chromonyl oxazolones and some condensation reactions of 2-methylchromone leading to novel chromones

(1981) *Journal of the Chemical Society, Perkin Transactions 1*, pp. 344-348. Cited 7 times.
doi: 10.1039/P19810000344

View at Publisher

37 Ravi Kumar, P., Behera, M., Raghavulu, K., Jaya Shree, A., Yennam, S.
Synthesis of novel isoxazole-benzoquinone hybrids via 1,3-dipolar cycloaddition reaction as key step

(2012) *Tetrahedron Letters*, 53 (32), pp. 4108-4113. Cited 18 times.
doi: 10.1016/j.tetlet.2012.05.123

View at Publisher

38 Ravi Kumar, P., Behera, M., Sambaiah, M., Venu, K., Nagaraju, P., Jaya Shree, A., Yennam, S.
Design and Synthesis of Novel Isoxazole Tethered Quinone-Amino Acid Hybrids
(2014) *Journal of Amino Acids. Article ID 2014 721291*

39 Balakrishna, C., Payili, N., Yennam, S., Uma Devi, P., Behera, M.
Synthesis of new kojic acid based unnatural α-amino acid derivatives

(2015) *Bioorganic and Medicinal Chemistry Letters*, 25 (21), pp. 4753-4756. Cited 8 times.
http://www.journals.elsevier.com/bioorganic-and-medicinal-chemistry-letters/
doi: 10.1016/j.bmcl.2015.07.099

View at Publisher

40 China Raju, B., Nageswara Rao, R., Suman, P., Yogeeswari, P., Sriram, D., Shaik, T.B., Kalivendi, S.V.
Synthesis, structure-activity relationship of novel substituted 4H-chromen-1,2,3,4-tetrahydropyrimidine-5-carboxylates as potential anti-mycobacterial and anticancer agents

(2011) *Bioorganic and Medicinal Chemistry Letters*, 21 (10), pp. 2855-2859. Cited 65 times.
doi: 10.1016/j.bmcl.2011.03.079

View at Publisher

41 Theodora, W.G., Peter, G.M.W.
(1999) *In Protective Group in Organic Synthesis 3rd edn. (New York: John Wiley)*

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Rasayan Journal of Chemistry Open Access
Volume 10, Issue 3, July-September 2017, Pages 1015-1024

Synthesis and spectral characterization of antimicrobial activity of the binuclear co(II), Ni(II), Cu(II) and Zn(II) complexes of a novel macrocyclic biphenyl bridged schiff base Ligand (Article)

Mallikarjun, T.[a], Kasiviswanath, I.V.[a], Krishna, V.[b], Chary, D.P.[c]

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Abstract

View references (22)

A novel macrocyclic Schiff base ligand was synthesized by reacting 4-(4-aminophenoxy)benzenamine with 2,6-diformyl-4-methyl phenol and a series of metal complexes with this new Schiff base was synthesized by reaction with Co(II), Ni(II), Cu(II) and Zinc(II) metal salts. The Schiff base and its complexes have been characterized by elemental analysis, IR,^{1}H NMR, UV–vis, ES^{+} mass, ESR spectra, fluorescence, thermal, magnetic and molar conductance data. The analytical data reveal that the Co(II), Ni(II), Cu(II) and Zn(II) complexes possess 1:1 metal– ligand ratios. All the complexes are non-electrolytes in DMF and DMSO due to their low molar conductance values. Infrared spectral data suggest that the azomethanine Schiff base behaves as a hexadentate ligand with NON donor sequence towards the metal ions. The ESR spectral data of copper complexes show that the metal–ligand bond has considerable covalent character. The electrochemical behavior of the copper (II) complex was investigated by cyclic voltammetry. The Schiff base and its complexes have also been screened for their antibacterial (Escherichia coli, Staphylococcus aureus, Shigella dysentery, Micrococcus, Bacillus subtilis, Bacillus cereus and Pseudomonas aeruginosa) and antifungal activities (Aspergillus niger, Penicillium and Candida albicans) by MIC method.

Reaxys Database Information

View Compounds

Author keywords

Antimicrobial activity | Cyclic voltametry | ESR | Magnetic susceptibilitys | Metal(II) Schiff base complexes

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References (22)

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1 Dubey, S.N., Kaushik, B.
(1985) *Indian J. Chem.*, 24, p. 950. Cited 27 times.

2 Murukan, B., Mohanan, K.
Synthesis, characterization and antibacterial properties of some trivalent metal complexes with [(2-hydroxyl-1-naphthaldehyde)-3-isatin]-bishydrazone
(2007) *Journal of Enzyme Inhibition and Medicinal Chemistry*, 22 (1), pp. 65-70. Cited 43 times.
doi: 10.1080/14756360601027373
View at Publisher

3 Naskar, S., Mishra, D., Kumar Chattopadhyay, S., Corbella, M., Blake, A.J.
(2005) *Dalton Trans*, 2428.

4 Denton, D.A., Suschitzky, N.
(1963) *J. Chem. Soc.*, 4741.

5 Gange, R.R., Spiro, C.L., Smith, T.J., Hamann, C.A., Thies, W.R., Shiemke, A.K., Am, J.
(1981) *Chem. Soc.*, 103, p. 4073. Cited 22 times.

6 Ullmann, F., Brittner, K.
(1909) *Berichte der deutschen chemischen Gesellschaft*, 42 (2), pp. 2539-2548. Cited 72 times.
doi: 10.1002/cber.190904202160

7 Offiong, O.E., Martelli, S.
Antibacterial activity of metal complexes of benzil and benzoin thiosemicarbazones
(1994) *Farmaco*, 49 (7-8), pp. 513-518. Cited 65 times.

8 Collee, J.G., Duguid, J.P., Farser, A.G., Marmion, B.D.
(1989) *Practical Medical Microbiology*. Cited 252 times.
Churchill Livingstone, New York

9 Jerzy, K., Teodor, Z.
(1995) *Chem. Abstr.*, 123, p. 339.

10 Gunthkal, M.S., Goudar, T.R., Patil, S.A.
(2000) *Oriental J. Chem.*, 16, p. 151. Cited 15 times.

11 Rao, S.
Synthesis, magneto-spectral and biological studies of manganese(II) complexes with heteroaroyl hydrazones
(2005) *Asian Journal of Chemistry*, 17 (4), pp. 2663-2668. Cited 9 times.

12 Freedman, H.H.
Intramolecular H-Bonds. I. A Spectroscopic Study of the Hydrogen Bond between Hydroxyl and Nitrogen
(1961) *Journal of the American Chemical Society*, 83 (13), pp. 2900-2905. Cited 279 times.
doi: 10.1021/ja01474a026
View at Publisher

13 Baker, A.W., Shulgin, A.T.
Intramolecular Hydrogen Bonding. II. The Determination of Hammett Sigma Constants by Intramolecular Hydrogen Bonding in Schiff's Bases
(1959) *Journal of the American Chemical Society*, 81 (7), pp. 1523-1529. Cited 93 times.
doi: 10.1021/ja01516a001
View at Publisher

14 Nakamoto, K.
(1970) *Infrared Spectra of Inorganic and Coordination Compounds*. Cited 14942 times.
Wiley-Interscience, New York

15 Mohapatra, B.B., Saraf, S.K.
Polymetallic complexes. Part-LXXXII. Bis-bidentate and bis-tridentate azodye dimeric complexes of Co^{II}, Ni^{II},Cu^{II},Zn^{II},Cd^{II} and Hg^{II}
(2003) *Journal of the Indian Chemical Society*, 80 (7), pp. 696-699. Cited 30 times.

16 Choudhary, C.K., Choudray, R.K., Mishra, L.K.
(2003) *J. Indian Chem. Soc.*, 80.

17 Satyanarayana, D.N.
(2001) *Electronic Absorption Spectroscopy and Related Techniques*, p. 1023. Cited 159 times.
University Press, Hyderabad

18 Sengottuvelan, N., Mohanmani, J., Kondaswamy, M.
(2002) *Polyhedron*, 21.

19 Vtlla, J.F., Hatfield, W.E.
(1971) *Chem Commun*, 101.

20 Shirin, Z., Mukherjee, R.N.
Synthesis, spectra and electrochemistry of ruthenium(III) complexes with cage-like Schiff-base ligands
(1992) *Polyhedron*, 11 (20), pp. 2625-2630. Cited 83 times.
doi: 10.1016/S0277-5387(00)80232-6
View at Publisher

21 Syamala, A., Chakravarty, A.R.

Synthesis, structure and electrochemical properties of complexes with a (μ-oxo)bis-(μ-carboxylato)diruthenium(III) core

(1993) *Polyhedron*, 12 (12), pp. 1545-1552. Cited 30 times.
doi: 10.1016/S0277-5387(00)84597-0

View at Publisher

22 Chandra, S., Gupta, L.K.
Sangeetika, Synth. React. Inorg
(2004) *Met.-Org. Chem.*, 34.

Document details

Current Trends in Biotechnology and Pharmacy
Volume 11, Issue 3, July 2017, Pages 223-241

Optimization of process parameters for bioactive metabolite production by nocardiopsis trehalosi VSM-13 using response surface methodology and unstructured kinetic modelling (Article)

Managamuri, U.[a], Vijayalakshmi, M.[a], Rama Krishna Ganduri, V.S.[bc], Satish Babu, R.[d], Poda, S.[c]

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View additional affiliations

Abstract

View references (39)

Nocardiopsis trehalosi VSM 13, an actinobacterium isolated from marine environment was tested for the optimum culture conditions in shake-flask fermentations using one-factor-at-atime method. Response Surface Methodology (RSM) based Central composite Design was used to design the experiments, build the model and determine the optimum conditions for the desirable responses. RSM using a full factorial Box- Behnken design evaluated the optimized process conditions as 10 days of incubation time, pH - 8.0, temperature - 35°C, fructose @ 1.5% (w/v) and yeast extract @ 1% (w/v) which influenced the bioactive metabolite production by N. trehalosi VSM 13 and RSM model obtained results (R^2> 0.99) revealed a satisfactory correlation between the experimental and predicted values. Unstructured kinetic model-based parameters were also evaluated using non-linear regression method to test the fitness of the selected models. Parameters of growth and substrate utilization rates have shown excellent significant R^2 values of 0.996 and 0.994, respectively.

Reaxys Database Information

View Compounds

Author keywords

Bioactive metabolites | Nocardiopsis trehalosi | Regression analysis | Statistical optimization

Indexed keywords

EMTREE drug terms: fructose | yeast extract

EMTREE medical terms: Article | Candida albicans | controlled study | experimental design | fermentation | glucose metabolism | growth rate | incubation time | inhibition zone | kinetic parameters | kinetics | metabolomics | Nocardiopsis | Nocardiopsis trehalosi | nonhuman | pH | predictive value | process optimization | Pseudomonas aeruginosa | response surface method | Staphylococcus aureus | Streptococcus mutans | temperature | Xanthomonas campestris

Chemicals and CAS Registry Numbers:

fructose, 30237-26-4, 57-48-7, 7660-25-5, 77907-44-9

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References (39)

1 Rahman, H., Austin, B., Mitchell, W.J., Morris, P.C., Jamieson, D.J., Adams, D.R., Spragg, A.M., (...), Schweizer, M.

Novel anti-infective compounds from marine bacteria

(2010) *Marine Drugs*, 8 (3), pp. 498-518. Cited 71 times.
http://www.mdpi.com/1660-3397/8/3/498/pdf
doi: 10.3390/md8030498

View at Publisher

2 Xiong, Z.-Q., Wang, J.-F., Hao, Y.-Y., Wang, Y.

Recent advances in the discovery and development of marine microbial natural products

(2013) *Marine Drugs*, 11 (3), pp. 700-717. Cited 59 times.
http://www.mdpi.com/1660-3397/11/3/700/pdf
doi: 10.3390/md11030700

View at Publisher

3 Newman, D.J., Cragg, G.M.

Natural products as sources of new drugs over the last 25 years

(2007) *Journal of Natural Products*, 70 (3), pp. 461-477. Cited 2687 times.
doi: 10.1021/np068054v

View at Publisher

4 Skropeta, D.

Deep-sea natural products

(2008) *Natural Product Reports*, 25 (6), pp. 1131-1166. Cited 109 times.
doi: 10.1039/b808743a

View at Publisher

5 Good Fellow, M., Stach, J.E.M., Brown, R., Avinash, B.N.V., Jones, A.L., Mexson, J., Hans-Peter, F., (...), Alan, T.B.
Verruosispora maris sp
(2011) *nov., a novel deep sea actinomycete isolated from a marine sediment which produces abyssomycins. Antonie. Van. Leeuwen*, 101, pp. 185-193.

6 Ismet, A., Vikineswary, S., Paramaswari, S., Wong, W.H., Ward, A., Seki, T., Fiedler, H.P., (...), Goodfellow, M.
Production and chemical characterization of antifungal metabolites from micromonospora sp. M39 isolated from mangrove rhizosphere soil

(2004) *World Journal of Microbiology and Biotechnology*, 20 (5), pp. 523-528. Cited 27 times.
doi: 10.1023/B:WIBI.0000040399.60343.4c

View at Publisher

7 Iwai, Y., Ömura, S.
Culture conditions for screening of new antibiotics

(1982) *the journal of antibiotics*, 35 (2), pp. 123-141. Cited 63 times.
doi: 10.7164/antibiotics.35.123

View at Publisher

8 Lounès, A., Lebrihi, A., Benslimane, C., Lefebvre, G., Germain, P.
Regulation of spiramycin synthesis in Streptomyces ambofaciens: Effects of glucose and inorganic phosphate

(1996) *Applied Microbiology and Biotechnology*, 45 (1-2), pp. 204-211. Cited 43 times.
doi: 10.1007/s002530050671

View at Publisher

9 Ripa, F.A., Nikkon, F., Zaman, S., Khondkar, P.
Optimal conditions for antimicrobial metabolites production from a New Streptomyces sp
(2009) *RUPA-08PR isolated from Bangladeshi soil. Mycobiology*, 37, pp. 211-214. Cited 30 times.

10 Kiranmayi, M.U., Sudhakar, P., Sreenivasulu, K., Vijayalakshmi, M.
Optimization of culturing conditions for improved production of bioactive metabolites by Pseudonocardia sp. VUK-10

(2011) *Mycobiology*, 39 (3), pp. 174-181. Cited 18 times.
http://www.mycobiology.or.kr/Upload/files/MYCOBIOLOGY/39(3)%20174-181.pdf
doi: 10.5941/MYCO.2011.39.3.174

View at Publisher

11 He, P., Wang, L., Xue, J., Cao, Z.
Electrolytic treatment of methyl orange in aqueous solution using three-dimensional electrode reactor coupling ultrasonics

(2010) *Environmental Technology*, 31 (4), pp. 417-422. Cited 13 times.
doi: 10.1080/09593330903511413

View at Publisher

12 Karichappan, T., Venkatachalam, S., Jeganathan, P.M.
Optimization of electrocoagulation process to treat grey wastewater in batch mode using response surface methodology

(2014) *Journal of Environmental Health Science and Engineering*, 12 (1), art. no. 29. Cited 30 times.
http://www.ijehse.com/archive
doi: 10.1186/2052-336X-12-29

View at Publisher

13 Ramkrishna, D., Fredrickson, A.G., Tsuchiya, H.M.
The dynamics of microbial growth
(1966) *J. Ferm. Technol*, 44, pp. 210-217. Cited 7 times.

14 Charalampopoulos, D., Vázquez, J.A., Pandiella, S.S.
Modelling and validation of Lactobacillus plantarum fermentations in cereal-based media with different sugar concentrations and buffering capacities

(2009) *Biochemical Engineering Journal*, 44 (2-3), pp. 96-105. Cited 21 times.
doi: 10.1016/j.bej.2008.11.004

View at Publisher

15 Olaoye, O.S., Kolawole, O.S.
Modeling of the kinetics of ethanol formation from glucose biomass in batch culture with a non-structured model
(2013) *Int. J. Eng. Res. Appl*, 3, pp. 562-565. Cited 5 times.

16 Managamuri, U., Vijayalakshmi, M., Poda, S., Ganduri, V.S.R.K., Babu, R.S.
Optimization of culture conditions by response surface methodology and unstructured kinetic modeling for bioactive metabolite production by Nocardiopsis litoralis VSM-8
(Open Access)

(2016) *3 Biotech*, 6 (2), art. no. 219. Cited 2 times.
http://www.springerlink.com/content/2190-572x/
doi: 10.1007/s13205-016-0535-2

View at Publisher

17 Ravikumar, K., Krishnan, S., Ramalingam, S., Balu, K.
Optimization of process variables by the application of response surface methodology for dye removal using a novel adsorbent

(2007) *Dyes and Pigments*, 72 (1), pp. 66-74. Cited 144 times.
doi: 10.1016/j.dyepig.2005.07.018

View at Publisher

18 Jia, X., Ding, C., Yuan, S., Zhang, Z., Chen, Y., Du, L., Yuan, M.
Extraction, purification and characterization of polysaccharides from Hawk tea

(2014) *Carbohydrate Polymers*, 99, pp. 319-324. Cited 39 times.
doi: 10.1016/j.carbpol.2013.07.090

View at Publisher

19 Treier, K., Lester, P., Hubbuch, J.
Application of genetic algorithms and response surface analysis for the optimization of batch chromatographic systems

(2012) *Biochemical Engineering Journal*, 63, pp. 66-75. Cited 14 times.
doi: 10.1016/j.bej.2012.02.003

View at Publisher

20 Thirugnanasambandham, K., Sivakumar, V., Maran, J.P.
Response surface modelling and optimization of treatment of meat industry wastewater using electrochemical treatment method

(2015) *Journal of the Taiwan Institute of Chemical Engineers*, 46, pp. 160-167. Cited 23 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/715607/description#description
doi: 10.1016/j.jtice.2014.09.021

View at Publisher

21 Mohammadi, H.S., Mostafavi, S.S., Soleimanib, S., Bozorgian, S., Pooraskari, M., Kianmehr, A.

Response surface methodology to optimize partition and purification of two recombinant oxidoreductase enzymes, glucose dehydrogenase and D-galactose dehydrogenase in aqueous two-phase systems

(2015) *Protein Expression and Purification*, 108, pp. 41-47. Cited 11 times.
http://www.elsevier.com/inca/publications/store/6/2/2/9/3/5/index.htt
doi: 10.1016/j.pep.2015.01.002

View at Publisher

22 Xu, Q., Shen, Y., Wang, H., Zhang, N., Xu, S., Zhang, L.

Application of response surface methodology to optimise extraction of flavonoids from fructus sophorae

(2013) *Food Chemistry*, 138 (4), pp. 2122-2129. Cited 45 times.
doi: 10.1016/j.foodchem.2012.11.099

View at Publisher

23 Das, B., Roy, A.P., Bhattacharjee, S., Chakraborty, S., Bhattacharjee, C.

Lactose hydrolysis by β-galactosidase enzyme: Optimization using response surface methodology

(2015) *Ecotoxicology and Environmental Safety*, 121, pp. 244-252. Cited 13 times.
http://www.elsevier.com/inca/publications/store/6/2/2/8/1/9/index.htt
doi: 10.1016/j.ecoenv.2015.03.024

View at Publisher

24 Kishore, D., Kayastha, A.M.

Optimisation of immobilisation conditions for chick pea β-galactosidase (CpGAL) to alkylamine glass using response surface methodology and its applications in lactose hydrolysis

(2012) *Food Chemistry*, 134 (3), pp. 1650-1657. Cited 36 times.
doi: 10.1016/j.foodchem.2012.03.055

View at Publisher

25 Gámiz-Gracia, L., Cuadros-Rodríguez, L., Almansa-López, E., Soto-Chinchilla, J.J., García-Campaña, A.M.

Use of highly efficient Draper-Lin small composite designs in the formal optimisation of both operational and chemical crucial variables affecting a FIA-chemiluminescence detection system

(2003) *Talanta*, 60 (2-3), pp. 523-534. Cited 13 times.
doi: 10.1016/S0039-9140(03)00107-3

View at Publisher

26 Odabaş, H.İ., Koca, I.

Application of response surface methodology for optimizing the recovery of phenolic compounds from hazelnut skin using different extraction methods

(2016) *Industrial Crops and Products*, 91, pp. 114-124. Cited 11 times.
www.elsevier.com/inca/publications/store/5/2/2/8/2/5
doi: 10.1016/j.indcrop.2016.05.033

View at Publisher

27 Joshi, A., Pund, S., Nivsarkar, M., Vasu, K., Shishoo, C.

Dissolution test for site-specific release isoniazid pellets in USP apparatus 3 (reciprocating cylinder): Optimization using response surface methodology

(2008) *European Journal of Pharmaceutics and Biopharmaceutics*, 69 (2), pp. 769-775. Cited 29 times.
doi: 10.1016/j.ejpb.2007.11.020

View at Publisher

28 Subroto, E., Manurung, R., Heeres, H.J., Broekhuis, A.A.
Optimization of mechanical oil extraction from Jatropha curcas L: Kernel using response surface method

(2015) *Industrial Crops and Products*, 63, pp. 294-302. Cited 19 times.
www.elsevier.com/inca/publications/store/5/2/2/8/2/5
doi: 10.1016/j.indcrop.2014.08.050

View at Publisher

29 Yatish, K.V., Lalithamba, H.S., Suresh, R., Arun, S.B., Kumar, P.V.
Optimization of scum oil biodiesel production by using response surface methodology

(2016) *Process Safety and Environmental Protection*, 102, pp. 667-672. Cited 14 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/713889/description#description
doi: 10.1016/j.psep.2016.05.026

View at Publisher

30 Noordin, M.Y., Venkatesh, V.C., Sharif, S., Elting, S., Abdullah, A.
Application of response surface methodology in describing the performance of coated carbide tools when turning AISI 1045 steel

(2004) *Journal of Materials Processing Technology*, 145 (1), pp. 46-58. Cited 352 times.
doi: 10.1016/S0924-0136(03)00861-6

View at Publisher

31 Saranya, P., Sekaran, G.
Statistical optimization of the enzymatic breakdown of 2-Nitrophloroglucinol using thermo tolerant mixed Intracellular enzymes from Serratia marcescens

(2016) *Journal of the Taiwan Institute of Chemical Engineers*, 59, pp. 152-164. Cited 2 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/715607/description#description
doi: 10.1016/j.jtice.2015.09.014

View at Publisher

32 Box, G.E.P., Hunter, W.G.
(1978) *Statistics for experimenters*. Cited 5821 times.
Wiley, New York

33 Wang, C., Wang, H., Liu, Y., Huang, L.
Optimization of surface treatment for flotation separation of polyvinyl chloride and polyethylene terephthalate waste plastics using response surface methodology

(2016) *Journal of Cleaner Production*, 139, pp. 866-872. Cited 6 times.
doi: 10.1016/j.jclepro.2016.08.111

View at Publisher

34 Mohammed Iqbal, U., Senthil Kumar, V.S., Gopalakannan, S.
Application of Response Surface Methodology in optimizing the process parameters of Twist Extrusion process for AA6061-T6 aluminum alloy

(2016) *Measurement: Journal of the International Measurement Confederation*, 94, pp. 126-138. Cited 3 times.
doi: 10.1016/j.measurement.2016.07.085

View at Publisher

35 Yuan, X., Liu, J., Zeng, G., Shi, J., Tong, J., Huang, G.

Optimization of conversion of waste rapeseed oil with high FFA to biodiesel using response surface methodology

(2008) *Renewable Energy*, 33 (7), pp. 1678-1684. Cited 186 times.
doi: 10.1016/j.renene.2007.09.007

View at Publisher

36 Kavitha, G., Kurinjimalar, C., Sivakumar, K., Kaarthik, M., Aravind, R., Palani, P., Rengasamy, R.

Optimization of polyhydroxybutyrate production utilizing waste water as nutrient source by Botryococcus braunii Kütz using response surface methodology

(2016) *International Journal of Biological Macromolecules*, Part A 93, pp. 534-542. Cited 3 times.
www.elsevier.com/locate/ijbiomac
doi: 10.1016/j.ijbiomac.2016.09.019

View at Publisher

37 Salahi, A., Noshadi, I., Badrnezhad, R., Kanjilal, B., Mohammadi, T.

Nano-porous membrane process for oily wastewater treatment: Optimization using response surface methodology

(2013) *Journal of Environmental Chemical Engineering*, 1 (3), pp. 218-225. Cited 31 times.
doi: 10.1016/j.jece.2013.04.021

View at Publisher

38 Wu, J., Wang, J.-L., Li, M.-H., Lin, J.-P., Wei, D.-Z.

Optimization of immobilization for selective oxidation of benzyl alcohol by Gluconobacter oxydans using response surface methodology

(2010) *Bioresource Technology*, 101 (23), pp. 8936-8941. Cited 38 times.
doi: 10.1016/j.biortech.2010.07.019

View at Publisher

39 Noshadi, I., Amin, N.A.S., Parnas, R.S.

Continuous production of biodiesel from waste cooking oil in a reactive distillation column catalyzed by solid heteropolyacid: Optimization using response surface methodology (RSM)

(2012) *Fuel*, 94, pp. 156-164. Cited 105 times.
doi: 10.1016/j.fuel.2011.10.018

View at Publisher

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Directed bee colony optimization algorithm to solve the nurse rostering problem (Article) (Open Access)

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Abstract

View references (42)

The Nurse Rostering Problem is an NP-hard combinatorial optimization, scheduling problem for assigning a set of nurses to shifts per day by considering both hard and soft constraints. A novel metaheuristic technique is required for solving Nurse Rostering Problem (NRP). This work proposes a metaheuristic technique called Directed Bee Colony Optimization Algorithm using the Modified Nelder-Mead Method for solving the NRP. To solve the NRP, the authors used a multiobjective mathematical programming model and proposed a methodology for the adaptation of a Multiobjective Directed Bee Colony Optimization (MODBCO). MODBCO is used successfully for solving the multiobjective problem of optimizing the scheduling problems. This MODBCO is an integration of deterministic local search, multiagent particle system environment, and honey bee decision-making process. The performance of the algorithm is assessed using the standard dataset INRC2010, and it reflects many real-world cases which vary in size and complexity. The experimental analysis uses statistical tools to show the uniqueness of the algorithm on assessment criteria. © 2017 M. Rajeswari et al.

Indexed keywords

Engineering controlled terms: Combinatorial optimization, Decision making, Mathematical programming, Nursing, Problem solving, Scheduling, Statistical mechanics

Compendex keywords: Assessment criteria, Bee colony optimizations, Decision making process, Experimental analysis, Hard and soft constraints, Meta-heuristic techniques, Multi-objective mathematical programming, Multi-objective problem

Engineering main heading: Optimization

EMTREE medical terms: algorithm, animal, bee, biomimetics, decision making, nurse, organization and management, personnel management, physiology

MeSH: Algorithms, Animals, Bees, Biomimetics, Decision Making, Efficiency, Organizational, Nurses, Personnel Staffing and Scheduling

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References (42)

View in search results format >

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1 Crepinsek, M., Liu, S.-H., Mernik, M.
Exploration and exploitation in evolutionary algorithms: A survey
(2013) *ACM Computing Surveys*, 45 (3), art. no. 35. Cited 273 times.
doi: 10.1145/2480741.2480752
View at Publisher

2 Bai, R., Burke, E.K., Kendall, G., Li, J., McCollum, B.
A hybrid evolutionary approach to the nurse rostering problem
(2010) *IEEE Transactions on Evolutionary Computation*, 14 (4), art. no. 5532313, pp. 580-590. Cited 45 times.
doi: 10.1109/TEVC.2009.2033583
View at Publisher

3 Wooldridge, M.
(2009) *An Introduction to Multiagent Systems*. Cited 3324 times.
John Wiley & Sons

4 Goldberg David, E.
Genetic Algorithm in Search
(1988) *Optimization and Machine Learning*, 3.
Pearson Education

5 Kennedy, J.
Particle swarm optimization
(2011) *Encyclopedia of Machine Learning*, pp. 760-766. Cited 887 times.
Springer US

6 Dorigo, M., Birattari, M., Stützle, T.
Ant colony optimization artificial ants as a computational intelligence technique
(2006) *IEEE Computational Intelligence Magazine*, 1 (4), pp. 28-39. Cited 1387 times.
doi: 10.1109/CI-M.2006.248054
View at Publisher

7 Teodorović, D., Lučić, P., Marković, G., Dell'Orco, M.
Bee colony optimization: Principles and applications
(2006) *8th Seminar on Neural Network Applications in Electrical Engineering, Neurel-2006 Proceedings*, art. no. 4147188, pp. 151-156. Cited 102 times.
ISBN: 1424404339; 978-142440433-9
doi: 10.1109/NEUREL.2006.341200
View at Publisher

Jin, S.H. , Yun, H.Y. , Jeong, S.J. *(2017) Sustainability (Switzerland)*

Bee colony optimization algorithm for nurse rostering

Todorovic, N. , Petrovic, S. *(2013) IEEE Transactions on Systems, Man, and Cybernetics Part A:Systems and Humans*

View all related documents based on references

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8 Karaboga, D., Basturk, B.
On the performance of artificial bee colony (ABC) algorithm

(2008) *Applied Soft Computing Journal*, 8 (1), pp. 687-697. Cited 1863 times.
doi: 10.1016/j.asoc.2007.05.007

View at Publisher

9 Kumar, R.
Directed bee colony optimization algorithm

(2014) *Swarm and Evolutionary Computation*, 17, pp. 60-73. Cited 11 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/724666/description#description
doi: 10.1016/j.swevo.2014.03.001

View at Publisher

10 Osogami, T., Imai, H.
Classification of various neighborhood operations for the nurse scheduling problem

(2000) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 1969, pp. 72-83. Cited 32 times.
http://springerlink.com/content/0302-9743/copyright/2005/
ISBN: 3540412557; 978-354041255-7

View at Publisher

11 Millar, H.H., Kiragu, M.
Cyclic and non-cyclic scheduling of 12 h shift nurses by network programming

(1998) *European Journal of Operational Research*, 104 (3), pp. 582-592. Cited 72 times.
doi: 10.1016/S0377-2217(97)00006-4

View at Publisher

12 Van Den Bergh, J., Beliën, J., De Bruecker, P., Demeulemeester, E., De Boeck, L.
Personnel scheduling: A literature review

(2013) *European Journal of Operational Research*, 226 (3), pp. 367-385. Cited 183 times.
doi: 10.1016/j.ejor.2012.11.029

View at Publisher

13 Cheang, B., Li, H., Lim, A., Rodrigues, B.
Nurse rostering problems - A bibliographic survey

(2003) *European Journal of Operational Research*, 151 (3), pp. 447-460. Cited 273 times.
doi: 10.1016/S0377-2217(03)00021-3

View at Publisher

14 Asaju, L.B., Awadallah, M.A., Al-Betar, M.A., Khader, A.T.
Solving nurse rostering problem using artificial bee colony algorithm
(2015) *Proceedings of the 7th International Conference on Information Technology (ICIT 15)*, pp. 32-38.
Amman, Jordan, May

15 Awadallah, M.A., Bolaji, A.L., Al-Betar, M.A.
A hybrid artificial bee colony for a nurse rostering problem

(2015) *Applied Soft Computing Journal*, 35, pp. 726-739. Cited 13 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/621920/description#description
doi: 10.1016/j.asoc.2015.07.004

View at Publisher

16 Awadallah, M.A., Khader, A.T., Al-Betar, M.A., Bolaji, A.L.
Global best harmony search with a new pitch adjustment designed for nurse rostering
(2013) *Journal of King Saud University-Computer and Information Sciences*, 25 (2), pp. 145-162. Cited 14 times.

17 Awadallah, M.A., Al-Betar, M.A., Khader, A.T., Bolaji, A.L., Alkoffash, M.
Hybridization of harmony search with hill climbing for highly constrained nurse rostering problem

(2017) *Neural Computing and Applications*, 28 (3), pp. 463-482. Cited 3 times.
http://link.springer.com/journal/521
doi: 10.1007/s00521-015-2076-8

View at Publisher

18 Santos, H.G., Toffolo, T.A.M., Gomes, R.A.M., Ribas, S.
Integer programming techniques for the nurse rostering problem

(2016) *Annals of Operations Research*, 239 (1), pp. 225-251. Cited 10 times.
http://www.kluweronline.com/issn/0254-5330
doi: 10.1007/s10479-014-1594-6

View at Publisher

19 Berrada, I., Ferland, J.A., Michelon, P.
A multi-objective approach to nurse scheduling with both hard and soft constraints

(1996) *Socio-Economic Planning Sciences*, 30 (3), pp. 183-193. Cited 101 times.
www.elsevier.com/inca/publications/store/3/1/7/
doi: 10.1016/0038-0121(96)00010-9

View at Publisher

20 Burke, E.K., Li, J., Qu, R.
A Pareto-based search methodology for multi-objective nurse scheduling

(2012) *Annals of Operations Research*, 196 (1), pp. 91-109. Cited 14 times.
doi: 10.1007/s10479-009-0590-8

View at Publisher

21 Dowsland, K.A., Thompson, J.M.
Solving a nurse scheduling problem with knapsacks, networks and tabu search

(2000) *Journal of the Operational Research Society*, 51 (7), pp. 825-833. Cited 78 times.
doi: 10.1057/palgrave.jors.2600970

View at Publisher

22 Dowsland, K.A.
Nurse scheduling with tabu search and strategic oscillation

(1998) *European Journal of Operational Research*, 106 (2-3), pp. 393-407. Cited 192 times.
doi: 10.1016/S0377-2217(97)00281-6

View at Publisher

23 Burke, E., De Causmaecker, P., Berghe, G.V.
A hybrid tabu search algorithm for the nurse rostering problem

(1999) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 1585, pp. 187-194. Cited 99 times.
http://springerlink.com/content/0302-9743/copyright/2005/
ISBN: 3540659072; 978-354065907-5

View at Publisher

24 Burke, E.K., Kendall, G., Soubeiga, E.

A Tabu-Search Hyperheuristic for Timetabling and Rostering

(2003) *Journal of Heuristics*, 9 (6), pp. 451-470. Cited 316 times.
doi: 10.1023/B:HEUR.0000012446.94732.b6

View at Publisher

25 Burke, E., Cowling, P., De Causmaecker, P., Berghe, G.V.

A memetic approach to the nurse rostering problem

(2001) *Applied Intelligence*, 15 (3), pp. 199-214. Cited 132 times.
doi: 10.1023/A:1011291030731

View at Publisher

26 Hadwan, M., Ayob, M.

A constructive shift patterns approach with simulated annealing for Nurse Rostering problem

(2010) *Proceedings 2010 International Symposium on Information Technology - Visual Informatics, ITSim'10*, 1, art. no. 5561304. Cited 9 times.
ISBN: 978-142446718-1
doi: 10.1109/ITSIM.2010.5561304

View at Publisher

27 Sharif, E., Ayob, M., Hadwan, M.

Hybridization of heuristic approach with variable neighborhood descent search to solve nurse Rostering problem at Universiti Kebangsaan Malaysia Medical Centre (UKMMC)

(2011) *Conference on Data Mining and Optimization*, art. no. 5976524, pp. 178-183. Cited 2 times.
ISBN: 978-161284212-7
doi: 10.1109/DMO.2011.5976524

View at Publisher

28 Aickelin, U., Dowsland, K.A.

An indirect genetic algorithm for a nurse-scheduling problem

(2004) *Computers and Operations Research*, 31 (5), pp. 761-778. Cited 176 times.
www.elsevier.com/inca/publications/store/3/0/0/
doi: 10.1016/S0305-0548(03)00034-0

View at Publisher

29 Asta, S., Özcan, E., Curtois, T.

A tensor based hyper-heuristic for nurse rostering

(2016) *Knowledge-Based Systems*, 98, pp. 185-199. Cited 4 times.
doi: 10.1016/j.knosys.2016.01.031

View at Publisher

30 Anwar, K., Awadallah, M.A., Khader, A.T., Al-Betar, M.A.

Hyper-heuristic approach for solving nurse rostering problem

(2014) *IEEE SSCI 2014 - 2014 IEEE Symposium Series on Computational Intelligence - CIEL 2014: 2014 IEEE Symposium on Computational Intelligence in Ensemble Learning, Proceedings*, art. no. 7015743. Cited 5 times.
ISBN: 978-147994513-9
doi: 10.1109/CIEL.2014.7015743

View at Publisher

31 Todorovic, N., Petrovic, S.
Bee colony optimization algorithm for nurse rostering

(2013) *IEEE Transactions on Systems, Man, and Cybernetics Part A:Systems and Humans*, 43 (2), pp. 467-473. Cited 30 times.
doi: 10.1109/TSMCA.2012.2210404

View at Publisher

32 Yang, X.-S.
(2010) *Nature-Inspired Meta-Heuristic Algorithms*. Cited 1800 times.
Luniver Press

33 Goyal, S.
The applications survey: Bee colony
(2012) *IRACST Engineering Science and Technology*, 2 (2), pp. 293-297. Cited 2 times.

34 Seeley, T.D., Kirk Visscher, P., Passino, K.M.
Group decision making in honey bee swarms

(2006) *American Scientist*, 94 (3), pp. 220-229. Cited 95 times.
doi: 10.1511/2006.3.220

View at Publisher

35 Passino, K.M., Seeley, T.D., Visscher, P.K.
Swarm cognition in honey bees

(2008) *Behavioral Ecology and Sociobiology*, 62 (3), pp. 401-414. Cited 68 times.
doi: 10.1007/s00265-007-0468-1

View at Publisher

36 Jiao, W., Shi, Z.
A dynamic architecture for multi-agent systems
(1999) *Proceedings of the Technology of Object-Oriented Languages and Systems (TOOLS 31 99)*, pp. 253-260. Cited 15 times.
Nanjing, China, November

37 Zhong, W., Liu, J., Xue, M., Jiao, L.
A Multiagent Genetic Algorithm for Global Numerical Optimization

(2004) *IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics*, 34 (2), pp. 1128-1141. Cited 290 times.
doi: 10.1109/TSMCB.2003.821456

View at Publisher

38 Haspeslagh, S., De Causmaecker, P., Schaerf, A., Stølevik, M.
The first international nurse rostering competition 2010

(2014) *Annals of Operations Research*, 218 (1), pp. 221-236. Cited 19 times.
http://www.kluweronline.com/issn/0254-5330
doi: 10.1007/s10479-012-1062-0

View at Publisher

39 Demšar, J.
Statistical comparisons of classifiers over multiple data sets

(2006) *Journal of Machine Learning Research*, 7, pp. 1-30. Cited 4137 times.
http://jmlr.csail.mit.edu/papers/volume7/demsar06a/demsar06a.pdf

View at Publisher

40 Costa, A., Cappadonna, F.A., Fichera, S.
A dual encoding-based meta-heuristic algorithm for solving a constrained hybrid flow shop scheduling problem

(2013) *Computers and Industrial Engineering*, 64 (4), pp. 937-958. Cited 11 times.
doi: 10.1016/j.cie.2013.01.004

View at Publisher

41 González-Rodríguez, G., Colubi, A., Gil, M.Á.
Fuzzy data treated as functional data: A one-way ANOVA test approach

(2012) *Computational Statistics and Data Analysis*, 56 (4), pp. 943-955. Cited 79 times.
doi: 10.1016/j.csda.2010.06.013

View at Publisher

42 Duncan, D.B.
Multiple range andmultiple F tests
(1955) *Biometrics*, 11, pp. 1-42. Cited 11303 times.

Rajeswari, M.; Department of CSE, Pondicherry University, Puducherry, India; email:raji.rajeswari18@gmail.com

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Analysis of notch band monopole antenna with defected ground structure (Article)

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Department of Electronics and Computer Engineering, Koneru Lakshmaiah University, Andhra Pradesh, India

Abstract

View references (20)

A Novel circular monopole antenna with defected ground structure is proposed to notch 2.6-3 GHz band of mobile broadband services. A symmetrical half circle shaped strip is incorporated in the circular patch element and a triangular slot is placed in the defected ground structure of the proposed model. Half circle shaped antenna with notch band characteristics is designed, simulated in ANSYS HFSS 3D EM full-wave simulation software and characterized in terms of the return loss, VSWR, impedance bandwidth, far-field radiation patterns and gain. The design models are optimized and prototyped on FR4 substrate for measurement validation.

Author keywords

Circular slot | Defected ground structure | Half ring | Monopole antenna | Notch band

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References (20)

View in search results format

All Export Print E-mail Save to PDF Create bibliography

1 Sung, Y.J., Kim, M., Kim, Y.-S.
Harmonics reduction with defected ground structure for a microstrip patch antenna

(2003) *IEEE Antennas and Wireless Propagation Letters*, 2, pp. 111-113. Cited 91 times.
doi: 10.1109/LAWP.2003.815281

View at Publisher

2 Madhav, B.T.P., Manikanta Prasanth, A., Prasanth, S., Krishna, B.M.S., Manikantha, D., NagaSai, U.S.
Analysis of defected ground structure notched monopole antenna

(2015) *ARPN Journal of Engineering and Applied Sciences*, 10 (2), pp. 747-752. Cited 48 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2015/jeas_0215_1519.pdf

3 Guha, D., Biswas, M., Antar, Y.M.M.
Microstrip patch antenna with defected ground structure for cross polarization suppression

(2005) *IEEE Antennas and Wireless Propagation Letters*, 4 (1), pp. 455-458. Cited 124 times.
doi: 10.1109/LAWP.2005.860211

View at Publisher

4 Narasimha Nayak, V., Madhav, B., Sai Divya, R., Nava Sai Krishna, A., Rohith Ramana, K., Mounika, D.
Compact microstrip rectangular edge fed antenna with DGS structure

(2015) *International Journal of Applied Engineering Research*, 10 (9), pp. 24331-24348. Cited 13 times.
http://www.ripublication.com/ijaer10/ijaerv10n9_241.pdf

5 Yu, Z.-W., Wang, G.-M., Missile, K.L.
Wide band harmonic suppression based on Koch-shaped defected ground structure for a microstrip patch antenna

(2010) *2010 International Conference on Microwave and Millimeter Wave Technology, ICMMT 2010*, art. no. 5524944, pp. 306-308.
ISBN: 978-142445705-2
doi: 10.1109/ICMMT.2010.5524944

View at Publisher

6 Ramkiran, D.S., Madhav, B.T.P., Grandhi, S.K., Sumanth, A.V., Kota, S.H., Boddu, L.K.
Compact microstrip band pass filter with defected ground structure

(2015) *Far East Journal of Electronics and Communications*, 15 (1), pp. 75-84. Cited 13 times.
http://www.pphmj.com/article.php?act=art_download&art_id=9244
doi: 10.17654/FJECSep2015-075-084

View at Publisher

7 Liu, W.-C., Wu, C.-M., Dai, Y.
Design of triple-frequency microstrip-fed monopole antenna using defected ground structure

(2011) *IEEE Transactions on Antennas and Propagation*, 59 (7), art. no. 5765454, pp. 2457-2463. Cited 153 times.
doi: 10.1109/TAP.2011.2152315

View at Publisher

8 Mohan Reddy, S.S., Mallikarjuna Rao, P., Madhav, B.T.P.

Asymmetric defected ground structured monopole antenna for wideband communication systems

(2015) *International Journal on Communications Antenna and Propagation*, 5 (5), pp. 256-262. Cited 47 times.
http://www.praiseworthyprize.org/jsm/index.php?journal=irecap&page=issue&op=current
doi: 10.15866/irecap.v5i5.6005

View at Publisher

9 Ismaiel, A.M., Abdel-Rahman, A.B.

A meander shaped defected ground structure (DGS) for reduction of mutual coupling between microstrip antennas

(2014) *National Radio Science Conference, NRSC, Proceedings*, art. no. 6835056, pp. 21-26. Cited 9 times.
ISBN: 978-147993820-9
doi: 10.1109/NRSC.2014.6835056

View at Publisher

10 Bhavani, K.V.L., Khan, H., Madhav, B.T.P.

Multiband slotted aperture antenna with defected ground structure for C and X-band communication applications

(2015) *Journal of Theoretical and Applied Information Technology*, 82 (3), pp. 454-461. Cited 24 times.
http://www.jatit.org/volumes/Vol82No3/15Vol82No3.pdf

11 Hussain Shah, S.I., Bashir, S., Altaf, A., Shah, S.D.H.

Compact multiband microstrip patch antenna using defected ground structure (DGS)

(2014) *Proceedings of International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory, DIPED*, art. no. 6958334, pp. 96-99. Cited 2 times.
http://ieeexplore.ieee.org/xpl/conferences.jsp
ISBN: 978-966027158-6
doi: 10.1109/DIPED.2014.6958334

View at Publisher

12 Bhavani, K.V.L., Khan, H., Sreenivasa Rao, D., Madhav, B.T.P., Rasagna Reddy, V., Monika, M., Dhanush Chand, Y.

Dual band notched planar printed antenna with serrated defected ground structure

(2016) *Journal of Theoretical and Applied Information Technology*, 88 (1), pp. 28-34. Cited 12 times.
http://www.jatit.org/volumes/Vol88No1/4Vol88No1.pdf

13 Raman, Y.S.V., Madhav, B.T.P., Mounika, G., Sai Teja, K., Sai Kumar, S.B.V.N., Sri Harsha, K.

Analysis of circularly polarized notch band antenna with DGS

(2016) *ARPN Journal of Engineering and Applied Sciences*, 11 (17), pp. 10140-10150. Cited 18 times.
http://www.arpnjournals.com/jeas/index.htm

14 Geng, J.P., Li, J.J., Jin, R.H., Ye, S., Liang, X.L., Li, M.Z.

The development of curved microstrip antenna with defected ground structure

(2009) *Progress in Electromagnetics Research*, 98, pp. 53-73. Cited 31 times.
http://ceta.mit.edu/pier/pier98/04.09081905.pdf
doi: 10.2528/PIER09081905

View at Publisher

15 Giridhar, V., Ramakrishna, T.V., Madhav, B.T.P., Bhavani, K.V.L., Reddiah Babu, M.V., Sai Krishna, V., Krishna, G.V., (...), Mohan Reddy, S.S.

Compact fractal monopole antenna with defected ground structure for wide band applications

(2016) *Journal of Theoretical and Applied Information Technology*, 91 (1), pp. 23-27. Cited 4 times.
http://www.jatit.org/volumes/Vol91No1/3Vol91No1.pdf

16 Liu, J.X., Yin, W.Y., He, S.L.

A new defected ground structure and its application for miniaturized switchable antenna

(2010) *Progress in Electromagnetics Research*, 107, pp. 115-128. Cited 49 times.
http://www.jpier.org/PIER/pier107/07.10050904.pdf

17 Rama Krishna, T.V., Madhav, B.T.P., Sri Rama Krishna, T., Sravanthi, K., Dinesh Gopi, G.

Strip loaded closed loop resonator based multiband defected ground structured antenna

(2016) *Journal of Engineering and Applied Sciences*, 11 (6), pp. 1417-1422. Cited 6 times.
http://www.medwelljournals.com/archive.php?jid=1816-949x

18 Shobeyri, M., Vadjed-Samiei, M.H.
Compact ultra-wideband bandpass filter with defected ground structure
(2008) *Progress In Electromagnetics Research Letters*, pp. 25-31. Cited 59 times.

19 Bhavani, K.V.L., Khan, H., Madhav, B.T.P

Wideband CPW fed monopole fractal antenna with defected ground structure

(2016) *Journal of Engineering and Applied Sciences*, 11 (11), pp. 2446-2454. Cited 6 times.
http://docsdrive.com/pdfs/medwelljournals/jeasci/2016/2446-2454.pdf
doi: 10.3923/jeasci.2016.2446.2454

View at Publisher

20 Madhav, B.T.P., Kaza, H., Kartheek, T., Kaza, V.L., Prasanth, S., Chandra Sikakollu, K.S.S., Thammishetti, M., (...), Bhavani, K.V.L.

Novel printed monopole trapezoidal notch antenna with S-band rejection

(2015) *Journal of Theoretical and Applied Information Technology*, 76 (1), pp. 42-49. Cited 48 times.
http://www.jatit.org/volumes/Vol76No1/5Vol76No1.pdf

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SVM - LWT enabled fuzzy clustering-based image analysis for brain tumor detection (Article)

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Abstract

View references (36)

Medical image processing plays a key role in medical practices that detect brain tumor. This study proposes using the support vector machine (SVM) technique to accurately identify tumor stages from magnetic resonance (MR) images. The accuracy of any brain tumor detection scheme relies on its ability to effectively and separately differentiate various types of tissues. Segmentation based schemes used for detection can be considered the most important process in the characterization, delineation and visualization of regions of interest in MR images. This study evaluates the ability of support vector machine (SVM) to identify tumor type and lifting based wavelet transformation (LWT) to extract different tissue classes from MR images. The proposed technique uses SVM, LWT and fuzzy clustering method based segmentation, abbreviated as SWFCM and has the potential to automatically analyze large data sets of MR images. To evaluate the performance of our proposed mechanism, we conducted simulations on different MR images. The simulation results prove the significance and efficacy of our proposed mechanism in comparison to the existing techniques.

Author keywords

Brain tumor detection | Fuzzy clustering | Image analysis

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References (36)

View in search results format

Related documents

Image Analysis for MRI Based Brain Tumor Detection and Feature Extraction Using Biologically Inspired BWT and SVM
Bahadure, N.B. , Ray, A.K. , Thethi, H.P.
(2017) International Journal of Biomedical Imaging

An efficient methodology for abnormal brain and stage detection in MRI images
Sreedevi, B. , Anil Kumar, T. , Kishan Rao, K.
(2018) International Journal of Pure and Applied Mathematics

Performance analysis of combined k-mean and fuzzy-c-mean segmentation of MR brain images
Ahammed Muneer, K.V. , Paul Joseph, K.
(2018) Lecture Notes in Computational Vision and Biomechanics

1 Guo, L., Zhao, L., Wu, Y., Li, Y., Xu, G., Yan, Q.
Tumor detection in MR images using one-class immune feature weighted SVMs

(2011) *IEEE Transactions on Magnetics*, 47 (10), art. no. 6027644, pp. 3849-3852. Cited 11 times.
doi: 10.1109/TMAG.2011.2158520

View at Publisher

2 Abdel-Maksoud, E., Elmogy, M., Al-Awadi, R.
Brain tumor seg-mentation based on a hybrid clustering technique
(2015) *Egyptian Informatics Journal*, 16, pp. 71-81. Cited 35 times.

3 Demirhan, A., Toru, M., Guler, I.
Segmentation of Tumor and Edema Along with Healthy Tissues of Brain Using Wavelets and Neural Networks

(2015) *IEEE Journal of Biomedical and Health Informatics*, 19 (4), art. no. 6911956, pp. 1451-1458. Cited 20 times.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6221020
doi: 10.1109/JBHI.2014.2360515

View at Publisher

4 Madhukumar, S., Santhiyakumari, N.
Evaluation of k-Means and fuzzy C-means segmentation on MR images of brain
(Open Access)

(2015) *Egyptian Journal of Radiology and Nuclear Medicine*, 46 (2), pp. 475-479. Cited 13 times.
http://www.elsevier.com/wps/find/journaldescription.cws_home/724146/description#description
doi: 10.1016/j.ejrnm.2015.02.008

View at Publisher

5 Kong, Y., Deng, Y., Dai, Q.
Discriminative clustering and feature selection for brain MRI segmentation

(2015) *IEEE Signal Processing Letters*, 22 (5), art. no. 6936403, pp. 573-577. Cited 32 times.
doi: 10.1109/LSP.2014.2364612

View at Publisher

6 El-Melegy, M.T., Mokhtar, H.M.
Tumor segmentation in brain MRI using a fuzzy approach with class center priors
(Open Access)

(2014) *Eurasip Journal on Image and Video Processing*, 2014, art. no. 21. Cited 23 times.
doi: 10.1186/1687-5281-2014-21

View at Publisher

7 Liu, J., Li, M., Wang, J., Wu, F., Liu, T., Pan, Y.
A survey of MRI-based brain tumor segmentation methods

(2014) *Tsinghua Science and Technology*, 19 (6), pp. 578-595. Cited 45 times.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=5971803
doi: 10.1109/TST.2014.6961028

View at Publisher

8 Benson, C.C., Lajish, V.L.

Morphology based enhancement and skull stripping of mri brain images

(2014) *Proceedings - 2014 International Conference on Intelligent Computing Applications, ICICA 2014*, art. no. 6965051, pp. 254-257. Cited 12 times.
ISBN: 978-147993966-4
doi: 10.1109/ICICA.2014.61

View at Publisher

9 Aslam, H.A., Ramashri, T., Ahsan, M.I.A.
A new approach to image segmentation for brain tumor detection using pillar k-means algorithm
(2013) *International Journal of Advanced Research in Computer and Communication Engineering*, 2 (3), pp. 1429-1436. Cited 8 times.
March

10 Coatrieux, G., Huang, H., Shu, H., Luo, L., Roux, C.

A watermarking-based medical image integrity control system and an image moment signature for tampering characterization

(2013) *IEEE Journal of Biomedical and Health Informatics*, 17 (6), art. no. 6522126, pp. 1057-1067. Cited 28 times.
doi: 10.1109/JBHI.2013.2263533

View at Publisher

11 Yang, G., Nawaz, T., Barrick, T.R., Howe, F.A., Slabaugh, G.

Discrete Wavelet Transform-Based Whole-Spectral and Subspectral Analysis for Improved Brain Tumor Clustering Using Single Voxel MR Spectroscopy

(2015) *IEEE Transactions on Biomedical Engineering*, 62 (12), art. no. 7130581, pp. 2860-2866. Cited 6 times.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?reload=true&punumber=10
doi: 10.1109/TBME.2015.2448232

View at Publisher

12 Torheim, T., Malinen, E., Kvaal, K., Lyng, H., Indahl, U.G., Andersen, E.K.F., Futsaether, C.M.

Classification of dynamic contrast enhanced MR images of cervical cancers using texture analysis and support vector machines

(2014) *IEEE Transactions on Medical Imaging*, 33 (8), art. no. 6807722, pp. 1648-1656. Cited 20 times.
http://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=42
doi: 10.1109/TMI.2014.2321024

View at Publisher

13 Yao, J., Chen, J., Chow, C.

Breast tumor analysis in dynamic contrast enhanced MRI using texture features and wavelet transform

(2009) *IEEE Journal on Selected Topics in Signal Processing*, 3 (1), pp. 94-100. Cited 29 times.
doi: 10.1109/JSTSP.2008.2011110

View at Publisher

14 Ribbens, A., Hermans, J., Maes, F., Vandermeulen, D., Suetens, P.

Unsupervised segmentation, clustering, and groupwise registration of heterogeneous populations of brain mr images

(2014) *IEEE Transactions on Medical Imaging*, 33 (2), art. no. 6544234, pp. 201-224. Cited 14 times.
doi: 10.1109/TMI.2013.2270114

View at Publisher

15 Hamamci, A., Kucuk, N., Karaman, K., Engin, K., Unal, G.
Tumor-cut: Segmentation of brain tumors on contrast enhanced mr images for radiosurgery applications

(2012) *IEEE Transactions on Medical Imaging*, 31 (3), art. no. 6112681, pp. 790-804. Cited 91 times.
doi: 10.1109/TMI.2011.2181857

View at Publisher

16 Ji, Z., Xia, Y., Sun, Q., Chen, Q., Xia, D., Feng, D.D.
Fuzzy local Gaussian mixture model for brain MR image segmentation

(2012) *IEEE Transactions on Information Technology in Biomedicine*, 16 (3), art. no. 6138916, pp. 339-347. Cited 57 times.
doi: 10.1109/TITB.2012.2185852

View at Publisher

17 Maulik, U.
Medical image segmentation using genetic algorithms

(2009) *IEEE Transactions on Information Technology in Biomedicine*, 13 (2), pp. 166-173. Cited 102 times.
doi: 10.1109/TITB.2008.2007301

View at Publisher

18 Lal, S., Chandra, M.
Efficient algorithm for contrast enhancement of natural images

(2014) *International Arab Journal of Information Technology*, 11 (1), pp. 95-102. Cited 16 times.
http://www.ccis2k.org/iajit/PDF/vol.11,no.1/5307.pdf

19 Oo, S.Z., Khaing, A.S.
Brain tumor detection and segmentation using watershed segmentation and morphological operation
(2014) *International Journal of Research in Engineering and Technology*, 3 (3), pp. 367-374. Cited 2 times.

20 Roslan, R., Jamil, N., Mahmud, R.
Skull stripping magnetic resonance images brain images: Region growing versus mathematical morphology
(2011) *International Journal of Computer Information Systems and Industrial Management Applications*, 3, pp. 150-158. Cited 17 times.

21 Mohsin, S., Sajjad, S., Malik, Z., Abdullah, A.H.
Efficient way of skull stripping in mri to detect brain tumor by applying morphological operations, after detection of false background
(2012) *International Journal of Information and Education Technology*, 2 (4), pp. 335-337. Cited 5 times.

22 Jang, J.S.R., Sun, C.T., Mizutani, E.
(2014) *Neuro-Fuzzy and Soft Computing*. Cited 5568 times.
Eastern Economy Edition Prentice Hall of India

23 Pandey, S.C., Misra, P.K.
Modified memory convergence with fuzzy pso
(2007) *Proceedings of the World Congress on Engineering*, 1.
London, United Kingdom, 2-4 July

24 Sotudeh Chafi, M., Moavenian, M., Akbarzadeh-T., M.-R., Ziejewski, M.

Agent based soft computing approach for component fault detection and isolation of CNC X-axis drive system

(2008) *ASME International Mechanical Engineering Congress and Exposition, Proceedings*, 9 PART A, pp. 635-644.
ISBN: 0791843033; 978-079184303-1
doi: 10.1115/IMECE2007-41848

View at Publisher

25 Pandey, S.C., Misra, P.

Memory convergence and optimization with fuzzy PSO and ACS

(2008) *Journal of Computer Science*, 4 (2), pp. 139-147. Cited 2 times.
http://www.scipub.org/fulltext/jcs/jcs42139-147.pdf

View at Publisher

26 Bahadure, N.B., Ray, A.K., Thethi, H.P.

Performance analysis of image segmentation using watershed algorithm, fuzzy C-means of clustering algorithm and Simulink design

(2016) *Proceedings of the 10th INDIACom; 2016 3rd International Conference on Computing for Sustainable Global Development, INDIACom 2016*, art. no. 7724447, pp. 1160-1164.
ISBN: 978-938054419-9

27 Acharya, T., Chakrabarti, C.

A survey on lifting-based discrete wavelet transform architectures

(2006) *Journal of VLSI Signal Processing Systems for Signal, Image, and Video Technology*, 42 (3), pp. 321-339. Cited 84 times.
doi: 10.1007/s11266-006-4191-3

View at Publisher

28 Uytterhoeven, G., Roose, D., Bultheel, A.
Integer wavelet transforms using the lifting scheme
(1999) *IEEE International Conference CSCC'99*, 58, pp. 6251-6253. Cited 5 times.
Athens, Greece

29 Nanthagopal, P.A., Sukanesh, R.

Wavelet statistical texture features-based segmentation and classification of brain computed tomography images

(2013) *IET Image Processing*, 7 (1), pp. 25-32. Cited 32 times.
doi: 10.1049/iet-ipr.2012.0073

View at Publisher

30 Anitha, V., Murugavalli, S.

Brain tumor classification based on clustered discrete cosine transform in compressed domain

(2014) *Journal of Computer Science*, 10 (10), pp. 1908-1916. Cited 2 times.
http://thescipub.com/pdf/10.3844/jcssp.2014.1908.1916
doi: 10.3844/jcssp.2014.1908.1916

View at Publisher

31 Parveen, Singh, A.

Detection of brain tumor in MRI images, using combination of fuzzy c-means and SVM

(2015) *2nd International Conference on Signal Processing and Integrated Networks, SPIN 2015*, art. no. 7095308, pp. 98-102. Cited 12 times.
ISBN: 978-147995991-4
doi: 10.1109/SPIN.2015.7095308

View at Publisher

32 Gordillo, N., Montseny, E., Sobrevilla, P.

State of the art survey on MRI brain tumor segmentation

(2013) *Magnetic Resonance Imaging*, 31 (8), pp. 1426-1438. Cited 151 times.
doi: 10.1016/j.mri.2013.05.002

View at Publisher

33 *DICOM Samples ImageSets*
http://www.osirixiewer.com/datasets/DATA/BRAINIX.zip

34 *Brain Web: Simulated Brain Database*. Cited 98 times.
[online; Accessed: 01.10.2016]
http://brainweb.bic.mni.mcgill.ca/cgi/brainweb1

35 Vaishnavee, K.B., Amshakala, K.

An automated MRI brain image segmentation and tumor detection using SOM-clustering and Proximal Support Vector Machine classifier

(2015) *ICETECH 2015 - 2015 IEEE International Conference on Engineering and Technology*, art. no. 7275030. Cited 7 times.
ISBN: 978-147991854-6
doi: 10.1109/ICETECH.2015.7275030

View at Publisher

36 Bhanumurthy, M.Y., Anne, K.

An automated detection and segmentation of tumor in brain MRI using artificial intelligence

(2014) *2014 IEEE International Conference on Computational Intelligence and Computing Research, IEEE ICCIC 2014*, art. no. 7238374. Cited 3 times.
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doi: 10.1109/ICCIC.2014.7238374

View at Publisher

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Synthesis and comparative catalytic study of zinc oxide (ZnO_x) nanoparticles promoted $MnCO_3$, $MnO_2$and $Mn_2O_3$for selective oxidation of benzylic alcohols using molecular oxygen (Article)

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Abstract

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Selective oxidation catalysts play an important role in several industrial processes. Efforts towards finding better oxidation catalysts have always been a focus of studies. In this study we report the synthesis of ZnO_xdoped $MnCO_3$[ZnO_x(1%)–$MnCO_3$] via a facile co-precipitation method, which upon calcination at different temperatures yields different manganese oxides i.e., [ZnO_x(1%)–MnO_2] and [ZnO_x(1%)–Mn_2O_3]. A comparative catalytic study was carried out to evaluate the catalytic performance of carbonate and oxides for the selective oxidation of benzyl alcohol. During this study various catalysts were prepared by varying the w/w percentage of $ZnO_x$and calcination temperature. The catalytic performance in the liquid-phase oxidation of benzyl alcohol with molecular oxygen as the oxidant was examined and the influence of various parameters such as reaction temperature, reaction time and catalyst concentration has been thoroughly investigated. The ZnO_x(%1)–$MnCO_3$obtained after calcination at 300°C showed the best catalytic performance and possessed highest surface area which suggests that the calcination temperature and surface area play a crucial role. Typically, an extremely high specific activity of 60 $mmol \cdot g^{-1} \cdot h^{-1}$with complete benzyl alcohol conversion as well as product selectivity of >99% was achieved within very short reaction time (4 min). It was found that ZnO_xnanoparticles also play an important role in enhancing the catalytic activity for the aerobic oxidation of alcohols. A selective conversion of substituted benzyl alcohols and high benzaldehyde selectivity was observed at different reaction times under mild conditions. Additionally, the catalyst was recycled six times without considerable loss of the catalytic performance and the selectivity remained almost unchanged.

Reaxys Database Information

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Author keywords

Benzylic alcohols | Mn_2O_3 | $MnCO_3$ | MnO_2 | Oxidation | ZnO_xnanoparticles

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Silver-doped manganese based nanocomposites for aerial oxidation of alcohols

Assal, M.E. , Shaik, M.R. , Kuniyil, M.
(2018) Materials Express

Mixed zinc/manganese on highly reduced graphene oxide: A highly active nanocomposite catalyst for aerial oxidation of benzylic alcohols

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(2017) Catalysts

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References (97)

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1 Tojo, G., Fernández, M.I.
(2006) *Book Oxidation of Alcohols to Aldehydes and Ketones: A Guide to Current Common Practice, Springer Science and Business Media*
New York, USA

2 Hoelderich, W.F.
Environmentally benign manufacturing of fine and intermediate chemicals
(2000) *Catalysis Today*, 62 (1), pp. 115-130. Cited 164 times.
doi: 10.1016/S0920-5861(00)00413-2
View at Publisher

3 Sheldon, R.A., Arends, I.W.C.E., Brink, G.-J.T., Dijksman, A.
Green, catalytic oxidations of alcohols
(2002) *Accounts of Chemical Research*, 35 (9), pp. 774-781. Cited 871 times.
doi: 10.1021/ar010075n
View at Publisher

4 Mallat, T., Baiker, A.
Oxidation of alcohols with molecular oxygen on solid catalysts
(2004) *Chemical Reviews*, 104 (6), pp. 3037-3058. Cited 1340 times.
doi: 10.1021/cr0200116
View at Publisher

5 Sheldon, R.A., Arends, I.W.C.E., Dijksman, A.
New developments in catalytic alcohol oxidations for fine chemicals synthesis
(2000) *Catalysis Today*, 57 (1-2), pp. 157-166. Cited 502 times.
View at Publisher

6 Yu, Y., Lu, B., Wang, X., Zhao, J., Wang, X., Cai, Q.
Highly selective oxidation of benzyl alcohol to benzaldehyde with hydrogen peroxide by biphasic catalysis
(2010) *Chemical Engineering Journal*, 162 (2), pp. 738-742. Cited 49 times.
doi: 10.1016/j.cej.2010.05.057
View at Publisher

7 Lu, Y., Bradshaw, J., Zhao, Y., Kuester, W., Kabotso, D.
Structure-reactivity relationship for alcohol oxidations via hydride transfer to a carbocationic oxidizing agent
(2011) *Journal of Physical Organic Chemistry*, 24 (12), pp. 1172-1178. Cited 10 times.
doi: 10.1002/poc.1842
View at Publisher

8 Du, Z., Ma, J., Ma, H., Gao, J., Xu, J.
Synergistic effect of vanadium-phosphorus promoted oxidation of benzylic alcohols with molecular oxygen in water

(2010) *Green Chemistry*, 12 (4), pp. 590-592. Cited 26 times.
doi: 10.1039/b924602a

View at Publisher

9 Colmenares, J.C., Ouyang, W., Ojeda, M., Kuna, E., Chernyayeva, O., Lisovytskiy, D., De, S., (...), Balu, A.M.
Mild ultrasound-assisted synthesis of TiO_2 supported on magnetic nanocomposites for selective photo-oxidation of benzyl alcohol

(2016) *Applied Catalysis B: Environmental*, 183, pp. 107-112. Cited 28 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2015.10.034

View at Publisher

10 Yamamoto, R., Sawayama, Y.-S., Shibahara, H., Ichihashi, Y., Nishiyama, S., Tsuruya, S.
Promoted partial oxidation activity of supported Ag catalysts in the gas-phase catalytic oxidation of benzyl alcohol

(2005) *Journal of Catalysis*, 234 (2), pp. 308-317. Cited 67 times.
doi: 10.1016/j.jcat.2005.06.032

View at Publisher

11 Della Pina, C., Falletta, E., Rossi, M.
Highly selective oxidation of benzyl alcohol to benzaldehyde catalyzed by bimetallic gold-copper catalyst

(2008) *Journal of Catalysis*, 260 (2), pp. 384-386. Cited 172 times.
doi: 10.1016/j.jcat.2008.10.003

View at Publisher

12 March, J.
(1992) *Book Advanced Organic Chemistry: Reactions, Mechanisms, and Structure*. Cited 9889 times.
John Wiley & Sons, New York, USA

13 Pillai, U.R., Sahle-Demessie, E.
Selective oxidation of alcohols by molecular oxygen over a Pd/MgO catalyst in the absence of any additives

(2004) *Green Chemistry*, 6 (3), pp. 161-165. Cited 106 times.

View at Publisher

14 Zhan, B.-Z., Thompson, A.
Recent developments in the aerobic oxidation of alcohols

(2004) *Tetrahedron*, 60 (13), pp. 2917-2935. Cited 314 times.
doi: 10.1016/j.tet.2004.01.043

View at Publisher

15 Bäckvall, J.-E.
(2011) *Book Modern Oxidation Methods*
John Wiley & Sons, Boschstr.12, Germany

16 Alabbad, S., Adil, S.F., Assal, M.E., Khan, M., Alwarthan, A., Siddiqui, M.R.H.

Gold & silver nanoparticles supported on manganese oxide: Synthesis, characterization and catalytic studies for selective oxidation of benzyl alcohol (Open Access)

(2014) *Arabian Journal of Chemistry*, 7 (6), pp. 1192-1198. Cited 16 times.
http://colleges.ksu.edu.sa/Arabic%20Colleges/CollegeOfScience/ChemicalDept/AJC/default.aspx
(ScienceDirect http://www.sciencedirect.com/science/journal/18785352)
doi: 10.1016/j.arabjc.2014.02.007

View at Publisher

17 Yu, J., Li, J., Wei, H., Zheng, J., Su, H., Wang, X.

Hydrotalcite-supported gold catalysts for a selective aerobic oxidation of benzyl alcohol driven by visible light

(2014) *Journal of Molecular Catalysis A: Chemical*, 395, pp. 128-136. Cited 16 times.
doi: 10.1016/j.molcata.2014.08.023

View at Publisher

18 Yan, Y., Jia, X., Yang, Y.

Palladium nanoparticles supported on CNT functionalized by rare-earth oxides for solvent-free aerobic oxidation of benzyl alcohol

(2016) *Catalysis Today*, Part 2 259 (Part 2), pp. 292-302. Cited 16 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.07.021

View at Publisher

19 Zhou, C., Guo, Z., Dai, Y., Jia, X., Yu, H., Yang, Y.

Promoting role of bismuth on carbon nanotube supported platinum catalysts in aqueous phase aerobic oxidation of benzyl alcohol

(2016) *Applied Catalysis B: Environmental*, 181, pp. 118-126. Cited 22 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2015.07.048

View at Publisher

20 Tian, J., Li, J., Wei, N., Xu, X., Cui, H., Liu, H.

Ru nanoparticles decorated TiO_2 nanobelts: A heterostructure towards enhanced photocatalytic activity and gas-phase selective oxidation of benzyl alcohol

(2016) *Ceramics International*, Part B 42 (1), pp. 1611-1617. Cited 16 times.
doi: 10.1016/j.ceramint.2015.09.112

View at Publisher

21 Tian, J., Hu, X., Wei, N., Zhou, Y., Xu, X., Cui, H., Liu, H.

RuO_2/TiO_2 nanobelt heterostructures with enhanced photocatalytic activity and gas-phase selective oxidation of benzyl alcohol

(2016) *Solar Energy Materials and Solar Cells*, 151, pp. 7-13. Cited 15 times.
http://www.sciencedirect.com/science/journal/09270248/100
doi: 10.1016/j.solmat.2016.02.017

View at Publisher

22 Varma, R.S.

Solvent-free organic syntheses: Using supported reagents and microwave irradiation

(1999) *Green Chemistry*, 1 (1), pp. 43-55. Cited 1178 times.
http://pubs.rsc.org/en/journals/journal/gc
doi: 10.1039/a808223e

View at Publisher

23 Payra, S., Saha, A., Banerjee, S.

Nano-$NiFe_2O_4$ as an efficient catalyst for regio- and chemoselective transfer hydrogenation of olefins/alkynes and dehydrogenation of alcohols under Pd-/Ru-free conditions

(2016) *RSC Advances*, 6 (57), pp. 52495-52499. Cited 9 times.
http://pubs.rsc.org/en/journals/journalissues
doi: 10.1039/c6ra09659j

View at Publisher

24 Shaikh, M., Satanami, M., Ranganath, K.V.S.

Efficient aerobic oxidation of alcohols using magnetically recoverable catalysts

(2014) *Catalysis Communications*, 54, pp. 91-93. Cited 16 times.
http://www.elsevier/locate/catcom
doi: 10.1016/j.catcom.2014.05.023

View at Publisher

25 Cruz, P., Pérez, Y., Del Hierro, I., Fajardo, M.

Copper, copper oxide nanoparticles and copper complexes supported on mesoporous SBA-15 as catalysts in the selective oxidation of benzyl alcohol in aqueous phase

(2016) *Microporous and Mesoporous Materials*, 220, pp. 136-147. Cited 29 times.
www.elsevier.com/inca/publications/store/6/0/0/7/6/0
doi: 10.1016/j.micromeso.2015.08.029

View at Publisher

26 Wang, H., Fan, W., He, Y., Wang, J., Kondo, J.N., Tatsumi, T.

Selective oxidation of alcohols to aldehydes/ketones over copper oxide-supported gold catalysts

(2013) *Journal of Catalysis*, 299, pp. 10-19. Cited 62 times.
doi: 10.1016/j.jcat.2012.11.018

View at Publisher

27 Ragupathi, C., Judith Vijaya, J., Narayanan, S., Jesudoss, S.K., John Kennedy, L.

Highly selective oxidation of benzyl alcohol to benzaldehyde with hydrogen peroxide by cobalt aluminate catalysis: A comparison of conventional and microwave methods

(2015) *Ceramics International*, Part PA 41 (2), pp. 2069-2080. Cited 28 times.
doi: 10.1016/j.ceramint.2014.10.002

View at Publisher

28 Mahdavi, V., Hasheminasab, H.R.

Vanadium phosphorus oxide catalyst promoted by cobalt doping for mild oxidation of benzyl alcohol to benzaldehyde in the liquid phase

(2014) *Applied Catalysis A: General*, 482, pp. 189-197. Cited 13 times.
http://www.sciencedirect.com/science/journal/0926860X
doi: 10.1016/j.apcata.2014.06.003

View at Publisher

29 Hajipour, A.R., Karimi, H., Koohi, A.

Selective oxidation of alcohols over nickel zirconium phosphate

(2015) *Cuihua Xuebao/Chinese Journal of Catalysis*, 36 (7), pp. 1109-1116. Cited 7 times.
http://www.chxb.cn/
doi: 10.1016/S1872-2067(14)60315-6

View at Publisher

30 Cang, R., Lu, B., Li, X., Niu, R., Zhao, J., Cai, Q.

Iron-chloride ionic liquid immobilized on SBA-15 for solvent-free oxidation of benzyl alcohol to benzaldehyde with H_2O_2

(2015) *Chemical Engineering Science*, 137, pp. 268-275. Cited 23 times.
http://www.journals.elsevier.com/chemical-engineering-science/
doi: 10.1016/j.ces.2015.06.044

View at Publisher

31 Rao, P.S.N., Rao, K.T.V., Sai Prasad, P.S., Lingaiah, N.

The role of vanadia for the selective oxidation of benzyl alcohol over heteropolymolybdate supported on alumina

(2011) *Cuihua Xuebao/Chinese Journal of Catalysis*, 32 (11), pp. 1719-1726. Cited 17 times.
doi: 10.1016/S1872-2067(10)60279-3

View at Publisher

32 Adil, S.F., Assal, M.E., Khan, M., Al-Warthan, A., Rafiq Siddiqui, M.H.

Nano silver-doped manganese oxide as catalyst for oxidation of benzyl alcohol and its derivatives: Synthesis, characterisation, thermal study and evaluation of catalytic properties

(2013) *Oxidation Communications*, 36 (3), pp. 778-791. Cited 14 times.

33 Noshiranzadeh, N., Bikas, R., Ślepokura, K., Mayeli, M., Lis, T.

Synthesis, characterization and catalytic activity of new Cr(III) complex in oxidation of primary alcohols to aldehydes

(2014) *Inorganica Chimica Acta*, 421, pp. 176-182. Cited 10 times.
http://www.journals.elsevier.com/inorganica-chimica-acta/
doi: 10.1016/j.ica.2014.05.026

View at Publisher

34 Biradar, A.V., Dongare, M.K., Umbarkar, S.B.

Selective oxidation of aromatic primary alcohols to aldehydes using molybdenum acetylide oxo-peroxo complex as catalyst

(2009) *Tetrahedron Letters*, 50 (24), pp. 2885-2888. Cited 56 times.
doi: 10.1016/j.tetlet.2009.03.178

View at Publisher

35 Sousa, S.C.A., Bernardo, J.R., Florindo, P.R., Fernandes, A.C.

Efficient and selective oxidation of alcohols catalyzed by oxo-rhenium complexes

(2013) *Catalysis Communications*, 40, pp. 134-138. Cited 13 times.
doi: 10.1016/j.catcom.2013.06.012

View at Publisher

36 Goh, T.W., Xiao, C., Maligal-Ganesh, R.V., Li, X., Huang, W.

Utilizing mixed-linker zirconium based metal-organic frameworks to enhance the visible light photocatalytic oxidation of alcohol

(2015) *Chemical Engineering Science*, 124, pp. 45-51. Cited 37 times.
http://www.journals.elsevier.com/chemical-engineering-science/
doi: 10.1016/j.ces.2014.08.052

View at Publisher

37 Farhadi, S., Zaidi, M.

Polyoxometalate-zirconia (POM/ZrO_2) nanocomposite prepared by sol-gel process: A green and recyclable photocatalyst for efficient and selective aerobic oxidation of alcohols into aldehydes and ketones

(2009) *Applied Catalysis A: General*, 354 (1-2), pp. 119-126. Cited 71 times.
doi: 10.1016/j.apcata.2008.11.024

View at Publisher

38 Siddiqui, M.R.H., Warad, I., Adil, S.F., Mahfouz, R.M., Al-Arifi, A.

Nano-gold supported nickel manganese oxide: Synthesis, characterisation and evaluation as oxidation catalyst

(2012) *Oxidation Communications*, 35 (2), pp. 476-481. Cited 10 times.

39 Adil, S.F., Alabbad, S., Kuniyil, M., Khan, M., Alwarthan, A., Mohri, N., Tremel, W., (...), Siddiqui, M.R.H.

Vanadia supported on nickel manganese oxide nanocatalysts for the catalytic oxidation of aromatic alcohols

(2015) *Nanoscale Research Letters*, 10 (1), pp. 1-9. Cited 11 times.
http://www.springer.com/materials/nanotechnology/journal/11671
doi: 10.1186/s11671-015-0750-5

View at Publisher

40 Borthakur, R., Asthana, M., Kumar, A., Lal, R.A.

Cooperative catalysis by polymetallic copper-zinc complexes in the efficient oxidation of alcohols under solvent free condition

(2014) *Inorganic Chemistry Communications*, 46, pp. 198-201. Cited 12 times.
doi: 10.1016/j.inoche.2014.05.018

View at Publisher

41 Çelik, A., Aktaş, F.

A new NADH-dependent, zinc containing alcohol dehydrogenase from Bacillus thuringiensis serovar israelensis involved in oxidations of short to medium chain primary alcohols

(2013) *Journal of Molecular Catalysis B: Enzymatic*, 89, pp. 114-121. Cited 3 times.
doi: 10.1016/j.molcatb.2013.01.005

View at Publisher

42 Hosseini-Sarvari, M., Ataee-Kachouei, T., Moeini, F.

A novel and active catalyst Ag/ZnO for oxidant-free dehydrogenation of alcohols

(2015) *Materials Research Bulletin*, 72, pp. 98-105. Cited 11 times.
http://www.sciencedirect.com/science/journal/00255408
doi: 10.1016/j.materresbull.2015.07.019

View at Publisher

43 Forouzani, M., Mardani, H.R., Ziari, M., Malekzadeh, A., Biparva, P.

Comparative study of oxidation of benzyl alcohol: Influence of Cu-doped metal cation on nano ZnO catalytic activity

(2015) *Chemical Engineering Journal*, 275, pp. 220-226. Cited 21 times.
www.elsevier.com/inca/publications/store/6/0/1/2/7/3/index.htt
doi: 10.1016/j.cej.2015.04.032

View at Publisher

44 Wang, Z., Li, X., Song, W., Chen, J., Li, T., Feng, Z.
Synergetic promotional effects between cerium oxides and manganese oxides for NH3-selective catalyst reduction over Ce–Mn/TiO_2
(2011) *Mater. Express*, 1, p. 167. Cited 8 times.

45 Xu, H., Liu, X.-J., Peng, Q.-W., Lu, Z.-W.
Oxalate co-precipitation synthesis of $LiNi_{0.45}Cr_{0.05}Mn_{1.5}O_4$/Ag composite for lithium-ion batteries

(2014) *Materials Express*, 4 (1), pp. 72-78. Cited 8 times.
http://docserver.ingentaconnect.com/deliver/connect/asp/21585849/v4n1/s8.pdf?
doi: 10.1166/mex.2014.1142

View at Publisher

46 Clarke, T.J., Kondrat, S.A., Taylor, S.H.
Total oxidation of naphthalene using copper manganese oxide catalysts

(2015) *Catalysis Today*, Part 2 258, pp. 610-615. Cited 11 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.01.032

View at Publisher

47 Guo, X., Li, J., Zhou, R.
Catalytic performance of manganese doped CuO-CeO_2 catalysts for selective oxidation of CO in hydrogen-rich gas

(2016) *Fuel*, 163, pp. 56-64. Cited 18 times.
http://www.journals.elsevier.com/fuel/
doi: 10.1016/j.fuel.2015.09.043

View at Publisher

48 Tepluchin, M., Kureti, S., Casapu, M., Ogel, E., Mangold, S., Grunwaldt, J.-D.
Study on the hydrothermal and SO_2 stability of Al_2O_3-supported manganese and iron oxide catalysts for lean CO oxidation

(2015) *Catalysis Today*, Part 2 258, pp. 498-506. Cited 8 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.01.010

View at Publisher

49 Shi, L., Hu, Z.-H., Deng, G.-M., Li, W.-C.
Carbon monoxide oxidation on copper manganese oxides prepared by selective etching with ammonia

(2015) *Cuihua Xuebao/Chinese Journal of Catalysis*, 36 (11), pp. 1920-1927. Cited 6 times.
http://www.chxb.cn/
doi: 10.1016/S1872-2067(15)60947-0

View at Publisher

50 Kim, S.C., Park, Y.-K., Nah, J.W.
Property of a highly active bimetallic catalyst based on a supported manganese oxide for the complete oxidation of toluene

(2014) *Powder Technology*, 266, pp. 292-298. Cited 16 times.
www.elsevier.com/locate/powtec
doi: 10.1016/j.powtec.2014.06.049

View at Publisher

51 Ashouri, F., Zare, M., Bagherzade, M.

Manganese and cobalt-terephthalate metal-organic frameworks as a precursor for synthesis of Mn2O3, Mn3O4 and Co3O4 nanoparticles: Active catalysts for olefin heterogeneous oxidation

(2015) *Inorganic Chemistry Communications*, 61, pp. 73-76. Cited 9 times.
http://www.journals.elsevier.com/inorganic-chemistry-communications/
doi: 10.1016/j.inoche.2015.08.019

View at Publisher

52 Piumetti, M., Fino, D., Russo, N.

Mesoporous manganese oxides prepared by solution combustion synthesis as catalysts for the total oxidation of VOCs

(2015) *Applied Catalysis B: Environmental*, 163, pp. 277-287. Cited 86 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2014.08.012

View at Publisher

53 Feng, Z., Xie, Y., Hao, F., Liu, P., Luo, H.

Catalytic oxidation of cyclohexane to KA oil by zinc oxide supported manganese 5,10,15,20-tetrakis(4-nitrophenyl)porphyrin

(2015) *Journal of Molecular Catalysis A: Chemical*, 410, pp. 221-225. Cited 13 times.
doi: 10.1016/j.molcata.2015.09.027

View at Publisher

54 Wang, T., She, Y., Fu, H., Li, H.

Selective cyclohexane oxidation catalyzed by manganese porphyrins and co-catalysts

(2016) *Catalysis Today*, 264, pp. 185-190. Cited 9 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.07.034

View at Publisher

55 Einaga, H., Yamamoto, S., Maeda, N., Teraoka, Y.

Structural analysis of manganese oxides supported on SiO_2 for benzene oxidation with ozone

(2015) *Catalysis Today*, 242 (PB), pp. 287-293. Cited 17 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2014.05.018

View at Publisher

56 Nie, J., Liu, H.

Efficient aerobic oxidation of 5-hydroxymethylfurfural to 2,5-diformylfuran on manganese oxide catalysts

(2014) *Journal of Catalysis*, 316, pp. 57-66. Cited 41 times.
http://www.elsevier.com/inca/publications/store/6/2/2/8/5/8/index.htt
doi: 10.1016/j.jcat.2014.05.003

View at Publisher

57 Burange, A.S., Kale, S.R., Jayaram, R.V.

Oxidation of alkyl aromatics to ketones by tert-butyl hydroperoxide on manganese dioxide catalyst

(2012) *Tetrahedron Letters*, 53 (24), pp. 2989-2992. Cited 24 times.
doi: 10.1016/j.tetlet.2012.03.091

View at Publisher

58 Qi, G., Li, W.

NO oxidation to NO_2 over manganese-cerium mixed oxides

(2015) *Catalysis Today*, Part 1 258, pp. 205-213. Cited 33 times.
http://www.sciencedirect.com/science/journal/09205861
doi: 10.1016/j.cattod.2015.03.020

View at Publisher

59 Yu, W.H., Zhou, C.H., Tong, D.S., Xu, T.N.

Aerobic oxidation of 4-tert-butyltoluene over cobalt and manganese supported hexagonal mesoporous silicas as heterogeneous catalysts

(2012) *Journal of Molecular Catalysis A: Chemical*, 365, pp. 194-202. Cited 12 times.
doi: 10.1016/j.molcata.2012.09.004

View at Publisher

60 Pei, J., Han, X., Lu, Y.

Performance and kinetics of catalytic oxidation of formaldehyde over copper manganese oxide catalyst

(2015) *Building and Environment*, 84, pp. 134-141. Cited 16 times.
http://www.elsevier.com/inca/publications/store/2/9/6/index.htt
doi: 10.1016/j.buildenv.2014.11.002

View at Publisher

61 Tang, Q., Gong, X., Zhao, P., Chen, Y., Yang, Y.

Copper-manganese oxide catalysts supported on alumina: Physicochemical features and catalytic performances in the aerobic oxidation of benzyl alcohol

(2010) *Applied Catalysis A: General*, 389 (1-2), pp. 101-107. Cited 35 times.
doi: 10.1016/j.apcata.2010.09.014

View at Publisher

62 Arena, F., Gumina, B., Lombardo, A.F., Espro, C., Patti, A., Spadaro, L., Spiccia, L.

Nanostructured MnO_x catalysts in the liquid phase selective oxidation of benzyl alcohol with oxygen: Part I. Effects of Ce and Fe addition on structure and reactivity

(2015) *Applied Catalysis B: Environmental*, 162, pp. 260-267. Cited 33 times.
www.elsevier.com/inca/publications/store/5/2/3/0/6/6/index.htt
doi: 10.1016/j.apcatb.2014.06.054

View at Publisher

63 Yang, M., Ling, Q., Rao, R., Yang, H., Zhang, Q., Liu, H., Zhang, A.

Mn_3O_4-NiO-Ni/CNTs catalysts prepared by spontaneous redox at high temperature and their superior catalytic performance in selective oxidation of benzyl alcohol

(2013) *Journal of Molecular Catalysis A: Chemical*, 380, pp. 61-69. Cited 14 times.
doi: 10.1016/j.molcata.2013.09.011

View at Publisher

64 Chen, Y., Zheng, H., Guo, Z., Zhou, C., Wang, C., Borgna, A., Yang, Y.

Pd catalysts supported on $MnCeO_x$ mixed oxides and their catalytic application in solvent-free aerobic oxidation of benzyl alcohol: Support composition and structure sensitivity

(2011) *Journal of Catalysis*, 283 (1), pp. 34-44. Cited 65 times.
doi: 10.1016/j.jcat.2011.06.021

View at Publisher

65 Mandal, S., Santra, C., Bando, K.K., James, O.O., Maity, S., Mehta, D., Chowdhury, B.
Aerobic oxidation of benzyl alcohol over mesoporous Mn-doped ceria supported Au nanoparticle catalyst

(2013) *Journal of Molecular Catalysis A: Chemical*, 378, pp. 47-56. Cited 34 times.
doi: 10.1016/j.molcata.2013.05.011

View at Publisher

66 Yang, M., Ling, Q., Yang, H., Li, C., Zhang, A.
Enhanced catalytic activity of K-birnessite MnO_2 confined in carbon nanotubes for selective oxidation of benzyl alcohol

(2014) *Catalysis Communications*, 46, pp. 238-241. Cited 17 times.
doi: 10.1016/j.catcom.2013.12.031

View at Publisher

67 Mahdavi, V., Mardani, M.
Preparation of manganese oxide immobilized on SBA-15 by atomic layer deposition as an efficient and reusable catalyst for selective oxidation of benzyl alcohol in the liquid phase

(2015) *Materials Chemistry and Physics*, 155, pp. 136-146. Cited 10 times.
doi: 10.1016/j.matchemphys.2015.02.011

View at Publisher

68 Buffat, Ph., Borel, J.-P.
Size effect on the melting temperature of gold particles

(1976) *Physical Review A*, 13 (6), pp. 2287-2298. Cited 2465 times.
doi: 10.1103/PhysRevA.13.2287

View at Publisher

69 Ali, R., Adil, S., Al-Warthan, A., Siddiqui, M.R.H.
Identification of active phase for selective oxidation of benzyl alcohol with molecular oxygen catalyzed by copper-manganese oxide nanoparticles
(2012) *J. Chem*, 2013, p. 1.

70 Su, Y., Wang, L.-C., Liu, Y.-M., Cao, Y., He, H.-Y., Fan, K.-N.
Microwave-accelerated solvent-free aerobic oxidation of benzyl alcohol over efficient and reusable manganese oxides

(2007) *Catalysis Communications*, 8 (12), pp. 2181-2185. Cited 61 times.
doi: 10.1016/j.catcom.2007.04.020

View at Publisher

71 Pathan, S., Patel, A.
Selective green oxidation of alcohols and alkenes with molecular oxygen using supported undecamolybdophosphate under solvent free condition

(2014) *Chemical Engineering Journal*, 243, pp. 183-191. Cited 17 times.
doi: 10.1016/j.cej.2013.12.098

View at Publisher

72 Nepak, D., Darbha, S.

Selective aerobic oxidation of alcohols over Au-Pd/sodium titanate nanotubes

(2014) *Catalysis Communications*, 58, pp. 149-153. Cited 16 times.
http://www.elsevier/locate/catcom
doi: 10.1016/j.catcom.2014.09.018

View at Publisher

73 Adam, F., Ooi, W.-T.

Selective oxidation of benzyl alcohol to benzaldehyde over Co-metalloporphyrin supported on silica nanoparticles

(2012) *Applied Catalysis A: General*, 445-446, pp. 252-260. Cited 28 times.
doi: 10.1016/j.apcata.2012.08.029

View at Publisher

74 Estrada, M., Costa, V.V., Beloshapkin, S., Fuentes, S., Stoyanov, E., Gusevskaya, E.V., Simakov, A.

Aerobic oxidation of benzyl alcohol in methanol solutions over Au nanoparticles: $Mg(OH)_2$ vs MgO as the support

(2014) *Applied Catalysis A: General*, 473, pp. 96-103. Cited 28 times.
doi: 10.1016/j.apcata.2013.12.039

View at Publisher

75 Qi, L., Qi, X., Wang, J., Zheng, L.

A synergistic effect in the combination of H_2O_2, FeAPO-5 and NaBr for selective oxidation of benzyl alcohols

(2011) *Catalysis Communications*, 16 (1), pp. 225-228. Cited 8 times.
doi: 10.1016/j.catcom.2011.09.035

View at Publisher

76 Zhan, G., Huang, J., Du, M., Sun, D., Abdul-Rauf, I., Lin, W., Hong, Y., (...), Li, Q.

Liquid phase oxidation of benzyl alcohol to benzaldehyde with novel uncalcined bioreduction Au catalysts: High activity and durability

(2012) *Chemical Engineering Journal*, 187, pp. 232-238. Cited 60 times.
doi: 10.1016/j.cej.2012.01.051

View at Publisher

77 Reis, M.C., Barros, S.D.T., Lachter, E.R., San Gil, R.A.S., Flores, J.H., Pais Da Silva, M.I., Onfroy, T.

Synthesis, characterization and catalytic activity of meso-niobium phosphate in the oxidation of benzyl alcohols

(2012) *Catalysis Today*, 192 (1), pp. 117-122. Cited 9 times.
doi: 10.1016/j.cattod.2012.05.025

View at Publisher

78 Zhan, G., Hong, Y., Mbah, V.T., Huang, J., Ibrahim, A.-R., Du, M., Li, Q.

Bimetallic Au-Pd/MgO as efficient catalysts for aerobic oxidation of benzyl alcohol: A green bio-reducing preparation method

(2012) *Applied Catalysis A: General*, 439-440, pp. 179-186. Cited 41 times.
doi: 10.1016/j.apcata.2012.07.005

View at Publisher

79 Tang, Q., Wu, C., Qiao, R., Chen, Y., Yang, Y.

Catalytic performances of Mn-Ni mixed hydroxide catalysts in liquid-phase benzyl alcohol oxidation using molecular oxygen

(2011) *Applied Catalysis A: General*, 403 (1-2), pp. 136-141. Cited 37 times.
doi: 10.1016/j.apcata.2011.06.023

View at Publisher

80 Sharma, R.V., Soni, K.K., Dalai, A.K.

Preparation, characterization and application of sulfated Ti-SBA-15 catalyst for oxidation of benzyl alcohol to benzaldehyde

(2012) *Catalysis Communications*, 29, pp. 87-91. Cited 30 times.
doi: 10.1016/j.catcom.2012.09.027

View at Publisher

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Document details

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A reconfigurable beam steering linear phased array antenna for Ku band satellite communication using graphing method (Article)

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Abstract

View references (11)

In this work, initially a linear phased array antenna operating at 11.7GHz is designed and presented. The radiating elements of the designed antenna connected with PIN diodes to achieve reconfigurability in terms of frequency. The designed antenna can reconfigure to 2.4 / 5.3 GHz frequencies using graphing method and can serve wireless applications. Return loss, gain characteristics and beam steering performance of the antenna is analyzed at the resonant frequencies of all topologies. Different topologies achieved different results and the choice of topology depends on the user's application. The proposed antenna is designed using HFSS software. The designed linear array can steer its main beam approximately 80 on either side of 00, with variation in phases of the feeds driven to the antenna radiating elements.

Author keywords

Beam Steering | Graphing Method | Phased Array Antenna | PIN Diodes | Reconfigurability

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	Department of Science and Technology, Government of Kerala		
SB/FTP/ETA-0175/2014	Science and Engineering Research Board	SERB	See opportunities by SERB

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References (11)

1 Kakhki, M.B., Rezaei, P., Sharbati, V., Fakharian, M.M.
Small square reconfigurable antenna with switchable single/tri-band functions

(2016) *Radioengineering*, 25 (1), pp. 40-45. Cited 3 times.
http://www.radioeng.cz/fulltexts/2016/16_01_0040_0045.pdf
doi: 10.13164/re.2016.0040

View at Publisher

2 Ge, L., Luk, K.-M.
A band-reconfigurable antenna based on directed dipole

(2014) *IEEE Transactions on Antennas and Propagation*, 62 (1), art. no. 6648646, pp. 64-71. Cited 32 times.
doi: 10.1109/TAP.2013.2287520

View at Publisher

3 Haupt, R.L., Lanagan, M.
Reconfigurable antennas

(2013) *IEEE Antennas and Propagation Magazine*, 55 (1), art. no. 6474484, pp. 49-61. Cited 88 times.
doi: 10.1109/MAP.2013.6474484

View at Publisher

4 Baggen, R., Voccaro, S., Del Rio, D.L.
Design considerations for compact mobile Ku-Band satellite terminals
(2007) *Proc. of 2Nd European Conf. on Antennnas Propagation*, pp. 1-5. Cited 10 times.

5 Kazama, Y., Sugawara, A., Takano, T., Radenamad, D.
Novel phased array antenna with elements of conical beam patterns

(2008) *2008 IEEE International Symposium on Antennas and Propagation and USNC/URSI National Radio Science Meeting, APSURSI*, art. no. 4619743. Cited 12 times.
ISBN: 978-142442042-1
doi: 10.1109/APS.2008.4619743

View at Publisher

6 Madhav, B.T.P., Kaza, H., Vaka, J.K., Sravan Kumar, K., Sriharsha, N., Jaswanth Kumar, J., Siddharth, D.S., (...), Sai Teja Reddy, D.
Design and analysis of compact coplanar wave guide fed asymmetric monopole antennas

(2015) *Research Journal of Applied Sciences, Engineering and Technology*, 10 (3), pp. 247-252. Cited 23 times.
http://www.maxwellsci.com/print/rjaset/v10-247-252.pdf
doi: 10.19026/rjaset.10.2484

View at Publisher

7 Klavins, E.
Programmable Self-Assembly

(2007) *IEEE Control Systems*, 27 (4), pp. 43-56. Cited 100 times.
doi: 10.1109/MCS.2007.384126

View at Publisher

8 Rakesh, D., Rakesh Kumar, P., Khan, H., Sri Kavya, K.C.H., Madhav, B.T.P., Prabhu Kumar, K., Bala Durga Prasad, S.
Performance evaluation of microstrip square patch antenna on different substrate materials

(2011) *Journal of Theoretical and Applied Information Technology*, 26 (2), pp. 97-106. Cited 24 times.
http://www.jatit.org/volumes/research-papers/Vol26No2/5Vol26No2.pdf

9 Madhav, B.T.P., Kumar, K.V.V., Manjusha, A.V.

Analysis of CPW fed step serrated ultra wide band antenna on Rogers RT/duroid substrates

(2014) *International Journal of Applied Engineering Research*, 9 (1), pp. 53-58. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv9n1_06.pdf

10 Madhav, B.T.P., Pisipati, V.G.K.M., Madhavi Latha, D., Dattaprasad, P.V.

Planar dipole antenna on liquid crystal polymer substrate at 2.4 GHz

(2012) *Solid State Phenomena*, 181-182, pp. 289-292. Cited 15 times.
http://www.ttp.net
ISBN: 978-303785293-4
doi: 10.4028/www.scientific.net/SSP.181-182.289

View at Publisher

11 Costantine, J., Christodoulou, C.G., Barbin, S.E.

Mapping reconfigurable antennas using graphs

(2008) *Proceedings of the 2008 NASA/ESA Conference on Adaptive Hardware and Systems, AHS 2008*, art. no. 4584265, pp. 133-140. Cited 6 times.
ISBN: 978-076953166-3
doi: 10.1109/AHS.2008.51

View at Publisher

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Integrated novel multi-phase level sets with modified marker controlled watershed for segmentation of breast cancer histopathological images (Article)

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Abstract

View references (17)

Early stage symptomatic detection of Breast Cancer (BC), helps radiologists and internists in their diagnosis to combat the mortality rate. Pre-processing and removal of false-positives used K-means clustering, Otsu's thresholding method and CLAH (Contrast Limited Adaptive Histogram) equalisation techniques. The nuclei are detected using Circular Hough Transform. The nuclei extraction was initially done adopting Marker Controlled Watershed Approach, but results suffer from local intensity inhomogeneities. So, the model is proposed which integrates Adaptive Structuring Element size Marker Controlled Watershed Approach with Novel Multi- Phase Level Sets. Performance results proved that the proposed hybrid strategy is faster, automatic and has higher accuracy for BC tissue image segmentation useful in diagnosis.

Author keywords

Adaptive structuring element's size | Biomedical image processing | Breast cancer | Marker controlled watershed approach | Novel multi-phase level sets

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References (17)

View in search results format

1 *Fact Sheet No. 297: Cancer*. Cited 69 times.
http://www.who.int/mediacentre/factsheets/fs297/en/index.html

2 Irshad, H., Veillard, A., Roux, L., Racoceanu, D.
Methods for nuclei detection, segmentation, and classification in digital histopathology: A review-current status and future potential
(2014) *IEEE Reviews in Biomedical Engineering*, 7, art. no. 6690201, pp. 97-114. Cited 147 times.
doi: 10.1109/RBME.2013.2295804
View at Publisher

3 Hrebien, M., Korbicz, J., Obuchowicz, A.
Hough Transform, (1+1) Search Strategy and Watershed Algorithm in segmentation of Cytological Images
(2007) *Computer Recognition Systems:Springer-Verlag Berlin Heidelberg*, 2, pp. 550-557. Cited 2 times.

4 Belsare, A.D., Mushrif, M.M.
Histopathological Image Analysis Using Image Processing Techniques: An Overview
(2012) *Signal & Image Processing*, 3 (4), pp. 22-36. Cited 31 times.

5 Rajyalakshmi, U., Satya Prasad, K., Koteswara Rao, S.
Tissue Processing, Staining And Image segmentation Of Pathological Cancer Images
(2014) *International Journal of Engineering and Advanced Technology*, 3, pp. 1-16. Cited 3 times.

6 Osher, S., Sethian, J.A.
Fronts propagating with curvature-dependent speed: Algorithms based on Hamilton-Jacobi formulations
(1988) *Journal of Computational Physics*, 79 (1), pp. 12-49. Cited 8571 times.
doi: 10.1016/0021-9991(88)90002-2
View at Publisher

7 Otsu, Nobuyuki
THRESHOLD SELECTION METHOD FROM GRAY-LEVEL HISTOGRAMS.
(1979) *IEEE Trans Syst Man Cybern*, SMC-9 (1), pp. 62-66. Cited 15971 times.
View at Publisher

8 Li, C., Huang, R., Ding, Z., Gatenby, J.C., Metaxas, D.N., Gore, J.C.
A level set method for image segmentation in the presence of intensity inhomogeneities with application to MRI
(2011) *IEEE Transactions on Image Processing*, 20 (7), art. no. 5754584, pp. 2007-2016. Cited 567 times.
doi: 10.1109/TIP.2011.2146190
View at Publisher

9 Zuiderveld, K.
(1994) *Contrast Limited Adaptive Histogram Equalization in Graphics Gems*, pp. 474-485. Cited 749 times.
IV. San Diego, CA, USA: Academic

10 http://www.pathologyoutlines.com/topic/breastnormal.html

(2011) IEEE Transactions on Image Processing

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11 Krishnamurthy, S., Holyer, R.J., Lybanon, M.
Histogram-Based Morphological Edge Detector

(1994) *IEEE Transactions on Geoscience and Remote Sensing*, 32 (4), pp. 759-767. Cited 25 times.
doi: 10.1109/36.298005

View at Publisher

12 Fan, J., Yau, D.K.Y., Elmagarmid, A.K., Aref, W.G.
Automatic image segmentation by integrating color-edge extraction and seeded region growing

(2001) *IEEE Transactions on Image Processing*, 10 (10), pp. 1454-1466. Cited 401 times.
doi: 10.1109/83.951532

View at Publisher

13 Vincent, L., Vincent, L., Soille, P.
Watersheds in Digital Spaces: An Efficient Algorithm Based on Immersion Simulations

(1991) *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 13 (6), pp. 583-598. Cited 3487 times.
doi: 10.1109/34.87344

View at Publisher

14 Kanungo, T., Mount, D.M., Netanyahu, N.S., Piatko, C.D., Silverman, R., Wu, A.Y.
An efficient k-means clustering algorithms: Analysis and implementation

(2002) *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 24 (7), pp. 881-892. Cited 2156 times.
doi: 10.1109/TPAMI.2002.1017616

View at Publisher

15 Wang, X., Wan, S., Lei, T.
Brain Tumor Segmentation Based on Structuring Element Map Modification and Marker-controlled Watershed Transform
(2014) *JSW*, 9 (11), pp. 2925-2932. Cited 4 times.

16 Li, C., Xu, C., Gui, C., Fox, M.D.
Distance regularized level set evolution and its application to image segmentation

(2010) *IEEE Transactions on Image Processing*, 19 (12), art. no. 5557813, pp. 3243-3254. Cited 944 times.
doi: 10.1109/TIP.2010.2069690

View at Publisher

17 Trajković, M., Hedley, M.
Fast corner detection

(1998) *Image and Vision Computing*, 16 (2), pp. 75-87. Cited 268 times.

View at Publisher

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An unexplored remarkable PNIPAM-osmolyte interaction study: An integrated experimental and simulation approach (Article)

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[b]K L College of Pharmacy, K L University, Guntur, India
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Abstract

View references (61)

We investigate the aggregation and collapse of water soluble amphiphilic polymer, poly(N-isopropylacrylamide) (PNIPAM), in aqueous solution containing variable amount of trehalose, sucrose and sorbitol. The effect of these osmolytes on the coil to globular transition of the PNIPAM is studied by the use of comprehensive biophysical techniques like UV–visible spectroscopy, fluorescence spectroscopy, dynamic light scattering and Fourier transform infrared spectroscopy (FTIR). The polarization induced by these additives promotes the collapsed state of PNIPAM at much lower temperature as compared to the pure PNIPAM in aqueous solution. The decrease in the lower critical solution temperature (LCST) of the polymer with increase in the concentration of osmolyte is due to the significant changes in the interactions among polymer, osmolyte and water. The high affinity of these additives toward water destabilize the hydrated macromolecular structure via preferential interactions. To investigate the molecular mechanism behind the decrease in the LCST of the polymer in presence of the osmolytes, a molecular dynamics (MD) study was performed. The MD simulation has clearly shown the reduction in hydration shell of the polymer after interacting with the osmolyte. MD study revealed significant changes in polymer conformation because of osmolyte interaction and strongly supports the experimental observation of polymer phase transition at temperature lower than typical LCST. The driving force for concomitant sharp configurational transition has been attributed to the rupture of hydrogen bonds between water and polymer and to the hydrophobic association of the polymer. The results of the present study can be used in the bioresponsive smart PNIPAM-based devices as its LCST is close to body temperature. This study provides an alternative method to tune the LCST of the widely accepted model PNIPAM polymer. © 2017 Elsevier Inc.

Reaxys Database Information

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Author keywords

Biophysical techniques | Lower critical solution temperature | Molecular dynamics simulation | Osmolytes | Poly(N-isopropylacrylamide)

Indexed keywords

Engineering controlled terms: Acrylic monomers | Amides | Fluorescence spectroscopy | Fourier transform infrared spectroscopy | Hydration | Hydrogen bonds | Light scattering | Macromolecules | Molecular dynamics | Solutions

Compendex keywords: Biophysical techniques | Lower critical solution temperature | Molecular dynamics simulations | Osmolytes | Poly (n isopropylacrylamide)

Engineering main heading: Polymers

EMTREE drug terms: osmolite | poly(n isopropylacrylamide) | sorbitol | sucrose | trehalose | water

EMTREE medical terms: aqueous solution | Article | bioseparation | chemical structure | comparative study | concentration (parameters) | conformational transition | controlled study | fluorescence spectroscopy | hydration | hydrodynamics | hydrogen bond | hydrophobicity | infrared spectroscopy | low temperature | macromolecule | molecular dynamics | molecular interaction | molecular stability | phase transition | photon correlation spectroscopy | polarization | priority journal | ultraviolet spectroscopy

Chemicals and CAS Registry Numbers:

osmolite, 102257-18-1; poly(n isopropylacrylamide), 25189-55-3; sorbitol, 26566-34-7, 50-70-4, 53469-19-5; sucrose, 122880-25-5, 57-50-1; trehalose, 99-20-7; water, 7732-18-5

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SB/SI/PC-109/2012	Department of Science and Technology, Government of Kerala		
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References (61)

View in search results format >

All | Export | Print | E-mail | Save to PDF | Create bibliography

1 Yancey, P.H., Clark, M.E., Hand, S.C., Bowlus, R.D., Somero, G.N.
Living with water stress: Evolution of osmolyte systems

(1982) *Science*, 217 (4566), pp. 1214-1222. Cited 2521 times.
doi: 10.1126/science.7112124

View at Publisher

2 Zhang, Y., Cremer, P.S.
Chemistry of hofmeister anions and osmolytes

(2010) *Annual Review of Physical Chemistry*, 61, pp. 63-83. Cited 324 times.
doi: 10.1146/annurev.physchem.59.032607.093635

View at Publisher

of Imidazolium-Based Ionic Liquids: An Interplay between Hydrophilic and Hydrophobic Interactions

Umapathi, R. , Vepuri, S.B. , Venkatesu, P.
(2017) Journal of Physical Chemistry B

The influence of various alkylammonium-based ionic liquids on the hydration state of temperature-responsive polymer

Umapathi, R. , Mkhize, T.Y. , Venkatesu, P.
(2017) Journal of Molecular Liquids

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3 Kumar, A., Venkatesu, P.
Overview of the stability of α-chymotrypsin in different solvent media

(2012) *Chemical Reviews*, 112 (7), pp. 4283-4307. Cited 127 times.
doi: 10.1021/cr2003773

View at Publisher

4 Reddy, P.M., Taha, M., Kumar, A., Venkatesu, P., Lee, M.-J.
Interruption of hydration state of thermoresponsive polymer, poly(N-isopropylacrylamide) in guanidinium hydrochloride

(2013) *Polymer (United Kingdom)*, 54 (2), pp. 791-797. Cited 9 times.
doi: 10.1016/j.polymer.2012.12.032

View at Publisher

5 Ohtake, S., Kita, Y., Arakawa, T.
Interactions of formulation excipients with proteins in solution and in the dried state

(2011) *Advanced Drug Delivery Reviews*, 63 (13), pp. 1053-1073. Cited 113 times.
doi: 10.1016/j.addr.2011.06.011

View at Publisher

6 Jain, N.K., Roy, I.
Effect of trehalose on protein structure

(2009) *Protein Science*, 18 (1), pp. 24-36. Cited 328 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/121502465/PDFSTART
doi: 10.1002/pro.3

View at Publisher

7 Donnamaria, M.C., Howard, E.I., Grigera, J.R.
Interaction of water with α,α-trehalose in solution: Molecular dynamics simulation approach

(1994) *Journal of the Chemical Society, Faraday Transactions*, 90 (18), pp. 2731-2735. Cited 113 times.
doi: 10.1039/FT9949002731

View at Publisher

8 Grassi, S., Carretti, E., Dei, L., Branham, C.W., Kahr, B., Weiss, R.G.
D-Sorbitol, a structurally simple, low molecular-mass gelator

(2011) *New Journal of Chemistry*, 35 (2), pp. 445-452. Cited 29 times.
doi: 10.1039/c0nj00673d

View at Publisher

9 Wittaya, T.
Influence of type and concentration of plasticizers on the properties of edible film from mung bean proteins
(2013) *Kmitl Sci. Technol. J.*, 13, pp. 51-58. Cited 12 times.

10 Teramoto, N., Sachinvala, N.D., Shibata, M.
Trehalose and trehalose-based polymers for environmentally benign, biocompatible and bioactive materials

(2008) *Molecules*, 13 (8), pp. 1773-1816. Cited 53 times.
http://www.mdpi.org/molecules/papers/13081773.pdf
doi: 10.3390/molecules13081773

View at Publisher

11 Vieira, M.G.A., Da Silva, M.A., Dos Santos, L.O., Beppu, M.M.
Natural-based plasticizers and biopolymer films: A review (Open Access)

(2011) *European Polymer Journal*, 47 (3), pp. 254-263. Cited 387 times.
doi: 10.1016/j.eurpolymj.2010.12.011

View at Publisher

12 Kapla, J., Engström, O., Stevensson, B., Wohlert, J., Widmalm, G., Maliniak, A.
Molecular dynamics simulations and NMR spectroscopy studies of trehalose-lipid bilayer systems

(2015) *Physical Chemistry Chemical Physics*, 17 (34), pp. 22438-22447. Cited 4 times.
http://www.rsc.org/Publishing/Journals/CP/index.asp
doi: 10.1039/c5cp02472b

View at Publisher

13 Khodadadi, S., Clark, N.J., McAuley, A., Cristiglio, V., Curtis, J.E., Shalaev, E.Y., Krueger, S.
Influence of sorbitol on protein crowding in solution and freeze-concentrated phases

(2014) *Soft Matter*, 10 (23), pp. 4056-4060. Cited 3 times.
doi: 10.1039/c4sm00600c

View at Publisher

14 Baek, M.H., Yoo, B., Lim, S.-T.
Effects of sugars and sugar alcohols on thermal transition and cold stability of com starch gel

(2004) *Food Hydrocolloids*, 18 (1), pp. 133-142. Cited 61 times.
doi: 10.1016/S0268-005X(03)00058-4

View at Publisher

15 Shukla, D., Schneider, C.P., Trout, B.L.
Complex interactions between molecular ions in solution and their effect on protein stability

(2011) *Journal of the American Chemical Society*, 133 (46), pp. 18713-18718. Cited 20 times.
doi: 10.1021/ja205215t

View at Publisher

16 Attri, P., Venkatesu, P., Kaushik, N., Choi, E.H.
TMAO and sorbitol attenuate the deleterious action of atmospheric pressure non-thermal jet plasma on α-chymotrypsin

(2012) *RSC Advances*, 2 (18), pp. 7146-7155. Cited 19 times.
doi: 10.1039/c2ra20085f

View at Publisher

17 Rani, A., Venkatesu, P.
A Distinct Proof on Interplay between Trehalose and Guanidinium Chloride for the Stability of Stem Bromelain

(2016) *Journal of Physical Chemistry B*, 120 (34), pp. 8863-8872. Cited 6 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/acs.jpcb.6b05766

View at Publisher

18 Rani, A., Venkatesu, P.

Insights into the interactions between enzyme and co-solvents: Stability and activity of stem bromelain

(2015) *International Journal of Biological Macromolecules*, 73 (1), pp. 189-201. Cited 17 times.
www.elsevier.com/locate/ijbiomac
doi: 10.1016/j.ijbiomac.2014.10.068

View at Publisher

19 Kumar, A., Attri, P., Venkatesu, P.

Trehalose protects urea-induced unfolding of α-chymotrypsin

(2010) *International Journal of Biological Macromolecules*, 47 (4), pp. 540-545. Cited 24 times.
doi: 10.1016/j.ijbiomac.2010.07.013

View at Publisher

20 Thomas, C.S., Xu, L., Olsen, B.D.

Effect of small molecule osmolytes on the self-assembly and functionality of globular protein-polymer diblock copolymers

(2013) *Biomacromolecules*, 14 (9), pp. 3064-3072. Cited 12 times.
doi: 10.1021/bm400664t

View at Publisher

21 Kaushik, J.K., Bhat, R.

Why is trehalose an exceptional protein stabilizer? An analysis of the thermal stability of proteins in the presence of the compatible osmolyte trehalose

(2003) *Journal of Biological Chemistry*, 278 (29), pp. 26458-26465. Cited 324 times.
doi: 10.1074/jbc.M300815200

View at Publisher

22 Fedorov, M.V., Goodman, J.M., Nerukh, D., Schumm, S.

Self-assembly of trehalose molecules on a lysozyme surface: The broken glass hypothesis

(2011) *Physical Chemistry Chemical Physics*, 13 (6), pp. 2294-2299. Cited 19 times.
doi: 10.1039/c0cp01705a

View at Publisher

23 Paul, S., Paul, S.

Exploring the Counteracting Mechanism of Trehalose on Urea Conferred Protein Denaturation: A Molecular Dynamics Simulation Study

(2015) *Journal of Physical Chemistry B*, 119 (30), pp. 9820-9834. Cited 9 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/acs.jpcb.5b01576

View at Publisher

24 Yamaguchi, A., Hiyoshi, N., Sato, O., Shirai, M.

Sorbitol dehydration in high temperature liquid water

(2011) *Green Chemistry*, 13 (4), pp. 873-881. Cited 80 times.
doi: 10.1039/c0gc00426j

View at Publisher

25 Cheng, X., Canavan, H.E., Graham, D.J., Castner, D.G., Ratner, B.D.
Temperature dependent activity and structure of adsorbed proteins on plasma polymerized N-isopropylacrylamide
(2006) *Biointerphases*, 1, pp. 61-72. Cited 57 times.

26 Reddy, P.M., Venkatesu, P.
Ionic liquid modifies the lower critical solution temperature (LCST) of poly(N-isopropylacrylamide) in aqueous solution

(2011) *Journal of Physical Chemistry B*, 115 (16), pp. 4752-4757. Cited 63 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp201826v

View at Publisher

27 Reddy, P.M., Umapathi, R., Venkatesu, P.
Interactions of ionic liquids with hydration layer of poly(N- isopropylacrylamide): Comprehensive analysis of biophysical techniques results

(2014) *Physical Chemistry Chemical Physics*, 16 (22), pp. 10708-10718. Cited 19 times.
http://www.rsc.org/Publishing/Journals/CP/index.asp
doi: 10.1039/c4cp00010b

View at Publisher

28 Halperin, A., Kröger, M., Winnik, F.M.
Poly(N-isopropylacrylamide) Phase Diagrams: Fifty Years of Research

(2015) *Angewandte Chemie - International Edition*, 54 (51), pp. 15342-15367. Cited 114 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1521-3773
doi: 10.1002/anie.201506663

View at Publisher

29 Rodríguez-Ropero, F., Van Der Vegt, N.F.A.
Direct osmolyte-macromolecule interactions confer entropic stability to folded states

(2014) *Journal of Physical Chemistry B*, 118 (26), pp. 7327-7334. Cited 42 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp504065e

View at Publisher

30 Du, H., Wickramasinghe, R., Qian, X.
Effects of salt on the lower critical solution temperature of poly (N-isopropylacrylamide)

(2010) *Journal of Physical Chemistry B*, 114 (49), pp. 16594-16604. Cited 119 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp105652c

View at Publisher

31 Alaghemandi, M., Spohr, E.
Molecular dynamics investigation of the thermo-responsive polymer poly(N-isopropylacrylamide)

(2012) *Macromolecular Theory and Simulations*, 21 (2), pp. 106-112. Cited 27 times.
doi: 10.1002/mats.201100071

View at Publisher

32 Walter, J., Sehrt, J., Vrabec, J., Hasse, H.

Molecular dynamics and experimental study of conformation change of poly(N -isopropylacrylamide) hydrogels in mixtures of water and methanol

(2012) *Journal of Physical Chemistry B*, 116 (17), pp. 5251-5259. Cited 66 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp212357n

View at Publisher

33 Min, S.H., Kwak, S.K., Kim, B.-S.

Atomistic simulation for coil-to-globule transition of poly(2-dimethylaminoethyl methacrylate)

(2015) *Soft Matter*, 11 (12), pp. 2423-2433. Cited 15 times.
http://www.rsc.org/Publishing/Journals/sm/Article.asp?Type=CurrentIssue
doi: 10.1039/c4sm02242d

View at Publisher

34 Lian, C., Zhang, E., Wang, T., Sun, W., Liu, X., Tong, Z.

Binding interaction and gelation in aqueous mixtures of poly(N-isopropylacrylamide) and hectorite clay

(2015) *Journal of Physical Chemistry B*, 119 (2), pp. 612-619. Cited 5 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp510526j

View at Publisher

35 Radecki, M., Spěváček, J., Zhigunov, A., Sedláková, Z., Hanyková, L.

Temperature-induced phase transition in hydrogels of interpenetrating networks of poly(N-isopropylacrylamide) and polyacrylamide

(2015) *European Polymer Journal*, 68, pp. 68-79. Cited 11 times.
doi: 10.1016/j.eurpolymj.2015.04.019

View at Publisher

36 Wang, M., Gao, Y., Cao, C., Chen, K., Wen, Y., Fang, D., Li, L., (...), Guo, X.

Binary solvent colloids of thermosensitive poly(N -isopropylacrylamide) microgel for smart windows

(2014) *Industrial and Engineering Chemistry Research*, 53 (48), pp. 18462-18472. Cited 14 times.
http://pubs.acs.org/journal/iecred
doi: 10.1021/ie502828b

View at Publisher

37 Hartanto, Y., Zargar, M., Wang, H., Jin, B., Dai, S.

Thermoresponsive Acidic Microgels as Functional Draw Agents for Forward Osmosis Desalination

(2016) *Environmental Science and Technology*, 50 (8), pp. 4221-4228. Cited 3 times.
http://pubs.acs.org/journal/esthag
doi: 10.1021/acs.est.5b04123

View at Publisher

38 Hartanto, Y., Yun, S., Jin, B., Dai, S.

Functionalized thermo-responsive microgels for high performance forward osmosis desalination

(2015) *Water Research*, 70, pp. 385-393. Cited 24 times.
www.elsevier.com/locate/watres
doi: 10.1016/j.watres.2014.12.023

View at Publisher

39 Razmjou, A., Simon, G.P., Wang, H.
Effect of particle size on the performance of forward osmosis desalination by stimuli-responsive polymer hydrogels as a draw agent

(2013) *Chemical Engineering Journal*, 215-216, pp. 913-920. Cited 54 times.
doi: 10.1016/j.cej.2012.11.088

View at Publisher

40 Wang, Z., Zhang, J., Xie, J., Wang, Z., Yin, Y., Li, J., Li, Y., (...), Yang, B.
Polymer Bragg stack as color tunable photonic paper

(2012) *Journal of Materials Chemistry*, 22 (16), pp. 7887-7893. Cited 28 times.
doi: 10.1039/c2jm15943k

View at Publisher

41 Gao, Y., Yang, J., Ding, Y., Ye, X.
Effect of urea on phase transition of poly(N-isopropylacrylamide) investigated by differential scanning calorimetry

(2014) *Journal of Physical Chemistry B*, 118 (31), pp. 9460-9466. Cited 23 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp503834c

View at Publisher

42 Sagle, L.B., Zhang, Y., Litosh, V.A., Chen, X., Cho, Y., Cremer, P.S.
Investigating the hydrogen-bonding model of urea denaturation

(2009) *Journal of the American Chemical Society*, 131 (26), pp. 9304-9310. Cited 144 times.
http://pubs.acs.org/doi/pdfplus/10.1021/ja9016057
doi: 10.1021/ja9016057

View at Publisher

43 Das, P., Xia, Z., Zhou, R.
Collapse of a hydrophobic polymer in a mixture of denaturants

(2013) *Langmuir*, 29 (15), pp. 4877-4882. Cited 11 times.
doi: 10.1021/la3046252

View at Publisher

44 Xu, Y., Liu, G.
Amplification of Hofmeister effect by alcohols

(2014) *Journal of Physical Chemistry B*, 118 (26), pp. 7450-7456. Cited 9 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/jp504317j

View at Publisher

45 Taha, M., Gupta, B.S., Khoiroh, I., Lee, M.-J.
Interactions of biological buffers with macromolecules: The ubiquitous "smart" polymer PNIPAM and the biological buffers MES, MOPS, and MOPSO

(2011) *Macromolecules*, 44 (21), pp. 8575-8589. Cited 31 times.
doi: 10.1021/ma201790c

View at Publisher

46 Rodríguez-Ropero, F., Hajari, T., Van Der Vegt, N.F.A.
Mechanism of Polymer Collapse in Miscible Good Solvents

(2015) *Journal of Physical Chemistry B*, 119 (51), pp. 15780-15788. Cited 37 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/acs.jpcb.5b10684

View at Publisher

47 Reddy, P.M., Taha, M., Venkatesu, P., Kumar, A., Lee, M.-J.
Destruction of hydrogen bonds of poly(N-isopropylacrylamide) aqueous solution by trimethylamine N-oxide

(2012) *Journal of Chemical Physics*, 136 (23), art. no. 234904. Cited 25 times.
doi: 10.1063/1.4729156

View at Publisher

48 Cavallaro, G., Lazzara, G., Massaro, M., Milioto, S., Noto, R., Parisi, F., Riela, S.
Biocompatible poly(N -isopropylacrylamide)-halloysite nanotubes for thermoresponsive curcumin release

(2015) *Journal of Physical Chemistry C*, 119 (16), pp. 8944-8951. Cited 41 times.
http://pubs.acs.org/journal/jpccck
doi: 10.1021/acs.jpcc.5b00991

View at Publisher

49 Cavallaro, G., Lazzara, G., Milioto, S., Parisi, F.
Steric stabilization of modified nanoclays triggered by temperature

(2016) *Journal of Colloid and Interface Science*, 461, pp. 346-351. Cited 9 times.
http://www.elsevier.com/inca/publications/store/6/2/2/8/6/1/index.htt
doi: 10.1016/j.jcis.2015.09.046

View at Publisher

50 De La Rosa, V.R., Woisel, P., Hoogenboom, R.
Supramolecular control over thermoresponsive polymers (Open Access)

(2016) *Materials Today*, 19 (1), pp. 44-55. Cited 14 times.
http://www.journals.elsevier.com/materials-today/
doi: 10.1016/j.mattod.2015.06.013

View at Publisher

51 Jain, A.N., Koile, K., Chapman, D.
Compass: Predicting Biological Activities from Molecular Surface Properties. Performance Comparisons on a Steroid Benchmark

(1994) *Journal of Medicinal Chemistry*, 37 (15), pp. 2315-2327. Cited 154 times.
doi: 10.1021/jm00041a010

View at Publisher

52 Berendsen, H.J.C., Postma, J.P.M., Van Gunsteren, W.F., Dinola, A., Haak, J.R.
Molecular dynamics with coupling to an external bath

(1984) *The Journal of Chemical Physics*, 81 (8), pp. 3684-3690. Cited 16273 times.
doi: 10.1063/1.448118

View at Publisher

53 Conner, B.N., Yoon, C., Dickerson, J.L., Dickerson, R.E.

Helix geometry and hydration in an A-DNA tetramer: ^{I}C-C-G-G

(1984) *Journal of Molecular Biology*, 174 (4), pp. 663-695. Cited 101 times.
doi: 10.1016/0022-2836(84)90089-5

View at Publisher

54 Umapathi, R., Reddy, P.M., Kumar, A., Venkatesu, P., Chang, C.-J.

The biological stimuli for governing the phase transition temperature of the "smart" polymer PNIPAM in water

(2015) *Colloids and Surfaces B: Biointerfaces*, 135, pp. 588-595. Cited 11 times.
www.elsevier.com/locate/colsurfb
doi: 10.1016/j.colsurfb.2015.08.020

View at Publisher

55 Malferrari, M., Nalepa, A., Venturoli, G., Francia, F., Lubitz, W., Möbius, K., Savitsky, A.

Structural and dynamical characteristics of trehalose and sucrose matrices at different hydration levels as probed by FTIR and high-field EPR

(2014) *Physical Chemistry Chemical Physics*, 16 (21), pp. 9831-9848. Cited 15 times.
http://www.rsc.org/Publishing/Journals/CP/index.asp
doi: 10.1039/c3cp54043j

View at Publisher

56 Lee, H., Choi, J.-H., Verma, P.K., Cho, M.

Spectral Graph Analyses of Water Hydrogen-Bonding Network and Osmolyte Aggregate Structures in Osmolyte-Water Solutions

(2015) *Journal of Physical Chemistry B*, 119 (45), pp. 14402-14412. Cited 10 times.
http://pubs.acs.org/journal/jpcbfk
doi: 10.1021/acs.jpcb.5b08029

View at Publisher

57 Gast, K., Damaschun, G., Misselwitz, R., Zirwer, D.

Application of dynamic light scattering to studies of protein folding kinetics

(1992) *European Biophysics Journal*, 21 (5), pp. 357-362. Cited 41 times.
doi: 10.1007/BF00188349

View at Publisher

58 Jha, I., Venkatesu, P.

Deciphering the Interactions of Bromelain with Carbon Nanotubes: Role of Protein as Well as Carboxylated Multiwalled Carbon Nanotubes in a Complexation Mechanism

(2016) *Journal of Physical Chemistry C*, 120 (28), pp. 15436-15445. Cited 5 times.
http://pubs.acs.org/journal/jpccck
doi: 10.1021/acs.jpcc.6b03547

View at Publisher

59 Sun, B., Lin, Y., Wu, P., Siesler, H.W.

A FTIR and 2D-IR spectroscopic study on the microdynamics phase separation mechanism of the poly(N-isopropylacrylamide) aqueous solution

(2008) *Macromolecules*, 41 (4), pp. 1512-1520. Cited 178 times.
doi: 10.1021/ma702062h

View at Publisher

60 Kesselman, E., Ramon, O., Berkovici, R., Paz, Y.

ATR-FTIR studies on the effect of strong salting-out salts on the phase separation scenario in aqueous solutions of poly(N-isopropylacrylamide) [PNIPA]

(2002) *Polymers for Advanced Technologies*, 13 (10-12), pp. 982-991. Cited 23 times.

View at Publisher

61 Auton, M., Bolen, D.W.

Prediction the energetics of osmolyte-induced protein folding/unfolding

(2005) *Proceedings of the National Academy of Sciences of the United States of America*, 102 (42), pp. 15065-15068. Cited 273 times.
doi: 10.1073/pnas.0507053102

View at Publisher

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A smart heuristic scanner for an intrusion detection system using two-stage machine learning techniques (Article)

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Abstract

View references (15)

Building intrusion detection system (IDS) for an enterprise is a complex and challenging task as the attack types are growing day by day. Hence, there is a need for a smart heuristic scanner in an IDS to perform deep packet inspection in order to detect newer form of attacks and decisively declare a source as trusted or un-trusted. To perform deep packet inspection, packet headers at transport and network layers are processed through a two-level machine learning classifiers. Naive Bayes is applied in the first stage on TCP level heuristics. The output of the first stage classifier and IP heuristics are given as input to the k-nearest neighbours (KNNs) classifier in the second stage. At the end of the second stage classification, results are rendered as trusted or un-trusted. The experimental results showed that the proposed approach is efficient in terms of detection rate and false alarms. Copyright © 2017 Inderscience Enterprises Ltd.

Author keywords

Classifiers | Heuristic | IDS | Intrusion detection system | Machine learning | TCP/IP packets

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References (15)

View in search results format

1 Amor, N.B., Benferhat, S., Elouedi, Z.
Naive Bayes vs decision trees in intrusion detection systems

(2004) *Proceedings of the ACM Symposium on Applied Computing*, 1, pp. 420-424. Cited 171 times.

View at Publisher

2 Bace, R.G.
Intrusion detection
(2000) *Proceedings of the 2nd European Conference on Information Warfare and Security*. Cited 249 times.
Macmillan Technical Publishing, UK, ISBN 1-57870-185-6

3 Domingos, P., Pazzani, M.
On the Optimality of the Simple Bayesian Classifier under Zero-One Loss

(1997) *Machine Learning*, 29 (2-3), pp. 103-130. Cited 1646 times.

View at Publisher

4 Hsieh, S.-L., Hsieh, S.-H., Cheng, P.-H., Chen, C.-H., Hsu, K.-P., Lee, I.-S., Wang, Z., (...), Lai, F.
Design ensemble machine learning model for breast cancer diagnosis

(2012) *Journal of Medical Systems*, 36 (5), pp. 2841-2847. Cited 14 times.
doi: 10.1007/s10916-011-9762-6

View at Publisher

5 Idris, N.B., Shanmugam, B.
Artificial intelligence techniques applied to intrusion detection

(2005) *Proceedings of INDICON 2005: An International Conference of IEEE India Council*, 2005, art. no. 1590122, pp. 52-55. Cited 32 times.
ISBN: 0780395034; 978-078039503-9
doi: 10.1109/INDCON.2005.1590122

View at Publisher

6 Liao, Y., Vemuri, V.R.
Use of k-nearest neighbor classifier for intrusion detection

(2002) *Computers and Security*, 21 (5), pp. 439-448. Cited 223 times.
doi: 10.1016/S0167-4048(02)00514-X

View at Publisher

7 Site Advisor (MSA), M.
(2014) *McAfee Site Advisor*
online]
http://www.siteadvisor.com/(accessedMarch2014)

8 Mukkamala, S., Sung, A.H.
Identifying key features for intrusion detection using neural networks
(2002) *Proceeding of ICCC, Proceedings of the 15th International Conference on Computer Communication*, pp. 1132-1138. Cited 21 times.
USA

9 Patcha, A., Park, J.-M.
An overview of anomaly detection techniques: Existing solutions and latest technological trends

(2007) *Computer Networks*, 51 (12), pp. 3448-3470. Cited 582 times.
doi: 10.1016/j.comnet.2007.02.001

View at Publisher

10 Rao, K.V.S.N.R., Patra, M.R.
A service oriented modeling and analysis for building intrusion detection systems', in Krishna, P.V., Babu, M.R. and Ariwa, E. (Eds.)
(2011) *Proceedings of ObCom, Springer (LNCS) in Communications in Computer and Information Science (CCIS)*, pp. 661-670.
CCIS 269

11 Scarfone, K., Mell, P.
(2010) *Guide to Intrusion Detection and Prevention Systems (IDPS)*. Cited 266 times.
[online]
http://csrc.nist.gov/publications/nistpubs/800-94/SP800-94.pdf(accessedJune2013)

12 Stoddard, D., Thomas, M.
(2009) *Network Security First-step: Firewalls*
(accessed March 2009)
http://www.ciscopress.com/articles/article.asp?p=1823359

13 Williams, N., Zander, S., Armitage, G.
A preliminary performance comparison of five machine learning algorithms for practical IP traffic flow classification

(2006) *Computer Communication Review*, 36 (5), pp. 7-15. Cited 313 times.

14 Wu, S.-Y., Yen, E.
Data mining-based intrusion detectors

(2009) *Expert Systems with Applications*, 36 (3 PART 1), pp. 5605-5612. Cited 52 times.
doi: 10.1016/j.eswa.2008.06.138

View at Publisher

15 Yao, J.T., Zhao, S.L., Saxton, L.V.
A study on fuzzy intrusion detection

(2005) *Proceedings of SPIE - The International Society for Optical Engineering*, 5812, art. no. 03, pp. 23-30. Cited 32 times.
doi: 10.1117/12.604465

View at Publisher

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Analysis of wideband monopole antenna with defected ground structure for X and KU band communication applications (Article)

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Abstract

View references (11)

A defected ground structured monopole antenna is proposed for X and Ku band communication applications in this article. To achieve high bandwidth, monopole antenna is added with L-shaped strips on both sides of radiating element. The stub loaded designed antenna is showing an impedance bandwidth of 96% in the range of 8 to 25 GHz. The proposed antenna is showing good radiation characteristics with peak realized gain of more than 6 dB. In addition, effects of added additional strips length on the performance of the proposed antenna is also examined and presented in this work. The simulation of the proposed antenna is done on CST microwave studio and a measured result of the prototyped antenna is verified on ZNB 20 Vector Network Analyzer.

Author keywords

Communication Applications | Defected Ground Structure (DGS) | Monopole Antenna | Wideband

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References (11)

View in search results format

1 Madhav, B.T.P., Kaza, H., Kartheek, T., Kaza, V.L., Prasanth, S., Chandra Sikakollu, K.S.S., Thammishetti, M., (...), Bhavani, K.V.L.

Novel printed monopole trapezoidal notch antenna with S-band rejection

(2015) *Journal of Theoretical and Applied Information Technology*, 76 (1), pp. 42-49. Cited 48 times.
http://www.jatit.org/volumes/Vol76No1/5Vol76No1.pdf

2 Lakshmikanth, P., Takeshore, K., Madhav, B.T.P.

Printed log-periodic dipole antenna with notched filter at 2.45 GHz frequency for wireless communication applications

(2015) *Journal of Engineering and Applied Sciences*, 10 (3), pp. 40-44. Cited 43 times.
http://docsdrive.com/pdfs/medwelljournals/jeasci/2015/40-4.pdf
doi: 10.3923/jeasci.2015.40.44

View at Publisher

3 Ramkiran, D.S., Madhav, B.T.P., Prasanth, A.M., Harsha, N.S., Vardhan, V., Avinash, K., Chaitanya, M.N., (...), Nagasai, U.S.

Novel compact asymmetrical fractal aperture Notch band antenna

(2015) *Leonardo Electronic Journal of Practices and Technologies*, 14 (27), pp. 1-12. Cited 31 times.
http://lejpt.academicdirect.org/A27/001_012.pdf

4 Lakshmi, M.L.S.N.S., Khan, H., Madhav, B.T.P.

Novel sequential rotated 2×2 array notched circular patch antenna

(2015) *Journal of Engineering Science and Technology Review*, 8 (4), pp. 73-77. Cited 27 times.
http://www.jestr.org/downloads/Volume8Issue4/fulltext84112015.pdf

5 Reddiah Babu, M.V., Kotamraju, S.K., Madhav, B.T.P., Mohan Reddy, S.S., Krishna, G.V., Giridhar, M.V., Sai Krishna, V.

Compact serrated notch band MIMO antenna for UWB applications

(2016) *ARPN Journal of Engineering and Applied Sciences*, 11 (7), pp. 4358-4369. Cited 13 times.
http://www.arpnjournals.org/jeas/research_papers/rp_2016/jeas_0416_3966.pdf

6 Ajay Babu, M., Madhav, B.T.P., Naga Vaishnavi, D., Radhakrishna, P., Bharath, N., Madhuri, K., Bhavani Prasad, K., (...), Harish, K.

Flared V-shape slotted monopole multiband antenna with metamaterial loading

(2015) *International Journal on Communications Antenna and Propagation*, 5 (2), pp. 93-97. Cited 25 times.
http://www.praiseworthyprize.it/public/SUBSCRIBERS/IRECAP.html

View at Publisher

7 Mohan Reddy, S.S., Mallikarjuna Rao, P., Madhav, B.T.P.

Asymmetric defected ground structured monopole antenna for wideband communication systems

(2015) *International Journal on Communications Antenna and Propagation*, 5 (5), pp. 256-262. Cited 47 times.
http://www.praiseworthyprize.org/jsm/index.php?journal=irecap&page=issue&op=current
doi: 10.15866/irecap.v5i5.6005

View at Publisher

8 Madhav, B.T.P., Khan, H., Kotamraju, S.K.

Circularly polarized slotted aperture antenna with coplanar waveguide fed for broadband applications

(2016) *Journal of Engineering Science and Technology*, 11 (2), pp. 267-277. Cited 23 times.
http://jestec.taylors.edu.my/Vol%2011%20issue%202%20February%202016/Volume%20(11)%20Issue%20(2)%20267-%20277.pdf

9 Rama Krishna, T.V., Madhav, B.T.P., Monica, G., Janakiram, V., Md Abid Basha, S.

Microstrip line fed leaky wave antenna with shorting vias for wideband systems (Open Access)

(2016) *International Journal of Electrical and Computer Engineering*, 6 (4), pp. 1725-1731. Cited 5 times.
iaesjournal.com/online/index.php/IJECE
doi: 10.11591/ijece.v6i4.10699

View at Publisher

10 Sundar, P.S., Kotamraju, S.K., Madhav, B.T.P., Sreehari, M., Rao, K.R., Prathyusha, L., Pravallika, Y.

Parasitic strip loaded dual band notch circular monopole antenna with defected ground structure (Open Access)

(2016) *International Journal of Electrical and Computer Engineering*, 6 (4), pp. 1742-1750. Cited 11 times.
iaesjournal.com/online/index.php/IJECE
doi: 10.11591/ijece.v6i4.10529

View at Publisher

11 Padmapriya, T., Saminadan, V.
Distributed load balancing for multiuser multi-class traffic in MIMO LTE-advanced networks
(2016) *Research Journal of Applied Sciences, Engineering and Technology (RJASET) - Maxwell Scientific Organization*, 12 (8), pp. 813-822. Cited 45 times.
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Document details

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A new computation method for pointing accuracy of cassegrain antenna in satellite communication (Article)

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Abstract

View references (30)

The amount of pointing error (beam squint) plays a decisive role in maintaining high data link for satellite communication. Antenna pointing errors cause a decrease in gain as well as an increase in interference to neighboring satellites. Due to the restricted beam width in high gain antennas, precise pointing is needed. In this paper, the pointing error for 1.5m Cassegrain antenna (ground station antenna) is calculated with respect to its structural displacements (mainly Feed Displacement and Secondary Reflector Translation). Also, the impact of these structural deflections on antenna parameters such as peak gain, phase error, and sidelobe level is evaluated. The result shows that pointing error may rise up to 1.6 degrees for one-inch displacement of structures. Finally, 75% of gain loss is compensated by using movable feed and Subreflector.

Author keywords

Antenna pointing | Axial defocus | Cassegrain antenna | Feed displacement | Lateral defocus | Phase error

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References (30)

View in search results format

1 Hawkins, G.J., Edwards, D.J., McGeehan, J.P.
Tracking systems for satellite communications

(1988) *IEE Proceedings F: Communications Radar and Signal Processing*, 135 (5), pp. 393-407. Cited 46 times.
doi: 10.1049/ip-f-1.1988.0047

View at Publisher

2 Dybdal, R.B., Soohoo, K.M.
Narrow beamwidth satellite antenna pointing and tracking

(2011) *IEEE Antennas and Propagation Society, AP-S International Symposium (Digest)*, art. no. 5996901, pp. 2012-2015. Cited 5 times.
ISBN: 978-142449563-4
doi: 10.1109/APS.2011.5996901

View at Publisher

3 Ralph Brooker, D.V.
Antenna Pointing Accuracy Impact on Geostationary Link Quality and Interference
(2005) *23Rd AIAA International Communication Satellite System and 11Th Ka and Broadband Communication Joint Conference*
Rome,Italy

4 Zarghamee, M.S.
Peak Gain of a Cassegrain Antenna with Secondary Position Adjustment

(1982) *IEEE Transactions on Antennas and Propagation*, 30 (6), pp. 1228-1233. Cited 5 times.
doi: 10.1109/TAP.1982.1142944

View at Publisher

5 Lamb, J.W.
(1983) *Analysis of a Cassegrian Antenna Having a Gaussian Illumination Pattern*
Helsinki University of Technology,Radio Laboratory, Otaniemi,Finland

6 Wang, C.S., Duan, B.Y., Qiu, Y.Y.
Accurate algorithm for analysis of surface errors in reflector antennas and calculation of gain loss

(2005) *MAPE2005: IEEE 2005 International Symposium on Microwave, Antenna, Propagation and EMC Technologies for Wireless Communications, Proceedings*, 2, art. no. 1618177, pp. 1365-1368. Cited 2 times.
ISBN: 0780391284; 978-078039128-4

7 Ahsan, Md.R., Islam, M.T., Yamada, Y., Misran, N.
Ray tracing technique for shaping a dual reector antenna system

(2016) *Turkish Journal of Electrical Engineering and Computer Sciences*, 24 (3), pp. 1223-1234.
http://journals.tubitak.gov.tr/elektrik/issues/elk-16-24-3/elk-24-3-38-1311-214.pdf
doi: 10.3906/elk-1311-214

View at Publisher

8 Li, N., Duan, B., Zheng, F.
Effect of the random error on the radiation characteristic of the reflector antenna based on two-dimensional fractal (Open Access)

(2012) *International Journal of Antennas and Propagation*, 2012, art. no. 543462. Cited 10 times.
doi: 10.1155/2012/543462

View at Publisher

Beam pointing accuracy of phased arrays for satellite communication

Kavya, K.C.S. , Kotamraju, S.K. , Naveen Kumar, B.
(2017) Journal of Theoretical and Applied Information Technology

Development of phased array antenna for c-band applications using HFSS

Tej, D.R. , Sri Kavya, K.Ch. , Kotamraju, S.K.
(2017) Ponte

Dual band notch MIMO antenna with meander slot and DGS for ultra-wideband applications

Prakash, B.L. , Madhav, B.T.P. , Sai Parimala, B.
(2017) ARPN Journal of Engineering and Applied Sciences

View all related documents based on references

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Authors > Keywords >

9 Battilana, R.H.J.A.
Gain Reduction of a Shaped Cassegrain Antenna due to Lateral Displacements

10 Lamb, J.W.
(1983) *Analysis of a Cassegrain Antenna Having a Gaussian Illumination Pattern*
Helsinki University of Technology, Radio Laboratory, Otaniemi, Finland

11 Zocchi, F.E.
Estimation of the accuracy of a reflector surface from the measured rms error

(2005) *IEEE Transactions on Instrumentation and Measurement*, 54 (5), pp. 2124-2129. Cited 3 times.
doi: 10.1109/TIM.2005.853680

View at Publisher

12 Bergmann, J.R., Palma Pereira, L.C.
Radiation pattern control by subreflector shaping in a dual-reflector antenna

(2002) *Microwave and Optical Technology Letters*, 35 (5), pp. 408-412. Cited 2 times.
doi: 10.1002/mop.10621

View at Publisher

13 Baars, W.
Characteristics of a Reflector Antenna
(2003) *ALMA Memo*, 456. Cited 4 times.

14 Balanis, C.A.
Modern antenna handbook

(2007) *Modern Antenna Handbook*, pp. 1-1680. Cited 100 times.
http://onlinelibrary.wiley.com/book/10.1002/9780470294154
ISBN: 978-047029415-4; 978-047003634-1
doi: 10.1002/9780470294154

View at Publisher

15 Baars, J.W.
(2007) *The Paraboloidal Reflector Antenna in Radio Astronomy and Communication*. Cited 36 times.
Springer

16 He, G.
Analysis of Feed Defocus's Effects on a KA-Band Parabolic Antenna
(2013) *Proceedings of the 26Th Conference of Spacecraft TT&C Technology in China*
Beijing

17 Rajarao, K.
(2013) *Satellite Communication: Concepts and Applications*
PHI Learning Pvt. Ltd

18 Rakesh, D., Rakesh Kumar, P., Khan, H., Sri Kavya, K.C.H., Madhav, B.T.P., Prabhu Kumar, K., Bala Durga Prasad, S.

Performance evaluation of microstrip square patch antenna on different substrate materials

(2011) *Journal of Theoretical and Applied Information Technology*, 26 (2), pp. 97-106. Cited 24 times.
http://www.jatit.org/volumes/research-papers/Vol26No2/5Vol26No2.pdf

19 Prabhu Kumar, K., Brahmanandam, P.S., Madhav, B.T.P., Sri Kavya, K.C., Shiva Kumar, V., Raghavendravishnu, T., Rakesh, D.

Uniplanar quasi yagi antenna for channel measurements at X band

(2011) *Journal of Theoretical and Applied Information Technology*, 26 (2), pp. 91-96. Cited 14 times.
http://www.jatit.org/volumes/research-papers/Vol26No2/4Vol26No2.pdf

20 Kavya, K.C.S., Kotamraju, S.K., Khan, H.

Calibration of linear array antenna using restoration technique with near-field compressed sensing

(2013) *2013 7th European Conference on Antennas and Propagation, EuCAP 2013*, art. no. 6546686, pp. 2220-2223. Cited 4 times.
ISBN: 978-889070183-2

21 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Praveen Kumar, K., Bhavani, K.V.L., Ravi Kumar, M.

Liquid crystal Bow-Tie microstrip antenna for wireless communication applications

(2011) *Journal of Engineering Science and Technology Review*, 4 (2), pp. 131-134. Cited 34 times.
http://www.jestr.org/downloads/issue2/fulltext222011.pdf

22 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Praveen Kumar, K., Bhavani, K.V.L., Ravi Kumar, M.

Liquid crystal Bow-Tie microstrip antenna for wireless communication applications

(2011) *Journal of Engineering Science and Technology Review*, 4 (2), pp. 131-134. Cited 34 times.
http://www.jestr.org/downloads/issue2/fulltext222011.pdf

23 Madhav, B.T.P., Mohan Reddy, S., Ravindranath Chowdary, J., Vinod Babu, V., Satya Parthiva, S., Kalyana Saravana, S.

Analysis of dual feed asymmetric antenna

(2013) *International Journal of Applied Engineering Research*, 8 (4), pp. 461-467. Cited 36 times.
http://www.ripublication.com/ijaerv6/ijaerv8n4_07.pdf

24 Madhav, B.T.P., Mohan Reddy, S.S., Sanjay, B., Ujwala, D.

Trident shaped ultra wideband antenna analysis based on substrate permittivity

(2013) *International Journal of Applied Engineering Research*, 8 (12), pp. 1355-1361. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv8n12_02.pdf

25 Madhav, B.T.P., Krishnam Naidu Yedla, G.S., Kumar, K.V.V., Rahul, R., Srikanth, V.

Fractal aperture EBG ground structured dual band planar slot antenna

(2014) *International Journal of Applied Engineering Research*, 9 (5), pp. 515-524. Cited 42 times.
http://www.ripublication.com/ijaerv6/ijaerv9n5_01.pdf

26 Madhav, B.T.P., Sanikommu, M., Pranoop, M.S., Bose, K.S.N.M.C., Kumar, B.S.

Cpw fed antenna for wideband applications based on tapered step ground and ebg structure

(2015) *Indian Journal of Science and Technology*, 8, pp. 119-127. Cited 46 times.
http://www.indjst.org
doi: 10.17485/ijst/2015/v8iS9/53392

View at Publisher

27 Sadasivarao, B., Madhav, B.T.P.

Analysis of hybrid slot antenna based on substrate permittivity

(2014) *ARPN Journal of Engineering and Applied Sciences*, 9 (6), pp. 885-890. Cited 39 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2014/jeas_0614_1115.pdf

28 Madhav, B.T.P., Kumar, K.V.V., Manjusha, A.V.

Analysis of CPW fed step serrated ultra wide band antenna on Rogers RT/duroid substrates

(2014) *International Journal of Applied Engineering Research*, 9 (1), pp. 53-58. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv9n1_06.pdf

29 Madhav, B.T.P., Kumar, K.V.V., Manjusha, A.V.

Analysis of CPW fed step serrated ultra wide band antenna on Rogers RT/duroid substrates

(2014) *International Journal of Applied Engineering Research*, 9 (1), pp. 53-58. Cited 44 times.
http://www.ripublication.com/ijaerv6/ijaerv9n1_06.pdf

30 Madhav, B.T.P., Pisipati, V.G.K.M., Khan, H., Prasad, V.G.N.S., Praveen Kumar, K., Bhavani, K.V.L., Datta Prasad, P.V.

Microstrip 2 × 2 square patch array antenna on K15 liquid crystal substrate

(2011) *International Journal of Applied Engineering Research*, 6 (9), pp. 1099-1104. Cited 25 times.
http://www.ripublication.com/ijaerv6/ijaerv6n9s_1.pdf

Document details

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Main-chain poly(fullerene) multiblock copolymers as organic photovoltaic donor-acceptors and stabilizers (Article)

Raissi, M.[abf], Erothu, H.[cg], Ibarboure, E.[c], Bejbouji, H.[a], Cramail, H.[c], Cloutet, E.[cd], Vignau, L.[ab], Hiorns, R.C.[de]

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Abstract

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A multi-block copolymer based on main-chain fullerene repeating units is used in organic photovoltaic devices for the first time. A poly(fullerene) (PFDP) is linked at the chain-ends to poly(3-hexylthiophene) (P3HT) to give poly[poly(3-hexylthiophene)-block-poly{([1,4]-fullerene)-alt-[1,4-dimethylene-2,5-bis(cyclohexylmethyl ether)phenylene]}] (P3HT-b-PFDP). While normal devices give poor results, inverted architectures result in near 50-fold improvements in performances to a block copolymer efficiency of 2.8% for this novel system. PFDP-b-P3HT is also employed as an additive to P3HT:PCBM bulk heterojunction devices and demonstrates increases from 3.6% to 4.2%, and remarkably gives a stable flat-line efficiency over the time studied. © The Royal Society of Chemistry.

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Compendex keywords: Bulk-heterojunction devices | Donor acceptors | Inverted architectures | Line efficiency | Multiblock co-polymers | Organic photovoltaic devices | Organic photovoltaics | Poly (3-hexylthiophene)

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Publisher: Royal Society of Chemistry

References (100)

View in search results format >

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View all 100 references

1 Lewis, N.S., Nocera, D.G.
Powering the planet: Chemical challenges in solar energy utilization

(2006) *Proceedings of the National Academy of Sciences of the United States of America*, 103 (43), pp. 15729-15735. Cited 3778 times.
doi: 10.1073/pnas.0603395103

View at Publisher

2 Nelson, J.
Polymer: Fullerene bulk heterojunction solar cells (Open Access)

(2011) *Materials Today*, 14 (10), pp. 462-470. Cited 238 times.
doi: 10.1016/S1369-7021(11)70210-3

View at Publisher

3 Dang, M.T., Hirsch, L., Wantz, G.
P3HT:PCBM, best seller in polymer photovoltaic research

(2011) *Advanced Materials*, 23 (31), pp. 3597-3602. Cited 690 times.
doi: 10.1002/adma.201100792

View at Publisher

4 Stingelin, N.
On the phase behaviour of organic semiconductors

(2012) *Polymer International*, 61 (6), pp. 866-873. Cited 26 times.
doi: 10.1002/pi.4214

View at Publisher

5 Yang, X., Loos, J.
Toward high-performance polymer solar cells: The importance of morphology control

(2007) *Macromolecules*, 40 (5), pp. 1353-1362. Cited 502 times.
doi: 10.1021/ma0618732

View at Publisher

6 Morana, M., Azimi, H., Dennler, G., Egelhaaf, H.-J., Scharber, M., Forberich, K., Hauch, J., (...), Brabec, C.J.
Nanomorphology and charge generation in bulk heterojunctions based on low-bandgap dithiophene polymers with different bridging atoms

(2010) *Advanced Functional Materials*, 20 (7), pp. 1180-1188. Cited 156 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/123314739/PDFSTART
doi: 10.1002/adfm.200900931

View at Publisher

incorporating fullerene backbone repeat units

Hiorns, R.C. , Cloutet, E. , Ibarboure, E.
(2010) Macromolecules

Fullerene-capped copolymers for bulk heterojunctions: Device stability and efficiency improvements

Raïssi, M. , Erothu, H. , Ibarboure, E.
(2015) Journal of Materials Chemistry A

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7 Ballantyne, A.M., Chen, L., Dane, J., Hammant, T., Braun, F.M., Heeney, M., Duffy, W., (...), Nelson, J.

The effect of poly(3-hexylthiophene) molecular weight on charge transport and the performance of polymer: Fullerene solar cells

(2008) *Advanced Functional Materials*, 18 (16), pp. 2373-2380. Cited 179 times.
doi: 10.1002/adfm.200800145

View at Publisher

8 Hiorns, R.C., De Bettignies, R., Leroy, J., Bailly, S., Firon, M., Sentein, C., Khoukh, A., (...), Dagron-Lartigau, C.

High molecular weights, polydispersities, and annealing temperatures in the optimization of bulk-heterojunction photovoltaic cells based on poly(3-hexylthiophene) or poly(3-butylthiophene)

(2006) *Advanced Functional Materials*, 16 (17), pp. 2263-2273. Cited 167 times.
doi: 10.1002/adfm.200600005

View at Publisher

9 Reid, O.G., Malik, J.A.N., Latini, G., Dayal, S., Kopidakis, N., Silva, C., Stingelin, N., (...), Rumbles, G.

The influence of solid-state microstructure on the origin and yield of long-lived photogenerated charge in neat semiconducting polymers

(2012) *Journal of Polymer Science, Part B: Polymer Physics*, 50 (1), pp. 27-37. Cited 83 times.
doi: 10.1002/polb.22379

View at Publisher

10 Dennler, G., Scharber, M.C., Brabec, C.J.

Polymer-fullerene bulk-heterojunction solar cells

(2009) *Advanced Materials*, 21 (13), pp. 1323-1338. Cited 2436 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/122186302/PDFSTART
doi: 10.1002/adma.200801283

View at Publisher

11 Moliton, A., Nunzi, J.-M.

How to model the behaviour of organic photovoltaic cells

(2006) *Polymer International*, 55 (6), pp. 583-600. Cited 328 times.
doi: 10.1002/pi.2038

View at Publisher

12 Dupuis, A., Wong-Wah-Chung, P., Rivaton, A., Gardette, J.-L.

Influence of the microstructure on the photooxidative degradation of poly(3-hexylthiophene)

(2012) *Polymer Degradation and Stability*, 97 (3), pp. 366-374. Cited 37 times.
doi: 10.1016/j.polymdegradstab.2011.12.012

View at Publisher

13 Usluer, O., Abbas, M., Wantz, G., Vignau, L., Hirsch, L., Grana, E., Brochon, C., (...), Hadziioannou, G.

Metal residues in semiconducting polymers: Impact on the performance of organic electronic devices

(2014) *ACS Macro Letters*, 3 (11), pp. 1134-1138. Cited 27 times.
http://pubs.acs.org/journal/amlccd
doi: 10.1021/mz500590d

View at Publisher

14 Lilliu, S., Agostinelli, T., Pires, E., Hampton, M., Nelson, J., MacDonald, J.E.

Dynamics of crystallization and disorder during annealing of P3HT/PCBM bulk heterojunctions

(2011) *Macromolecules*, 44 (8), pp. 2725-2734. Cited 133 times.
doi: 10.1021/ma102817z

View at Publisher

15 Clarke, T.M., Ballantyne, A.M., Nelson, J., Bradley, D.D.C., Durrant, J.R.

Free energy control of charge photogeneration in polythiophene/fullerene solar cells: The influence of thermal annealing on P3HT/PCBM blends

(2008) *Advanced Functional Materials*, 18 (24), pp. 4029-4035. Cited 209 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/121501744/PDFSTART
doi: 10.1002/adfm.200800727

View at Publisher

16 Darling, S.B.

Block copolymers for photovoltaics

(2009) *Energy and Environmental Science*, 2 (12), pp. 1266-1273. Cited 186 times.
doi: 10.1039/b912086f

View at Publisher

17 Botiz, I., Darling, S.B.

Optoelectronics using block copolymers (Open Access)

(2010) *Materials Today*, 13 (5), pp. 42-51. Cited 103 times.
doi: 10.1016/S1369-7021(10)70083-3

View at Publisher

18 Sommer, M., Huettner, S., Thelakkat, M.

Donor-acceptor block copolymers for photovoltaic applications

(2010) *Journal of Materials Chemistry*, 20 (48), pp. 10788-10797. Cited 103 times.
doi: 10.1039/c0jm00665c

View at Publisher

19 Segalman, R.A., McCulloch, B., Kirmayer, S., Urban, J.J.

Block copolymers for organic optoelectronics

(2009) *Macromolecules*, 42 (23), pp. 9205-9216. Cited 292 times.
http://pubs.acs.org/doi/pdfplus/10.1021/ma901350w
doi: 10.1021/ma901350w

View at Publisher

20 Liang, Y., Wang, H., Yuan, S., Lee, Y., Gan, L., Yu, L.

Conjugated block copolymers and co-oligomers: From supramolecular assembly to molecular electronics

(2007) *Journal of Materials Chemistry*, 17 (21), pp. 2183-2194. Cited 72 times.
doi: 10.1039/b702271a

View at Publisher

21 Tseng, Y.-C., Darling, S.B.
Block copolymer nanostructures for technology

(2010) *Polymers*, 2 (4), pp. 470-489. Cited 74 times.
http://www.mdpi.com/2073-4360/2/4/470/pdf
doi: 10.3390/polym2040470

View at Publisher

22 Topham, P.D., Parnell, A.J., Hiorns, R.C.
Block copolymer strategies for solar cell technology

(2011) *Journal of Polymer Science, Part B: Polymer Physics*, 49 (16), pp. 1131-1156. Cited 121 times.
doi: 10.1002/polb.22302

View at Publisher

23 De Cuendias, A., Hiorns, R.C., Cloutet, E., Vignau, L., Cramail, H.
Conjugated rod-coil block copolymers and optoelectronic applications

(2010) *Polymer International*, 59 (11), pp. 1452-1476. Cited 63 times.
doi: 10.1002/pi.2915

View at Publisher

24 Shah, M., Ganesan, V.
Correlations between morphologies and photovoltaic properties of rod-coil block copolymers

(2010) *Macromolecules*, 43 (1), pp. 543-552. Cited 53 times.
http://pubs.acs.org/doi/pdfplus/10.1021/ma9020467
doi: 10.1021/ma9020467

View at Publisher

25 Botiz, I., Martinson, A.B.F., Darling, S.B.
Minimizing lateral domain collapse in etched poly(3-hexylthiophene)- block -polylactide thin films for improved optoelectronic performance

(2010) *Langmuir*, 26 (11), pp. 8756-8761. Cited 34 times.
doi: 10.1021/la904515z

View at Publisher

26 Watkins, P.K., Walker, A.B., Verschoor, G.L.B.
Dynamical monte carlo modelling of organic solar cells: The dependence of internal quantum efficiency on morphology

(2005) *Nano Letters*, 5 (9), pp. 1814-1818. Cited 291 times.
doi: 10.1021/nl051098o

View at Publisher

27 Sun, S.-S., Zhang, C., Li, R., Nguyen, T., David, T., Brooks, J.
Frontier orbital and morphology engineering of conjugated polymers and block copolymers for potential high efficiency photovoltaics

(2012) *Solar Energy Materials and Solar Cells*, 97, pp. 150-156. Cited 7 times.
doi: 10.1016/j.solmat.2011.09.040

View at Publisher

28 Gratt, J.A., Cohen, R.E.

The role of ordered block copolymer morphology in the performance of organic/inorganic photovoltaic devices

(2004) *Journal of Applied Polymer Science*, 91 (5), pp. 3362-3368. Cited 18 times.
doi: 10.1002/app.13526

View at Publisher

29 Hiorns, R.C., Iratçabal, P., Bégué, D., Khoukh, A., De Bettignies, R., Leroy, J., Firon, M., (...), Dagron-Lartigau, C.

Alternatively linking fullerene and conjugated polymers

(2009) *Journal of Polymer Science, Part A: Polymer Chemistry*, 47 (9), pp. 2304-2317. Cited 32 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/122275144/PDFSTART
doi: 10.1002/pola.23311

View at Publisher

30 Lindner, S.M., Hüttner, S., Chiche, A., Thelakkat, M., Krausch, G.

Charge separation at self-assembled nanostructured bulk interface in block copolymers

(2006) *Angewandte Chemie - International Edition*, 45 (20), pp. 3364-3368. Cited 178 times.
doi: 10.1002/anie.200503958

View at Publisher

31 Mok, J.W., Lin, Y.-H., Yager, K.G., Mohite, A.D., Nie, W., Darling, S.B., Lee, Y., (...), Verduzco, R.

Linking Group Influences Charge Separation and Recombination in All-Conjugated Block Copolymer Photovoltaics

(2015) *Advanced Functional Materials*, 25 (35), pp. 5578-5585. Cited 16 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1616-3028
doi: 10.1002/adfm.201502623

View at Publisher

32 Sommer, M., Hüttner, S., Steiner, U., Thelakkat, M.

Influence of molecular weight on the solar cell performance of double-crystalline donor-acceptor block copolymers

(2009) *Applied Physics Letters*, 95 (18), art. no. 183308. Cited 68 times.
doi: 10.1063/1.3257367

View at Publisher

33 Chen, X.L., Jenekhe, S.A.
(1996) *Macromolecules*, 29, p. 6189. Cited 5 times.

34 Heiser, T., Adamopoulos, G., Brinkmann, M., Giovanella, U., Ould-Saad, S., Brochon, C., van de Wetering, K., (...), Hadziioannou, G.

Nanostructure of self-assembled rod-coil block copolymer films for photovoltaic applications

(2006) *Thin Solid Films*, 511-512, pp. 219-223. Cited 50 times.
doi: 10.1016/j.tsf.2005.12.134

View at Publisher

35 Olsen, B.D., Segalman, R.A.
Self-assembly of rod-coil block copolymers

(2008) *Materials Science and Engineering R: Reports*, 62 (2), pp. 37-66. Cited 243 times.
doi: 10.1016/j.mser.2008.04.001

View at Publisher

36 Segalman, R.A.
Patterning with block copolymer thin films

(2005) *Materials Science and Engineering R: Reports*, 48 (6), pp. 191-226. Cited 732 times.
doi: 10.1016/j.mser.2004.12.003

View at Publisher

37 Flory, P.J.
(1953) *Principles of Polymer Chemistry*. Cited 19134 times.
Cornell University Press, Ithaca, New York

38 De Gennes, P.-G.
(1979) *Scaling Concepts in Polymer Physics*. Cited 14044 times.
Cornell University Press, Ithaca, New York

39 Bates, F.S.
Polymer-polymer phase behavior

(1991) *Science*, 4996 (251), pp. 898-905. Cited 1062 times.

View at Publisher

40 Stupp, S.I., LeBonheur, V., Walker, K., Li, L.S., Huggins, K.E., Keser, M., Amstutz, A.
Supramolecular materials: Self-organized nanostructures

(1997) *Science*, 276 (5311), pp. 384-389. Cited 923 times.
doi: 10.1126/science.276.5311.384

View at Publisher

41 Gholamkhass, B., Peckham, T.J., Holdcroft, S.
Poly(3-hexylthiophene) bearing pendant fullerenes: Aggregation vs. self-organization

(2010) *Polymer Chemistry*, 1 (5), pp. 708-719. Cited 43 times.
doi: 10.1039/b9py00384c

View at Publisher

42 Ouhib, F., Khoukh, A., Ledeuil, J.-B., Martinez, H., Desbriéres, J., Dagron-Lartigau, C.
Diblock and random Donor/Acceptor "Double Cable" polythiophene copolymers via the GRIM method

(2008) *Macromolecules*, 41 (24), pp. 9736-9743. Cited 74 times.
doi: 10.1021/ma801934g

View at Publisher

43 Hiorns, R.C., Boucher, R.J., Duhlev, R., Hellwich, K.-H., Hodge, P., Jenkins, A.D., Jones, R.G., (...), Vohlídal, J.
A brief guide to polymer nomenclature (IUPAC Technical Report)

(2012) *Pure and Applied Chemistry*, 84 (10), pp. 2167-2169. Cited 17 times.
doi: 10.1351/PAC-REP-12-03-05

View at Publisher

44 Hagberg, E.C., Goodridge, B., Ugurlu, O., Chumbley, S., Sheares, V.V.

Development of a versatile methodology for the synthesis of poly(2,5-benzophenone) containing coil-rod-coil triblock copolymers

(2004) *Macromolecules*, 37 (10), pp. 3642-3650. Cited 13 times.
doi: 10.1021/ma0352983

View at Publisher

45 Hiorns, R.C., Martinez, H.

A tentative theory for conjugated rod-coil multi-block copolymer assembly and the initial characterisation by atomic force microscopy and small angle neutron scattering of poly(polymethylphenylsilane-block-polyisoprene)

(2003) *Synthetic Metals*, 139 (2), pp. 463-469. Cited 10 times.
doi: 10.1016/S0379-6779(03)00200-5

View at Publisher

46 Huettner, S., Hodgkiss, J.M., Sommer, M., Friend, R.H., Steiner, U., Thelakkat, M.

Morphology-dependent charge photogeneration in donor-acceptor block copolymer films based on poly(3-hexylthiophene)-block-poly(perylene bisimide acrylate)

(2012) *Journal of Physical Chemistry B*, 116 (33), pp. 10070-10078. Cited 21 times.
doi: 10.1021/jp301966p

View at Publisher

47 Hufnagel, M., Fischer, M., Thurn-Albrecht, T., Thelakkat, M.

Influence of Fullerene Grafting Density on Structure, Dynamics, and Charge Transport in P3HT-b-PPC$_{61}$BM Block Copolymers

(2016) *Macromolecules*, 49 (5), pp. 1637-1647. Cited 11 times.
http://pubs.acs.org/journal/mamobx
doi: 10.1021/acs.macromol.5b02276

View at Publisher

48 Mougnier, S.-J., Brochon, C., Cloutet, E., Magnet, S., Navarro, C., Hadziioannou, G.

Facile and versatile synthesis of rod-coil poly(3-hexylthiophene)-based block copolymers by nitroxide-mediated radical polymerization

(2012) *Journal of Polymer Science, Part A: Polymer Chemistry*, 50 (12), pp. 2463-2470. Cited 12 times.
doi: 10.1002/pola.26023

View at Publisher

49 Heuken, M., Komber, H., Erdmann, T., Senkovskyy, V., Kiriy, A., Voit, B.

Fullerene-functionalized donor-acceptor block copolymers through etherification as stabilizers for bulk heterojunction solar cells

(2012) *Macromolecules*, 45 (10), pp. 4101-4114. Cited 22 times.
doi: 10.1021/ma300473w

View at Publisher

50 Sommer, M., Lang, A.S., Thelakkat, M.

Crystalline-crystalline donor-acceptor block copolymers

(2008) *Angewandte Chemie - International Edition*, 47 (41), pp. 7901-7904. Cited 170 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/121410671/PDFSTART
doi: 10.1002/anie.200802725

View at Publisher

51 Yang, C., Lee, J.K., Heeger, A.J., Wudl, F.

Well-defined donor-acceptor rod-coil diblock copolymers based on P3HT containing C_{60}: The morphology and role as a surfactant in bulk-heterojunction solar cells

(2009) *Journal of Materials Chemistry*, 19 (30), pp. 5416-5423. Cited 192 times.
doi: 10.1039/b901732a

View at Publisher

52 Zhang, Q., Cirpan, A., Russell, T.P., Emrick, T.

Donor-acceptor poly(thiophene-block-perylene diimide) copolymers: Synthesis and solar cell fabrication

(2009) *Macromolecules*, 42 (4), pp. 1079-1082. Cited 248 times.
http://pubs.acs.org/doi/pdfplus/10.1021/ma801504e
doi: 10.1021/ma801504e

View at Publisher

53 Miyanishi, S., Zhang, Y., Tajima, K., Hashimoto, K.

Fullerene attached all-semiconducting diblock copolymers for stable single-component polymer solar cells

(2010) *Chemical Communications*, 46 (36), pp. 6723-6725. Cited 94 times.
doi: 10.1039/c0cc01819h

View at Publisher

54 Sun, Z., Xiao, K., Keum, J.K., Yu, X., Hong, K., Browning, J., Ivanov, I.N., (...), Geohegan, D.B.

PS-b-P3HT copolymers as P3HT/PCBM interfacial compatibilizers for high efficiency photovoltaics

(2011) *Advanced Materials*, 23 (46), pp. 5529-5535. Cited 76 times.
doi: 10.1002/adma.201103361

View at Publisher

55 Miyanishi, S., Zhang, Y., Hashimoto, K., Tajima, K.

Controlled synthesis of fullerene-attached poly(3-alkylthiophene)-based copolymers for rational morphological design in polymer photovoltaic devices

(2012) *Macromolecules*, 45 (16), pp. 6424-6437. Cited 34 times.
doi: 10.1021/ma300376m

View at Publisher

56 Guo, C., Lin, Y.-H., Witman, M.D., Smith, K.A., Wang, C., Hexemer, A., Strzalka, J., (...), Verduzco, R.

Conjugated block copolymer photovoltaics with near 3% efficiency through microphase separation

(2013) *Nano Letters*, 13 (6), pp. 2957-2963. Cited 132 times.
doi: 10.1021/nl401420s

View at Publisher

57 Zhu, M., Kim, H., Jang, Y.J., Park, S., Ryu, D.Y., Kim, K., Tang, P., (...), Peng, J.

Toward high efficiency organic photovoltaic devices with enhanced thermal stability utilizing P3HT-b-P3PHT block copolymer additives

(2016) *Journal of Materials Chemistry A*, 4 (47), pp. 18432-18443. Cited 3 times.
http://pubs.rsc.org/en/journals/journalissues/ta
doi: 10.1039/c6ta08181a

View at Publisher

58 Mok, J.W., Kipp, D., Hasbun, L.R., Dolocan, A., Strzalka, J., Ganesan, V., Verduzco, R.
Parallel bulk heterojunction photovoltaics based on all-conjugated block copolymer additives

(2016) *Journal of Materials Chemistry A*, 4 (38), pp. 14804-14813. Cited 8 times.
http://pubs.rsc.org/en/journals/journalissues/ta
doi: 10.1039/c6ta06502c

View at Publisher

59 Hiorns, R.C., Cloutet, E., Ibarboure, E., Vignau, L., Lemaitre, N., Guillerez, S., Absalon, C., (...), Cramail, H.
Main-chain fullerene polymers for photovoltaic devices

(2009) *Macromolecules*, 42 (10), pp. 3549-3558. Cited 34 times.
http://pubs.acs.org/doi/pdfplus/10.1021/ma900279a
doi: 10.1021/ma900279a

View at Publisher

60 Santos Silva, H., Ramanitra, H.H., Bregadiolli, B.A., Bégué, D., Graeff, C.F.O., Dagron-Lartigau, C., Peisert, H., (...), Hiorns, R.C.
Oligo- and poly(fullerene)s for photovoltaic applications: Modeled electronic behaviors and synthesis

(2017) *Journal of Polymer Science, Part A: Polymer Chemistry*, 55 (8), pp. 1345-1355. Cited 3 times.
http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-0518
doi: 10.1002/pola.28502

View at Publisher

61 Giacalone, F., Martín, N.
Fullerene polymers: Synthesis and properties

(2006) *Chemical Reviews*, 106 (12), pp. 5136-5190. Cited 266 times.
doi: 10.1021/cr068389h

View at Publisher

62 Martín, N., Giacalone, F.
Fullerene Polymers: Synthesis, Properties and Applications

(2009) *Fullerene Polymers: Synthesis, Properties and Applications*, pp. 1-311. Cited 38 times.
http://onlinelibrary.wiley.com/book/10.1002/9783527628742
ISBN: 978-352732282-4
doi: 10.1002/9783527628742

View at Publisher

63 Hiorns, R.C., Cloutet, E., Ibarboure, E., Khoukh, A., Bejbouji, H., Vignau, L., Cramail, H.
Synthesis of donor-acceptor multiblock copolymers incorporating fullerene backbone repeat units

(2010) *Macromolecules*, 43 (14), pp. 6033-6044. Cited 42 times.
doi: 10.1021/ma100694y

View at Publisher

64 Ramanitra, H.H., Dowland, S.A., Bregadiolli, B.A., Salvador, M., Santos Silva, H., Bégué, D., Graeff, C.F.O., (...), Hiorns, R.C.
Increased thermal stabilization of polymer photovoltaic cells with oligomeric PCBM

(2016) *Journal of Materials Chemistry C*, 4 (34), pp. 8121-8129. Cited 7 times.
http://pubs.rsc.org/en/journals/journalissues/tc
doi: 10.1039/c6tc03290g

View at Publisher

65 Noshay, A., McGrath, J.E.
(1977) *Block Copolymers*. Cited 517 times.
Academic Press, New York

66 Machado, A.M., Da Motta Neto, J.D., Cossiello, R.F., Atvars, T.D.Z., Ding, L., Karasz, F.E., Akcelrud, L.
Photophysical study of a conjugated-non-conjugated PPV-type electroluminescent copolymer

(2005) *Polymer*, 46 (8), pp. 2452-2460. Cited 17 times.
doi: 10.1016/j.polymer.2005.02.007

View at Publisher

67 Hiorns, R.C., Holder, S.J.
The synthesis of organometallic rod-coil block copolymers from polysilanes

(2009) *Polymer International*, 58 (3), pp. 323-329. Cited 9 times.
http://www3.interscience.wiley.com/cgi-bin/fulltext/121660820/PDFSTART
doi: 10.1002/pi.2535

View at Publisher

68 Hiorns, R.C., Holder, S.J., Schué, F., Jones, R.G.
Synthesis and characterization of poly(methylphenylsilylene)-poly(ethylene oxide) and poly(methylphenyylsilylene-polyisoprene multiblock copolymers

(2001) *Polymer International*, 50 (9), pp. 1016-1028. Cited 13 times.
doi: 10.1002/pi.739

View at Publisher

69 Tao, Y., McCulloch, B., Kim, S., Segalman, R.A.
The relationship between morphology and performance of donor-acceptor rod-coil block copolymer solar cells

(2009) *Soft Matter*, 5 (21), pp. 4219-4230. Cited 100 times.
doi: 10.1039/b907836c

View at Publisher

70 Brady, M.A., Ku, S.-Y., Perez, L.A., Cochran, J.E., Schmidt, K., Weiss, T.M., Toney, M.F., (...), Chabinyc, M.L.
Role of Solution Structure in Self-Assembly of Conjugated Block Copolymer Thin Films

(2016) *Macromolecules*, 49 (21), pp. 8187-8197. Cited 4 times.
http://pubs.acs.org/journal/mamobx
doi: 10.1021/acs.macromol.6b01686

View at Publisher

71 Scholes, G.D., Rumbles, G.
Excitons in nanoscale systems

(2006) *Nature Materials*, 5 (9), pp. 683-696. Cited 728 times.
http://www.nature.com/nmat/
doi: 10.1038/nmat1710

View at Publisher

72 Yokoyama, A., Miyakoshi, R., Yokozawa, T.

Chain-Growth Polymerization for Poly(3-hexylthiophene) with a Defined Molecular Weight and a Low Polydispersity

(2004) *Macromolecules*, 37 (4), pp. 1169-1171. Cited 431 times.
doi: 10.1021/ma035396o

View at Publisher

73 Sheina, E.E., Liu, J., Lovu, M.C., Laird, D.W., McCullough, R.D.

Chain growth mechanism for regioregular nickel-initiated cross-coupling polymerizations

(2004) *Macromolecules*, 37 (10), pp. 3526-3528. Cited 358 times.
doi: 10.1021/ma0357063

View at Publisher

74 Yokozawa, T., Yokoyama, A.

Chain-growth condensation polymerization for the synthesis of well-defined condensation polymers and π-conjugated polymers

(2009) *Chemical Reviews*, 109 (11), pp. 5595-5619. Cited 243 times.
http://pubs.acs.org/doi/pdfplus/10.1021/cr900041c
doi: 10.1021/cr900041c

View at Publisher

75 Okamoto, K., Luscombe, C.K.

Controlled polymerizations for the synthesis of semiconducting conjugated polymers

(2011) *Polymer Chemistry*, 2 (11), pp. 2424-2434. Cited 119 times.
http://pubs.rsc.org/en/Journals/JournalIssues/PY
doi: 10.1039/c1py00171j

View at Publisher

76 Urien, M., Erothu, H., Cloutet, E., Hiorns, R.C., Vignau, L., Cramail, H.

Poly(3-hexylthiophene) based block copolymers prepared by "click" chemistry

(2008) *Macromolecules*, 41 (19), pp. 7033-7040. Cited 110 times.
doi: 10.1021/ma800659a

View at Publisher

77 Hiorns, R.C., Khoukh, A., Gourdet, B., Dagron-Lartigau, C.

Extremely regio-regular poly (3-alkylthiophene)s from simplified chain-growth Grignard metathesis polymerisations and the modification of their chain-ends

(2006) *Polymer International*, 55 (6), pp. 608-620. Cited 37 times.
doi: 10.1002/pi.2013

View at Publisher

78 Liu, J., Loewe, R.S., McCullough, R.D.

Employing MALDI-MS on poly(alkylthiophenes): Analysis of molecular weights, molecular weight distributions, end-group structures, and end-group modifications

(1999) *Macromolecules*, 32 (18), pp. 5777-5785. Cited 272 times.
doi: 10.1021/ma9905324

View at Publisher

79 Audouin, F., Imuffer, R., Mathis, C.

Synthesis of di- and tetra-adducts by addition of polystyrene macroradicals onto fullerene C_{60}

(2004) *Journal of Polymer Science, Part A: Polymer Chemistry*, 42 (14), pp. 3456-3463. Cited 43 times.
doi: 10.1002/pola.20201

View at Publisher

80 Gügel, A., Belik, P., Walter, M., Kraus, A., Harth, E., Wagner, M., Spickermann, J., (...), Müllen, K.

The repetitive Diels-Alder reaction: A new approach to [60]fullerene main-chain polymers

(1996) *Tetrahedron*, 52 (14), pp. 5007-5014. Cited 45 times.
http://www.journals.elsevier.com/tetrahedron/
doi: 10.1016/0040-4020(96)00108-1

View at Publisher

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