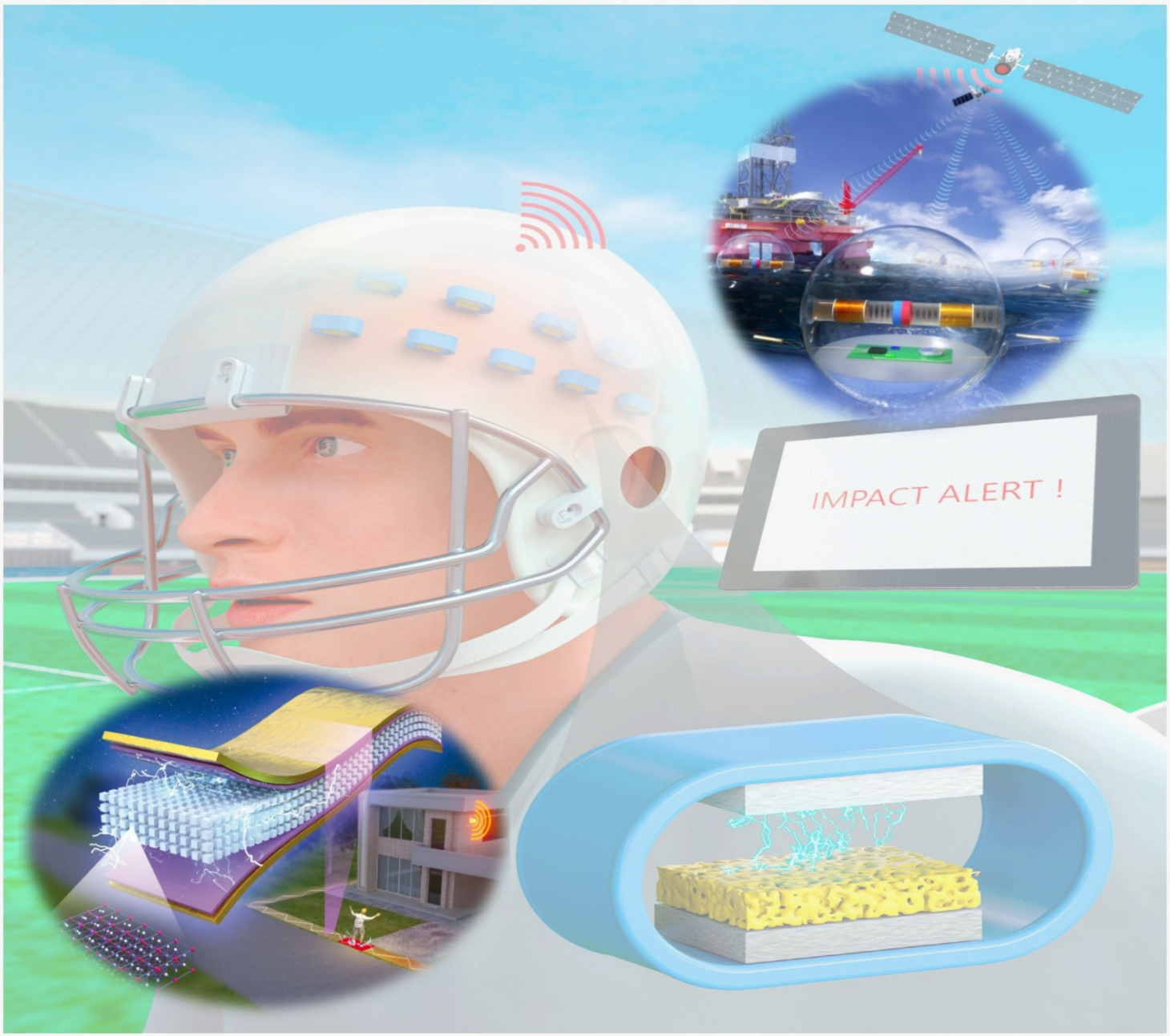
CENTER FOR

FLEXIBLE ELECTRONICS



CENTER FOR FLEXIBLE ELECTRONICS

Department of Electronics and Communication Engineering

KONERU LAKSHMAIAH EDUCATION FOUNDATION (KLEF)

(Deemed to be KL University)

Green Field, Vaddeswaram, Guntur Dist., Andhra Pradesh – 522 302, India

CENTER FOR FLEXIBLE ELECTRONICS

About us

The Centre for Flexible Electronics, a pioneering entity within the Electronics and Communication Engineering Department at KLEF, Academicians in the Centre Pursue interdisciplinary research and education across various disciplines. The focus is on critical enabling technologies like materials, devices, and systems for electronics applications, energy-harvesting nanogenerators, photovoltaics, sensors, e-skin, and biomedical, amongst various existing crossovers. Inspired by the endless possibilities of nanotechnology and aided by the strong emphasis on sustainable next-generation IoT sensors, self-sustainable devices, flexible electronics material growth, scalable processes, and product development.

Vision

To be a globally recognized hub for pioneering research, innovation, and commercialization in the field of flexible electronics, contributing to technological advancements and sustainable development.

Mission

- ✓ Conduct leading-edge research in flexible electronics, developing advanced materials, devices, and systems that enhance technological capabilities.
- ✓ Develop environmentally friendly and sustainable electronic solutions that address global challenges & fostering innovation and the development of new products in flexible electronics.
- ✓ Betterment of mankind and train the researchers/students to excel in in flexible electronics.
- ✓ Transforming promising ideas into proof-of-concept devices, facilitating the transfer of technology, and promoting the commercialization of research findings in collaboration with industry.

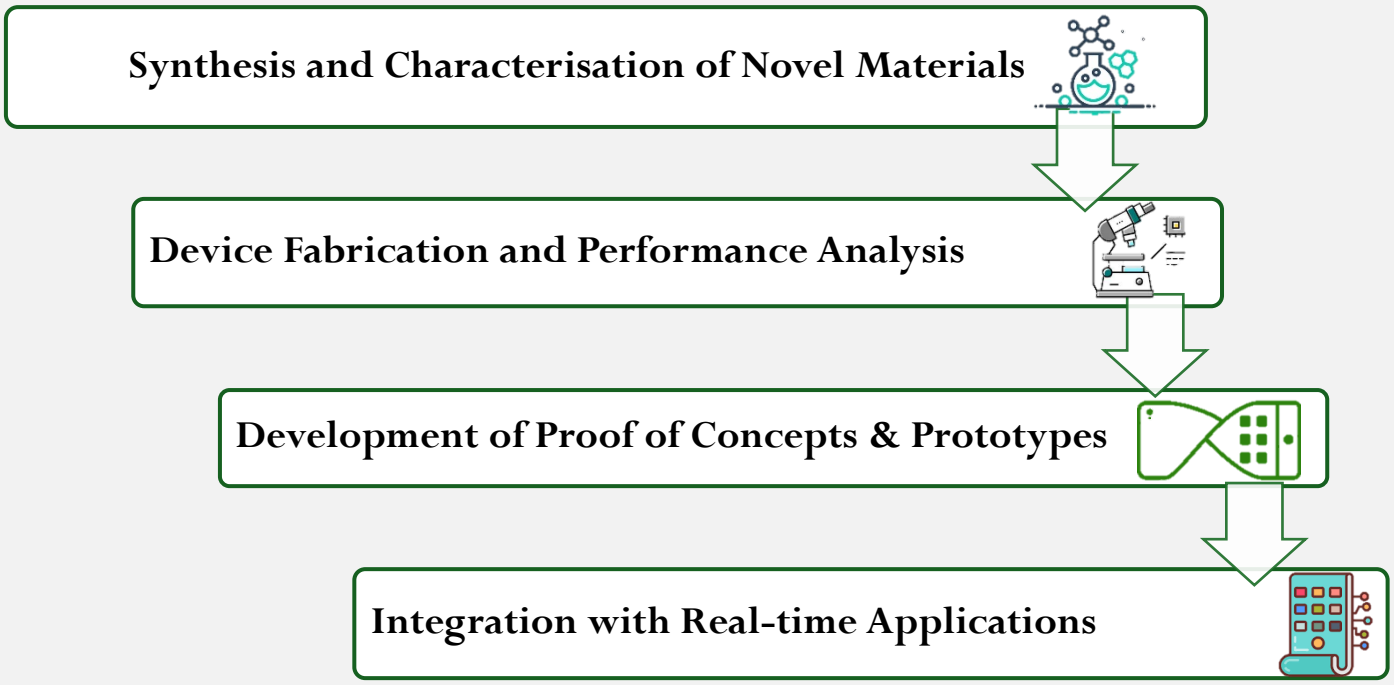
CENTER FOR FLEXIBLE ELECTRONICS

Distinguishing Activities

The Centre for Flexible Electronics is distinguished by its inclusive and diverse collaborative research approach. Our research teams are not confined to a single department or college but are formed from faculty across multiple disciplines, fostering a rich exchange of ideas. Our faculty can achieve their research goals by leveraging the facilities of existing KLEF technology centres and KLEF central instrumentation facilities. The Department of Electronics and Communication Engineering, Physics, Chemistry, and Mechanical Engineering currently has an established research program in this area.

Research and technology play a key role in the development of flexible electronics.

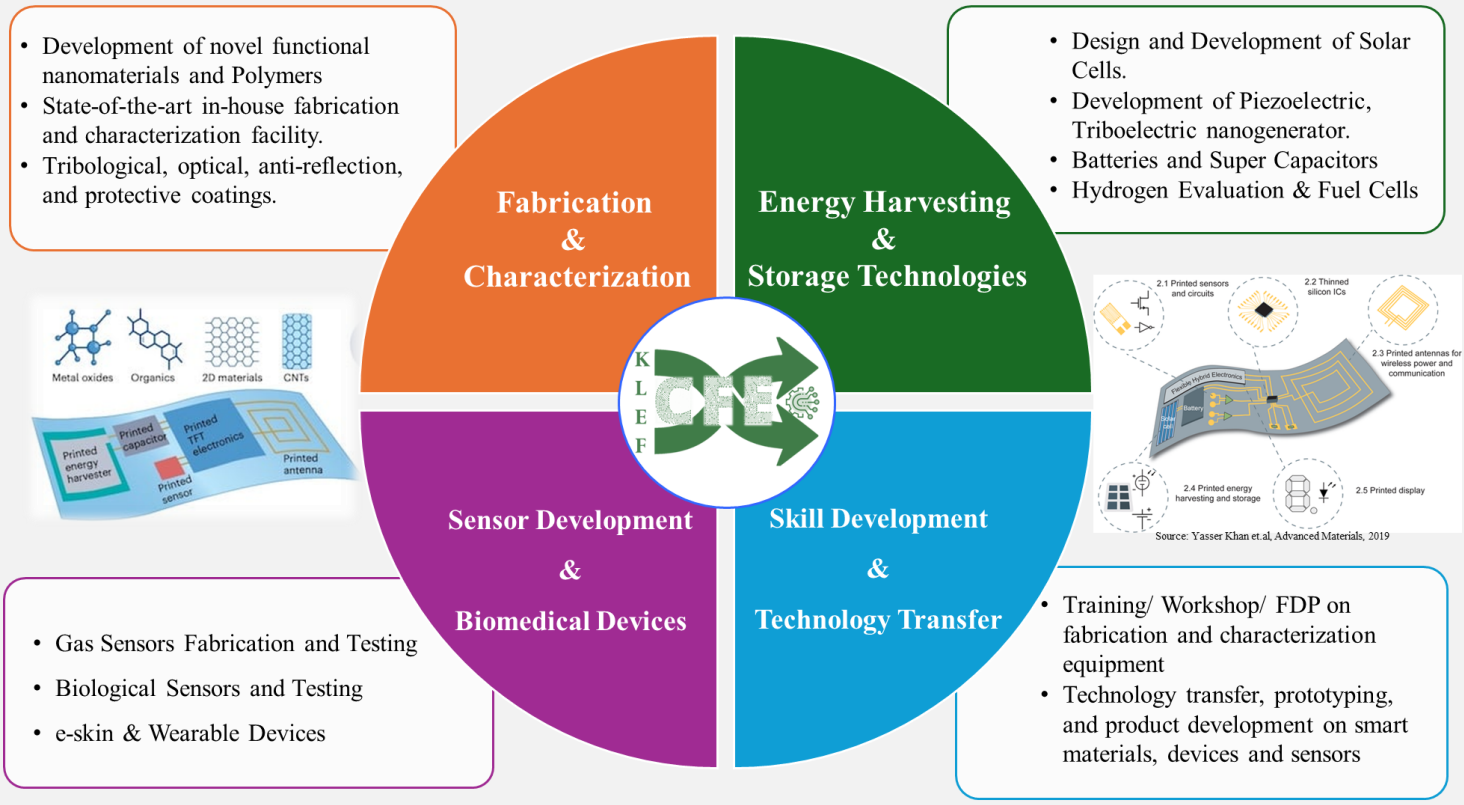
The process of manufacturing flexible electronics starts with the characterisation of the materials.



CENTER FOR FLEXIBLE ELECTRONICS

Focus Research Areas:

- ✓ **Functional Nanomaterials & Polymers**
- ✓ **Energy Harvesting and Storage**
- ✓ **Wearable Electron-Devices**
- ✓ **Sensors and Actuators**
- ✓ **Biomedical Devices**
- ✓ **Systems**



Potential Application

Flexible electronics refers to a class of lightweight, flexible, and electronic sensing components and electronic devices built on stretchable substrates used for a broad range of products and applications, such as displays and sensors. The technology used has evolved over time, and now, thanks to inkjet printers, electrical circuits can be printed quickly and inexpensively. Flexible electronics can be applied in many new sectors, ranging from medical devices to environmental monitoring.

CENTER FOR FLEXIBLE ELECTRONICS

Facility and Infrastructure

The Centre for Flexible Electronics has state-of-the-art indigenous materials preparation, fabrication & characterization facilities for material growth, thin film deposition, and device development including vacuum-based deposition, wet chemical processing, tribological, optical, and electrical characterization. Assistance to Ideation, prototyping, and product design are provided along with the consultancy services.

Preparation & Fabrication Facilities

Wet Chemical Synthesis
Hydrothermal
Deep Freezer
Chemical Vapor Deposition
Micro Oven
Electro spinning Nano Fibers Unit
Hot Press
UV-Cabinet
Glove Box with Spin Coating
RF & DC Sputtering
Ink jet Printer

Characterisation & Testing Facilities

Electrochemical Workstation
UV-Vis Spectrophotometer
Electrometer
Gas Sensing Setup
Nano Fluids Experimental Setup
Fuel Cell Setup
Electrolyser Setup
Microbial Fuel Cell
Atomic Adsorption Spectrometer
Linear Motor
LCR Meter
Atomic Force Microscopy
FE-Scanning Electron Microscopy -CIF
X-ray Diffractometer - CIF

Prototype to Product

Vibration Generator Setup
Thermoelectric measurement Setup
Fully Automated Prototype Machine
3D Printer

Design Thinking aspects of ideation, Benchmarking to Prototype, Design Scalable Product Development

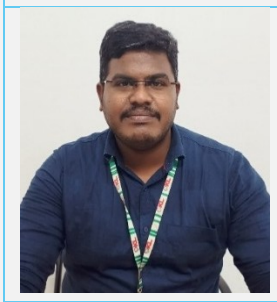
CENTER FOR FLEXIBLE ELECTRONICS

KEY Faculty Members

	Name & Designation	Research Area
	**Dr. P. S. Srinivasa Babu** Professor	Flexible Printed Electronics & Supercapacitors
	**Dr. S. Arunmetha** Associate Professor	Solar Energy Harvesting, Photocatalysis, Hydrogen Evolution & CO_2 Reduction
	**Dr. V. Vivekananthan** Associate Professor	Nanomaterials, Flexible TENGs & PENGs, Wearable Energy Harvesters & Self-Powered Sensors
	**Dr. Sivasankara Rao Ede** Assistant Professor	Electrochemical Water Splitting, CO_2 Reduction, Fuel Cell and Li-ion Batteries
	**Dr. Koyilapu Rambabu** Assistant Professor	Functional and Flexible Polymers, PEM Fuel Cell, and Batteries

CENTER FOR FLEXIBLE ELECTRONICS

Research Teams

	Name & Designation	Research area
	**Dr. Kaliyannan ManojKumar** Post Doctoral Fellow	Development of Novel Nanomaterials, Flexible TENGs & PENGs, Wearable Energy Harvesters & Self-Powered sensors Colloids, Metal- air batteries Electrochemistry.
	**Mr. N. Ravivarman** Research Scholar	Solar Energy Harvesting Photocatalysis & Photoelectrochemical Hydrogen Evolution
	**Mr. D. Sateesh** Research Scholar	Flexible PENGs, Wearable Energy Harvesters & Self-Powered sensors
	**Mr. M. Mukilan** Research Scholar	Novel Nano Materials Energy Harvester & Sensors Systems
	**Mr. B. V. Aravind** Research Scholar	Flexible super capacitors & Batteries

CENTER FOR FLEXIBLE ELECTRONICS

	**Mr. Sivakumar Ogirala** Research Scholar	Novel Materials for Environmental Applications & EMI Shielding
	**Mr. B. Thirukumaran** Research Scholar	Nano Materials for Environmental Applications
	**Mrs. Sowjanya kesana** Research Scholar	Flexible Antennas
	**Mrs. Ch. Krishnaveni** Research Scholar	Flexible Nano Energy Harvester
	**Mrs. Ch. Jaya Lakshmi** Research Scholar	Flexible Energy Harvesting Systems

CENTER FOR FLEXIBLE ELECTRONICS

Key Collaborators

Prof. Dr. Wan haliza B A M

Prof V Periasamy

Dr Thamil Selvi V

University of Malaya, Malaysia

Prof. S. Ravi P. Silva
University of Surrey
United Kingdom

Prof. Hoe Joon Kim
DGIST
South Korea

Prof. Sang jae Kim
Jeju Natl University
South Korea

Dr. Hamideh Khanbareh
University of Bath
United Kingdom

Prof. R. Jayavel
Anna University
India

Prof. Naratip Vittayakorn
KMIT, Bangkok
Thailand

Dr. Ishara Dharmasena
Loughborough University
United Kingdom

Dr. Arunkumar C
Vellore Institute of Tech
India

Dr. M Sathish
CSIR-CECRI
India

Dr. Shamima Hussain
UGC-DAE
India

Dr. K. Nageswari
IIT Bombay
India

Dr. Nagaraju Goli
Imperial College London
United Kingdom

Dr. R. Yuvakkumar
Allagappa University
India

Dr. Kaushik Parida
IIT Roorkee
India

Dr. Rakesh Kumar R
NIT Warangal
India

CENTER FOR FLEXIBLE ELECTRONICS

Funders and Funding Collaborators

विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF SCIENCE & TECHNOLOGY

MHRD Govt. of India

SERB DIA

ROYAL SOCIETY OF CHEMISTRY

UNIVERSITY OF SURREY

KMIT Ladkraban Bangkok

UNIVERSITY OF BATH

National Research Foundation of Korea

JEJU NATIONAL UNIVERSITY

DGIST 대구경북과학기술원 Daegu Gyeongbuk Institute of Science & Technology

175 YEARS OF IIT ROORKEE Estd. 1847

UKRI Engineering and Physical Sciences Research Council

CENTER FOR FLEXIBLE ELECTRONICS

Sponsored Projects:

PI & Co-PI	Title of the project	Funding Agency	Grant Sanctioned in INR (Lakh)
Dr. BTP Madhav Dr. V. Vivekananthan Dr. S. Arunmetha Dr. P. S. Srinivasa Babu Dr. K Swapna Dr. Sk Mahamuda	Novel Low-Dimensional Materials and Flexible Dielectrics for Optoelectronic and Microwave Devices	DST-PURSE (2023-2027)	684.49
Dr. S. Arunmetha Dr. M. Sathish (Colloborator)	Development of Heterostructured Materials for an Efficient Photocatalytic and Photoelectrochemical Water Splitting towards Green Energy Harvesting	SERB-TARE (2021-2024)	18.30
Dr. V. Vivekananthan	Development of Piezoelectric and Triboelectric Array-based Self-powered Sensors for Rehabilitation Applications	RSC, UK (2022-2024)	4.5
Dr. S. Arunmetha Dr. Shamima Hussain (Colloborator)	Develop Nanostructured materials for Efficient Solar Energy Conversion Applications	UGC-DAE (2022-2025)	3.5
Dr. V. Vivekananthan	Triboelectric Nanogenerator based E-Textiles for Energy Harvesting and Self-Powered Sensing	KLEF (2022-2025)	10
Dr. S. Arunmetha	Development of Nanostructured Materials for Energy Conversion Applications	KLEF (2021-2023)	3.0
Dr. S. Arunmetha	Design and Development of TENG for Energy Harvesting Systems	KLEF (2021-2023)	2.5

CENTER FOR FLEXIBLE ELECTRONICS

KEY PUBLICATIONS (LAST 2 YEARS)

Papers Indexed in Both SCOPUS and WOS (Total 53 Papers)		
Q1	**Q2**	**Q3**
29	**17**	**6**

1. ***P. S. Srinivasa Babu*** *et.al.,* Strategic Way of Synthesizing Heteroatom-Doped Carbon Nano-onions Using Waste Chicken Fat Oil for Energy Storage Devices. ACS Applied Materials & Interfaces. 2024 Apr 24;16(18):23334-43. **Impact Factor: 8.3 – Q1**

2. ***P. S. Srinivasa Babu*** *et.al.,* Flexible Supercapacitors with Improved Energy Density Using OPBI-Coated Polyaniline-Carbon Nanotube Blends. IEEE Transactions on Electron Devices. 2024 Jun 25. **Impact Factor: 2.9 – Q2**

3. ***P. S. Srinivasa Babu*** *et.al.,* 'Designed Construction of Hierarchical Cobalt Sulfide Nanonetwork as a High-Capacity and Binder-Free Cathode for Hybrid Supercapacitors' **American Chemical Society (ACS) Energy & Fuels** 2023, 37, 17535−17544. **Impact Factor: 5.3 – Q1**

4. ***P.S. Srinivasa Babu*** *et.al.,* 'Well-integrated bismuth trioxide nanotriangles on carbon cloth as a flexible faradic electrode for supercapacitor applications', **Elsevier Diamond & Related Materials** 139 (2023) 110406. **Impact Factor: 4.1 – Q1**

5. **P.S. Srinivasa Babu** et.al., 'Rational design of Cu-doped Co_3O_4@carbon nanocomposite and agriculture crop-waste derived activated carbon for high-performance hybrid supercapacitors', **Elsevier Journal of Industrial and Engineering Chemistry, 2022**, 116, 428-437. **Impact Factor: 6.1 – Q1**

6. ***Satya Srinivasa Babu Patcha****, et.al., '*Char of Tagetes erecta (African marigold) flower as a potential electrode material for supercapacitors', **J. Electrochem. Sci. Eng.** 12(4)(2022) 787-797; **Impact Factor: 2.2 – Q3**

7. ***Satya Srinivasa Babu Patcha****, Subhakaran Singh Rajaputra*, 'Rice husk char as a potential electrode material for supercapacitors', **J. Electrochem. Sci. Eng.** 12(3)(2022) 451-462. **Impact Factor: 2.2– Q3**

8. **Satya Srinivasa Babu** et.al., 'Metal organic framework derived MnO@carbon composites for highly durable Li-ion batteries and hybrid electrochemical cells', **Elsevier Journal of Power Sources**, Volume 549, 30 November 2022, 232113 **Impact Factor: 9.1 – Q1**

9. **Vivekananthan V et. al.,**. Triboelectric Nanogenerators for Brake Pattern Recognition. ***Macromolecular Rapid Communications***. **Impact Factor- 4.2 – Q1**

10. **Vivekananthan V et. al.,**. Metal organic Frameworks for self-powered sensors and systems . ***Advanced Sustainable Systems***. **Impact Factor- 6.5 – Q1**

11. **Vivekananthan V et. al.,**. A biocompatible triboelectric nanogenerator-based edible electronic skin for morse code transmitters and smart healthcare applications. ***Nano Energy. 2024 Jun 17:109899***. **Impact Factor- 16.6 – Q1**

12. **Vivekananthan V et. al.,**. Hybrid nanogenerator for self-powered object recognition. ***Journal of Science: Advanced Materials and Devices. 2024 Jun 1;9(2):100693***. **Impact Factor- 8.0 – Q1**
13. **Vivekananthan V et. al.,** Smart maracas: An innovative triboelectric nanogenerator for earthquake detection and energy harvesting. ***Nano Energy. 2024 May 1;123:109379***. **Impact Factor- 16.6 – Q1**

14. **Vivekananthan V et. al.,**. Synergistic Integration of Nanogenerators and Solar Cells: Advanced Hybrid Structures and Applications. ***Advanced Energy Materials. 2024 Feb 26:2400025***. **Impact Factor- 27.8 – Q1**

15. **Vivekananthan V et. al.,** Innovative Synthesis of Zeolitic Imidazolate Framework by a Stovetop Kitchen Pressure Cook Pot for Triboelectric Nanogenerator. ***Energy Technology. 2024 Mar 16:2400099***. **Impact Factor- 3.5 – Q3**

16. **Vivekananthan V et. al.,** A. Touch-Enabled Self-Powered Elastomeric Keypad for Mapping Human Input and an Emergency Alert via Triboelectric Effect. ***Energy Technology. 2024 Mar;12(3):2300831***. **Impact Factor- 3.5 – Q3**

17. **Vivekananthan V et. al.,**. Contact-electrification enabled water-resistant triboelectric nanogenerators as demonstrator educational appliances. ***Journal of Physics: Energy. 2023 Nov 3;6(1):015003***.

18. **Vivekananthan V et. al.,** "A review on the next generation of healing: exploring the use of triboelectric nanogenerators in wound care". ***Chemical Physics Letters. 2023 Jun 9:140648***. **Impact Factor- 2.8 -Q2**

19. **Vivekananthan V et. al.,** "Electrochemical and photochemical characteristics of organic dyes and biological molecules at conducting polymer-modified electrodes of indium oxide-polypyrrole nanohybrids", ***Materials Science and Engineering: B. 2023 Nov 1;297:116761.*** **Impact Factor- 3.8 – Q2**

20. **Vivekananthan V et. al.,** "Investigation on structural, morphological and magnetic properties of Barium Cobaltite (BaCoO3) nanoparticle", ***Materials Science and Engineering: B. 2023 Nov 1;296:116669.*** **Impact Factor- 3.8 – Q2**

21. **Vivekananthan V et. al.,** "Revolutionizing self-powered robotic systems with triboelectric nanogenerators". ***Nano Energy. 2023 Oct 1;115:108729***. **Impact Factor- 17.5 – Q1**

22. **Vivekananthan V et. al.,** "Roadmap on Energy Harvesting Materials". ***Journal of Physics: Materials. 2023 Mar 17.*** **Impact Factor- 4.69 – Q1**

23. **Vivekananthan V et. al.,** "Spent Catalyst-Derived Mo-MOF: Triboelectric Nanogenerators and Energy Harvesting". ***Energy Technology. 2023:2300498.*** **Impact Factor- 3.5 – Q3**

24. **Vivekananthan V et. al.,** "Crystalline Porous Material-Based Nanogenerators: Recent Progress, Applications, Challenges, and Opportunities". ***Small. 2023:2306209.*** **Impact Factor- 13.3 – Q1**

25. **Vivekananthan V et. al.,** "A comprehensive review on triboelectric nanogenerators based on Real-Time applications in energy harvesting and Self-Powered sensing", ***Materials Science and Engineering: B. 2023 Nov 1;297:116762.*** **Impact Factor- 3.8 – Q2**

26. **Vivekananthan V et. al.,** "Carbohydrate–protein interaction-based detection of pathogenic bacteria using a biodegradable self-powered biosensor", ***J. Mater. Chem. B, 2023, 11, 10147-10157.*** **Impact Factor- 7.0 – Q1**

27. **Vivekananthan V et. al.,** "Contact-electrification enabled water-resistant triboelectric nanogenerators as demonstrator educational appliances". ***Journal of Physics: Energy. 2024.*** **Impact Factor- 6.5 – Q1**

28. **Arunmetha S et. al.,** "Improving Electrochemical Performance in Three-Electrode Measurements with Ferroelectric Bimetallic Co-Fe-MgO/CNT Composite". **Electrochimica Acta. 2024 Jun 3:144528. Impact Factor 5.5 - Q1.**

29. **Arunmetha S et. al., "**α-Fe2O3/MoS2 heterostructured nanomaterial for enhanced visible-light photocatalytic performance under sunlight irradiation". **Journal of Materials Science: Materials in Electronics. 2024 Jun;35(16):1-9. Impact Factor: 2.8 -Q2.**

30. **Arunmetha S et. al.,** "Nanoplatelets assembled CuCo2S4/N doped rGO nanocomposites for hydrogen evolution reaction", **International Journal of Hydrogen Energy 65, 704-716 (2024) Impact Factor: 8.1-Q1.**

31. **Arunmetha S et. al.,** "Synthesis of surfactant assisted Cu2ZnSnS4 (CZTS) photocatalysts for removal of dyes from wastewater". **Sustainable Energy Technologies and Assessments. 2024 May 1;65:103778. Impact Factor: 7.1-Q1.**

32. **Arunmetha S et. al.,** "Microwave synthesis of magnesium phosphate-rGO as an effective electrode for supercapacitor application". **Zeitschrift für Physikalische Chemie. 2024 May 13(0). Impact Factor: 3.0-Q2.**

33. **Arunmetha S et. al., "**Ni (OH) 2/Co (OH) 2 nanocomposite as electrocatalyst towards water oxidation process", **Journal of Sol-Gel Science and Technology, 110, 90-102 (2024) Impact Factor: 2.3-Q1**

34. **Arunmetha S et. al.,** "Facile Synthesis of Ni-MgO/CNT Nanocomposite for Hydrogen Evolution Reaction", **Nanomaterials, 14(3), 280 (2024) Impact Factor: 4.4-Q1**

35. **Arunmetha S et. al., "**Enhanced electrochemical performances of SrMoO4/MWCNT-PVP nanocomposites as electrocatalyst for hydrogen evolution reaction", **Ceramics International, 50(10) (2024) Impact Factor: 3.5-Q1**

36. **Arunmetha S et. al., "**Facile synthesis of chromium oxide composite carbon (Cr2O3/C) nanostructures by solvothermal route for high performance supercapacitor applications", **Materials Letters, 43, 136158 (2024) Impact Factor: 3.5-Q2**

37. K Sakthipandi, K Venkatesan, G Purushothaman, G Rajkumar, Rajshree B Jotania, R Sivakumar, **S Arunmetha**, Aslam Hossain Study of phase transition temperature in defect-induced barium hexaferrite, **Materials Letters, 363, 36257 (2024) Impact Factor: 3.5-Q2**

38. K Sakthipandi, K Venkatesan, R Sivakumar, G Rajkumar, B Ganesh Babu, **S Arunmetha**, Aslam Hossain, M Srinidhi Raghavan, V Rajendran Exploring the impact of rare-earth (La3+) ions doping on structural, magnetic, and dielectric properties of Co0. 50Ni0. 50LaxFe2-xO4 nano-spinel ferrite, **Journal of Alloys and Compounds, 981, 173708 (2024). Impact Factor: 6.0-Q1**

39. **Arunmetha S et. al., "**Magnetically separable rare earth metal incorporated CdFe2O4 photocatalyst for degradation of cationic and azo dyes", **Journal of Molecular Structure 1302, 137479, (2024) Impact Factor: 4.0-Q2**

40. **Arunmetha S et. al.,** "Design and implementation of hybrid (radix-8 Booth and TRAM) approximate multiplier using 15-4 approximate compressors for image processing application", **Journal of Real-Time Image Processing, 21(2), 50 (2024) Impact Factor: 3.5-Q2**

41. **Arunmetha S et. al., "**Copper tungsten sulfide nanocubes decorated with rGO/MWCNT for overall water splitting", **Electrochimica Acta, 475, 143685 (2024) Impact Factor: 4.3-Q2**

42. **Arunmetha S et. al., "**Bayberry-like Cu3BiS3 with 2D layered nanosheets of rGO and g-C3N4 for effective electrochemical HER activity", **International Journal of Hydrogen Energy, 49, 295-308 (2024) Impact Factor: 8.1-Q1.**

43. **Arunmetha S et. al.,** "Enhanced electrochemical performance of CuO/NiO/rGO for oxygen evolution reaction", Electrochimica Acta, 473, 143464 (2024) **Impact Factor: 5.5-Q2**

44. **Arunmetha S et. al.,** "Vermi degradation of different dietary supplements mediated on the reproduction and metabolic profile of earthworm Eudrilus eugeniae, **Notulae Scientia Biologicae, 15 (4), 11638 (2023) Impact Factor: 4.3-Q2**

45. **Arunmetha S et. al.,** "Exploring the electromagnetic shielding behavior of lanthanum doped calcium nanoferrites", **Journal of Rare Earths, 42(4), 629, (2023) Impact Factor: 5.2-Q1.**

46. **Arunmetha S et. al., "**Synthesis of ZnWO4 nanorods: the photocatalytic effects on RhB dye degradation upon irradiation with sunlight light, **Journal of Materials Science: Materials in Electronics, 34 (31), 2094 (2023) Impact Factor: 3.5-Q2**

47. **Arunmetha S et. al.,** "Development of Ag/SrTiO3 and Ag/SrTiO3/GO nanocomposites with superior photocatalytic and electrochemical characteristics for the environmental remediation of industrial dye, **Ceramics International, 50(2), 4218-4226 (2024) Impact Factor: 5.2-Q1**

48. **Arunmetha S et. al.,** "Adaptive FIR Filter Design with Approximate Adder and Hybridized Multiplier for Efficient Noise Eradication in Sensor Nodes, **ECS Journal of Solid State Science and Technology, 12 (9), 097002 (2023) Impact Factor: 2.2-Q3**

49. **Arunmetha S et. al.,** "Bismuth ferrite (BiFeO3) 2D-nanoflakes for the photocatalytic degradation of chromogenic dyes under solar irradiation, **Surfaces and Interfaces, 41, 103240 (2023). Impact Factor: 6.2-Q1**

50. **Arunmetha S et. al.,** "A simple fluorescent sensor for the meticulous recognition of Cu2+ ion and its functioning in logic gate and keypad lock", **Journal of Photochemistry and Photobiology A: Chemistry this link is disabled, 441, 114750 (2022). Impact Factor: 5.0-Q2**

51. **Arunmetha S et. al.,** "A simple method for functionalizing polypyrrole-coated cotton fabrics by reduced graphene oxide for UV screening". **Inorganic and Nano-Metal Chemistry. 2023 Mar 4;53(3):302-10. Impact Factor: 1.0-Q3**

52. **Arunmetha S et. al.,** "Implementation and Investigation of an Optimal Full Adder Design for Low Power and Reduced Delay Conditions", **Wireless Personal Communications, 126(4), pp. 3041–3069 (2022) Impact Factor: 3.4-Q2**

53. **Arunmetha S et. al.,,** A survey paper on design and implementation of multipliers for digital system applications, Artificial Intelligence Review, 55, 1-29 (2022) **Impact Factor:**

CENTER FOR FLEXIBLE ELECTRONICS

List of Patents Published in the Last 2 Years

1. P. S. Srinivasa Babu et. al., 'Fabrication of Flexible Electrodes for Supercapacitor using Bio-Degradable Materials' Application No.: 202341069372

2. Vivekananthan V, "A Self-powered Rehabilitation System using Flexible Piezoelectric Sensor made of KNN based Perovskite Solid System"

3. P. S. Srinivasa Babu et al., 'Wideband antennas for radio applications', Indian Design Patent. Patent No. 400487-001, Issued Date: 25.01.2024, Issued by The Patents Office, Govt of India

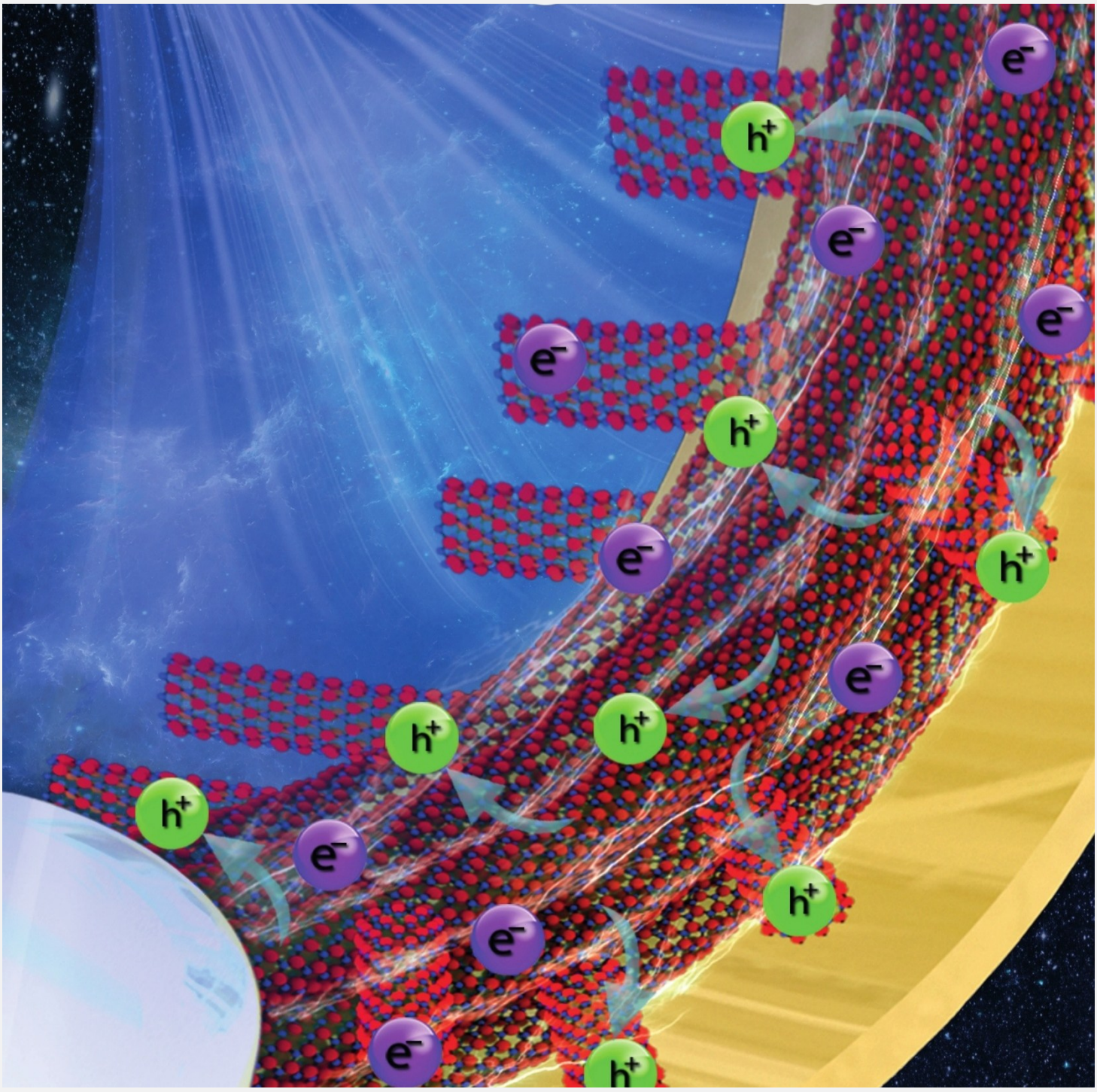
4. Arunmetha S et.al., Portable Triboelectric Nanogenerators with IoT Interface, 202241040111 A, July 2022-Published, Issued by The Patents Office, Govt of India

5. Arunmetha S et.al., Automation Device for Health Care Application, 202341045561A, Sep 2023-Published, Issued by The Patents Office, Govt of India

6. Arunmetha S et.al., An Automatic Object Disinfection Device for Healthcare applications, 202341045909 A, Sep 2023-Published, Issued by The Patents Office, Govt of India

CENTER FOR

FLEXIBLE ELECTRONICS



Center for Flexible Electronics

Department of Electronics and Communication Engineering

KONERU LAKSHMAIAH EDUCATION FOUNDATION (KLEF)

(Deemed to be KL University)

Green Field, Vaddeswaram, Guntur Dist., Andhra Pradesh – 522 302, India