SCHEDULE

Resource Person	Time	Event
Dr. Vamsi Krishna Balla	10:00 AM – 11:30 AM	Technical Talk-1
	11:30 AM – 11:45PM	Tea Break
	11:45 PM – 01:00 PM	Technical Talk-2
1:00 PM - 2:00 PM		Lunch Break
Dr. Rupinder Singh	2:00 PM – 3:30 PM	Technical Talk-3
	3:30 PM – 3:45 PM	Tea Break
	3:45 PM – 5:00 PM	Technical Talk-4

REMEMBER

Date of Seminar : **27th March 2021**
Course Time : **10:00** AM - **5:00** PM

SEMINAR LINK

https://kluniversity.webex.com/meet/cro23

NOTE

- ✓ No Registration Fee
- ✓ Register by submitting the google form: **https://forms.gle/ZQYbbf8qCwryWVdR9**
- ✓ Submit the google form on or before **8.30 AM** of **27-03-2021**
- ✓ Softcopy of participation certificate will be provided to registered participants

RESOURCE PERSONS

Dr. Vamsi Krishna Balla
Senior Principal Scientist, Central Glass & Ceramic Research Institute - CGCRI, Kolkata, West Bengal, India

Dr. Rupinder Singh
Professor, National Institute of Teachers' Technical Training and Research, NITTTR, Chandigarh, India.

DEPT. OF MECHANICAL ENGINEERING, KL

Dr. D. V. A. Rama Sastry
Head of the Department, ME, KL

CONVENER

Dr. K. L. Narayana
Principal Investigator (TIDE PROJECT)

ORGANIZERS

Dr. Surya Narayan Padhi, KL
Dr. M. B. S. Sreekar Reddy, KL

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KL UNIVERSITY | Department of **Mechanical Engineering**

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(As a part of sponsored project vide SEED / TIDE / 2018 / 33 / G)

One Day Virtual Seminar on

4D PRINTING & BIO-MEDICAL APPLICATIONS

on (Saturday) 27th March, 2021

www.kluniversity.in

ABOUT THE UNIVERSITY

The Institute has been established during 1980-81 as Koneru Lakshmaiah College of Engineering (KLCE), became Autonomous in 2006, and subsequently has been upgraded into a Deemed to be University by UGC in 2009. The University has been accredited with A++ Grade by NAAC in 2019. MHRD declared the University as Category-I Institution. The University has been ranked as 41 by NIRF in 2020.

ABOUT THE DEPARTMENT

The Department has strong back-up of 90 faculty with 40 Doctorates. It hosts 9 laboratories and 2 Centers of Excellence. The faculty contributing towards publications in reputed reviewed journals along with patents both in design and utility. Students are very much encouraged to participate in National events organized by SAE, ASME, ISHRAE. The Department is also extending consultancy works in testing and evaluation. It has extended MOUs with leading R & D laboratories and Institutions of academic repute.

ABOUT ADDITIVE MANUFACTURING

Additive manufacturing is defined in ISO/ASTM 52900, as a process of joining materials to make parts from 3D model, usually layer by layer. It is reverse process to subtractive manufacturing and formative manufacturing methodologies. The use of additive manufacturing has evolved a variety of mainstream manufacturing sectors, including aerospace, automotive, biotechnical / medical, with customized applications. Bio-medical implants using AM will facilitate on-demand production of patient-specific body parts with optimized properties that meet both biological and structural needs of the individual. AM is the only manufacturing process offering the capability of manufacturing net-shaped parts, similar to trabecular bone with desired mechanical properties. AM utilizes a range of biocompatible materials for manufacturing guides and implants.

ABOUT 4D PRINTING

New printing techniques and their ability to print objects from a variety of materials such as plastics, metals, ceramics, and more allow developers and manufacturers to speed prototyping, and produce complex designs. Even so, there are limits due to rigidity of materials.4D-printing is where the printed object can transform its shape in response to certain conditions. The ability to do so arises from the near infinite configurations at a micrometer resolution, creating solids with engineered molecular spatial distributions and thus allowing unprecedented multifunctional performance. Shape-shifting materials could be used for small, implantable medical devices. Smart materials have the ability to change shape over time, creating a wide-range of potential new products. Tiny, soft devices could be inserted or implanted in people, and harden when they reach the affected area by adding a dimensional transformation over time especially in medical field, such as tissues.