Speakers Information

Prof. Lingxue Kong

Professor, Institute of Frontier Materials, Deakin University, Australia

Leads research in materials engineering and micro/nano fabrication for biomedical use.

Prof. Dongbin Wei

Associate Professor, School of Mechanical and Mechatronic Engineering, UTS, Australia

Focuses on additive manufacturing and materials processing for healthcare devices.

Prof. G. L. Samuel

Professor, Department of Mechanical Engineering, IIT Madras

Expert in precision and additive manufacturing for biomedical device fabrication.

How to Apply

Participants interested in attending this workshop are required to complete online registration using the link provided below (***Online registration is mandatory for all participants.***)

Registration Link:

https://forms.gle/4MwxaDxQTDbeGAvd9

SPARC Workshop on

Advanced Techniques for Manufacturing of Biomedical Devices

01.12.2025 - 03.12.2025

CRC 302, NPTEL Studio, IIT Madras, Chennai

In collaboration with

Overview

The convergence of advanced manufacturing technologies and biomedical engineering is revolutionizing the way healthcare devices and diagnostic systems are developed. The integration of additive manufacturing, micromachining, laser-based fabrication, and micro/nano manufacturing has opened new possibilities for designing compact, high-precision, and biocompatible medical devices.

This SPARC workshop aims to provide participants with a comprehensive understanding of manufacturing processes, material selection, and surface engineering tailored for biomedical applications. Special focus will be given to disease diagnostics, particularly in the area of renal health, highlighting how engineering innovations can enable affordable, rapid, and reliable diagnostic solutions.

Through lectures, demonstrations, and discussions, participants will gain insights into the manufacturing-to-diagnosis continuum — from material processing to clinical translation.

Objectives

- To discuss emerging manufacturing processes for medical and diagnostic devices.
- To explore additive, micro, and laser-based manufacturing for biomedical applications.
- To understand materials and surface modification techniques for improved device performance and biocompatibility.
- To introduce innovations in disease diagnostic systems, with case studies from nephrology.
- To promote academic and clinical collaboration under the SPARC program.

Who Can Attend

- Students, researchers, and faculty in Mechanical, Biomedical, and Materials Engineering.
- Medical professionals interested in innovative diagnostic devices.
- Industry experts involved in medical device fabrication and precision manufacturing.

Number of participants limited to 50 (First-come come first-served basis)

Workshop Highlights

- Expert lectures on additive, micro, and laser-based manufacturing and discussion on biocompatible materials and surface modification methods
- Insights into biomedical needs to guide next-generation device development.
- Hands-on lab demonstrations and IITM laboratory visits for experiential learning
- Visit to IITM Research Park to explore translational research and industry partnerships
- Collaborative roadmap for future biomedical manufacturing and diagnostic innovations

Registration Fee

- Students - INR 1000
- Faculty -INR 3000
- Industry / Research Organization- INR 5000

The registration fee includes networking lunch and refreshments. Accommodation will be provided on a payment basis, subject to availability within the IIT Madras campus, based on request.

Contact Information

Workshop Coordinator
Prof. G. L. Samuel
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Indian Institute of Technology Madras
Chennai – 600036, India
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