GOVERNMENT OF
KARNATAKA
Department of
Science & Technology

BENGALURU INDIA NANO

3-5, AUGUST 2026

THE LALIT, BENGALURU

ಬೆಂಗಳೂರು ಇಂಡಿಯಾ ನ್ಯಾನೋ

NANOTECH'S
Next Frontier - AI & Beyond

Conceive, Converge & Commercialise

Organisers

KSTePS

JNCASR

Event Curator

MM ACTIV
Sci-Tech Communications
Media | Events | Partnering | Advisory

EVENT COMPENDIUM

Karnataka Science and Technology Promotion Society (KSTePS)

KSTePS - Karnataka Science and Technology Promotion Society is a registered autonomous organization established in 2013 under the Department of Information Technology, Biotechnology and Science & Technology (DST), Govt. of Karnataka. KSTePS aims at serving as a mechanism in supporting the preparation and implementation of policy initiatives of Department of Science and Technology and act as a nodal agency in channelizing the funding and in coordinating programs of the Department across the State.

KSTePS is Chaired by Secretary to Govt., Department of Information Technology, Biotechnology and Science & Technology with members drawn from various line Departments. Director, Dept. of Science and Technology is the Member Secretary and Managing Director.

Objectives:

- To serve as a mechanism to support the Department of Science and Technology in the preparation and implementation of its policy initiatives.
- To act as a nodal agency or channelizing funding for programs and for coordination between various implementing agencies.
- To identify priority areas of science and technology, which are useful for long term development of the State, so as to develop core competency in such areas.
- To act as a nodal agency for development of Nano Park and to extend all support services for promotion of Nanoscience and Nanotechnology in Karnataka.
- To coordinate and liaise with organizations of the Government of India in working out collaborative and joint programs/ventures in the field of science and technology.
- To act as a facilitator and liaise with all concerned in establishment of science city, science centres and other types of scientific establishments across the State.

One of the important programs of KSTePS is the organization of Bengaluru India Nano Event as it is the big technological surge impacting wide spectrum of Industry in the coming years. The aim of this event is to create a congenial ecosystem for the growth of this industry similar to the growth witnessed in Information Technology and Biotechnology sectors.

The Fourteenth edition of India's premier Nano-science and Nanotechnology Event Bengaluru India Nano 2026 will be held during **August 3-5**, **2026** with pre conference tutorials on 3rd August at Hotel The Lalit, Bengaluru. This event is guided by eminent visionaries, who have made significant achievements and contributions in the field of Nano Science and Nanotechnology under the guidance of distinguished scientist **Bharat Ratna Prof. CNR Rao, FRS**, who is the Honorary President, Jawaharlal Nehru Centre for Advanced Scientific Research Centre (JNCASR) & Linus Pauling Research Professor.

Contact:

Shri Bharath S, IAS, Director, DST, GoK/Managing Director, KSTePS, Dept. of Science and Technology, GoK, No.507, 5th Floor, 5th Stage, M.S. Building, Bengaluru – 560001. Ph: 080 26711166, Email:ksteps.dst@gmail.com, www.ksteps.karnataka.gov.in

Programme at a Glance

BENGALURU INDIA NANO 3-5, AUGUST 2026 THE LALIT, BENGALURU

Pre-Conference Tutorials | Monday, August 03, 2026		
Time	**Hall**	
	Lalit - 1 & 2	**Lalit - 3 & 4**
10:30 AM - 11:45 AM	**Tutorial 1 - Advanced Semiconductor Manufacturing** CMOS Technology – The Lithographic Revolution in Nanofabrication Technology	**Tutorial 1 - AI & ML for Sciences and Engineering** Application of Machine Learning in Materials Science and Engineering
11:45 AM - 01:00 PM	**Tutorial 2 - Advanced Semiconductor Manufacturing** Tutorial on Silicon Photonic Manufacturing	**Tutorial 2 - AI & ML for Sciences and Engineering** AI-driven Peptide and Protein Design and Molecular Therapeutics
01:00 PM - 02.00 PM	Lunch & Networking Break	
02:00 PM - 03:15 PM	**Tutorial 3 - Advanced Semiconductor Manufacturing** Advanced Packaging and Heterogeneous Integration	**Tutorial 3 - Advances in Nano Characterization** Seeing the Invisible — How Raman & SERS Unlock Hidden Nanoscale Phenomena
03:15 PM - 04:30 PM	**Tutorial 4 - Advanced Semiconductor Manufacturing** MEMS Packaging: A Wafer Scale Approach	**Tutorial 4 - Advances in Nano Characterization** Nano to Pico: The Power of Transmission Electron Microscopy

Day 1 | Tuesday, August 04, 2026				
08:00 AM onwards	Registration			
10:00 AM - 11:00 AM	Inauguration of the Event (Kalinga - 1)			
11:00 AM - 11:30 AM	Inauguration of Exhibition and Poster Showcase (Magadh)			
11:30 AM - 11:45 AM	Tea / Coffee Break			
11:45 AM - 12:30 PM	Plenary Lecture I - Semiconductor Nanostructures for Optoelectronics Applications (GBR)			
12:30 PM - 01:15 PM	Plenary Lecture II - The Nanoscale Century (GBR)		Nanotech Quiz (Kalinga - 1)	
01:15 PM - 02:15 PM	Lunch and Visit to Expo & Poster			
02:15 PM - 04:00 PM	**Nano for the Young (Kalinga - 1)** Smart Single Pixels using Solution Processed Semiconductors with Multifunctional Attributes Van der Waals Gap Engineering of Two Dimensional (2D) Materials: Applications for Energy Storage 3D/4D Bioprinting: Healthcare's New Dimensions			
	GBR	Lalit - 1 & 2	Lalit - 3	Lalit - 4
02:15 PM - 04:00 PM	SESSION 1 Nano in Semiconductor	SESSION 2 Nano in Agriculture & Health	SESSION 3 Nano in Energy & Environment	SESSION 4 GIA
	How Semiconductors Enable Your Electronics World	Reconsidering Conventional Toxicity Endpoints in the Assessment of Nanomaterial Safety in Food and Agricultural Systems	Manufacturing Nanoscale Interfacial Thin Films for Lithium Metal and Scaling for Commercialization	GERMANY From Lab to Market: Indo-German Partnerships Driving the Future of Nanotechnology
	Scalable Laser-Induced Graphene Biointerfaces for Next-Generation Bioelectronics	Conceive, Converge, Commercialize: Nano-enabled Climate-Smart Agriculture for Food, Energy and Environmental Security	Understanding and Optimising Nanoscale Energy Materials	FRANCE Nanotechnology: Building Franco-Indian Cooperation from Lab to Industry
	Enabling AI with AI	Biophysical Basis for Neuropathologies	Engineering Ångström-Scale Channels with 2D Materials: New Physics of Water and Ion Transport for Sustainable Technologies	NETHERLANDS Tackling Modern Day Pollutants with Hollowfibre Nanofiltration Membranes

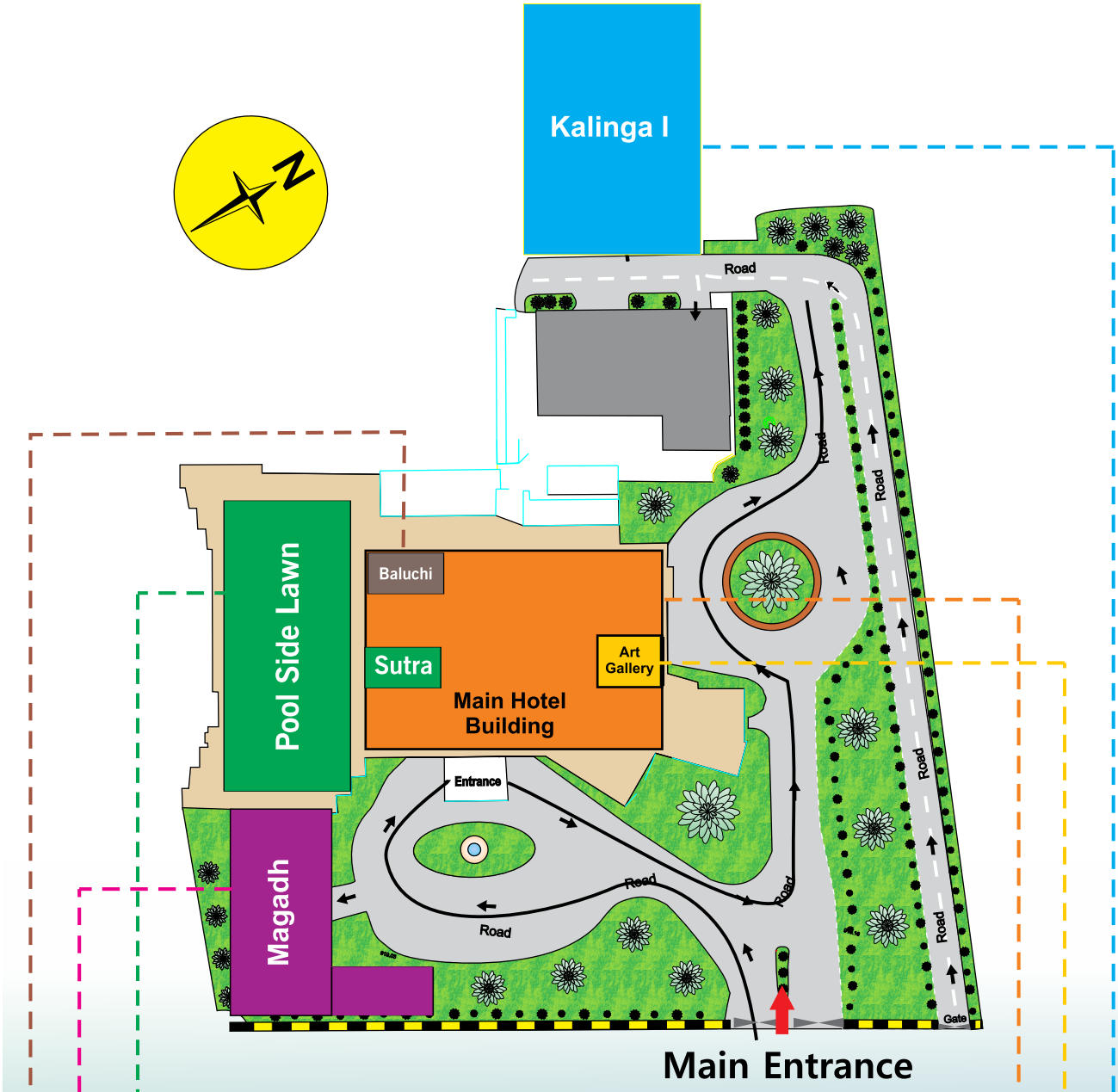
Programme at a Glance

BENGALURU INDIA NANO 3-5, AUGUST 2026 THE LALIT, BENGALURU

04:00 PM - 04:15 PM	Tea / Coffee Break		
04:15 PM - 06:15 PM	Poster Interactive Session (Magadh)		
06:30 PM - 08:30 PM	Nano Excellence Awards & Cultural Programme (Kalinga - 1)		
Day 2 | Wednesday, August 05, 2026			
10:00 AM - 10:45 AM	Plenary Lecture III - 2D Materials: A Platform for Exciting Science and Exotic Applications (GBR)		
10:45 AM - 11:30 AM	Plenary Lecture IV - Molecular Tools for Manipulating the Size, Size Distribution and Alloy Formation in Metal Nanoparticle Systems (GBR)		
11:30 AM - 11:45 AM	Tea / Coffee Break		
	GBR	Lalit - 1 & 2	Lalit - 3 & 4
11:45 AM - 1:15 PM	SESSION 5 Nano in Semiconductor	SESSION 6 Nano in Agriculture & Health	SESSION 7 Nano in Energy & Environment
	Molecular Neuromorphic Building Blocks for Artificial Intelligence	Nano-enabled Agriculture to Achieve Evergreen Revolution	Artificially Intelligent Nanopores for High-Throughput DNA Sequencing
	Nonlinear Silicon NEMS Resonator Interfaces for Quantum Electronics	Nanoparticle-mediated Immunotherapy	Persistent Photoconductivity and Persistent Photocatalysis
	From Silicon to Society: Essential Semiconductor Innovations Driving Modern Life	Nanotechnology Enabled Sensors Shaping the Future of Healthcare	From Atoms to Equity: AI-Accelerated Frugal Energy Material Innovation for Billion-People Prosperity
1:15 PM - 2:15 PM	Lunch and Visit to Expo & Poster		
02:15 PM - 03:15 PM	SESSION 8 Deep-tech India: Next Big Opportunities for India's Semiconductor Future: Commercialization, Scale-up, Investment & Ecosystem creation		SESSION 9 Nano to Gigawatt: Commercializing Nanotechnology for India's Energy Future
03:15 PM - 03:30 PM	Tea / Coffee Break		
03:30 PM - 04:30 PM	SESSION 10 Nano in Semiconductor	NanoSparX	Poster Interactive Session (Magadh)
	Engineering 2D Materials and Ion-Implanted Semiconductors for Next-Generation Technologies		
	Accelerating Semiconductor Design and Development with Physics-Informed AI Surrogates		
	India-Denmark Collaborations in Nanobiotechnology for Applications in Cancer and Diabetes Research		
04:30 PM - 05:00 PM	NanoSparX, Poster Awards & Valedictory (GBR)		

* Subject to change

AERIAL VIEW



DELEGATE LUNCH & DINNER
(Pool Side)
VIP LUNCH
(Sutra)

EXHIBITION
(Magadh)

POSTER
(Magadh)

B2B MEETINGS
(Alfresco coffee shop)

MAIN HOTEL BUILDING

Ground Floor
SESSIONS
VALEDICTORY FUNCTION
(Grand Ballroom)

First Floor
TUTORIALS / SESSIONS
(Lalit 1 & 2 and Lalit 3 & 4)

SPEAKERS LOUNGE
(Board Room)

MEDIA LOUNGE (VC ROOM)

REGISTRATION
(Art Gallery)

(Kalinga I)
- INAUGURATION
- AWARDS FUNCTION
- NANO FOR THE YOUNG
- NANOTECH QUIZ

Map not to scale

#BIrIndiaNano

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY

28+ YEARS OF EXCELLENCE

(A State University of Government of Karnataka
Established as per the VTU Act, 1994)
"Jnana Sangama", Belagavi - 590018, Karnataka, India

Named after **Bharat Ratna Sir M. Visvesvaraya**, an Eminent Engineer, Administrator and Statesman

Empowering Engineers for a Better Tomorrow

ABOUT VTU

Established on 1st April 1998 through enactment of VTU Act 1994 by the Government of Karnataka, to promote the planned and sustainable development of technical education, research, innovation, and outreach programs.

219 Engineering and Architecture Colleges statewide inclusive of 44 Autonomous Colleges, 18 Government Engineering Colleges, 25 Schools of Architecture, and 03 Constituent Colleges are affiliated to VTU.

Provides education to over 3.5 lakh students through 45 undergraduate and 94 postgraduate programs.

Over 5860 research scholars pursuing Doctoral and M.S.(Engg.) Research programs in 923 departments of affiliated engineering colleges are recognized as Research Centers.

RANKINGS & RECOGNITIONS

Ministry of Education (MoE) and National Institutional Ranking Framework (NIRF) in 2025

शिक्षा मंत्रालय
MINISTRY OF EDUCATION

nirf

- 50th — State Public University Category
- 101-150 Band — Universities Category
- 151-200 Band — Engineering Category

Indian Institutional Ranking Framework in 2026

IIRF SINCE 2015

- 5th — All India Engineering Ranking
- 59th — Management Category

TechEDU India Awards '26

- GOLD - OUTSTANDING TECH VISIONARY VICE-CHANCELLOR
- GOLD - OUTSTANDING TECH-DRIVEN ENGINEERING UNIVERSITY
- GOLD - OUTSTANDING IN ADOPTING NEP STRATEGIES
- SILVER - EXCELLENCE IN TECH-DRIVEN INDUSTRY-ACADEMIA PARTNERSHIPS
- BRONZE - EXCELLENCE IN DIGITAL LIBRARY SERVICES

EXCELLENCE IN INDUSTRY PARTNERSHIPS & GRADUATE EMPLOYABILITY - GOLD
VISIONARY HIGHER EDUCATION LEADERSHIP - SILVER

PROUDLY RANKED 27TH ACROSS INDIA TOP ENGINEERING (GOVT) COLLEGES IN 2026

- 2nd — RANK IN TOP 10 ENGINEERING COLLEGES WITH LOWEST FEES
- 10th — EMERGING COLLEGE SETUP AFTER 2000
- 27th — RANK ACROSS INDIA TOP ENGINEERING (GOVT) COLLEGES
- 4th — BEST GOVERNMENT ENGINEERING COLLEGE IN SOUTH INDIA ZONE

INDIA TODAY

"Excellence in Distance Learning Programs" by
ET THE ECONOMIC TIMES
CAREERS360
India's Best Engineering Institutes
2023 – AAAA
2024 – AAAA+
India's Best B-School
2024 – AAA+

Best University (National) Award by FOSSEE-GIS (NMEICT) project, IIT Bombay
National Geospatial Awards 2025 (Edition 2)

Times B School
71 TOP PRIVATE INSTITUTES
19 B-SCHOOLS
2026 Best Business Schools in India Rankings

CENTRES OF EXCELLENCE

In collaboration with Industry, Academia & Research Organizations

- CoE in CNC & Milling 
- CoE in Solar Automation (Schneider) 
- CoE in Robotics (Spark) 
- CoE in IoT (Ispark) 
- CoE in Building Automation (Schneider) 
- CoE in 3D Printing 
- CoE in EV Technology (Vision Astra) 
- CoE in Air-VR (Trendsetters Info) 
- CoE in Robotics & Hydraulics 
- CoE in Aerospace & Drone (Sarus) 
- CoE in Buildware Prototyping (Cybermotion) 

(In Clockwise Direction)

VTU also offers online degree programs through its Centre for Distance and Online Education (CDOE) Including BBA, MBA, BCA, LLM, MCA & MCA (Lateral Entry)

STAY CONNECTED
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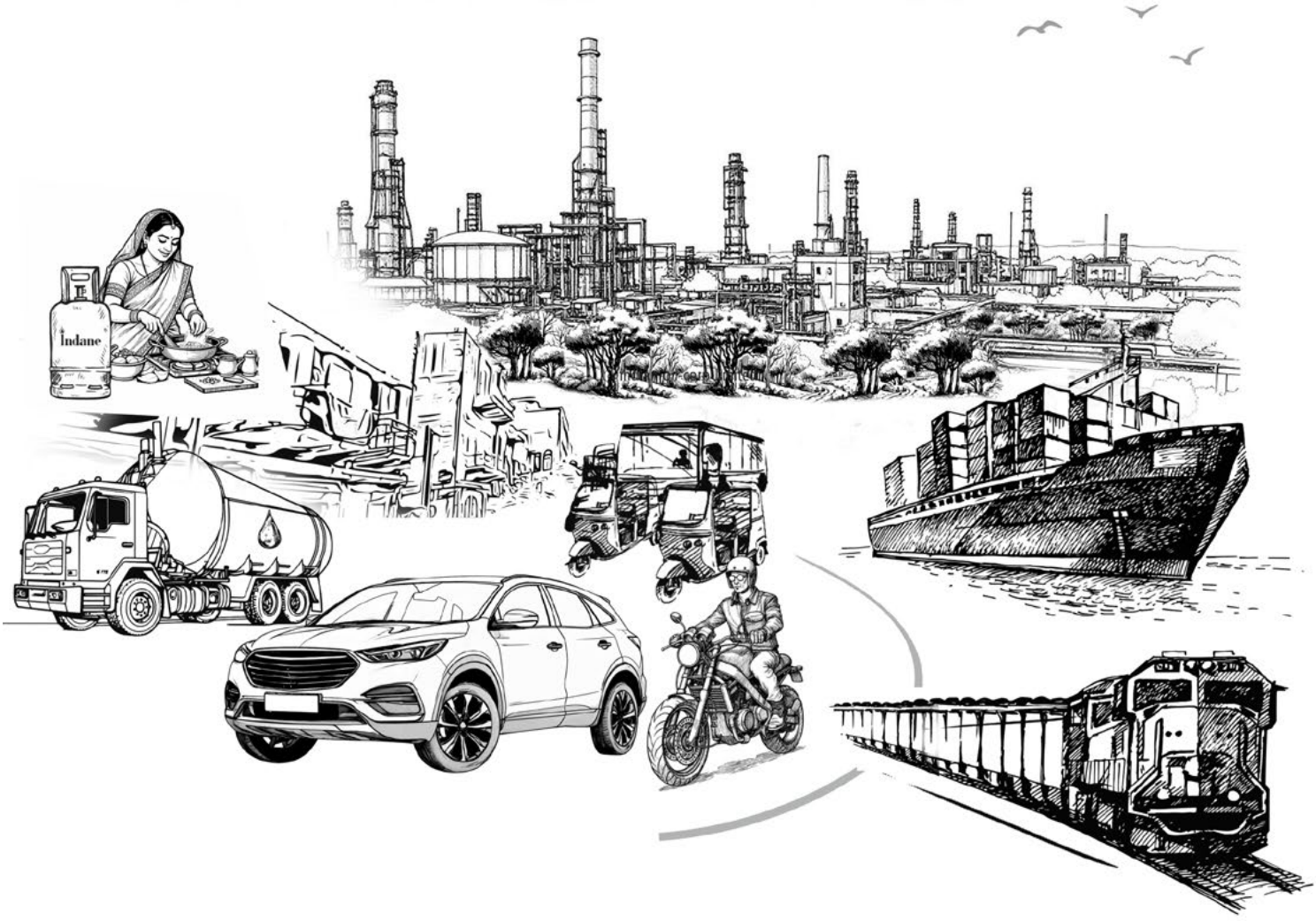
Transforming Lives... Empowering Futures...
Building a Better Tomorrow
"Jnana Sangama" – Where Knowledge Converges and Futures Take Shape.

- VTU Offers undergraduate B.E./B.Tech. and postgraduate M.Tech./MBA/MCA courses, at all Regional Centers and Constituent Colleges

इंडियनऑयल

IndianOil

SERVING EVERY MILE, EVERY DAY FOR A NATION ALWAYS ON THE MOVE



- IndianOil owns and operates 10 group Refineries with a refining capacity of 80.75 MMTPA
- Total pipeline length operated by IndianOil is over 20,000 Km
- Pipelines throughput of over 100 Million Metric Tonnes per annum
- Operates over 14,000 Electric Vehicle Charging Stations
- Product sales of over 100 Million Metric Tonnes per annum
- Fuelling journeys across the nation with over 40,000 Retail Outlets
- Over 15 Crore kitchens across India trust Indane LPG

BENGALURU INDIA NANO 3-5, AUGUST 2026 THE LALIT, BENGALURU

Vision Group on Nanotechnology

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Professor, Department of Electrical Engineering
IIT Bombay

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Consultant to ESDM Industry, India

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Director, Department of Science & Technology and
Managing Director, Karnataka Science and Technology
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Prof. M. Eswaramoorthy
Professor, Chemistry and Physics of Materials Unit
JNCASR, Bengaluru

Tutorial 1 - Advanced Semiconductor Manufacturing

CMOS Technology – The Lithographic Revolution in Nanofabrication Technology

10:30 AM – 11:45 AM
Lalit - 1 & 2

Tutorial Speaker

Prof. Veeresh Deshpande

Assistant Professor, Dept. of Electrical Engineering,
Indian Institute of Technology (IIT),
Bombay, India

Tutorial 1 - AI & ML for Sciences and Engineering

Application of Machine Learning in Materials Science and Engineering

10:30 AM – 11:45 AM
Lalit - 3 & 4

Tutorial Speaker

Prof. Abhishek Kumar Singh

Professor, Materials Theory and Simulation Lab, MRC,
IISc, India

Tutorial 2 - Advanced Semiconductor Manufacturing

Tutorial on Silicon Photonic Manufacturing

11:45 AM – 1:00 PM
Lalit - 1 & 2

Tutorial Speaker

Prof. Awanish Pandey

Assistant Professor,
Indian Institute of Technology (IIT),
Delhi, India

Tutorial 2 - AI & ML for Sciences and Engineering

AI-driven Peptide and Protein Design and Molecular Therapeutics

11:45 AM – 1:00 PM
Lalit - 3 & 4

Tutorial Speaker

Prof. Anand Srivastava

Professor, Molecular Biophysics Unit,
Indian Institute of Science (IISc),
Bengaluru, India

Prof. Veeresh Deshpande

Prof. Veeresh Deshpande
Assistant Professor, Dept. of Electrical Engineering,
Indian Institute of Technology (IIT),
Bombay, India

Title:

CMOS Technology – The Lithographic Revolution in Nanofabrication Technology

Abstract:

Complementary Metal Oxide Semiconductor (CMOS) Technology has become the bedrock of computing systems over the last several decades. Exponential increase in computing power has been possible due to constant miniaturization of CMOS technology, allowing us to cram more transistors on chip. By late 1990s, the minimum feature sizes in CMOS technology had become close to 100 nm and were constantly shrinking. Today we are witnessing CMOS technology where the minimum feature size has been reduced to 4-5 nm. The technology is truly the most advanced and widespread 'nano-technology'. Several generations of innovations in fabrication of small features, device design, various methodologies for 3D feature creation have kept the technology progressing. In this tutorial we will go over various generations of CMOS technology, look at the nano-fabrication techniques utilized, the principles behind them, and their evolution. We will cover advances in lithography needed to achieve these. We will also look at the latest approaches in these technologies particularly from logic and memory applications.

Profile:

Prof. Veeresh Deshpande carried out PhD thesis research on the development of nanowire Si FinFETs on 300 mm FDSOI CMOS Technology platform at CEA-LETI, France (one of the world's leading microelectronics research center) from 2009-2012. His PhD work demonstrated impact of quantum effects in ultra-scale nanowire-fin FETs. He subsequently worked at IBM India Semiconductor R&D Centre on the development of computational lithography for 22 nm and lower nodes from 2012-2014. From 2014-17, he was a post-doctoral researcher at IBM Zurich Research Laboratory (Switzerland), working on the development of advanced 3D monolithic CMOS technology and design-technology co-optimization (DTCO). He then worked at IMEC (Belgium) on DTCO for advanced RF-logic hybrid technologies. From 2019-23 he was deputy head of institute at Helmholtz Research Centre Berlin (HZB), where he established a research group on device and circuit development for emerging ferroelectric and oxide memory technology for 3D integration. He joined as an Associate Professor at the Department of Electrical Engineering, IIT Bombay, in April 2023. His current research focus is the development of emerging memory technologies (eDRAM, NV-DRAM, FeFETs, RRAM) for AI applications, and advanced packaging. He has been invited to part of technical committee in several high-impact IEEE device and circuit conferences (ESSERC, DATE, EDTM, IEEE IEDM).

Prof. Abhishek Kumar Singh

Prof. Abhishek Kumar Singh
Professor, Materials Theory and Simulation Lab, MRC,
IISc, India

Title:

Application of Machine Learning in Materials Science and Engineering

Abstract:

Machine learning (ML) has become an indispensable tool for accelerating materials discovery and design, offering a way to learn patterns from data and predict material properties without the need for expensive, repeated first-principles calculations or experiments. This tutorial provides a structured introduction to ML and its applications in materials science. We begin with the fundamentals of machine learning — including regression techniques, regularisation, kernel methods, ensemble learning, and Gaussian Process Regression — followed by strategies such as active learning and Bayesian optimisation that allow models to intelligently select the most informative data points, significantly reducing the computational and experimental cost of data generation. The tutorial then transitions into deep learning, covering the basic building blocks of neural networks, backpropagation, and common architectures, illustrated through a worked example relevant to materials property prediction. Applications of deep learning in both general and materials-specific contexts are discussed, including property prediction and materials generation. Finally, the tutorial briefly introduces the current landscape of artificial intelligence, covering generative AI (GANs, diffusion models, and large language models) and the emerging paradigm of agentic AI — systems capable of autonomous reasoning, tool use, and iterative decision-making — and discusses their potential to further accelerate scientific discovery, including in materials research.

Profile:

Prof. Abhishek Kumar Singh is Professor and Chair of the Materials Research Centre at the Indian Institute of Science (IISc), Bangalore. He received his Ph.D. from Tohoku University, Japan, and held research positions at the University of California, Santa Barbara, and Rice University, USA. His research focuses on computational materials science, materials informatics, quantum materials, defect physics, two-dimensional materials, and AI-driven materials discovery. He leads the Materials Informatics Initiative (MI^3) at IISc and established India's first computational materials database, aNANt. Prof. Singh has authored over 250 publications with more than 16,000 citations (h-index 67) and is the recipient of several prestigious honors, including the Materials Research Society of India Medal, the Chemical Society of Japan Distinguished Lectureship Award, and the JSPS Invitation Fellowship.

Prof. Awanish Pandey

Prof. Awanish Pandey
Assistant Professor,
Indian Institute of Technology (IIT),
Delhi, India

Title:

Tutorial on Silicon Photonic Manufacturing

Abstract:

This tutorial provides a comprehensive introduction to silicon photonics manufacturing, detailing how standard CMOS semiconductor foundries are leveraged to fabricate high-performance Photonic Integrated Circuits (PICs). Beginning with the introduction and fundamentals of optical waveguiding, index contrast, and Silicon-on-Insulator (SOI) platform architecture, the session explores how core device physics dictates strict manufacturing tolerances. We will walk through key fabrication steps and elaborate on the current manufacturing ecosystem. Finally, the tutorial covers performance of key devices giving attendees a practical, end-to-end perspective on taking photonic designs from concept to wafer-scale production.

Profile:

Awanish Pandey is an Assistant Professor at the Indian Institute of Technology (IIT) Delhi. His research focuses on silicon photonics, with an emphasis on developing high-speed photonic devices to address the ever-increasing demand for data communication. Prior to joining IIT Delhi, he was a Senior Fellow at CERN, Switzerland, and a Postdoctoral Researcher at imec-Ghent University, Belgium.

Prof. Anand Srivastava

Prof. Anand Srivastava
Professor, Molecular Biophysics Unit,
Indian Institute of Science (IISc),
Bengaluru, India

Title:

AI-driven Peptide and Protein Design and Molecular Therapeutics

Abstract:

Recent advances at the intersection of machine learning and physics-based biomolecular simulations are revolutionizing our understanding of complex protein dynamics and accelerating rational protein engineering. In this seminar, I will discuss three to four different biophysics research problems where my group at IISc is leveraging the power of AI in conjunction with classical methods to address longstanding challenges in structural biology and therapeutic design. I shall start with our work that provides a framework to develop small drug molecules for the "undruggable" intrinsically disordered proteins (IDPs) that are implicated in neurodegenerative diseases like Alzheimer's and Parkinson's diseases. I will discuss a ML-assisted pipeline that leverages t-SNE clustering (JCTC2023) and parallel tempering simulations (NatComms2021) to map high-resolution ensemble conformations and guide rational drug design for IDPs. For the second topic, I will present a polarizable force-field-assisted deep learning framework— combining VGG16 convolutional networks and Graph Attention Networks (GANs)—that integrates atomistic, sequence, and 3D structural features to accurately predict and design potent, non-cytotoxic antimicrobial peptides (AMPs) (PSFB2025). My third topic will be related to addressing the scalability of protein thermal stability engineering problem that we have developed for for effective antigen design. Towards that, we build a new DL model (named as OligoStab), which is an attention-based architecture fusing protein language models and graph neural networks to predict single-point mutational effects on stability of oligomeric protein complexes (Unpublished). Finally, time permitting, I will discuss our recent work on fold-switching metamorphic proteins through Morpheus (Bionformatics2025, Unpublished), a sequence-based classification algorithm for identifying fold-switching proteins with an eventual idea to design synthetic molecular sensors and switches.

Profile:

Anand Srivastava (1979) studied Engineering at the Indian Institute of Technology, Kharagpur (1998-2002) and obtained his PhD at the Ohio State University in the United States (2010). After his post-doc period at the University of Chicago (USA) with Prof. Gregory Voth, he joined the Molecular Biophysics Unit (MBU) at the Indian Institute of Science (Bangalore) in 2015 as an assistant professor. He was tenured and promoted to associate professor in 2021. His laboratory develops and uses multiscale theories, molecular simulations and machine learning tools to unravel atomic-level descriptions of the functional motions of biomolecules. His current interest and activities lie in application and development of AI models to solve problems related to anti-microbial resistance, de novo design of stable proteins for effective antibody response in viral infections, and design and engineering of biology inspired molecular switches and sensors.

Tutorial 3 - Advanced Semiconductor Manufacturing

Advanced Packaging and Heterogeneous Integration

2:00 PM – 3:15 PM
Lalit - 1 & 2

Tutorial Speaker

Prof. Prosenjit Sen

Associate Professor,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Tutorial 3 - Advances in Nano Characterization

Seeing the Invisible — How Raman & SERS Unlock Hidden Nanoscale Phenomena

2:00 PM – 3:15 PM
Lalit - 3 & 4

Tutorial Speaker

Prof. Chandrabhas Narayana

Professor, JNCASR, India

Tutorial 4 - Advanced Semiconductor Manufacturing

MEMS Packaging: A Wafer Scale Approach

3:15 PM – 4:30 PM
Lalit - 1 & 2

Tutorial Speaker

Prof. Saurabh Chandorkar

Associate Professor,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Tutorial 4 - Advances in Nano Characterization

Nano to Pico: The Power of Transmission Electron Microscopy

3:15 PM – 4:30 PM
Lalit - 3 & 4

Tutorial Speaker

Prof. Arup Dasgupta

Senior Scientist and Head, SAMS,
Indira Gandhi Centre for Atomic Research (IGCAR), India

Prof. Prosenjit Sen

Prof. Prosenjit Sen
Associate Professor,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Title:

Advanced Packaging and Heterogeneous Integration

Abstract:

As Moore's Law scaling slows, advanced packaging has emerged as the primary lever for continued performance, power, and cost improvements in modern electronic systems. This tutorial provides a comprehensive introduction to the multidisciplinary engineering challenges underlying next-generation heterogeneous integration. We begin with electrical design considerations, covering signal integrity, power delivery network (PDN) design, and the impact of interconnect parasitics on system performance at the package level. The tutorial then transitions to thermo-mechanical design, addressing the critical challenges of heat dissipation, warpage control, and stress management in multi-die, multi-material stacks. Topics include coefficient of thermal expansion (CTE) mismatch, and thermal simulation techniques used to predict and mitigate reliability risks such as delamination and interconnect fatigue. Building on these foundations, we survey key fabrication techniques enabling modern packages, including redistribution layer (RDL) formation, through-silicon via (TSV) integration, hybrid bonding, and wafer-level processing methods. The tutorial culminates in a detailed examination of Fan-Out Wafer-Level Packaging (FOWLP), synthesizing the electrical, thermo-mechanical, and fabrication principles discussed throughout. We explore FOWLP's unique advantages in enabling thinner form factors, improved electrical performance, and cost-effective high-density integration, while highlighting the specific design and manufacturing trade-offs practitioners must navigate. Attendees will leave with a practical, systems-level understanding of the technologies driving the advanced packaging revolution.

Profile:

Prosenjit Sen received the Ph.D. degree in mechanical engineering from the University of California, Los Angeles (UCLA), in 2007, and the B.Tech. degree in manufacturing science and engineering from the Indian Institute of Technology, Kharagpur, India, in 2000. At the Micro and Nano Manufacturing Laboratory, UCLA, his research interests included microfluidic systems, droplet dynamics, liquid-metal-based RF microelectromechanical systems, and reliability of electrowetting-on-dielectric devices. From 2010-2013 he worked at Innovative Micro Technology, Santa Barbara, CA as a process engineer and program manager. Currently he is a Professor in Centre for Nano Science and Engineering at Indian Institute of Science. His group works towards development of microfluidic devices and heterogeneous systems. Dr. Sen is a recipient of the Institute Silver Medal from the Indian Institute of Technology, Kharagpur.

Prof. Chandrabhas Narayana

Prof. Chandrabhas Narayana
Professor, JNCASR, India

Title:

Seeing the Invisible — How Raman & SERS Unlock Hidden Nanoscale Phenomena

Abstract:

Raman spectroscopy and its enhanced counterpart, SERS, provide uniquely powerful vibrational fingerprints that reveal structure, chemistry and dynamics far below the optical diffraction limit. This talk highlights how these techniques expose hidden nanoscale phenomena — from defect landscapes and strain fields in 2D materials to molecular adsorption, catalytic hotspots and plasmon-driven reactivity on engineered nanostructures. By combining high-resolution mapping, surface-enhanced sensitivity and data-driven spectral analysis, Raman and SERS enable researchers to visualize processes that were previously inaccessible, accelerating discovery in nanomaterials, biosensing, and quantum-enabled devices. The talk will outline emerging capabilities, practical challenges, and the transformative role of vibrational spectroscopy in shaping the next generation of nano-innovation.

Profile:

Prof. Chandrabhas Narayana is an eminent experimental condensed matter physicist and Professor at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru. He earned his Ph.D. from the Indian Institute of Science (IISc), Bengaluru, in 1995, after graduating with distinction from the Regional College of Education, Mysore. Following postdoctoral research at Cornell University, USA, he joined JNCASR in 1998 and became Professor in 2011. He also served as Director of the Rajiv Gandhi Centre for Biotechnology (RGCB), Thiruvananthapuram, from 2020 to 2025. Prof. Narayana's research spans condensed matter physics, advanced materials, spectroscopy, nanoscience, and biomaterials, leading to significant contributions in both fundamental and translational research. He holds several national and international patents, including innovations in surface-enhanced Raman spectroscopy and nanoparticle technologies. His scholarly output includes over 218 research papers, six book chapters, and one edited book. A Fellow of the Indian Academy of Sciences, the National Academy of Sciences, India, and the Royal Society of Chemistry (UK), Prof. Narayana has received numerous prestigious honours, including the Sir C.V. Raman Young Scientist Award, the Raja Ramanna Award, the Platinum Jubilee Lecture Award of the Indian Science Congress, and the Swadeshi Sastra Puraskaram (2026). He has held several leadership positions, including Dean of Research and Development at JNCASR, Chairman of the Chemistry and Physics of Materials Unit, and Coordinator of major India–Germany and India–Japan scientific collaborations. He currently serves on several national scientific councils, editorial boards, and academic advisory bodies, contributing significantly to research, higher education, and science policy in India.

Prof. Saurabh Chandorkar

Prof. Saurabh Chandorkar
Associate Professor,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Title:

MEMS Packaging: A Wafer Scale Approach

Abstract:

MEMS packaging has been a long-standing challenge that has still not found a universal solution, unlike CMOS devices. The primary challenge lies in the fact that MEMS devices are free to move and cannot be simply injection-molded after wire bonding. This tutorial aims to introduce different approaches taken to address the packaging of MEMS devices and evaluate their advantages and shortcomings. After an introduction to MEMS, a brief refresher will be given on MEMS fabrication technology. Next, the challenges of packaging MEMS devices will be addressed, followed by examples of different approaches taken up in the commercial domain.

Profile:

Dr Saurabh Arun Chandorkar obtained his B.Tech. in Mechanical Engineering from IIT Bombay in 2003. He received his M.S. and PhD in Mechanical Engineering with a minor in Electrical Engineering from Stanford University in 2009. He worked as a postdoctoral fellow in adaptive Nanoimprint lithography in the Electrical Engineering Department at Stanford University from 2009 to 2010. He worked in the Intel Mask Production facility in an R&D group for 6 years, where his efforts focused on providing turnkey solutions to emerging issues in the 1276 and 1278 nodes. He was awarded two Intel Logic Technology Development (LTD) Divisional awards. In 2017, he worked at Stanford University as a lecturer. He joined IISc Bangalore in December 2017, where he conducts research on MEMS/NEMS with a special interest in using resonators as a platform to study physics, packaging solutions, and advanced system development.

Prof. Arup Dasgupta

Prof. Arup Dasgupta
Senior Scientist and Head, SAMS,
Indira Gandhi Centre for Atomic Research (IGCAR), India

Title:

Nano to Pico: The Power of Transmission Electron Microscopy

Abstract:

The Transmission Electron Microscope (TEM) was invented in 1934 by Ernst Ruska and his colleagues in Germany. In recognition of this pioneering achievement, Ruska was awarded the Nobel Prize in Physics in 1986. Since its invention, TEM has undergone remarkable technological advancements, leading to dramatic improvements in spatial resolution, analytical capabilities, and chemical mapping. Today, Transmission Electron Microscopy is arguably the most powerful technique for the characterization of materials over length scales ranging from several hundred nanometres to a few tens of picometres. Modern TEM encompasses a wide spectrum of imaging and analytical methods, from conventional amplitude- and diffraction-contrast TEM (CTEM) to High-Resolution TEM (HRTEM) and High-Resolution Scanning Transmission Electron Microscopy (HRSTEM). With the advent of aberration-corrected electron optics, spatial resolutions approaching 50 pm have been achieved, enabling direct visualization of atomic structures with unprecedented clarity. Advances in electron monochromation have further improved the energy resolution to approximately 150 meV, enabling the determination of interatomic bond lengths and the investigation of chemical bonding through Electron Energy Loss Spectroscopy (EELS). Furthermore, Energy Dispersive X-ray Spectroscopy (EDXS) now enables atomic-resolution elemental mapping, while Differential Phase Contrast (DPC) imaging enables direct visualization of light elements and local electromagnetic fields with high sensitivity. This lecture will introduce the fundamental principles of modern transmission electron microscopy, highlight recent advances in imaging and analytical techniques, and demonstrate their capabilities through selected case studies in materials characterization.

Profile:

Dr. Arup Dasgupta completed M.Sc. (Physics) and M.Tech. (Materials Science & Engineering) from IIT Kharagpur. He obtained Ph.D. (Engg.) from Jadavpur University while working at the IACS, Kolkata, in 1999 in the field of thin film Si and Si Alloy Photovoltaic Devices. After his Postdoc at the Research Centre Juelich, Germany, he joined the Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, as a Scientific Officer in 2001. He is also a Professor of Physics with the Homi Bhabha National Institute (HBNI), Mumbai. His specializations include aberration-corrected transmission electron microscopy, electron spectroscopy, SEM, and allied fields; powder metallurgy of ODS steels; thin-film, coating, and hardfacing of steels; and thin-film silicon photovoltaics. He has over 200 publications in international journals, conference proceedings, and book chapters, and supervised several Ph.D. students. He is a recipient of the Young Physicist (Indian Physical Society), Young Engineer (Indian National Academy of Engineering), DAE Excellence in Science and Technology Awards in 2016, and DAE Group Achievement Awards in 2011 and 2012, respectively. He is a Fellow of the Indian Institute of Metals and the Electron Microscopy Society of India. He is a member of several professional bodies, including the SESI, MRSI, IIM, INS, and the EMSI. At IGCAR, he currently heads the Physical Metallurgy Division in the Metallurgy and Materials Group.

Inauguration of the Event

Inaugural Dignitaries

10:00 AM – 11:00 AM
Kalinga - 1

Dignitary

Shri D. K. Shivakumar

Hon'ble Chief Minister of Karnataka

Dignitary

Prof. C.N.R. Rao, FRS

Honorary Chairman, VGNT, Govt. of Karnataka,
National Research Professor & Linus Pauling Research Professor,
Honorary President, JNCASR, Bengaluru

Dignitary

Dr. G. Parameshwara

Hon'ble Deputy Chief Minister & Minister for Revenue & Sports,
Govt. of Karnataka

Dignitary

Shri Priyank Kharge

Hon'ble Minister for Home, Electronics, IT & Bt, and e-Governance, Govt. of Karnataka

Dignitary

Dr. Shalini Rajneesh, IAS

Chief Secretary, Govt. of Karnataka

Dignitary

Shri Rangesh Raghavan

Managing Director, Lam Research India

Dignitary

Shri Rizwan Arshad

Hon'ble Member of the Legislative Assembly, Shivajinagar Assembly Constituency, Govt. of Karnataka

Dignitary

Prof. Navakanta Bhat

Chair, Vision Group on Nanotechnology,
Govt. of Karnataka,
Dean, Division of Interdisciplinary Sciences,
Professor, CeNSE,
IISc, Bengaluru

Dignitary

Prof. P. S. Anil Kumar

Chair, CEC - Bengaluru INDIA NANO 2026; Dean, Administration & Finance, Professor, Dept. of Physics,
IISc, Bengaluru

Dignitary

Dr. N. Manjula, IAS

Secretary to Government,
Dept. of Electronics,
Information Technology,
Biotechnology and Science & Technology,
Govt. of Karnataka

Dignitary

Shri Bharath S, IAS

Director,
Department of Science and Technology and Managing Director,
KSTePS, Govt. of Karnataka

Plenary Lecture I

Semiconductor Nanostructures for Optoelectronics Applications

11:45 AM – 12:30 PM

GBR

Session Chair

Prof. G. U. Kulkarni

Professor and Sir J. C. Bose National Fellow,
JNCASR, India

Plenary Speaker

Prof. Chennupati Jagadish

Research School of Physics and Engineering,
The Australian National University (ANU), Australia

Prof. Chennupati Jagadish

Prof. Chennupati Jagadish
Research School of Physics and Engineering,
The Australian National University (ANU), Australia

Title:

Semiconductor Nanostructures for Optoelectronics Applications

Abstract:

Semiconductors have played an important role in the development of information and communications technology, solar cells, sensors and solid state lighting. Nanowires are considered as building blocks for the next generation electronics and optoelectronics. In this talk, I will present the results on growth of nanowires, nanomembranes and microrings and their optical properties. Then I will discuss theoretical design and experimental results on optoelectronic devices. In particular, I will discuss nanowire and micro-ring lasers and integration of nanowires and microrings. I will present results on single photon sources and detectors. I will present the results on chemical and bio sensors and neuro-electrodes to study brain signaling to understand dementia. Future prospects of the semiconductor nanostructures will be discussed.

Profile:

Professor Jagadish is a Distinguished Professor Emeritus of Physics and Electronic Materials Engineering at the Australian National University. He has published more than 800 journal papers, co-authored a book and co-edited 15 books. He is a fellow/member of 17 Science and/or Engineering Academies of Australia, US, UK, China, Europe, India, TWAS and received many awards including UNESCO Medal for Nanotechnology, IEEE Photonics Award, IEEE Nanotechnology Pioneer Award. He has received Australia's highest civilian honor, AC, Companion of the Order of Australia, in 2016 for his contributions to physics and engineering, in particular nanotechnology. He has received the 2023 Pravasi Bharatiya Samman Award from the President of India. He has served as the President of the Australian Academy of Science, IEEE Photonics Society, IEEE Nanotechnology Council and Australian Materials Research Society.

Plenary Lecture II

The Nanoscale Century

12:30 PM – 1:15 PM
GBR

Session Chair

Prof. G. U. Kulkarni

Professor and Sir J. C. Bose National Fellow,
JNCASR, India

Plenary Speaker

Dr. Suraj Rengarajan

Managing Director & Principal Technologist,
Applied Materials, India

Dr. Suraj Rengarajan

Dr. Suraj Rengarajan
Managing Director & Principal Technologist,
Applied Materials, India

Title:

The Nanoscale Century

Abstract:

Semiconductors, crops, medicines, batteries, and clean water share one unit of measure: the nanometer. This talk argues that nanoscale engineering is no longer a specialty but the operating scale of modern civilization — and that materials engineering, done atom by atom, is what turns nanoscale science into planetary-scale impact. Across five frontiers — compute, food, health, energy, and climate — the semiconductor is the keystone: the one place where atomic-scale engineering already runs at industrial volume, defect-free, to one-angstrom precision. It is both the proof that nano manufactures and the substrate the other four depend on. The talk traces six inflections remaking chips today — from the reinvented transistor to the AI -Nano flywheel — and closes on India's nano moment under the Semiconductor Mission, with Bengaluru at its center, and a call to action for researchers, startups, policymakers, and students.

Profile:

Dr. Suraj Rengarajan is the Managing Director and Principal Technologist at Applied Materials India, Bangalore. In this role he drives strategic engagement between Applied Materials India and external technology ecosystems, including universities, research institutions, the start-up eco-system and industry forums. He serves as a key spokesperson for Applied Materials in technology-related events and manage programs that foster innovation, collaboration, and talent development. Suraj started his career at Applied Materials, Santa Clara in 1997, where he held different roles ranging from process engineering, technology, program management, and product marketing for thin film deposition and metallization for interconnects silicides and novel memories. He moved to India in 2007 to head the SunFab group for Applied Materials in India. Later he headed the engineering group for dielectric deposition. As the India CTO, he worked on materials engineering driven inflections to develop and commercialize new technologies. As SPG India head he drove SPG strategic objectives in India, planning and growing a customer focused organization, building local leadership talent, enabling collaboration across India & Asia region, and strengthening university and ecosystem partnerships. Suraj holds a B. Tech from IIT Madras in Metallurgical Engineering and earned his M.S and Ph.D. from the University of Texas at Austin in Materials Science. Suraj holds over 20 US patents and has more than 25 publications.

Nano for the Young

Smart Single Pixels using Solution Processed Semiconductors with Multifunctional Attributes

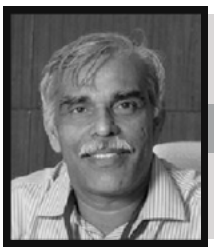
2:15 PM – 4:00 PM
Kalinga - 1

Speaker

Prof. K S Narayan

Professor and Sir J. C. Bose National Fellow,
JNCASR, India

Van der Waals Gap Engineering of Two Dimensional (2D) Materials: Applications for Energy Storage



Speaker

Prof. Vijayamohanan K Pillai

Professor, IISER Tirupati, India

3D/4D Bioprinting: Healthcare's New Dimensions

Speaker

Prof. Kaushik Chatterjee

Professor & Chair, Dept. of Bioengineering,
Indian Institute of Science (IISc),
Bengaluru, India

Prof. K S Narayan

Prof. K S Narayan
Professor and Sir J. C. Bose National Fellow,
JNCASR, India

Title:

Smart Single Pixels using Solution Processed Semiconductors with Multifunctional Attributes

Abstract:

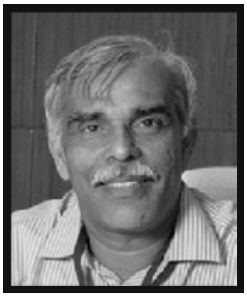
Light detection methods primarily involve quantifying independent parameters of incident radiation: intensity and wavelength. The feature of wavelength sensing, using a single-pixel photodetector without any dispersive elements or color-filters opens up range of optoelectronic applications. We illustrate examples from our laboratory of smart single pixel device structure with features such as "Wavelength Dependent Charge Carrier Dynamics for Color Sensing using Graded Perovskite Structures", and "color sensing using organic semiconductor-electrolyte junctions". These device structures provide appropriate asymmetry for the charge generation and transport that is exploited for these functions. Recent results on evaluation of speed and direction using these versatile single pixel structures will also be discussed.

Profile:

K S Narayan is an academic researcher and has been active in the general field of molecular/organic/polymer/bio electronics at Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore. Narayan's research interests are in applied physics and materials-physics with a focus on electronic and optoelectronic processes of extended macromolecular systems and utilizing it for device development. After contributing to the initial discoveries in the field of molecular magnetism during his PhD, he branched out to different research themes. His laboratory has extensively studied polymer solar cells, polymer light emitting diodes, optical-field effect transistors, FETs, and detectors. He has also contributed to research area of these soft-electronic polymers in biomedical arena where these materials have exhibited utility in tissue engineering and for vision prosthetic elements. His present laboratory theme focusses on exploring advanced materials for integrating seamlessly the connected world with human sensory systems for variety of biomedical applications and understand it from a device physics perspective. In this regard, host of modern materials offers a unique combination of optoelectronic and mechanical properties for sensing and stimulating neuronal activity. This possibility of triggering neuronal signals using these smart materials in a blind chick retina in his laboratory has opened up a route for utilizing these substrates as a prosthetic element. His other current pursuits include developing noise measurement and scanning techniques to predict the full life cycle of photovoltaic modules. He is a co-founder of a startup hbaromega.

Prof. Vijayamohanan K Pillai

Prof. Vijayamohanan K Pillai
Professor, IISER Tirupati, India



Title:

Van der Waals Gap Engineering of Two Dimensional (2D) Materials: Applications for Energy Storage

Abstract:

Most of the Two Dimensional materials have a finite van der Waals gap (v-gap) in between the layers which provides a clear separation between the in-plane and through plane electronic interactions. Although the carrier transport and associated unique features are studied in accurately prepared and precisely characterized monolayers, many technological applications such as nanoelectronics, electrocatalysis, biosensing, solar energy conversion, and energy storage use multilayers which are conveniently prepared using inexpensive and scalable chemical methods. My group was working on diverse type of materials including zero dimensional (quantum dots), one dimensional (Carbon nanotubes), and two dimensional (phosphorine) systems and their composites tailored for energy storage applications emphasising on their size/shape dependent properties. For example, among various two- dimensional (2D) materials, graphene possesses similar interlayer spacing of multiwalled carbon nanotubes (0.32–0.35 nm) which could be modulated by several strategies such as the intercalation of cations and anions, the nature of the solvent, and surface functionalization. The resultant graphene nanoribbons (~40 nm diameter) formed by the ionic liquid-assisted transformation of multiwalled carbon nanotubes of an average diameter (~21 nm) along with graphene quantum dots having an emission wavelength of 445 nm are more useful for some of the specific applications. This electrochemical approach not only reveals the introduction of multiple heteroatoms at room temperature but also modulates the van der Waals gap between the layers of multiwalled carbon nanotubes, which could have significant implications for the mechanical and electrical properties. The tunability of this spacing depends on the nature of the ionic liquid, the size of the incoming ions, the applied potential, and the time. In this lecture several examples of v-gap engineering will be demonstrated for specific application like Na/Li ion batteries and multifunctional electrocatalysts.

Profile:

Prof. Vijayamohanan K. Pillai is one of India's leading electrochemists and a distinguished expert in materials electrochemistry, energy storage, and electrocatalysis. He earned his B.Sc. from Fatima Mata National College, Kollam, M.Sc. from the University of Kerala, and Ph.D. from the Indian Institute of Science, Bengaluru. After nearly two decades at the CSIR-National Chemical Laboratory, Pune, he served as Director of CSIR-Central Electrochemical Research Institute (CECRI) and later held key academic leadership positions at IISER Tirupati. His research on nanostructured electrocatalysts, graphene, phosphorene, and advanced energy materials has resulted in over 270 publications, 28 patents, and the supervision of around 25 Ph.D. scholars. A Fellow of the Indian Academy of Sciences and the Indian National Science Academy, he has received numerous honors, including the MRSI Medal, CRSI Silver Medal, J.C. Bose Fellowship, and the CRS Lifetime Achievement Award (2025). He continues to contribute actively as a visiting professor and scientific advisor.

Prof. Kaushik Chatterjee

Prof. Kaushik Chatterjee
Professor & Chair, Dept. of Bioengineering,
Indian Institute of Science (IISc),
Bengaluru, India

Title:

3D/4D Bioprinting: Healthcare's New Dimensions

Abstract:

Trauma, disease, and congenital disorders often result in the loss or dysfunction of tissues and organs, posing major clinical challenges worldwide. While conventional treatments such as implants and organ transplantation have transformed patient care, they remain constrained by limitations including donor shortages, poor tissue integration, and long-term complications. Advances in tissue engineering and biofabrication are creating new opportunities to address these challenges by developing patient-specific regenerative therapies. This talk will highlight recent advances in 3D and 4D bioprinting for tissue regeneration and repair. I will discuss how bioinks based on natural proteins and polysaccharides can be engineered to create biologically active constructs that support cell viability, proliferation, and tissue formation. Examples from our work on the regeneration of hard tissues, such as bone, and soft tissues, including skin and peripheral nerves, will demonstrate how bioprinted scaffolds can guide tissue repair and functional recovery. In addition, I will present emerging 4D bioprinting approaches that enable printed constructs to change shape, deploy, and self-fit in response to external stimuli, opening new possibilities for minimally invasive regenerative therapies. By integrating advances in biomaterials, bioprinting technologies, and translational research, 3D and 4D bioprinting are redefining the future of personalized healthcare. This talk will showcase how next-generation biofabrication strategies are bringing regenerative medicine closer to clinical reality and creating new dimensions for tissue repair and patient care.

Profile:

Prof. Kaushik Chatterjee is a Professor and Chair of the Department of Bioengineering at the Indian Institute of Science (IISc), Bengaluru. He earned his Ph.D. in Bioengineering from Pennsylvania State University, following a Master's in Materials Science and Engineering from the University of Virginia, and a Bachelor's in Metallurgical Engineering from Bengal Engineering College. His research focuses on biomaterials, tissue engineering, biomedical devices, and advanced manufacturing technologies, including 3D printing and bioprinting for healthcare applications. Through his pioneering work, he has been developing next-generation biomaterials and engineered tissue scaffolds that are advancing regenerative medicine and medical device innovation. Before joining IISc, Prof. Chatterjee completed his postdoctoral research at the U.S. National Institute of Standards and Technology (NIST) and the National Institutes of Health (NIH). He is also a Fellow of the Royal Society of Chemistry and serves as an Associate Editor for leading international journals in biomaterials and materials science.

Session 1 - Nano in Semiconductor

2:15 PM – 4:00 PM
GBR

Session Chair

Shri K Krishna Moorthy

Technology & Strategy Advisor and Consultant to ESDM Industry, India

How Semiconductors Enable Your Electronics World

Speaker

Prof. Srinivasan Raghavan

Professor,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Scalable Laser-Induced Graphene Biointerfaces for Next-Generation Bioelectronics

Speaker

Prof. Sanket Goel

Dept. of Electrical and Electronics Engineering,
BITS Pilani (Birla Institute of Technology and Science),
Hyderabad Campus, India

Enabling AI with AI

Speaker

Pradeep Ramachandran

Senior Director and Head of Research at Advanced Computing Lab,
KLA, Chennai, India

Prof. Srinivasan Raghavan

Prof. Srinivasan Raghavan
Professor,
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Title:

How Semiconductors Enable Your Electronics World

Abstract:

It is fair to say that we live in an Electronics World. What is however not visible, when we handle our smart phones and our tablets or even if you dig a bit deeper and stare at the circuit board, is the materials development that went in to enable that convenience. While there is an entire army of materials that covers most of the periodic table, the talk will focus on Gallium Nitride (GaN), the second most important semiconductor since silicon. It enabled our "LED bulbs" and won a Nobel prize for that in 2014. Going ahead it is expected to impact the way we communicate wirelessly and consume electrical energy. All of this technology is enabled by the control of atomic level defects during crystal growth. We can actually "see" how these defects are born and how they evolve as the crystal is growing, by doing very sensitive stress measurements using laser reflection. After discussing GaN, I will briefly explain how such real time growth engineering also extends to oxides and all the way down to atomic layers, the so-called 2-dimensional materials. Through our collaborations, we then study how these defects aid the flow of electrons, block the flow of electrons, enable the manipulation of light and in the process help create the devices and systems we use.

Profile:

Srinivasan Raghavan is a metallurgist and materials engineer by training who enjoys working at the interface between the world of materials and that of electronic devices and systems. He is one of a team of 4 faculty members who set up CeNSE, India's largest academic fabrication and characterization facility for electronic devices, is the PI of GEECI, India's first low volume GaN device production facility, is the founder of AGNIT Semiconductors pvt. Limited, India's first company in the private sector to make GaN devices, is a fellow of the National Academy of Engineering and a National Abdul Kalam fellow.

Prof. Sanket Goel

Prof. Sanket Goel
Dept. of Electrical and Electronics Engineering,
BITS Pilani (Birla Institute of Technology and Science),
Hyderabad Campus, India

Title:

Scalable Laser-Induced Graphene Biointerfaces for Next-Generation Bioelectronics

Abstract:

Laser-induced graphene (LIG) is an emerging nanomaterial for bioelectronics owing to its hierarchical porous architecture, excellent electrical conductivity, mechanical flexibility, and rapid, mask-free fabrication. Building on these facets, scalable LIG biointerfaces were developed through direct laser conversion of polymer substrates, followed by surface biofunctionalization to promote cellular interactions. The engineered platform supported robust cell adhesion and proliferation while remaining compatible with electrochemical analysis, fluorescence imaging, and molecular labelling. Comprehensive structural, biological, and electrochemical characterization demonstrated label-free, non-invasive monitoring of cell–material interactions through dynamic changes at the LIG-electrolyte interface. Beyond its conventional role as a sensing electrode, LIG was shown to function as a multifunctional conductive biointerface integrating structural support, optical accessibility, and electrical responsiveness within a single platform. The combination of scalable manufacturing, biocompatibility, and multimodal functionality highlights the potential of laser-induced graphene for bioelectronic applications, including biosensing, tissue engineering, drug screening, and wearable and implantable healthcare technologies.

Profile:

Prof. Sanket Goel is the Birla Chair Professor in the Department of Electrical and Electronics Engineering (EEE)at BITS Pilani, Hyderabad Campus. He is the founding head the institute wide Center for Research Excellence in Semiconductor Technologies (CREST). He has founded the transdisciplinary team, MEMS, Microfluidics and Nanoelectronics (MMNE) Lab at Hyderabad Campus. A researcher, innovator, and academic leader, he previously served as Dean, Research & Innovation at BITS Pilani, driving research and innovation initiatives across its campuses, and Head of the EEE department. He holds a Masters from IIT Delhi, PhD from the University of Alberta, Canada, with training from Stanford University and A*STAR, Singapore. Prof. Goel's research focuses on semiconductor technologies, MEMS, microfluidics, printable electronics, biosensors, smart energy storage, and point-of-care healthcare systems. His work bridges fundamental research with real-world applications, leading to technology commercialization, industry collaborations, and startup creation. He has authored >450 publications, 5 books, holds nearly 100 patents, and guided ~70 PhD scholars. He co-founded 3 deep-tech startups and successfully translated several technologies to industry. A recipient of the National Award to Teachers conferred by the President of India, IEEE India Council's Best Startup Award and the IEEE India Council Technologist of the Year Award, Prof. Goel is a Fulbright and JSPS Fellow and a Distinguished Lecturer of the IEEE Sensors Council. His current work is shaping next-generation semiconductor-enabled sensing, diagnostics, and sustainable energy technologies, with a strong emphasis on innovation, societal impact, and translational research.

Pradeep Ramachandran

Pradeep Ramachandran
Senior Director and Head of Research at Advanced Computing Lab,
KLA, Chennai, India

Title:

Enabling AI with AI

Abstract:

Semiconductors enable the AI revolution that we live in today. These semiconductors, however, are some of the most complex components ever manufactured owing to their infinitesimally small dimensions and stringent requirements for precision. This talk will introduce you to the fascinating world of semiconductor manufacturing and highlight how KLA, a pioneer in this space, leverages state-of-the-art innovations in AI, computing, and HPC to enable manufacturing these devices that enable AI.

Profile:

Pradeep Ramachandran is a Senior Director in KLA, and heads KLA's Artificial Intelligence and Advanced Computing Lab (ACL). He holds a Btech from IIT Madras, and an MS and PhD from the University of Illinois at Urbana Champaign. Pradeep's research interests are in developing optimal system level solutions by co-optimising across algorithms, hardware, and software; his work under this theme spans the fields of fault tolerance, chip design, video compression software, and HPC systems design. Pradeep enjoys cooking, traveling, running outdoors, and rolling on the ground with his 6 year old son!

Session 2 - Nano in Agriculture & Health

2:15 PM – 4:00 PM
Lalit - 1 & 2

Session Chair

Dr. Taslimarif Saiyed

CEO and Director,
Centre for Cellular and Molecular Platforms (C-CAMP),
Bengaluru, India

Reconsidering Conventional Toxicity Endpoints in the Assessment of Nanomaterial Safety in Food and Agricultural Systems

Speaker

Prof. Kavya Dashora

Centre for Rural Development and Technology (CRDT),
Indian Institute of Technology (IIT),
Delhi, India

Conceive, Converge, Commercialize: Nano-enabled Climate-Smart Agriculture for Food, Energy and Environmental Security

Speaker

Dr. Pushplata Singh

Director and Senior Fellow,
TERI-Deakin Nanobiotechnology Centre (TDNBC),
The Energy and Resources Institute (TERI), India

Biophysical Basis for Neuropathologies

Speaker

Prof. Prasad Shastri

Biofunctional Macromolecular Chemistry,
University of Freiburg, Germany

Prof. Kavya Dashora

Prof. Kavya Dashora
Centre for Rural Development and Technology (CRDT),
Indian Institute of Technology (IIT),
Delhi, India

Title:

Reconsidering Conventional Toxicity Endpoints in the Assessment of Nanomaterial Safety in Food and Agricultural Systems

Abstract:

Conventional ecotoxicity endpoints including mortality, growth inhibition and cellular injury remain central to nanomaterial safety assessment, but their interpretation becomes less straightforward in food and agricultural systems, where biological function may decline before viability is lost. Our work addressed this question through a scale progressive sequence, beginning with a single organism assay, extending to a rice straw microcosm, and culminating in composting as a biological process. At the first scale, copper oxide nanoparticle exposure in Bacillus megaterium was assessed through growth, membrane integrity, ultrastructure, reactive oxygen species generation and indole acetic acid production. The results showed that microbial survival can coexist with impairment of a plant beneficial function, while melatonin can mitigate this loss. At the next scale, actinomycete mediated lignocellulose degradation was examined in a microcosm. Zinc oxide nanoparticles produced concentration dependent changes in cellulase activity and decomposition, demonstrating how dose, microbial identity and matrix interactions modify responses. At the process scale, nanoparticle mediated composting was evaluated through microbial activity, enzyme performance, organic matter transformation, humification, nutrient retention and compost maturity. Together, these studies trace how nanoparticle effects can progress from cellular stress to altered microbial function and ultimately to changes in system performance. They also show that preserved viability or accelerated degradation cannot independently define safety or benefit. Nanomaterial assessment in agriculture must therefore relate conventional endpoints to biological functions and process outcomes that sustain soil quality, crop productivity and amendment quality. Integration with computational nanotoxicology may support identification of exposure ranges that are technologically useful and biologically defensible.

Profile:

Prof. Kavya Dashora is Professor at the Centre for Rural Development and Technology (CRDT) and Associate Faculty at the Yardi School of Artificial Intelligence, Indian Institute of Technology (IIT) Delhi. An internationally recognized scientist, her work spans artificial intelligence, nanotechnology, food systems, sustainable agriculture, and rural development. She earned her Ph.D. with distinction in Plant Pathology and Tissue Culture before joining the United Nations–CGIAR–CABI, where she served as an International Research Scientist and later Deputy Director (Science and Strategy). During her international career, she led multidisciplinary agricultural and food security programmes across Asia, Africa, and the Pacific, contributing to policy development, integrated pest management, women's empowerment, sustainable farming, and climate-resilient agri-food systems. Her work has benefited farming communities in countries including Afghanistan, Bhutan, Nepal, Bangladesh, Vietnam, Thailand, Sri Lanka, Brazil, and the Philippines. At IIT Delhi, Prof. Dashora leads interdisciplinary research integrating artificial intelligence, machine learning, nanotechnology, IoT, blockchain, and biomass valorization to address challenges in food security, food safety, and sustainable agriculture. She has developed innovative technologies, including AI-based crop disease detection systems, plant-based protein alternatives, and advanced seed broadcasting technologies for precision agriculture. Prof. Dashora has authored over 108 scientific publications, supervised numerous doctoral scholars, and developed postgraduate courses in nanotechnology and rural value chains. She serves on scientific advisory and evaluation committees of DBT, DST, ICAR, BIRAC, and other national organizations. Her contributions have earned her several prestigious honors, including the Vidhyasetu Samman for Teaching Excellence (2025), the Women of Impact Award (IIT Delhi, 2025), the Chanakya Faculty Fellowship, the UNDP First Prize for Innovation, and the Commonwealth Agriculture Above and Beyond Award.

Dr. Pushplata Singh

Dr. Pushplata Singh
Director and Senior Fellow,
TERI-Deakin Nanobiotechnology Centre (TDNBC),
The Energy and Resources Institute (TERI), India

Title:

Conceive, Converge, Commercialize: Nano-enabled Climate-Smart Agriculture for Food, Energy and Environmental Security

Abstract:

Agriculture has been confronted with the challenge of food security but also with the challenge of mitigating agriculture's contribution to climate change. Conventional fertilizers have poor nutrient use efficiency (NUE) and their widespread use causes nutrient losses, damage to soil and its rhizospheric microbiota and significant greenhouse gas (GHG) emissions. Moreover, the production process of these fertilizers is highly energy-intensive. Collectively, these issues undermine environmental sustainability and pose significant threats to the long-term resilience and sustainability of global food production systems. Nanotechnology offers a transformative opportunity to reimagine agricultural systems through precision nutrient delivery and resource-efficient farming practices. This work presents the development and commercialization potential of TERI's biogenic nanofertilizers such as Nano Urea, Nano DAP and Nano Phosphorus developed and manufactured through environmentally benign biological routes. These agri-inputs have particle size range of 10-100 nm and consist of naturally encapsulated biomolecules released by bacteria during the bio fermentation process. Their nanoscale dimensions facilitate rapid plant uptake and enhanced translocation within plant tissues, allowing more than 90% of the nutrients to be utilized efficiently and plant growth promotion at significantly lower dosage of required plant nutrient. To assess their commercial viability, these nanofertilizers were extensively evaluated for efficacy across diverse agro-climatic conditions and safety. The field studies demonstrated that 25–50% of conventional fertilizer inputs can be replaced with nanofertilizers without compromising crop productivity or economic returns. For instance, multi-location evaluations of TERI Nano Urea (TNU), conducted through 12 field trials across nine locations in India on six crops, including maize, rice, tomato, okra, and chickpea, revealed significant potential to reduce conventional urea application while maintaining or even enhancing crop yields. In parallel, extensive environmental safety assessments using OECD test guidelines for toxicity testing in cellular, aquatic, and terrestrial model systems confirmed the biosafety and environmental compatibility of these biogenic nanomaterials. Collectively, these findings demonstrate that biogenic nanofertilizers represent a commercially viable and climate-smart solution for sustainable agriculture at the food-energy-environment nexus, owing to their high NUE, proven safety, and successful field-scale validation. Beyond their agronomic benefits, these nanofertilizers also contribute significantly to climate resilience and environmental sustainability. Real-time field measurements revealed reductions of 20–50% in nitrous oxide (N_2O) emissions and 30–40% in carbon dioxide (CO_2) emissions in comparison to conventional fertilizer practices. Furthermore, the reduced fertilizer application rate associated with nanofertilizers, lower the energy demand for fertilizer production, transportation, and field application, thereby substantially reducing the overall carbon footprint of agricultural systems. TERI's biogenic nanofertilizers are being commercialized by leading fertilizer companies, including Zuari FarmHub Limited, Chambal Fertilisers and Chemicals Limited, and Paradeep Phosphates Limited, demonstrating the successful translation of nanotechnology from laboratory innovation to market deployment. Overall, this study demonstrates that nano-enabled climate-smart agriculture offers a transformative approach to sustainable farming. Beyond the environmental benefits, the technology also provides significant socio-economic advantages to farmers by reducing fertilizer application and input costs while maintaining or improving crop yields, thereby contributing to resilient agricultural systems and promoting both ecosystem and human well-being.

Profile:

Dr. Pushplata Singh is a leading biotechnology scientist and the Director of the Centre for Nano Research and Agricultural Biotechnology at The Energy and Resources Institute (TERI). Holding a Ph.D. in Genetics from the University of Delhi, she has dedicated her 23-year career to pioneering green technologies that help farmer receive better yield gains, reduce chemical fertilizers, and thereby reduce agricultural greenhouse gas (GHG) emissions, environmental impacts, and energy consumption. Her globally recognized innovations include commercialized nano-fertilizers, nano-pesticides, and biofertilizer formulations that curb chemical runoff and lower the energy footprint of traditional farming inputs. Furthermore, her sustainable farming frameworks for air quality improvement have mitigated crop-residue burning, earning accolades from the World Bank and the Government of Uttar Pradesh. Dr. Singh also shapes international clean-tech policy through her advisory roles on the Bureau of Indian Standards (BIS) Nanotechnologies Sectional Committee, BioNanoNet, and the International Initiative for Safe and Sustainable Nanotechnology.

Prof. Prasad Shastri

Prof. Prasad Shastri
Biofunctional Macromolecular Chemistry,
University of Freiburg, Germany

Title:

Biophysical Basis for Neuropathologies

Abstract:

Institute for Macromolecular Chemistry and BIOSS – Centre for Biological Signalling Studies, University of Freiburg, Freiburg, Germany. The extracellular matrix (ECM) is a repository of biological cues, and it provides structure for many tissues, defines their mechanical properties, and also plays an important role in guiding cell function. ECM mechanics has been extensively investigated in the context of tissue development and cancer progression. ECM molecules possess structure, and their structure contributes to topography at the submicron – nanometer length scale. This aspect has been less investigated and understood in the context of tissue homeostasis. We demonstrated several years ago that stochastic nano-topography (nanoscale biophysical cues) can impact cell morphology, function, and their sensitivity to soluble signals. These early findings formed the foundation for a new paradigm for understanding and probing cellular homeostasis and degenerative conditions in the central nervous system. This talk will present our foundational work and make the case for a prominent role for nanoscale biophysical cues in degenerative conditions in the brain environment.

Profile:

Prasad Shastri is the Professor of Biofunctional Macromolecular Chemistry and the Director at the Institute for Macromolecular Chemistry and the BIOSS Professor of Cell Signalling Environments at the University of Freiburg. He received his PhD from Rensselaer Polytechnic Institute and carried out his post-doctoral work under the mentorship of Prof. Robert Langer at MIT. He has published over 250 peer-reviewed papers and extended abstracts and authored over 60 issued/pending patents in materials science, regenerative medicine, and tumor biology. He is an elected Fellow of the International Academy of Medical and Biological Engineering (IAMBE) (2024). His laboratory is active in the areas of 3D-bioprinting, cellular therapeutics, cancer biology, biomaterials for controlling cellular microenvironments, in vivo engineering of tissue, nano-biomaterials, polymer synthesis, polymer-melt processing, sustainable materials, and circular economy. He has published several notable papers in materials processing and engineering and on various aspects of regenerative medicine, specifically bone and cartilage tissue engineering. He is active in MRS, TERMIS-EU, and the ACS and was the co-Chair of the Materials Research Society (MRS) fall 2020 meeting in Boston, and is the chair and sole organizer (co-organized 2010-2019) of the Freiburg Macromolecular Colloquium, the oldest polymer meeting in the world and the largest in Europe. He has served as a guest editor on several occasions for notable journals, including Advanced Materials.

Session 3 - Nano in Energy & Environment

2:15 PM – 4:00 PM
Lalit 3

Session Chair

Prof. S. Sampath

Professor,
Department of Inorganic and Physical Chemistry,
IISc, Bengaluru

Manufacturing Nanoscale Interfacial Thin Films for Lithium Metal and Scaling for Commercialization

Speaker

Dr. Subra Herle

CTO, Elevated Materials, USA

Understanding and Optimising Nanoscale Energy Materials

Speaker

Prof. Akshay Rao

Dept. of Physics,
Cavendish Laboratory,
University of Cambridge, UK

Engineering Ångström-Scale Channels with 2D materials: New Physics of Water and Ion Transport for Sustainable Technologies

Speaker

Prof. Radha Boya

Dept. of Physics and Astronomy,
University of Manchester, UK

Dr. Subra Herle

Dr. Subra Herle
CTO, Elevated Materials, USA

Title:

Manufacturing Nanoscale Interfacial Thin Films for Lithium Metal and Scaling for Commercialization

Abstract:

Ultra-thin lithium is a foundational technology for virtually every next-generation battery, yet no existing manufacturing approach simultaneously delivers the required quality, cost, and production scale. While nanoscale materials engineering has long been established in the semiconductor and display industries, its application to battery manufacturing has been limited, despite battery electrochemical interfaces being only a few nanometers thick. This presentation explores how nanoscale interface engineering can transform the performance, safety, and manufacturability of next-generation batteries. Elevated Materials, a spinout from Applied Materials, leverages decades of expertise in vacuum roll-to-roll thin-film deposition to manufacture high-purity lithium films with engineered nanometer-scale interfacial layers that significantly improve ambient stability and electrochemical performance. The presentation will also outline the roadmap for scaling this interface engineering technology to gigawatt-hour manufacturing for next-generation electric vehicles, aerospace, and energy storage applications.

Profile:

Dr. Subramanya (Subra) Herle is Chief Technology Officer (CTO) of Elevated Materials, a spin-off from Applied Materials, and a leading expert in advanced battery technologies and energy storage. He earned his Ph.D. in Solid-State Chemistry from the Indian Institute of Science (IISc), Bengaluru, and an M.Sc. in Chemistry from Mangalore University, followed by postdoctoral research at Ames Laboratory (USA), the University of Tübingen, Germany, as an Alexander von Humboldt Fellow, and the University of Waterloo, Canada. With over two decades of experience in lithium-ion and lithium-metal battery technologies, he has held leadership positions at Applied Materials and Panasonic, driving innovations from research to pilot-scale commercialization. His work has been supported by major U.S. agencies, including the Department of Energy and the United States Advanced Battery Consortium. Dr. Herle has authored over 20 peer-reviewed publications, holds more than 25 patents, and is an internationally recognized speaker whose contributions continue to advance next-generation battery materials and sustainable energy storage technologies.

Prof. Akshay Rao

Prof. Akshay Rao
Dept. of Physics,
Cavendish Laboratory,
University of Cambridge, UK

Title:

Understanding and Optimising Nanoscale Energy Materials

Abstract:

In this talk I will discuss how optical spectroscopy and microscopy can be used to understand the optical, electronic and ionic properties of nanoscale energy materials, from molecular semiconductors [1] and 2D semiconductors [2], to battery cathode and anode materials [3-4]. I will also discuss how these new insights can be used to redesign the materials and architectures of these devices, promising performance beyond current physical limits. [1] Ghosh et al., Nature, 2024, DOI: 1038/s41586-024-07246-x [2] Lim et al., Nature, 2024, DOI: 1038/s41586-024-07872-5 [3] Merryweather et al., Nature, 2021, DOI: 10.1038/s41586-021-03584-2 [4] "Avalanche-like lithium intercalation and intraparticle correlations in graphite", Jiho Han et al, Nature, 2026, In Press, DOI: 10.1038/s41586-026-10862-4

Profile:

Akshay is Professor of Physics at the Cavendish Laboratory, University of Cambridge. He earned a BSc from St Stephen's College, University of Delhi (2006), an MSc from the University of Sheffield (2007), and a Ph.D. from the University of Cambridge (2011) under Prof. Sir Richard Friend. After a Junior Research Fellowship at Corpus Christi College, Cambridge, he established his independent research group in 2015. His research focuses on energy and nanoscale materials, investigating their electronic, structural, and transport properties to advance photovoltaics, LEDs, and batteries. He has pioneered advanced optical spectroscopy and microscopy techniques that enable unprecedented spatial and temporal analysis of these materials. His achievements have been recognized with the Institute of Physics Henry Moseley Medal and Prize (2017), the University of Tokyo Zasshikai Lectureship (2025), the Institute of Physics James Joule Medal and Prize (2026), and the Geoffrey Frew Fellowship of the Australian Academy of Science (2026). Akshay is also co-founder of Cambridge Photon Technology and illumion. Cambridge Photon Technology is commercializing the Singlet Fission Photon-Multiplier to improve silicon solar-cell efficiency beyond current limits, while illumion is developing Charge Photometry, a novel optical imaging technology that enables real-time analysis of battery materials to accelerate next-generation battery research.

Prof. Radha Boya

Prof. Radha Boya
Dept. of Physics and Astronomy,
University of Manchester, UK

Title:

Engineering Ångström-Scale Channels with 2D materials: New Physics of Water and Ion Transport for Sustainable Technologies

Abstract:

Angstrom-scale confinement fundamentally alters the structure, dynamics, and transport of liquids, giving rise to phenomena that are absent in bulk systems. Two-dimensional materials provide a unique platform for engineering atomically precise fluidic channels, where channel dimensions approach the size of individual molecules and ions. These well-defined nanostructures enable unprecedented control over confined fluids, allowing fundamental transport processes to be explored at their natural length scales. In this talk, I will present our recent advances in developing Ångström-scale channels from two-dimensional materials to investigate water and ion transport under extreme confinement. Using these platforms, we have uncovered highly selective ionic and molecular transport, enhanced ordering of confined water, and non-linear ionic conduction arising from strong confinement and interfacial interactions [1-8]. These discoveries reveal new principles governing molecular transport and establish a foundation for designing next-generation nanofluidic systems. I will also discuss how these unique transport characteristics can be harnessed to create functional nanoionic devices, including ionic memory elements, neuromorphic functionalities and quantum emitters-based local sensing [4-7], illustrating how fundamental nanoscience can inspire new paradigms in information processing and sensing. I will highlight our recent spectroscopic studies [9] that directly probe the molecular structure and hydrogen-bonding dynamics of water confined to a single molecular layer, providing new insights into the behaviour of liquids at the ultimate limit of confinement. Together, these studies demonstrate how Ångström-scale engineering with two-dimensional materials is opening a new frontier in nanotechnology, where atomic-scale control enables the discovery of new physical phenomena while laying the scientific foundations for future sustainable technologies in water, energy and intelligent nanoionic systems.

Profile:

Prof. Radha Boya FRSC is Professor of Nanoscience in the Department of Physics and Astronomy at the University of Manchester, UK, and a Royal Society University Research Fellow. She earned her Ph.D. from the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), India. An internationally renowned nanoscientist, her pioneering research in angstrom-scale nanofluidics, molecular transport, and two-dimensional materials has advanced applications in energy conversion, sensing, water purification, and sustainable technologies. She has secured over £8.2 million in competitive research funding, including prestigious European Research Council (ERC) Starting and Consolidator Grants. Prof. Boya has authored more than 86 peer-reviewed publications in leading journals such as Nature, Science, and Nature Nanotechnology, and holds two patents. Her achievements have earned her numerous international honors, including the Philip Leverhulme Prize, L'Oréal–UNESCO International Rising Talent Award, MIT Technology Review Innovators Under 35, and the Royal Society of Chemistry Marlow Award. She is also an active mentor, science communicator, and advocate for diversity in STEM.

References:

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[3] S. Goutham et al., Nature Nanotechnology (2023), 18, 596
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[5] A. Ismail et al., Nature Comm. (2025), 16, 7008
[6] K.V. Saurav, N. Roncery et al., arXIV 2025, arXiv:2509.11637
[7] N. Ronceray et al., Nature Materials (2023), 22,1236
[8] A. Bhardwaj et al., Advanced Functional Materials (2024), 2401988
[9] M. Martins et al., Nature Communications (2026), in press

Session 4 - Global Innovation Alliance

Germany - From Lab to Market: Indo-German Partnerships Driving the Future of Nanotechnology

2:15 PM - 2:50 PM
Lalit 4

Moderator

Anandi Iyer

Director, Fraunhofer Office India

Speaker

Prof. Shankar Kumar Selvaraja

Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Speaker

Gadhadar Reddy

Founder & CEO, NoPo Nanotechnologies India

Anandi Iyer

Anandi Iyer
Director, Fraunhofer Office India

Profile:

Ms. Anandi Iyer is the Director & Head of the Fraunhofer-Gesellschaft, India Office and Member, Vision Group on Innovation and Entrepreneurship Centre of Excellence, Govt. of Karnataka. She was for several years also Special Advisor to the Federal Ministry of Education and Research Govt. of Germany (BMBF). She has been working in the field of collaborative Technology and Innovation in the Indo-European corridor for the last more than 20 years. She is the recipient of the prestigious Order of Merit (Bundestverdienstkreuz am Bande), the highest civilian award accorded by the Federal Government of Germany, for outstanding contribution in the field of Science, Technology and Women Empowerment. She has recently been distinguished as one of the top 75 women in STEAM by the Indian Govt and the British High Commission to mark the 75 years of Indian Independence. She was the Chairperson for the G20 Empowering Working Group on Women in STEM. She has also recently received the Global Icon Award by TV9 Network and Government of Baden Württemberg. She has been nominated by the Government of India to the India and Germany CEO Forum, a G2G Initiative. Ms. Iyer is a Founder / Initiator of the German Innovation Forum in India and also Board member of two leading automotive companies in India as well as the Indian Institute of Technology Ropar (AWADH). She has written several research papers on Innovation and Technology.

Prof. Shankar Kumar Selvaraja

Prof. Shankar Kumar Selvaraja
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Profile:

Prof. Shankar Kumar Selvaraja is a Professor and Associate Chair at the Centre for Nano Science and Engineering (CeNSE), Indian Institute of Science (IISc), Bengaluru, and serves as the Chair of the National Nano Fabrication Centre (NNfC). He earned his Ph.D. in Photonics Engineering from Ghent University–imec, Belgium, following advanced studies in microelectronics and optical communications in the Netherlands and India. An internationally recognized expert in silicon photonics and integrated photonic circuits, Prof. Selvaraja's research spans high-speed optical interconnects, photonic integrated circuits, quantum photonics, optical sensing, and next-generation communication technologies. His work is helping shape the future of high-performance computing, data communications, and quantum-enabled systems through cutting-edge photonic innovation. Prior to joining IISc, he worked at imec, Belgium, one of the world's leading semiconductor research organizations. He has authored more than 200 scientific publications, holds several international patents, and is the recipient of prestigious recognitions, including the DST-SERB Early Career Research Award and the Visvesvaraya Young Faculty Research Fellowship.

Gadhadar Reddy

Gadhadar Reddy
Founder & CEO, NoPo Nanotechnologies India

Profile:

Gadhadar Reddy is a visionary entrepreneur leading India's deep-tech revolution. As the CEO of NoPo Nanotechnologies, he has built one of the world's most advanced Single Walled Carbon Nanotube manufacturing platforms right here in India. Under his leadership, NoPo has positioned the country as a global force in Single Walled Carbon Nanotubes— materials that are transforming space, defense, water purification, electronics, and next-generation batteries. Gadhadar co-founded NoPo in 2011 with Dr. Robert Kelley Bradley, the co-inventor of HiPCO® Carbon Nanotubes, and has since grown the company into a symbol of scientific excellence and indigenous innovation. NoPo is also a participant in the global X-Prize Water Challenge, bringing futuristic nanotechnology to solve one of humanity's oldest problems—access to clean water. An alumnus of BMS College of Engineering, Louisiana Tech University, and the University of Oxford (CRISP Program), Gadhadar's work has been featured in peer reviewed journals, and celebrated through numerous national and international awards. Gadhadar Reddy represents the new face of Indian innovation: bold, rooted in deep science, globally respected, and unapologetically future- facing. His journey is a testament to what India can achieve when ambition meets execution.

Session 4 - Global Innovation Alliance

France - Nanotechnology: Building Franco-Indian Cooperation from Lab to Industry

2:50 PM - 3:25 PM
Lalit 4

Moderator

Louis Abord de Chatillon

Economic Attaché, French Consulate, Bangalore, India

Speaker

Greeshma Girijakumari

Global Innovation Leader, Schneider

Speaker

Dr. Manoj Kumar

Director of Innovation, STMicrolectronics

Speaker

Rajeev Nair

Manager India, CEA-List

Louis Abord de Chatillon

Louis Abord de Chatillon
Economic Attaché, French Consulate, Bangalore, India

Profile:

Louis Abord de Chatillon serves as the Economic Attaché at the French Consulate in Bengaluru, where he drives innovation partnerships between France and South India. His work focuses on supporting French technology companies, strengthening connections within the startup ecosystem, and fostering Franco-Indian collaboration in the digital economy and emerging technologies. Through his role, he actively promotes cross-border innovation, investment, and strategic partnerships that advance technological and economic cooperation between the two countries.

Greeshma Girijakumari

Greeshma Girijakumari
Global Innovation Leader, Schneider

Profile:

Greeshma Girijakumari is an innovation Leader with over 12 years of multidisciplinary experience, spanning across advanced materials, MedTech innovation across cardiology and neurology, and global innovation leadership. She is currently the Global Innovation & Transformation Leader at Schneider Electric. She holds a Bachelor's degree in Nanotechnology, a Master's in Quantum Physics from Japan, and a Master's Diploma in BioInnovation and Entrepreneurship through the Stanford Biodesign affiliate,BioInnovate Ireland. Her research focused on quantum effects in sub-10 nm semiconductor devices, and advanced materials, complemented by research at organisations like ISRO, IIT Madras and Renesas Electronics. An inventor on five patents and author of several research publications and international conference papers, Greeshma is passionate about technology transfer, innovation ecosystems, and industrial adoption. She applies systems thinking and design thinking principles to bridge scientific discovery with industrial impact.

Dr. Manoj Kumar

Dr. Manoj Kumar
Director of Innovation, STMicrolectronics

Profile:

Dr. Kumar is leading ST's initiative of scouting for external innovations worldwide. In this mission he works with various ST organizations and stakeholders to collaborate with startups, VCs, incubators, accelerators, and universities with the mission of defining association and deriving value to the startups and ST. He is managing the System Applications and Integration Lab of SRA group at ST India with a global mission to build and promote reference designs, software, and system solutions in the areas of Connectivity, EV Charging Stations, Motor Control, Energy Efficiency, IoT & Edge AI. He is driving the STEM initiative, University engagements, startup and VC engagements for ST India. He is a board member at Electronics Sector Skill Council of India (ESSCI) and was an Executive Council member of India Electronics & Semiconductor Association (IESA) previously.

Rajeev Nair

Rajeev Nair
Manager India, CEA-List

Profile:

Rajeev Nair is a strategic partnerships and technology commercialization leader with over 15 years of experience building enterprise ecosystems, engaging senior industry and institutional stakeholders, and converting collaboration into commercial and transformation outcomes. He currently leads India partnerships as Manager CEA List, where he focuses on value-based technology commercialization with Indian conglomerates, government bodies, research organizations, and innovation stakeholders. At CEA List, Rajeev drives market-entry strategy, strategic alliances, joint R&D collaboration, and MoU-led partnerships that help translate advanced research capabilities into industrial applications. His work sits at the intersection of research, industry, and policy, with a strong emphasis on building sustainable France–India cooperation pathways from lab to market. Rajeev brings a partnership-led perspective on how deep-tech ecosystems can accelerate commercialization, strengthen institutional collaboration, and create long-term industrial impact across priority technology sectors.

Session 4 - Global Innovation Alliance

Netherlands - Tackling Modern Day Pollutants with Hollowfibre Nanofiltration Membranes

3:25 PM - 4:00 PM
Lalit 4

Opening Remarks

Anne Cremers

Deputy Consul General,
The Kingdom of the Netherlands in South India

Speaker

Vamsi Sreepada

Application Engineer, NX Filtration

Anne Cremers

Anne Cremers
Deputy Consul General,
The Kingdom of the Netherlands in South India

Profile:

Ms. Anne Cremers is the Deputy Consul General of the Kingdom of the Netherlands in South India and currently serves as the Acting Consul General at the Consulate General in Bengaluru. A Dutch diplomat with expertise in international relations, trade policy, and European law, she previously served as Second Secretary in the Political Department at the Embassy of the Kingdom of the Netherlands in Argentina and as a Policy Officer in the Trade Policy Department at the Ministry of Foreign Affairs of the Kingdom of the Netherlands. Before joining the diplomatic service, Anne was a Lecturer at the Faculty of Law at Maastricht University. She holds a bachelor's degree in European studies and a Master of Laws (LL.M.) in European Law from Maastricht University.

Vamsi Sreepada

Vamsi Sreepada
Application Engineer, NX Filtration

Profile:

SVN Vamsi is an experienced Environmental Engineer currently serving as an Application Sales Engineer at NX Filtration. With over a decade of expertise in the water and wastewater treatment sector, he holds a Master's degree from NIT Warangal and has contributed to leading organizations, including VA Tech Wabag, Thermax, and Veolia Water Technologies & Solutions. Vamsi brings a strong foundation in R&D and process engineering, having successfully delivered innovative projects focused on wastewater reuse and resource recovery. His deep understanding of membrane-based treatment flowsheets has enabled industries to meet stringent effluent reuse standards across various sectors.

Plenary Lecture III

2D Materials: A Platform for Exciting Science and Exotic Applications

10:00 AM – 10:45 AM
GBR

Session Chair

Prof. V Ramgopal Rao

Group Vice-Chancellor, BITS Pilani Campuses, India

Plenary Speaker

Prof. Umesh V. Waghmare

Secretary, Dept. of Science & Technology,
Govt. of India

Prof. Umesh V. Waghmare

Prof. Umesh V. Waghmare
Secretary, Dept. of Science & Technology,
Govt. of India

Title:

2D Materials: A Platform for Exciting Science and Exotic Applications

Abstract:

2D materials have been a topic of intense research over the last two decades owing to their intrinsic mechanical flexibility, remarkable in-plane strength and more importantly electronic structure enriched by quantum geometry. Straining or variation in stacking of different 2-D structures leads to further diversity in their properties due to lowering of symmetries and the inter-layer interactions. We demonstrate how exotic properties emerge in 2D or layered materials from remarkable interplay between vibrations, electronic charge, spin and quantum geometry, with specific examples of graphene, phosphorene, h-BN, transition metal chalcogenides, In2Se3, exhibiting phenomena such as valley Hall effects, electronic ferroelectricity, topological transitions, charge density waves, metal insulator transition and superconductivity. We also discuss the possibilities of novel devices such as Anomalous Hall Transistor, low power Non-Volatile Memories, Sensors and Hall transistors.

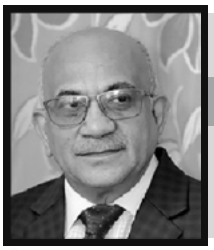
Profile:

Prof. Umesh V. Waghmare is the Secretary of the Department of Science & Technology, Government of India, where he is leading the nation's science, technology, and innovation agenda. Prior to assuming this role in July 2026, he served as President and Professor in the Theoretical Sciences Unit at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bengaluru. An alumnus of IIT Bombay and Yale University, with postdoctoral research at Harvard University, Prof. Waghmare is internationally recognized for his pioneering contributions to computational materials science. His research has advanced the understanding of multifunctional materials, nanostructures, quantum materials, and energy-related technologies, with significant impact on both fundamental science and next-generation applications. A recipient of the prestigious Shanti Swarup Bhatnagar Prize, and a Fellow of several leading national science academies, Prof. Waghmare has played a pivotal role in shaping India's scientific ecosystem through research excellence, academic leadership, and now national science policy.

Plenary Lecture IV

Molecular Tools for Manipulating the Size, Size Distribution and Alloy Formation in Metal Nanoparticle Systems

10:45 AM – 11:30 AM
GBR



Session Chair

Prof. Ashok K Ganguli

Director,
IISER Berhampur & Honorary Professor of Chemistry at IIT Delhi and JNCASR Bengaluru

Plenary Speaker

Dr. B. L. V. Prasad

Chief Scientist,
Physical/Materials Chemistry Division,
CSIR-National Chemical Laboratory (CSIR-NCL), India

Dr. B. L. V. Prasad

Dr. B. L. V. Prasad
Chief Scientist,
Physical/Materials Chemistry Division,
CSIR-National Chemical Laboratory (CSIR-NCL), India

Title:

Molecular Tools for Manipulating the Size, Size Distribution and Alloy Formation in Metal Nanoparticle Systems

Abstract:

The transformation of noble and transition metals into functional nanomaterials involves not only reducing their dimensions to the nanometer scale but also tailoring their surfaces through functionalization with appropriate organic molecules (ligands). Surface functionalization is crucial not only for ensuring nanoparticle (NP) stability in diverse solvent media but also for governing their interactions with one another and with their surrounding environment, including biological systems. In general, organic ligands possessing one or more functional groups stabilize NPs against aggregation through surface binding. Beyond stabilization, ligands play a pivotal role in controlling NP size, morphology, and dispersion stability in a given solvent medium. This talk provides a brief overview of these aspects, with particular emphasis on Digestive Ripening (DR), a post-synthetic size modification process that offers a reliable and reproducible route for achieving precise control over the size and size distribution of nanoparticles. DR transforms a polydisperse NP dispersion into a nearly monodisperse one through the action of surface-active organic ligands. Our recent studies have helped unravel how the final NP size distribution depends on factors such as ligand chain length, ligand head group–NP binding strength, and ligand–solvent compatibility. A fundamental understanding of ligand–NP interactions not only provides mechanistic insights into the digestive ripening process but also offers a rational framework for designing more complex nanostructures. Leveraging this understanding, we demonstrate how DR can be effectively employed to synthesize alloy nanoparticles from physical mixtures of monometallic NP dispersions, and how these principles can be extended to the preparation of compositionally complex alloys, including the highly sought-after high-entropy alloy nanoparticles. The specific influence of the above-mentioned parameters and their implications for controlled nanoparticle synthesis will be discussed during the talk.

Profile:

Prof. B. L. V. Prasad is Director of the Centre for Nano and Soft Matter Sciences (CeNS), Bengaluru, and formerly Senior Principal Scientist in the Physical and Materials Chemistry Division at CSIR-National Chemical Laboratory (NCL), Pune. He earned his M.Sc. and Ph.D. in Chemistry from the University of Hyderabad before undertaking postdoctoral research at the Tokyo Institute of Technology, Japan, and Kansas State University, USA. Since joining CSIR–NCL in 2003, he has established an internationally recognized research program in the synthesis of nanoparticles and nanoscale materials. His research focuses on the design, synthesis, and applications of advanced nanomaterials for diverse technological applications. Prof. Prasad has authored more than 125 peer-reviewed publications and holds eight international patents. He has also served as a visiting professor at leading universities in Japan, the United States, the United Kingdom, France, and Germany. His contributions to nanoscience and materials chemistry have significantly advanced the field and strengthened international scientific collaborations.

Session 5 - Nano in Semiconductor

11:45 AM – 1:15 PM
GBR

Session Chair

Dr. Shashishekar Adiga

Co-founder,
EQUBE Energy Storage Solutions Pvt Ltd, India

Molecular Neuromorphic Building Blocks for Artificial Intelligence

Speaker

Prof. Sreetosh Goswami

Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Nonlinear Silicon NEMS Resonator Interfaces for Quantum Electronics

Speaker

Prof. Ashwin A. Seshia

Dept. of Electrical Enginnering,
Indian Institute of Technology (IIT),
Bombay, India

From Silicon to Society: Essential Semiconductor Innovations Driving Modern Life

Speaker

Naga Satish Godavarthi

PMTS, RF Product Development, GlobalFoundries, India

Prof. Sreetosh Goswami

Prof. Sreetosh Goswami
Centre for Nano Science and Engineering (CeNSE),
Indian Institute of Science (IISc),
Bengaluru, India

Title:

Molecular Neuromorphic Building Blocks for Artificial Intelligence

Abstract:

Artificial Intelligence (AI) has long been a subject of fascination, oscillating between grand promises and inevitable disillusionment. While remarkable milestones, like AI outperforming human champions in complex games, suggest we are entering a new era of computing, a deeper look reveals that these breakthroughs come at a steep cost — demanding vast amounts of energy and intensive, expensive training process. In areas like cognition, decision-making, and intelligence, even our most advanced computing machines fall far short of the brain's unparalleled efficiency and compact design. The core of this challenge lies in the limitations of conventional circuit elements and computing architectures, which struggle to replicate the brain's complex, nonlinear dynamics operating at the edge of chaos. In this seminar, I will introduce a new class of molecular circuit elements designed to capture the intricate, reconfigurable logic that mimics brain-like behaviour at the nanoscale. These devices can be operated as analog or digital elements, or could be poised on the verge of instability, offering a unique potential to emulate neural functions in ways that traditional computing hardware cannot. Our journey explores these molecular systems from their foundational physics and chemistry, all the way to integrated circuit design and on-chip applications [1-9] with the aim of laying the groundwork for AI and machine learning platforms that can transcend the limitations of Moore's Law and lead to a new era of energy-efficient computing.

Profile:

Sreetosh Goswami is Associate Professor at the Centre for Nanoscience and Engineering (CeNSE), Indian Institute of Science. He joined IISc as Assistant Professor in 2021 and was promoted to Associate Professor in 2025. He received his Ph.D. from the National University of Singapore, where his graduate research was recognised with gold medals at MRS Spring (Phoenix, 2018) and E-MRS (Warsaw, 2018), and the Best Contribution Award at Memrisys (Dresden, 2018). His group develops energy-efficient molecular neuromorphic hardware for AI, with applications in deep learning, signal and image processing, and bioinformatics. The broader aim is to move computing beyond conventional CMOS limits and to provide tools useful to the wider scientific community. Recent recognitions include the iCANX Young Scientist Award (2025), Wiley Young Investigator Award (2025), INSA Young Associate (2025), IISc Research Award (2025), Young Associate of the Indian Academy of Sciences (2024), the Young Physicist Award (2024), and the MRS-S Young Scientist Medal (2023).

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[7] Goswami, Sreetosh, et al. "Decision trees within a molecular memristor." Nature 597.7874 (2021): 51-56.
[8] Goswami, Sreetosh, et al. "Robust resistive memory devices using solution-processable metal-coordinated azo aromatics." Nature Materials 16.12 (2017): 1216-1224.

Prof. Ashwin A. Seshia

Prof. Ashwin A. Seshia
Dept. of Electrical Enginnering,
Indian Institute of Technology (IIT),
Bombay, India

Title:

Nonlinear Silicon NEMS Resonator Interfaces for Quantum Electronics

Abstract:

Silicon nanomechanical resonators have demonstrated exquisite sensitivity to physical quantities such as charge and mass. This feature, together with their scalability and capability for co-integration with CMOS processing, establishes these devices as potential candidates for highly sensitive and scalable readout interfaces for applications in quantum electronics. This talk will discuss the design feasibility and technical aspects involved as well as the potential for the use of engineering nonlinearity to enhance the response sensitivity of nanomechanical resonators. Results of recent experiments will be presented demonstrating the ability to detect the discrete charging states of a single-electron transistor using nanomechanical resonators.

Profile:

Prof. Ashwin A. Seshia is a Professor in the Department of Electrical Engineering at the Indian Institute of Technology Bombay and also serves as Professor of Microsystems Technology at the University of Cambridge, where he has been a faculty member for over two decades. An alumnus of IIT Bombay, Prof. Seshia earned his M.S. and Ph.D. in Electrical Engineering and Computer Science from the University of California, Berkeley, and later completed his M.A. at the University of Cambridge. His research spans micro- and nano-electromechanical systems (MEMS), advanced sensor technologies, frequency control, energy harvesting, and emerging quantum technologies. Recognized internationally for his pioneering contributions to microsystems engineering, Prof. Seshia has led groundbreaking research in high-performance MEMS sensors and resonators, while also co-founding technology companies that have successfully translated cutting-edge academic research into real-world innovations.

Naga Satish Godavarthi

Naga Satish Godavarthi
PMTS, RF Product Development, GlobalFoundries, India

Title:

From Silicon to Society: Essential Semiconductor Innovations Driving Modern Life

Abstract:

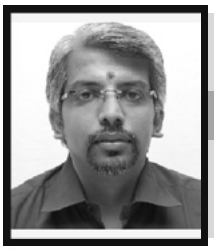
This talk explores how semiconductor fabrication serves as the manufacturing foundation for today's defining megatrends—physical AI, AI data centers, and ubiquitous connectivity—enabled by purpose-built silicon platforms. It examines the emerging shift in AI system bottlenecks from computation to connectivity and highlights the advances in integration, device architecture, materials, and process technology that are delivering substantial improvements in performance and energy efficiency. From atomic-scale engineering to global-scale impact, the talk demonstrates how semiconductor innovation is shaping the next chapter of technological and societal progress.

Profile:

Mr. Satish is a Principal Member of Technical Staff in the 'Advanced Connectivity' group at GlobalFoundries, where he enables application-level technology proof points across photonics, SiGe, and SOI platforms. Before transitioning to GlobalFoundries in 2015, he worked at IBM Microelectronics 'Semiconductor Research and Development Center', enabling SiGe and SOI technologies for RF and millimeter-wave front ends in consumer electronics. Earlier, he developed RF and millimeter-wave front ends for defense radar systems at BEL's Central Research Laboratory. He holds a specialization in Microwave and Photonics Engineering from IIT Kanpur and brings nearly 20 years of experience in connectivity technologies.

Session 6 - Nano in Agriculture & Health

11:45 AM – 1:15 PM
Lalit - 1 & 2



Session Chair

Dr. S. Swaminathan

Director, CeNTAB Sastra Deemed University Thanjavur,
Tamil Nadu

Nano-enabled Agriculture to Achieve Evergreen Revolution

Speaker

Dr. K S Subramanian

Former Director of Research & Founder Head,
Center for Agricultural Nanotechnology,
TNAU, Coimbatore, India

Nanoparticle-mediated Immunotherapy

Speaker

Dr. Prakriti Tayalia

Department of Biosciences & Bioengineering,
Indian Institute of Technology (IIT),
Bombay, India

Nanotechnology Enabled Sensors – Shaping the Future of Healthcare

Speaker

Dr. Paramita Kar Choudhury

Senior Scientist,
Embedded Devices and Intelligent Systems (EDIS),
TCS Research, India

Dr. K S Subramanian

Dr. K S Subramanian
Former Director of Research & Founder Head,
Center for Agricultural Nanotechnology,
TNAU, Coimbatore, India

Title:

Nano-enabled Agriculture to Achieve Evergreen Revolution

Abstract:

Indian agriculture is facing a wide array of challenges such as burgeoning popultion, decling soil organic carbon, shrinking farm land, imbalanced fertilization, huge fertilizer subsidy and climatic adversaies caused by El-Nino. Nanotechnology holds a promise to evolve processes and products that are precise to deliver input to improve the crop productivity without associated environmntal harm. There are five key areas in agricultural sciences, nanotechnology is being exploited to improve the productivity of crops with minimal inputs and maximum output. The nano-agriculture includes 1. Nano diagnostics of early detection of pests, diseases and nutrient deficiencies besides pesticide residues, 2. Nano-agricultural inputs encompassing nano-enabled fertilizers, pesticides, seed invigoration and crop boosters, 3. Nano-preservatives to reduce the post-harvest losses in fruits and vegetables using nano-stickers, nano-pellets and nano-emulsion as spray or dip, 4. Nano-remediation of aquatic and soil pollutants to harvest contamination free crop produce and 5. Biosafety of nano-materials in agriculture to ensure its safety at various trophic levels namely soil beneficial microbes, predators, parasitoids, honey bees, earthworms, fishes and humans. To improve the nutrient or use efficiencies and minimize the cost of subsidies for fertilizers besides self-reliance in the country, nano-fertilizers were introduced in 2021 with the guiding principles of Regulatory Framework that facilitated notification of the first nano urea in 2021 and 31 have been notified till 2026 which is the highest in the world. Seed is a basic input deciding the fate of productivity of any crops especially under rainfed system which constitutes > 70%. Seed coating with nano-fibres loaded with agri inputs (nutrients, pesticides, hormones and bio-inputs), NPs (CNTs, ZnO, TiO2) and nano-formulations for seed invigoration. Nano-herbicides are intended to release active herbicide molecules only when moisture is available in rainfed system besides targeting both leaves and tubers. The existing herbicide molecules can be encapsulated with a suitable hydrophilic polymer that facilitates the release of herbicide molecules synchronize with soil moisture which circumvent weed seeds from germinating. Some of the allopathic chemicals derived from plants can be used for designing bio-nano-herbicides. Nano particles have the potential to manage biotic stresses directly. The important NPs that are known to have potential inhibitory effects include silica, silver, ZnO, TiO2 and Cu. Among the NPs, silica is one of the most used for pest management. The mesoporous nature of SiNPs, presenting a wide surface area, makes them ideal candidates to act as unique carriers for pesticides, herbicides, and fertilizers, giving rise to the concepts like nano pesticides nano herbicides or nano fertilizers that might significantly increase the productivity of different crops. In addition, nanotechnology can be applied for the preservation of fruits and vegetables to reduce the post-harvest losses, nano remediation of soil and aquatic pollutants besides biosafety of nanomaterials used in agricultural production systems. Keywords: Nanotechnology, Nano Agriculture, Nano-diagnostics, Nano-remediation, Biosafety

Profile:

Dr. K.S. Subramanian is Scientific Advisor at Coromandel International Ltd. and former Director of Research, NABARD Chair, Founder Head, and ICAR Emeritus Professor of the Centre for Agricultural Nanotechnology at Tamil Nadu Agricultural University (TNAU), Coimbatore, where he served for over 35 years. An internationally recognized expert in agricultural nanotechnology and digital farming, he is ranked among the world's top 2% scientists by Stanford University (2025). He established India's first Centre for Agricultural Nanotechnology at TNAU, now the national referral centre for nano-fertilizer testing. Dr. Subramanian played a key role in developing the Department of Biotechnology's regulatory guidelines for nano-agri inputs and has contributed to national policy through advisory roles with DST, DBT, BIS, and ICAR. His research has attracted over ₹30 crore in competitive funding, resulting in 15 technologies, 9 patents, more than 300 publications, and over 9,100 citations. He has received numerous prestigious awards, including the TANSA Award and the National Award for Nano-Fertilizer Research.

Dr. Prakriti Tayalia

Dr. Prakriti Tayalia
Department of Biosciences & Bioengineering,
Indian Institute of Technology (IIT),
Bombay, India

Title:

Nanoparticle-mediated Immunotherapy

Abstract:

Conventional treatments for cancer and autoimmune diseases are often limited by poor target specificity, systemic toxicity and suboptimal long-term therapeutic outcomes. Immunotherapy has emerged as a promising strategy enabled by genetic modification of immune cells or modulation of immune responses using biological and synthetic molecules. This has been further augmented by the usage of various delivery platforms, including scaffolds and nanoparticles. Here, we will discuss the nanoparticle-mediated approaches developed in our lab aimed at modulating the immune system via genetic as well non-genetic engineering strategies, which demonstrate either enhanced anti-tumor activity in cancer or reduced inflammation in rheumatoid arthritis. Our findings exhibit the therapeutic potential of nanotechnology-enabled targeted immunotherapy asa versatile platform for treating diverse pathological conditions.

Profile:

Dr. Prakriti Tayalia is a Professor in the Department of Biosciences & Bioengineering at IIT Bombay. She received her B.Tech from IIT Bombay and MS in Materials Science & Engineering from University of Delaware. She pursued her PhD and post-doctoral work in Applied Physics and Bioengineering at Harvard University. At IIT Bombay, she is the Principal Investigator of Cell and Tissue Engineering Laboratory and leads a team of more than 20 researchers. She has more than 20 years of interdisciplinary experience working towards applications of biomaterials in tissue engineering, immunotherapy, nanomedicine and drug delivery. Her research involves developing material platforms to recruit and program host cells in vivo for regeneration of tissue or manipulating the immune system for cancer therapy and various immune-related pathological conditions. She has made significant contributions to translational biomedical research, has authored high-impact publications, holds multiple patents and has received several national and international awards. Prof. Tayalia is also the Co-founder of InCARTis Therapeutics Private Limited, a startup developing next-generation in vivo CAR-T cell therapies using biomaterial-based platforms for cancer immunotherapy. She is also the Professor-in-Charge of the recently established Cell and Gene Therapy Center at IIT Bombay.

Dr. Paramita Kar Choudhury

Dr. Paramita Kar Choudhury
Senior Scientist,
Embedded Devices and Intelligent Systems (EDIS),
TCS Research, India

Title:

Nanotechnology Enabled Sensors – Shaping the Future of Healthcare

Abstract:

Imagine a world where diseases are detected before symptoms appear, where a simple breath test can monitor your health, and where portable devices rapidly diagnose infections at the point of care. This vision is becoming a reality through the power of nanotechnology. By operating at the molecular level, nanotechnology offers unprecedented sensitivity and specificity, making it a gamechanger in healthcare diagnostics. In this talk, I will discuss how nanotechnology-enabled sensors are shaping the future of healthcare. I will highlight three projects TCS has undertaken: using Chemi resistive nanosensors to detect Volatile Organic Compounds (VOCs) in breath for non-invasive Prediabetes monitoring; leveraging Surface Enhanced Raman Spectroscopy (SERS)-based nanosensors for early Sepsis prediction in critical care and employing microfluidic lab-on-chip nanobiosensors for rapid UTI detection. These cutting-edge technologies are not just futuristic concepts, they are tangible innovations that promise to revolutionize disease detection, bringing us closer to a world where early, accurate, and personalized healthcare is accessible to everyone.

Profile:

Paramita Kar Choudhury is a Senior Scientist at Embedded Devices and Intelligent Systems (EDIS) team, Nanosensing group in TCS Research. She has more than 15 years of experience working at the interface of materials engineering and device physics. She completed her PhD in Physics from IISc, Bangalore followed by two postdocs from University of Konstanz, Germany and University of California, Irvine. Recently sha has been working at the National Center for Flexible Electronics at IIT Kanpur before joining TCS Research. She is passionate about translation of innovation from lab to viable products.

Session 7 - Nano in Energy & Environment

11:45 AM – 1:15 PM
Lalit - 3 & 4

Session Chair

Prof. M. Eswaramoorthy

Professor, Chemistry and Physics of Materials Unit,
JNCASR, India

Artificially Intelligent Nanopores for High-Throughput DNA Sequencing

Speaker

Dr. Biswarup Pathak

Department of Chemistry,
Indian Institute of Technology (IIT),
Indore, India

Persistent Photoconductivity and Persistent Photocatalysis

Speaker

Prof. Deepa Khushalani

Chair Dept. Of Chemical Sciences,
Professor in Materials Chemistry at TIFR, India

From Atoms to Equity: AI-Accelerated Frugal Energy Material Innovation for Billion-People Prosperity

Speaker

Prof. Arghya Bhowmik

Dept. of Energy Conversion and Storage,
Technical University of Denmark (DTU),
Denmark

Dr. Biswarup Pathak

Dr. Biswarup Pathak
Department of Chemistry,
Indian Institute of Technology (IIT),
Indore, India

Title:

Artificially Intelligent Nanopores for High-Throughput DNA Sequencing

Abstract:

The advancement of rapid genome sequencing techniques holds immense potential to transform preventive healthcare. Recently, solid-state nanopores have emerged as a promising technology for accelerating DNA sequencing. In our research, we have applied a range of artificial intelligence and machine learning tools to investigate the sequencing of individual nucleotides. This presentation will critically examine the role of machine learning in enhancing third-generation DNA sequencing using solid-state nanopores embedded with electrodes.[1-7]

Profile:

Dr. Biswarup Pathak is a Professor in the Department of Chemistry at IIT Indore, where he leads the Computational Materials Designing Research Group. His research focuses on applying machine learning and artificial intelligence to chemistry and materials science, particularly for data-driven materials design and discovery. He currently serves as an Associate Editor of ACS Applied Materials & Interfaces, a leading journal of the American Chemical Society. Dr. Pathak has published over 340 peer reviewed research articles, earning over 10,000 citations and an H-index of 52, with his work receiving significant national and international recognition. In 2021, he was recognized by the American Chemical Society as one of India's most impactful researchers and has been honored with distinctions such as Fellow of the National Academy of Sciences, India (FNASc), Fellow of the Royal Society of Chemistry (FRSC), the CRSI Bronze Medal, and the MRSI Medal. Most recently, IIT Indore appointed him to its inaugural cohort of Institute Chair Professors in recognition of his outstanding contributions to research and academia.

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S. Mittal et al. ACS Materials Lett., 2023, 5, 1570.
M. K. Jena et al. ACS Materials Lett., 2023, 5, 2488.
S. Mittal et al. Digital Discovery, 2023, 2, 1589.

Prof. Deepa Khushalani

Prof. Deepa Khushalani
Chair Dept. Of Chemical Sciences,
Professor in Materials Chemistry at TIFR, India

Title:

Persistent Photoconductivity and Persistent Photocatalysis

Abstract:

Photocatalysis has emerged as a promising strategy for harnessing solar energy to drive chemical transformations, yet its reliance on continuous illumination remains a fundamental limitation. Nature addresses this challenge through the separation of light-driven charge generation from subsequent dark biochemical processes, enabling efficient utilization of harvested solar energy. Inspired by this concept, recent advances in carbon nitrides have revealed the intriguing ability to accumulate and retain photo-generated charge carriers over extended periods, giving rise to persistent photoconductivity and enabling chemical transformations to continue even after illumination has ceased. This phenomenon, often referred to as dark photocatalysis, challenges the conventional view that photocatalytic activity is intrinsically linked to the presence of light. In this presentation, I will discuss how these unique properties position carbon nitrides as an emerging class of multifunctional materials that bridge solar energy capture, charge storage, and catalysis. Rather than viewing these materials solely through the lens of solar energy storage, I will explore their broader potential as photocatalysts capable of operating under both illuminated and dark conditions. By comparing catalytic behavior across these two regimes, new insights emerge into the nature of stored photogenerated charge, the factors governing its persistence, and the mechanistic similarities and distinctions between light- driven and dark reactions. The concept of persistent photoconductivity provides a new framework for understanding these processes and opens opportunities for designing photocatalytic systems that extend chemical reactivity beyond the period of illumination. Such round-the-clock catalysis represents a conceptual shift in solar energy utilization and offers new directions for sustainable photocatalysis and solar-to-chemical energy conversion.

Profile:

Prof. Deepa Khushalani is Chair of the Department of Chemical Sciences and Professor at the Tata Institute of Fundamental Research (TIFR), Mumbai. She earned her B.Sc. in Chemistry from the University of British Columbia, Canada, and her Ph.D. in Inorganic Chemistry from the University of Toronto in 1997, followed by postdoctoral research at the University of Bristol, UK. Before joining TIFR in 2004, she served as a Lecturer at the University of Kent, UK. Her research focuses on the development of functional materials for photovoltaics, energy storage, and catalytic applications, with particular emphasis on photocatalysis and electrocatalysis for sustainable energy conversion. Her group develops advanced catalysts for CO_2 conversion, hydrogen production through water splitting, and environmentally benign organic synthesis while investigating catalyst stability, recyclability, and long-term performance. In addition to her research, Prof. Khushalani is deeply committed to science outreach, actively promoting basic sciences in rural and underserved communities across India through workshops, lectures, mentoring, and educational initiatives for students of all ages.

Prof. Arghya Bhowmik

Prof. Arghya Bhowmik
Dept. of Energy Conversion and Storage,
Technical University of Denmark (DTU),
Denmark

Title:

From Atoms to Equity: AI-Accelerated Frugal Energy Material Innovation for Billion-People Prosperity

Abstract:

Photocatalysis has emerged as a promising strategy for harnessing solar energy to drive chemical transformations, yet its reliance on continuous illumination remains a fundamental limitation. Nature addresses this challenge through the separation of light-driven charge generation from subsequent dark biochemical processes, enabling efficient utilization of harvested solar energy. Inspired by this concept, recent advances in carbon nitrides have revealed the intriguing ability to accumulate and retain photo-generated charge carriers over extended periods, giving rise to persistent photoconductivity and enabling chemical transformations to continue even after illumination has ceased. This phenomenon, often referred to as dark photocatalysis, challenges the conventional view that photocatalyti activity is intrinsically linked to the presence of light. In this presentation, I will discuss how these unique properties position carbon nitrides as an emerging class of multifunctional materials that bridge solar energy capture, charge storage, and catalysis. Rather than viewing these materials solely through the lens of solar energy storage, I will explore their broader potential as photocatalysts capable of operating under both illuminated and dark conditions. By comparing catalytic behavior across these two regimes, new insights emerge into the nature of stored photogenerated charge, the factors governing its persistence, and the mechanistic similarities and distinctions between light-driven and dark reactions. The concept of persistent photoconductivity provides a new framework for understanding these processes and opens opportunities for designing photocatalytic systems that extend chemical reactivity beyond the period of illumination. Such round-the-clock catalysis represents a conceptual shift in solar energy utilization and offers new directions for sustainable photocatalysis and solar-to-chemical energy conversion. References 1. Mann, R.; Khushalani, D. Photo and redox active carbon nitride – dual functionality for energy storage. Journal of Materials Chemistry A 2023, 11, 20601–20607. 2. Mann, R.; Tyagi, R.; Bhattacharyya, K.; Voora, V.; Khushalani, D. Structural determinants of photo-accumulated charge storage in poly-heptazine imides. Cell Reports Physical Science 2025, 102812.

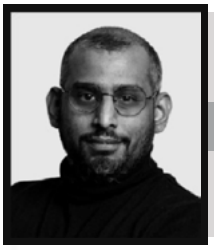
Profile:

Prof. Arghya Bhowmik is a Professor at DTU Energy, Technical University of Denmark, where he leads cutting-edge research at the intersection of artificial intelligence, materials science, and sustainable energy. He earned his Ph.D. from DTU after postgraduate studies at JNCASR, an M.Sc. from POSTECH, and a B.Tech. from IIT Kharagpur. His research focuses on AI-driven materials discovery, battery technologies, computational chemistry, and advanced energy materials, integrating machine learning with physics-based modeling to accelerate the development of next-generation batteries and catalysts. Prof. Bhowmik has held visiting appointments at TU Munich, TU Berlin, EPFL, and Karlsruhe Institute of Technology, and teaches graduate courses on AI for materials design and battery technologies. He serves on the editorial boards of Nature Scientific Data, npj Energy Materials, and Artificial Intelligence Chemistry. With more than 77 peer-reviewed publications and invited talks at leading international conferences, he is widely recognized for advancing AI-enabled materials innovation for sustainable energy.

Session 8 - Nano in Semiconductors (Industry Session)

Deep-tech India: Next big opportunities for India's Semiconductor Future: Commercialization, Scale-up, Investment & Ecosystem creation

2:15 PM – 3:15 PM
GBR



Moderator

Dr. Mithun Parambath

Co-Founder & CEO, Nanomatter Tech, India

Panelist

Naga Satish Godavarthi

PMTS, RF Product Development, GlobalFoundries, India

Panelist

Dr. Vishal Katariya

Deep Science Tech Investing, Ankur Capital

Panelist

Prof. Alex James

Professor, Electronics Engineering,
Digital University Kerala, India

Panelist

Dr. Charan Gurumurthy

Senior Vice President,
TATA Electronics Private Limited, USA

Dr. Mithun Parambath

Dr. Mithun Parambath
Co-Founder & CEO, Nanomatter Tech, India

Profile:

Dr. Mithun Parambath is the Founder and CEO of NanoMatter Technologies, where he drives the commercialization of 2D semiconductors through advanced deposition equipment and device development . His team builds large-area MOCVD and cluster tools designed for high-quality growth of TMDs and other semiconductor films, with a focus on scalable manufacturing and industrial adoption . NanoMatter has successfully delivered its first MOCVD system to TIFR Hyderabad, supporting cutting-edge research in next-generation electronic, optoelectronic, and photonic materials . He is committed to strengthening India's semiconductor equipment ecosystem through indigenous innovation, precision engineering, and deep-tech commercialization

Dr. Vishal Katariya

Dr. Vishal Katariya
Deep Science Tech Investing, Ankur Capital

Profile:

Vishal Katariya is a VP at Ankur Capital, leading deep science tech investments in energy, semiconductors, advanced materials and spacetech. Ankur Capital is an early-stage venture capital fund investing in digital and deep science tech innovations from India to the world. Vishal comes with a PhD in Physics which he leverages to bridge the technological and commercial aspects of early-stage startups.

Prof. Alex James

Prof. Alex James
Professor, Electronics Engineering,
Digital University Kerala, India

Profile:

Prof. Alex P. James is a Full-Professor of AI Hardware at Digital University Kerala and a leading researcher in analog memristive computing, AI hardware, and intelligent electronic systems. He earned his Ph.D. from the Queensland Micro and Nanotechnology Centre, Griffith University, Australia. He currently serves in several leadership roles, including Head of Maker Village—one of India's largest electronics hardware incubators with over 80 startups—Director of the Centre of Excellence in Intelligent IoT Sensors, and Head of the India Innovation Centre for Graphene. He is also a founding board member of India's first Digital Science Park and will serve as Controller of Examinations at Digital University Kerala and a member of the IEEE Circuits and Systems Society (CASS) Board of Governors (2026–2028). Prof. James has published over 200 research papers and has made significant contributions to AI hardware, chip design, and electronics innovation. He has played a pivotal role in shaping India's semiconductor, graphene, and hardware startup ecosystem through research, technology commercialization, and policy development.

Dr. Charan Gurumurthy

Dr. Charan Gurumurthy
Senior Vice President,
TATA Electronics Private Limited, USA

Profile:

Dr. Charan Gurumurthy is Business Head for Tata Semiconductor Assembly and Test. In 2023, He returned to India after 30 years in the United States to join Tata. Prior to joining Tata, Dr. Gurumurthy worked for Intel Corp., in various leadership roles between 2002 - 2023 and prior to that worked at IBM Microelectronics Division between 2000 - 2002. His expertise spans semiconductor Technology Development (TD), High Volume Manufacturing (HVM), Global Supply Chain, Factory start-up/operations and technology transfer. Dr. Gurumurthy has a Ph.D. in Materials Science and Engineering (minoring in Theoretical and Applied Mechanics) from Cornell University, New York, USA and Undergraduate degree in Mechanical Engineering from the Indian Institute of Technology (IIT) Roorkee, India. He has 55+ patents, and 15+ publications to his credit in the field of semiconductors. He also serves as Associate Editor for IEEE Transactions of CPMT (Components, Packaging and Manufacturing Technology) from 2005 to present.

Session 9 - Nano in Energy & Environment (Industry Session)

Nano to Gigawatt: Commercializing Nanotechnology for India's Energy Future

2:15 PM – 3:15 PM
Lalit - 3 & 4

Moderator

Dr. Shashishekar Adiga

Co-founder,
EQUBE Energy Storage Solutions Pvt Ltd, India

Panelist

Dr. Ajay Mehta

VP, Research and Innovation, Shell, India

Panelist

Prof. Praveen Ramamurthy

Department of Materials Engineering,
Indian Institute of Science (IISc),
Bengaluru, India

Panelist

Dr. Manjunath R V

VP, Quantum Hardware & Research QPiAI, India

Panelist

Dr. Kapila Wadumesthrige

GM, R&D, Agratas, USA

Dr. Shashishekar Adiga

Dr. Shashishekar Adiga
Co-founder,
EQUBE Energy Storage Solutions Pvt Ltd, India

Profile:

Shashishekar P. Adiga received the Ph.D. degree in materials science and engineering from North Carolina State University, USA. He is a co-founder of Eqube Energy Storage Solutions Pvt Ltd. His experience includes corporate R&D stints in Samsung Semiconductors, Shell Technology Center, Lockheed Martin Advanced Technology Laboratories, and Kodak Research Laboratories. Prior to that he was a postdoctoral fello and Enrico Fermi Scholar at Argonne National Labs. His research interests include semiconductors, materials for energy storage and conversion, and the use of artificial intelligence for automated discovery of functional, and device materials and AI enabled manufacturing.

Dr. Ajay Mehta

Dr. Ajay Mehta
VP, Research and Innovation, Shell, India

Profile:

Dr. Ajay Mehta serves as the Vice President Research & Innovation and Chief Engineer R&D for the Shell Group. He is currently based in Bangalore where he also heads up Shell's Technology Center. Ajay leads a global team of scientists and engineers who provide subject matter expertise and innovative engineering solutions across the full energy value chain in Upstream, Downstream, Integrated Gas and Renewable Energies. Over the course of his 30 years career at Shell, Ajay has assumed a broad range of technical and leadership roles in Deepwater Exploration & Production, Operations, CO2 Mitigation, Project Engineering, and Technology Management. He is a subject matter expert in natural gas hydrates and has served as a Distinguished Lecturer for the Society of Petroleum Engineers. In a prior role, he led Shell's New Energies Research & Technology group and built foundational capabilities in hydrogen, offshore wind, greenhouse gas management, low carbon fuels, energy storage, and e-Mobility. Ajay holds a BE in Chemical Engineering from the National Institute of Technology Karnataka, India, a PhD in Chemical Engineering from the Colorado School of Mines, and an MBA from the Massachusetts Institute of Technology.

Prof. Praveen Ramamurthy

Prof. Praveen Ramamurthy
Department of Materials Engineering,
Indian Institute of Science (IISc),
Bengaluru, India

Profile:

Prof. Praveen C. Ramamurthy received his M.Sc. in Polymer Science from the University of Mysore and a PhD from Clemson University in 2004. He has held research and engineering roles at Therm-O-Disc (Ohio, USA) and Hoku Scientific (Hawaii, USA). Since 2007, he has been with the Indian Institute of Science (IISc), where he is a Professor in the Department of Materials Engineering and Chair of the Interdisciplinary Centre for Water Research (ICWaR). His research in organic electronics focuses on molecular design, device architecture, and packaging, with applications across three areas: photovoltaics and electromagnetic shielding; sensing of organic molecules and metal ions; and biomedical sensors for analytes such as sweat, E. coli, and thyroxine. He has published over 400 peer-reviewed papers and holds 25 patents.

Dr. Manjunath R V

Dr. Manjunath R V
VP, Quantum Hardware & Research QPiAI, India

Profile:

Dr Manjunath.R.Venkatesh completed his MS and Phd from TU Delft, The Netherlands with specialization in Microelectronics. He has 14+ years' experience in CMOS, MEMS and Quantum device modeling, layout design, wafer-scale process development and device characterization at Kavli Nanolab, TUDelft-EKL BiCMOS7 and MEMS foundry. At Qutech-Intel and IQM Finland, he worked on the process development and characterization of superconducting qubit-based quantum processors. At QpiAI, he is leading the Quantum Hardware and Research team for the development of a full-stack quantum computer for superconducting qubits.

Dr. Kapila Wadumesthrige

Dr. Kapila Wadumesthrige
GM, R&D, Agratas, USA

Profile:

Dr. Kapila Wadumesthrige is the General Manager – Research & Development at Agratas, Tata Group, where he leads global innovation in advanced lithium-ion battery technologies. He earned his Ph.D. in Physical Chemistry from Wayne State University, Detroit, MI USA, and brings over 25 years of industrial experience in lithium-ion battery manufacturing, research, and development. Dr. Wadumesthrige held key technical and leadership roles at Delphi Automotive, A123 Systems, Tesla Motors, and General Motors in the United States, focusing on lithium-ion battery manufacturing, next-generation material development, and quality systems. His work has contributed to advancements in cathode and anode materials, cell design optimization, and intellectual property creation. Recognized for his leadership in global battery innovation, Dr. Wadumesthrige continues to drive breakthroughs that enable sustainable energy storage solutions for electric mobility worldwide.

Session 10 - Nano in Semiconductors

Engineering 2D Materials and Ion-Implanted Semiconductors for Next-Generation Technologies

3:30 PM – 4:30 PM
GBR

Speaker

Prof. Satheesh Krishnamurthy

Professor and the Director of The Surrey Ion Beam Centre,
University of Surrey, UK

Accelerating Semiconductor Design and Development with Physics-Informed AI Surrogates

Speaker

Bhavaneesh Athikary

Vice President – Technology & Business Development (Indo-Pacific & GCC),
Detroit Engineered Products, India

India-Denmark Collaborations in Nanobiotechnology for Applications in Cancer and Diabetes Research

Speaker

Joel Stafford

Innovation & Trade Advisor, Tech,
Deeptech & Digital Health,
Consulate General of Denmark, Bangalore, India

Prof. Satheesh Krishnamurthy

Prof. Satheesh Krishnamurthy
Professor and the Director of The Surrey Ion Beam Centre,
University of Surrey, UK

Title:

Engineering 2D Materials and Ion-Implanted Semiconductors for Next-Generation Technologies

Abstract:

As conventional silicon technology approaches physical and thermodynamic scaling limits, the development of next-generation electronic, optoelectronic, and energy devices relies heavily on atomic-scale material engineering. Low-dimensional nanomaterials such as two-dimensional (2D) transition metal dichalcogenides (TMDs), MXenes, and borophene offer unparalleled electro-optical, chemical, and mechanical properties. However, realising their full technological potential requires precise control over electronic band structures, point defects, and surface functionalization. This work outlines advanced strategies for tailoring low-dimensional nanomaterials and wide-bandgap semiconductors using state-of-the-art ion implantation and ion-beam processing. By leveraging controlled ion bombardment and post-annealing regimes, we demonstrate deterministic defect complex engineering and carrier activation in challenging semiconductor matrixes, including diamond. Furthermore, we showcase how surface engineering, metallic/non-metallic doping, and defect architecture in 2D systems modulate interfacial charge transport, catalytic reactivity, and ion diffusion pathways. These integrated processing techniques provide a robust framework for designing scalable, high-performance materials for application in next-generation microelectronics, quantum materials, energy storage systems, and environmental wastewater treatment and sensing platforms. Particular emphasis will also be placed on the opportunities and challenges in moving from single-ion-precision laboratory demonstrations to manufacturable, defect-engineered platforms for next-generation electronic and quantum materials, and on the value of international collaboration between the UK and India in particular in accelerating this translation.

Profile:

Prof. Satheesh Krishnamurthy FRSC FIMMM is Director of the UK National Ion Beam Centre at the University of Surrey and an internationally recognized leader in materials science, semiconductor physics, and advanced nanotechnology. His research focuses on two-dimensional materials, including MXenes, wide-bandgap semiconductors, single-ion implantation, and defect engineering using EPR/ODMR techniques for quantum technologies, high-performance electronic devices, and catalytic systems. He has secured over £40 million in competitive research funding as Principal or Co-Investigator, authored more than 120 peer-reviewed publications with over 15,000 citations, and received the UK–India Research Excellence Award in 2017. Under his leadership, the UK National Ion Beam Centre supports more than 45 industrial partners and researchers from over 40 UK universities, underpinning over £150 million in EPSRC-funded research in recent years. Prof. Krishnamurthy is widely recognized for bridging fundamental materials characterization with scalable device technologies and for fostering international collaboration in semiconductor innovation, quantum technologies, and nanoscale materials commercialization.

Bhavaneesh Athikary

Bhavaneesh Athikary
Vice President – Technology & Business Development (Indo-Pacific & GCC),
Detroit Engineered Products, India

Title:

Accelerating Semiconductor Design and Development with Physics-Informed AI Surrogates

Abstract:

Semiconductor design cycles are shrinking while simulation cycles are not — thermal, signal integrity, warpage, and reliability analyses still take hours to days per design variant. This talk presents physics-informed AI surrogates as a practical path out of the bottleneck: machine learning models trained on compact simulation datasets and constrained by governing physics, predicting full field results in seconds.

Profile:

Vice President – Technology & Business Development (Indo-Pacific & GCC), Detroit Engineered Products (DEP) Bhavaneesh Athikary is Vice President of Technology & Business Development at Detroit Engineered Products (DEP), where he leads the adoption of DEP's flagship engineering platforms — MeshWorks and AIWorks — across the Indo-Pacific and GCC regions. With over 22 years in CAE spanning FEA, CFD, NVH, and aeroelasticity, his current focus is AI/ML surrogates for engineering simulation across the automotive, aerospace, defence, and semiconductor domains. He has previously held roles at Cadence, Hexagon, MSC Software, Hero MotoCorp, Tata Motors, and NAL, and is an alumnus of NIE Mysore and IIM Bangalore.

Joel Stafford

Joel Stafford
Innovation & Trade Advisor, Tech,
Deeptech & Digital Health,
Consulate General of Denmark, Bangalore, India

Title:

India-Denmark Collaborations in Nanobiotechnology for Applications in Cancer and Diabetes Research

Profile:

Joel is presently an Innovation and Trade Advisor with the commercial team of the Consulate General of Denmark in Bangalore, where he has worked on nearly 100 bilateral projects and initiatives, advising and facilitating Danish companies and stakeholders with opportunities for partnerships, market access and stakeholder engagement for commercial and research & innovation avenues with stakeholders in India across government, industry and academia.

NanoSparX

3:30 PM – 4:30 PM
Lalit - 1 & 2

Jury

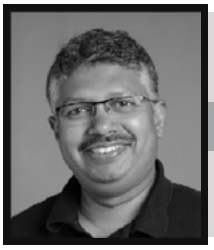
Prof. V Ramgopal Rao

Group Vice-Chancellor, BITS Pilani Campuses, India

Jury

Dr. Krishnan Venkateswaran

Head – Technology & Innovations, VISTA Autocare



Jury

Dr. Sudip Roy

Co-founder, Prescience In silico

Valedictory

04:30 PM - 05:00 PM

GBR

Dignitary

Shri Priyank Kharge

Hon'ble Minister for Home, Electronics
IT & Bt, and e-Governance
Govt. of Karnataka

Dignitary

Dr. A S Kiran Kumar

Former Chairman, ISRO and Chairperson,
Karnataka Vision Group on Space, Govt. of Karnataka

Dignitary

Dr. N. Manjula, IAS

Secretary to Government, Dept. of Electronics, Information Technology
Biotechnology and Science & Technology
Govt. of Karnataka

Dignitary

Shri Bharath S., IAS

Director
Department of Science and Technology, & Managing Director, KSTePS,
Govt. of Karnataka

Awards Presentation

NanoSparX
Poster Awards

EXHIBITOR'S DIRECTORY

ACHIRA LABS

Name of the Exhibitor : ACHIRA LABS

Address : 66B, 13TH CROSS, DOLLAR LAYOUT, 3RD PHASE, J. P. NAGAR
BENGALURU - 560078, KARNATAKA, INDIA

Contact Person : MR. FAISAL AHMED MOINUDDIN

Designation : BUSINESS DEVELOPMENT MANAGER

Website : https://achiralabs.com/

Sector : Healthcare

Profile:

Founded in 2009 in Bengaluru, India, Achira Labs began with a vision to decentralize medical diagnostics. We recognized that while central labs offer precision, they often lack speed and accessibility for patients in need of immediate care. By leveraging proprietary microfluidics & hydrogel technology, we have developed platforms that shrink the lab onto a chip. Today, we are an ISO 13485 compliant company, transforming how diagnostics are delivered across India and beyond. Our Vision : A world where advanced medical diagnostics are not a luxury, but a standard of care available to everyone. We aim to be a global leader in point-of-care testing by continuously innovating at the intersection

ALTACIT GLOBAL

Name of the Exhibitor : ALTACIT GLOBAL

Address : C2-A, INDUSTRIAL ESTATE, GUINDY
CHENNAI - 600032, TAMIL NADU, INDIA

Contact Person : DR. SUDHIR RAVINDRAN

Designation : FOUNDER AND MANAGING PARTNER

Website : https://www.altacit.com

Sector : Others

Profile:

Altacit Global Intellectual Property (OPC) Private Limited is an independently registered OPC (One Person Company) incorporated on 12th December 2022. We are an Intellectual Property (IP) services company. Our core mandate is to help individuals, startups, and established businesses identify, protect, manage, and commercialize their intellectual property assets. Our service portfolio spans the full IP lifecycle, including patent search, drafting, and prosecution; trademark search, registration, and portfolio management; copyright registration; design registration; IP due diligence; licensing and technology transfer support; IP valuation; and enforcement or dispute-resolution support.

APEX INSTRUMENTS

Name of the Exhibitor	:	APEX INSTRUMENTS
Address	:	82C, IBRAHIMPUR ROAD, JADAVPUR KOLKATA - 700032, WEST BENGAL, INDIA
Contact Person	:	MR. ABHISHEAK DEBNATH
Designation	:	TEAM LEAD (SALES AND MARKETING)
Website	:	https://www.apexicindia.com/
Sector	:	Manufacturing

Profile:

Apex Instruments Co. Pvt. Ltd. 4 Decades of Excellence in Thin-Film Research Equipments Founded in early 90s, APEX is an ISO 9001:2015 certified manufacturer of laboratory hardware for nano-thin film fabrication & characterisation. Our Portfolio Includes: Langmuir-Blodgett Troughs: Mono-molecular deposition. Spin Coating: Centrifugal polymer deposition. Dip Coating: Monolayer fabrication. SILAR Coating: Successive Ion Layer Adsorption. Contact Angle Meter: Surface energy analysis. UV Exposure Chamber: Photochemical curing. Empowering global nano, polymer & semiconductor R&D with hardware & software.

APPLIED MATERIALS INDIA PRIVATE LIMITED

Name of the Exhibitor	:	APPLIED MATERIALS INDIA PRIVATE LIMITED
Address	:	ENDEAVOUR, MULTI TENANTED BUILDING (MTB6), INTERNATIONAL TECH PARK, WHITEFIELD MAIN ROAD BANGALORE - 560066, KARNATAKA, INDIA
Contact Person	:	MR. HEMANG SHAH
Designation	:	SR. DIRECTOR, GOVERNMENT AFFAIRS
Website	:	https://www.appliedmaterials.com/in/en.html
Sector	:	Semiconductors & Materials

Profile:

Applied Materials, Inc. (Nasdaq: AMAT) is the leader in materials engineering solutions that are at the foundation of virtually every new semiconductor and advanced display in the world. The technology we create is essential to advancing AI and accelerating the commercialization of next-generation chips. At Applied, we push the boundaries of science and engineering to deliver material innovation that changes the world. Learn more at www.appliedmaterials.com.

BANGALORE BIOINNOVATION CENTRE

Name of the Exhibitor	:	BANGALORE BIOINNOVATION CENTRE
Address	:	HELIX BIOTECH PARK, IBAB CAMPUS, ELECTRONIC CITY PHASE I, DODDATHOGURU ELECTRONICS CITY - 560100, KARNATAKA, INDIA
Contact Person	:	DR. SARAVANAN RAVI
Designation	:	SENIOR SCIENTIST
Website	:	https://www.bioinnovationcentre.com/en
Sector	:	Others

Profile:

The Bangalore Bioinnovation Centre (BBC) is a flagship government initiative dedicated to nurturing innovation, entrepreneurship, and commercialization in the biotechnology sector. Strategically located in Bengaluru, Karnataka, India - widely known as the Silicon Valley of India - BBC serves as a catalyst for next-generation biotech startups, researchers, and innovators. Jointly established by the Department of IT, BT and S&T, Government of Karnataka, and the Department of Biotechnology (DBT), Government of India, BBC offers a world-class innovation ecosystem designed to accelerate the journey from idea to impact.

BENGALURU SCIENCE & TECHNOLOGY CLUSTER (BEST)

Name of the Exhibitor	:	BENGALURU SCIENCE & TECHNOLOGY CLUSTER (BEST)
Address	:	FOUNDATION FOR BEST, INDIAN INSTITUTE OF SCIENCE CAMPUS BENGALURU - 560003, KARNATAKA, INDIA
Contact Person	:	MR. ANANTHARAMAN R
Designation	:	CEO
Website	:	https://www.bestkc.in/
Sector	:	Others

Profile:

The Bengaluru Science and Technology (BeST) Cluster initiated by the Office of the Principal Scientific Adviser (PSA) to the Government of India. This initiative was launched on the recommendation of the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC) to accelerate the vision of building an Atmanirbhar Bharat through cutting-edge science, technology, and innovation BeST has created a strong ecosystem that brings together scientists, technologists, innovators, entrepreneurs, policymakers, and society. This model ensures seamless alignment between S&T providers and end-users, enabling impactful solution for healthcare, agriculture, mobility, water.

BIOSUSTAIN LABS

Name of the Exhibitor	:	BIOSUSTAIN LABS
Address	:	ECO ZONE, NO 72, NANJARAYAPATNA, VILLAGE SOMWARPET TALUK KODAGU BANGALORE - 560100, KARNATAKA, INDIA
Contact Person	:	DR. AJAY KALANJANA MONNAPPA
Designation	:	FOUNDER AND CEO
Website	:	https://www.biosustainlabs.com
Sector	:	Healthcare

Profile:

Biosustain Labs Private Limited is Kodagu based biotech startup, Bactovore® a next-generation biocontrol platform that targets antimicrobial-resistant pathogens through a naturally occurring biological mechanism, offering an alternative to conventional antibiotics. The platform is being developed across veterinary and life-sciences-tools applications, including a bovine mastitis product line and a research-use-only bacterial lysis reagent. ProSiCell® a modular biomolecular display and delivery platform designed to support vaccine development, diagnostics, and sample tracking/barcoding applications.

BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE (BITS), PILANI

Name of the Exhibitor	:	BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE (BITS), PILANI
Address	:	B226, BITS PILANI, HYDERABAD CAMPUS, JAWAHAR NAGAR HYDERABAD - 500078, TELANGANA, INDIA
Contact Person	:	DR. TRUPTI SHARMA
Designation	:	GRANTS ASSOCIATE
Website	:	https://www.bits-pilani.ac.in/research/home/
Sector	:	Semiconductors & Materials

Profile:

BITS Pilani is a premier institution known for its strong emphasis on research, innovation, and technology development. The university fosters interdisciplinary research and encourages students and faculty to address real-world challenges through advanced scientific and technological approaches. Its research activities span emerging fields such as nanotechnology, artificial intelligence, biotechnology, advanced materials, electronics, and sustainable technologies. Through specialized research centres, laboratories, industry collaborations, and innovation-driven initiatives, BITS Pilani provides an environment that supports scientific discovery, nanoscale research, technological innovation.

CENSE, IISC

Name of the Exhibitor	:	CeNSE, IISC
Address	:	CENTRE FOR NANO SCIENCE & ENGINEERING (CENSE), INDIAN INSTITUTE OF SCIENCE (IISC), MATHIKERE BENGALURU - 560012, KARNATAKA, INDIA
Contact Person	:	MR. MELRICK CRASTA
Designation	:	OUTREACH OFFICER (INCENSE)
Website	:	https://www.cense.iisc.ac.in/
Sector	:	Semiconductors & Materials

Profile:

Centre for Nano Science & Engineering (CeNSE) at the Indian Institute of Science (IISc), Bengaluru. A premier interdisciplinary research center to advance cutting-edge research in nanoscience, semiconductors, photonics, quantum technologies, MEMS/NEMS, advanced materials, and biotechnology. CeNSE houses 3 national facilities (NNFC, MNCF, and PASF). As part of CeNSE, we have: INCeNSE, a technology Business Incubator focusing on deep tech and nano tech-based startups IQTI (Quantum Technology Initiative), a multifaceted collaborative effort to explore various areas in quantum research WIC-QN (Wadhwani Innovation Centre for Quantum & Nano Technologies), to drive interdisciplinary research

CENTRE FOR NANO AND SOFT MATTER SCIENCES, BENGALURU

Name of the Exhibitor	:	CENTRE FOR NANO AND SOFT MATTER SCIENCES, BENGALURU
Address	:	ARKAVATHI, SURVEY NO.7, SHIVANAPURA, DASANAPURA HOBLI, BENGALURU URBAN BANGALORE RURAL DISTRICT - 562162, KARNATAKA, INDIA
Contact Person	:	DR. SUBASH C K
Designation	:	DST - INSPIRE FACULTY
Website	:	https://cens.res.in/en/
Sector	:	Others

Profile:

The Centre for Nano and Soft Matter Sciences (CeNS) is an autonomous research institute under the Department of Science and Technology (DST), Government of India. DST provides core support to the Centre through a grant-in-aid to conduct basic and applied research in nano and soft matter sciences. The Centre is engaged in materials research at all relevant length scales. Specifically, the current activities focus on a variety of metal and semiconductor nanostructures, liquid crystals, and hybrid materials. It has close interactions with many Institutions and Industry, in India and abroad.

DETROIT ENGINEERED PRODUCTS

Name of the Exhibitor	:	DETROIT ENGINEERED PRODUCTS
Address	:	2/86, DEP INDIA, 7TH AVENUE, ASHOK NAGAR CHENNAI - 600083, TAMIL NADU, INDIA
Contact Person	:	MR. ANTONY LEONARD
Designation	:	MARKETING EXECUTIVE
Website	:	https://depusa.com/
Sector	:	Others

Profile:

Detroit Engineered Products (DEP) is an Engineering Solutions and Product Development company established in 1998 in Troy, Michigan, USA. Over the years, DEP has grown into a global entity, with a presence in Europe, China, Korea, Japan, and India. With a dedicated team of passionate employees, committed partners, and a roster of exciting clients, DEP is committed to continuous innovation and invention, creating smarter solutions every day.

FIB-SOL LIFE TECHNOLOGIES

Name of the Exhibitor	:	FIB-SOL LIFE TECHNOLOGIES
Address	:	03, A2, IITM BIO-INCUBATOR, 3RD FLOOR, IIT MADRAS RESEARCH PARK, KANAGAM ROAD, TARAMANI, OPP MARMAG INFRA PVT LTD REGISTERED OFFICE CHENNAI - 600113, TAMIL NADU, INDIA
Contact Person	:	DR. KAVITHA SAIRAM
Designation	:	DIRECTOR
Website	:	https://fibsol.com/
Sector	:	Agriculture

Profile:

FIB-SOL develops innovative nanofiber substrates for agriculturally important biologicals. We have developed the world's first water-soluble nanofibers that host a high payload of live bacteria (10^13 cfu/g) and are stable for two years. Various other molecules can be easily entrapped in nanofibers using our technology to improve their stability, water solubility, and efficiency

GAUCELLO PRIVATE LIMITED

Name of the Exhibitor	:	GAUCELLO PRIVATE LIMITED
Address	:	GAUCELLO PRIVATE LIMITED SN32 NEMORYA GOSAVITEMPLE, PRASUN DHAM FL102 GAURANG, THERGAON, PRASUNDHAM PUNE - 411033, MAHARASHTRA, INDIA
Contact Person	:	MR. RAKESH RAO
Designation	:	RAKESH RAO
Website	:	https://www.gaucello.com/
Sector	:	Manufacturing

Profile:

Gaucello Pvt. Ltd. is a deep-tech startup pioneering sustainable biomaterial solutions by converting underutilized agricultural biomass into high-value cellulose, cellulose nanofibers (CNF), and lignin-based materials. Our proprietary technology delivers renewable, high-performance alternatives for applications in paper, packaging, paints & coatings, bioplastics, textiles, and advanced composites. By enabling a circular bioeconomy and reducing dependence on forest-derived resources, Gaucello is driving the transition toward greener manufacturing and next-generation materials. Innovating Nature. Engineering the Future.

GENIX.AI

Name of the Exhibitor	:	GENIX.AI
Address	:	SHRAVANTHI BLUE CHIP, NO.12, 2ND FLOOR, 100 FEET RING ROAD, 1ST ATAGE BENGALURU RURAL BENGALURU - 560059, KARNATAKA, INDIA
Contact Person	:	MR. GNANAVEL MUTHARASU
Designation	:	FOUNDER AND CEO
Website	:	https://genix.ai
Sector	:	Healthcare

Profile:

Genix.ai (Radiome Health Pvt Ltd) is a clinical genomics interpretation platform based in Bengaluru. Labs and hospitals can sequence at scale, but the software that classifies variants is calibrated on European reference populations — leaving too many South Asian findings clinically uncertain. Genix.ai is a sequencer-agnostic interpretation layer that applies ACMG/AMP classification against South Asian population references (gnomAD SAS, IndiGen, GenomeAsia 100K), returning reports clinicians can act on. We do not run a lab — we are the intelligence layer above the sequencer. We sell to hospitals, diagnostic labs and public health programmes across India and Southeast Asia.

IN14SILICON SOLUTIONS (INDIA) PRIVATE LIMITED

Name of the Exhibitor	:	IN14SILICON SOLUTIONS (INDIA) PRIVATE LIMITED
Address	:	2, 40, 2ND MAIN ROAD, MADAPPA GARDEN, RAJAJI NAGAR, BENGALURU URBAN BENGALURU - 560010, KARNATAKA, INDIA
Contact Person	:	MR. DEBABRATA GHOSH
Designation	:	FOUNDER'S OFFICE
Website	:	https://14si-solutions.com/
Sector	:	Semiconductors & Materials

Profile:

14Si is a CRO focused on contamination detection & mitigation for materials & chemicals used in the solar & semiconductor industries. Backed by 30+ years of combined industry experience, 14Si helps Global & Indian partners to identify & resolve contamination challenges at parts-per-trillion levels, while supporting India's high-purity chemical indigenisation efforts. 14Si has developed a first-of-its-kind nano-engineered, reusable substrate that captures native nanoparticles down to 20 nm. Combined with in-house ML/DL-based image analysis, it enables cost-effective contamination monitoring & particle characterisation for application chemistries used in advanced semiconductor manufacturing.

INDIAN OIL CORPORATION LIMITED

Name of the Exhibitor	:	INDIAN OIL CORPORATION LIMITED
Address	:	INDIAN OIL R&D CENTRE, SECTOR 13 FARIDABAD - 121007, HARYANA, INDIA
Contact Person	:	MR. SAMIK HAIT
Designation	:	INDIAN OIL CORPORATION LIMITED
Website	:	https://iocl.com/pages/r-and-d-centre
Sector	:	Environment/Energy

Profile:

IndianOil, a Fortune Global 500 energy major (#127, 2025), is India's largest integrated energy company with over six decades of leadership across refining, pipelines, marketing, petrochemicals, natural gas, exploration, and clean energy. Operating nine refineries with 71.5 MMTPA capacity and over 20,000 km of pipelines, it serves the nation through 65,000+ customer touchpoints. IndianOil is driving India's energy transition through biofuels, green hydrogen, sustainable aviation fuel, EV charging, battery technologies, and advanced R&D, while pursuing Net Zero Operational Emissions by 2046 and sustainable growth.

JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH (JNCASR)

Name of the Exhibitor	:	JAWAHARLAL NEHRU CENTRE FOR ADVANCED SCIENTIFIC RESEARCH (JNCASR)
Address	:	RACHENAHALLI LAKE RD, JAKKUR BENGALURU - 560064, KARNATAKA, INDIA
Contact Person	:	DR. PRINCY J. PEREIRA
Designation	:	COORDINATOR, R&D AND F&E
Website	:	https://www.jncasr.ac.in/
Sector	:	Others

Profile:

Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) is a multidisciplinary research institute situated in Jakkur, a locality north of Bangalore, India. It is relatively young yet well-known around the Globe. Our mandate is to pursue and promote world-class research and training at the frontiers of Science and Engineering covering broad areas ranging from Materials to Genetics. It provides a vibrant academic ambience hosting more than 300 Researchers. The Centre is an autonomous institution under the Department of Science and Technology, Government of India and is a deemed to be university.

MAGHEALS PVT LTD

Name of the Exhibitor	:	MAGHEALS PVT LTD
Address	:	2ND FLOOR, 198, SUITE 1379, CMH ROAD, INDIRANAGAR BENGALURU - 560038, KARNATAKA, INDIA
Contact Person	:	DR. RAJESH KATOCH
Designation	:	DIRECTOR
Website	:	https://wwww.magheals.com
Sector	:	Healthcare

Profile:

MagHeals Pvt. Ltd. develops nanotechnology-enabled healthcare solutions, including magnetic nanoparticles, smart biomaterials, targeted drug delivery systems, and magnetic hyperthermia devices. Our innovations are designed to enable precise, minimally invasive therapies for cancer and other challenging diseases while advancing translational nanomedicine.

METSI ENVIRO TECH P LTD

Name of the Exhibitor	:	METSI ENVIRO TECH P LTD
Address	:	TREASURE, 47, 1ST FLOOR, EVERGREEN LAYOUT, 2ND CROSS, KOTHANUR BENGALURU - 560077, KARNATAKA, INDIA
Contact Person	:	MR. KIRAN D SOUZA
Designation	:	SENIOR MANAGER
Website	:	https://metsiet.com
Sector	:	Environment/Energy

Profile:

Metsi Enviro Tech Private Limited is about 3 decades in technologies pertaining to environmental sustainability. Nano bubble generator technology is invented at IIT Ropar and is validated and certified by IIT . Patented technology is used across a wide spectrum of treatment of waste water , lakes , Nallahs & ponds, aquaculture , oil and grease, agriculture . Claire Fontaine Nano Kriti is sold in the Indian and global market place having a distinct advantage of consistent nano size bubble generation , long life & low power consumption . IIT Scientists,part of the global nano alliance research ,internationally accredited for pioneering innovative invention https://metsiet.com/nanokriti

MOLVERSE - ACCELERATING MOLECULAR DISCOVERIES

Name of the Exhibitor	:	MOLVERSE - ACCELERATING MOLECULAR DISCOVERIES
Address	:	BANGALORE BIOINNOVATION CENTRE, HELIX BIOTECH PARK, IBAB CAMPUS, ELECTRONIC CITY PHASE I, ELECTRONIC CITY BENGALURU - 560100, KARNATAKA, INDIA
Contact Person	:	MR. PRADEEP HN
Designation	:	DIRECTOR & CEO
Website	:	https://molverse.tech
Sector	:	Medicine

Profile:

MolVerse revolutionizes biomolecular discoveries, precision diagnostics and drug development pipelines making it accessible, affordable, and scalable while minimizing the use of animal models and reducing AI biases/hallucinations bridging the bench-to-bed gap against deadly human diseases.

MOREL BIO SCIENCE PRIVATE LIMITED

Name of the Exhibitor	:	MOREL BIO SCIENCE PRIVATE LIMITED
Address	:	17/18, BANGALORE INTERNATIONAL PUBLIC SCHOOL ROAD, UTTERHALLI BANGALORE - 560061, KARNATAKA, INDIA
Contact Person	:	MR. SUNIL VERMA
Designation	:	MANAGING DIRECTOR
Website	:	https://www.morelbioscience.com/
Sector	:	Healthcare

Profile:

Morel Bio Science Private Limited is an innovation-driven biotechnology company focused on developing and manufacturing high-value fermentation-derived bioactive ingredients for the nutraceutical, pharmaceutical, food, and feed industries. The company specializes in microbial fermentation, downstream processing, purification, and formulation of sustainable, high-quality products, including Vitamin K2 (MK-7). Incubated at the Bangalore Bioinnovation Centre (BBC), Morel Bio Science is committed to research, innovation, quality, and intellectual property development, delivering eco-friendly biotechnology solutions that support human health and industrial applications.

NANO AERPOD (FLH KLEANAIR)

Name of the Exhibitor	:	NANO AERPOD (FLH KLEANAIR)
Address	:	31/9C1, VABASANDRA VILLAGE, NANJAREDDY LAYOUT LANE, JIGANI LINK ROAD, 4TH PHASE, BEHIND APOTEX GATE 4, BOMMASANDRA INDUSTRIAL AREA, ANEKAL TALUK BANGALORE - 560105, KARNATAKA, INDIA
Contact Person	:	MR. KARL MAX
Designation	:	CEO
Website	:	https://aerpod.in/
Sector	:	Healthcare

Profile:

FLH Kleanair (Freedom • Life • Happiness) is an Indian clean-air technology startup developing wearable respiratory protection solutions for people exposed to hazardous air pollution. Incubated by Bangalore Bioinnovation Centre, IITM Pravartak and CPDMeD IIsc, the company focuses on innovative, lightweight, and user-centric products for traffic police, healthcare professionals, industrial workers, and urban commuters. Its flagship product, Nano Aerpod, is a wearable powered air purifier featuring HEPA H13 filtration with up to 99.97% particulate filtration efficiency to help reduce exposure to harmful airborne pollutants.

NANOVERSE

Name of the Exhibitor	:	NANOVERSE
Address	:	SHED NO. 1, THE CENTRAL, BLOCK NO. 328, SARKHEJ-BAVLA, N. H. 8A, SANAND, OPP NR. HOTEL BHAGYODAY, CHANGODAR AHMEDABAD - 382213, GUJARAT, INDIA
Contact Person	:	MR. VIKALP JOISAR
Designation	:	DIRECTOR
Website	:	https://resurgeninnovations.com/
Sector	:	Manufacturing

Profile:

Resurgen Innovations Pvt. Ltd. Redefining Nanotechnology through Sustainable, High-Purity Manufacturing. Rooted in Innovation: A "Made in India" Success Story.We take immense pride in our commitment to "Atmanirbhar Bharat"—building a self-reliant nation through cutting-edge science. Our proprietary manufacturing technology is entirely homegrown, developed and perfected right here in India. We are democratizing access to nanotechnology through responsible, green engineering. Our goal is to make ultra-high purity metal, metal oxide, and carbon-based nanoparticles affordable for industrial and commercial use by utilizing a revolutionary, solvent-free production process.

PAPERSENS PVT LTD

Name of the Exhibitor	:	PAPERSENS PVT LTD
Address	:	PAPERSENS PVT LTD, YENEPOYA UNIVERSITY CAMPUS, DERALAKATTE MANGALORE - 575018, KARNATAKA, INDIA
Contact Person	:	DR. K SUDHAKARAPRASAD
Designation	:	FORUNDER DIRECTOR AND PROFESSOR
Website	:	https://www.papersens.com/
Sector	:	Healthcare

Profile:

Bridging the gap between academic innovation and commercial diagnostics. We develop affordable, patent-backed point-of-care testing platforms for clinically relevant biomarkers. We utilize our scientific strength to develop affordable point-of-care testing platforms. With advice from clinicians at Yenepoya Deemed to be University Hospital, we ensure our solutions are practically relevant. Since the startup is a spin-off from academic research, we are translating ideas that might have otherwise remained as publications into tangible products. Currently, we are working on paper-based microfluidic platforms for age-related neurological issues, infectious diseases, and child and women's health.

PARK SYSTEMS

Name of the Exhibitor	:	PARK SYSTEMS
Address	:	SECOND FLOOR, NO. 86, GOKUL TOWERS, M S RAMAIAH ROAD, MATHIKERE BENGALURU - 560054, KARNATAKA, INDIA
Contact Person	:	MR. VAMSI BENDALAM
Designation	:	MARCOM MANAGER
Website	:	https://www.parksystems.com/
Sector	:	Manufacturing

Profile:

Park Systems is a global leader in nanoscale microscopy and metrology solutions, dedicated to empowering scientists, engineers, and industries to push the boundaries of innovation. Built on a pioneering legacy in atomic force microscopy (AFM), the company has grown into the world's #1 AFM provider and now offers a diversified portfolio that includes imaging spectroscopic ellipsometry (ISE), nanoscale IR spectrometers (AFM-IR), white light interferometry (WLI), active vibration isolation (AVI), and digital holographic microscopy (DHM). With headquarters in Korea, 16 global offices, and a trusted customer base of leading universities, national labs, and semiconductor fabs.

PIVECTOR LABS

Name of the Exhibitor	:	PIVECTOR LABS
Address	:	S-161 02ND FLOOR EXPRESS ZONE B WING MALAD EAST GOREGAON EAST MUMBAI - 400063, MAHARASHTRA, INDIA
Contact Person	:	MR. AKSHAY DIPAKKUMAR HARLALKA
Designation	:	AKSHAY DIPAKKUMAR HARLALKA
Website	:	https://www.pivectorlabs.com/
Sector	:	Manufacturing

Profile:

Pivector Labs develops compact metrology, inspection and precision-motion systems for semiconductor manufacturing, advanced packaging and research. Our technologies include high-throughput atomic force microscopy, automated probe-card inspection, optical and 3D surface metrology, microscope automation and miniature nanopositioning systems. We help semiconductor companies improve measurement throughput, integrate metrology closer to the process and access flexible, cost-effective instrumentation for inspection, process development and quality control.

PRANTAE SOLUTIONS

Name of the Exhibitor	:	PRANTAE SOLUTIONS
Address	:	S-3/35, SECTOR - A, ZONE - B, MANCHESWAR INDUSTRIAL ESTATE, BHUBANESWAR, KHORDHA, BHUBANESWAR - 751010, ODISHA, INDIA
Contact Person	:	DR. SUMONA KARJEE MISHRA
Designation	:	MANAGING DIRECTOR
Website	:	https://www.prantae.com
Sector	:	Healthcare

Profile:

Prantae Solutions Pvt. Ltd. is an award-winning Indian deep-tech MedTech company recognized with the National Startup Award 2022, CII Industrial IPR Award, and DSIR recognition for research excellence. Operating from a CDSCO-approved medical device manufacturing facility, the company develops AI-enabled, nanotechnology-powered point-of-care diagnostic platforms. Its flagship innovation, Proflo-U®, enables early diagnosis, staging, and monitoring of Chronic Kidney Disease (CKD), delivering laboratory-quality, connected, and affordable diagnostics to strengthen preventive healthcare and improve patient outcomes through decentralized care.

PRASINOS TECH INNOVATIONS PVT LTD

Name of the Exhibitor	:	PRASINOS TECH INNOVATIONS PVT LTD
Address	:	F- 502, GULMOHAR GARDENS, MALLAPUR HYDERABAD - 500076, TELANGANA, INDIA
Contact Person	:	DR. ADITI MULLICK
Designation	:	FOUNDER & MD
Website	:	https://prasinostech.co.in/
Sector	:	Manufacturing

Profile:

Prasinos Tech Innovations Pvt. Ltd. is a DPIIT-recognized deep-tech organization based in Hyderabad, India, specializing in innovative water and wastewater treatment solutions. The company develops indigenous technologies including nanobubble systems, ozone systems, oxygen generators, hydrodynamic cavitation reactors, and ultrasonic algae control systems. Its solutions improve treatment efficiency, reduce chemical consumption, and promote sustainable water management across municipal and industrial sectors. With 100+ installations across India and other countries, 10+ patents, and 30+ research publications, Prasinos is committed to delivering scalable, science-driven environmental solutions.

QUANTUM BIOSCIENCES PVT. LTD.

Name of the Exhibitor	:	QUANTUM BIOSCIENCES PVT. LTD.
Address	:	RMZ LATITUDE COMMERCIAL, 10TH FLOOR, HEBBAL BANGALORE - 560024, KARNATAKA, INDIA
Contact Person	:	MR. RAGHURAM PUVVALA
Designation	:	DIRECTOR
Website	:	https://www.quantumbiosciences.ai/
Sector	:	Healthcare

Profile:

We are a deep-tech diagnostics company developing Quantum Sentinel™, a platform that detects cellular stress before irreversible tissue damage occurs. Using NV-centre nano-diamond quantum sensors, quantum relaxometry, and AI, we measure reactive oxygen species in patient-derived cells and convert them into actionable clinical toxicity scores. Our first application targets post-operative acute kidney injury, with future expansion into sepsis, oncology, ICU monitoring, and drug toxicity screening. We are incubated at C-CAMP and in Silicon Valley, funded by India's National Quantum Mission, and collaborate with IISc, IIT Delhi, IIT Bombay, UC Berkeley, and the University of Groningen

RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Name of the Exhibitor	:	RAMAIAH UNIVERSITY OF APPLIED SCIENCES
Address	:	GNANAGANGOTHRI CAMPUS, MSR NAGAR BENGALURU - 560054, KARNATAKA, INDIA
Contact Person	:	MS. RENUKA R
Designation	:	MANAGER - ADMISSIONS & MARKETING
Website	:	https://www.msruas.ac.in
Sector	:	Others

Profile:

Ramaiah University of Applied Sciences (RUAS) – Accredited with NAAC A+ for Excellence in Higher Education Ramaiah University of Applied Sciences (RUAS) is a leading institution of higher education known for its strong legacy, academic distinction, and societal impact. Originating from the Gokula Education Foundation (GEF) founded by Dr. M. S. Ramaiah in 1979, RUAS continues this tradition as a modern, innovation-driven private university established under the Karnataka State Act and sponsored by GEF (Medical). _____ Academic Framework and Interdisciplinary Education RUAS offers a comprehensive portfolio of programs across multiple faculties, fostering int

S.G. INSTRUMENTS PRIVATE LIMITED

Name of the Exhibitor	:	S.G. INSTRUMENTS PRIVATE LIMITED
Address	:	PLOT NO-65 SECOND FLOOR,DWARKA SEC-23, POCHANPUR VILLAGE ROAD, SAI ENCLAVE, OPP NEAR GOVT BOYS PRIMARY SCHOOL, NEW DELHI, SOUTH WEST DELHI, NEW DELHI - 110077, DELHI, INDIA
Contact Person	:	MR. SANDIPAN GUHA
Designation	:	CHIEF EXECUTIVE
Website	:	https://www.sg-instruments.com/
Sector	:	Others

Profile:

Founded in 1996, we are a future-oriented scientific solutions company enabling the successful adoption of advanced technologies across biotechnology and materials science. With decades of on-ground market experience, we bridge global innovation with local execution—supporting both academic and industrial R&D through deep application expertise, strong customer relationships, and reliable after-sales support. Our legacy includes over 22 years as the erstwhile distributor for Linseis Thermal Analysis in India, followed by a strategic joint venture that led to the establishment of Linseis Thermal Analysis India.

SASTRA DEEMED UNIVERSITY

Name of the Exhibitor	:	SASTRA DEEMED UNIVERSITY
Address	:	SASTRA DEEMED UNIVERSITY, THIRUMALAISAMUDRAM THANJAVUR - 613401, TAMIL NADU, INDIA
Contact Person	:	PROF. SWAMINATHAN S
Designation	:	PROFESSOR
Website	:	https://www.sastra.edu/
Sector	:	Healthcare

Profile:

SASTRA Deemed University, with over 40 years of excellence in higher education and research, is one of India's premier multidisciplinary institutions, recognised for excellence in education, research, innovation, and industry collaboration. Accredited with NAAC A++ and recognised as a Category-I University by UGC, SASTRA offers cutting-edge research across engineering, biotechnology, healthcare, materials science, and advanced manufacturing. The University houses state-of-the-art research facilities and actively collaborates with academia, industry, and government agencies to develop translational technologies.

SCIENCE GALLERY BENGALURU

Name of the Exhibitor	:	SCIENCE GALLERY BENGALURU
Address	:	SCIENCE GALLERY BENGALURU, 10-11, BELLARY ROAD, SANJAYNAGAR BENGALURU - 560024, KARNATAKA, INDIA
Contact Person	:	MR. SHELWYN JAMES
Designation	:	LEARNING MANAGER
Website	:	https://bengaluru.sciencegallery.com/
Sector	:	Others

Profile:

Science Gallery Bengaluru (SGB) is a not-for-profit public institution for research-based engagement targeted at young adults working at the intersection of the human, natural, and social sciences, and engineering, art, and design. SGB's public engagement model moves beyond participation, and towards proactive involvement through ever-changing research festivals anchored by interdisciplinary exhibitions, programmes, and public events consisting of research-based engagements led by artists and scholars from diverse backgrounds. SGB is established with the founding support of the Government of Karnataka and three academic partners: IISc, NCBS and ICTS.

SIAMAF HEALTHCARE

Name of the Exhibitor	:	SIAMAF HEALTHCARE
Address	:	E-14, DHI INNOVATIONS PARK, BANNERGHATTA MAIN ROAD, ARAKERE, OPP SANKALP INDIA FOUNDATION, BENGALURU URBAN BANGALORE - 560076, KARNATAKA, INDIA
Contact Person	:	DR. SUBHASIS SARANGI
Designation	:	FOUNDER & CEO
Website	:	https://siamaf.com/
Sector	:	Healthcare

Profile:

SIAMAF Healthcare is developing magnetic nanotechnology for radiation free and affordable cancer diagnosis and therapy. SIAMAF aims to bring innovative solutions for cancer staging, screening, localization, imaging, and hyperthermia through innovative, practical, and cutting-edge technology solutions. The company is founded with a goal to develop a better standard of cancer care for all. The idea is to use magnetic nanotechnology to remove the need for radioactivity and strong chemicals for cancer treatment. The company's first product MafPro is an ultrasensitive hand-held magnetic probe system for staging, localization, and detection of breast, uterine, head & neck, and colorectal cancer.

TANUH (TRANSLATIONAL AI FOR NETWORKED UNIVERSAL HEALTHCARE)

Name of the Exhibitor	:	TANUH (TRANSLATIONAL AI FOR NETWORKED UNIVERSAL HEALTHCARE)
Address	:	7TH FLOOR, TCS SMART-X HUB, INDIAN INSTITUTE OF SCIENCE BENGALURU - 560012, KARNATAKA, INDIA
Contact Person	:	MS. FLARANTXA PEREIRA
Designation	:	MARKETING & COMMUNICATIONS MANAGER
Website	:	https://www.tanuh.ai/
Sector	:	Healthcare

Profile:

An AI Centre of Excellence focused on creating scalable solutions for the effective management of non-communicable diseases (NCDs) at the point of care. A multidisciplinary hub uniting clinicians, data scientists, and AI technologists to develop tools for early diagnosis, risk prediction, continuous monitoring, and personalised interventions for major NCDs.

TCS RESEARCH

Name of the Exhibitor	:	TCS RESEARCH
Address	:	IIT KHARAGPUR RESEARCH PARK NSTP PLOT III B/12,ACTION AREA III, NEW TOWN KOLKATA - 700160, WEST BENGAL, INDIA
Contact Person	:	DR. PARAMITA KAR CHOUDHURY
Designation	:	SENIOR SCIENTIST
Website	:	https://tcs.com
Sector	:	Others

Profile:

Tata Consultancy Services (TCS) is a global leader in IT services, consulting, and business solutions, delivering innovation across AI, digital technologies, engineering, and research. Through its R&D initiatives, TCS develops advanced technologies in areas including intelligent sensing, healthcare, robotics, semiconductors, and sustainable systems to address real-world challenges.

TECHSOL ENGINEERS

Name of the Exhibitor	:	TECHSOL ENGINEERS
Address	:	C265 PEENYA INDL. AREA, 1ST STAGE BANGALORE - 560058, KARNATAKA, INDIA
Contact Person	:	MR. NISCHINTH J
Designation	:	SALES COORDINATOR
Website	:	https://techsolengineers.com
Sector	:	Semiconductors & Materials

Profile:

Techsol Engineers is a leading provider of advanced fluid system solutions, serving industries including Semiconductor, Nanotechnology, Hydrogen, Energy, Pharmaceuticals, Aerospace, and Industrial Manufacturing. We specialise in instrumentation tube fittings, valves, regulators, UHP gas delivery systems, manifolds, hoses, filters, and customised fluid handling solutions. Partnering with globally recognised brands, we deliver innovative, reliable, and high-performance engineering solutions backed by strong technical expertise and dedicated customer support. Techsol Engineers – Solution Reimagined.

THANMATRA LIFE

Name of the Exhibitor	:	THANMATRA LIFE
Address	:	CABIN E, BRINDAVAN BUSINESS CENTRE, MINIMALA ROAD, EDAPPALLY PO ERNAKULAM - 682024, KERALA, INDIA
Contact Person	:	DR. GIRISH CM
Designation	:	DIRECTOR
Website	:	https://www.thanmatralife.com
Sector	:	Medicine

Profile:

Biomedical startup focusing on developing innovative medical technologies that address unmet clinical needs in the area of infection prevention, wound healing and drug delivery. Our mission is to develop and translate high quality advanced medical innovations that remain affordable and accessible.

THE STARTUP ZONE

Name of the Exhibitor	:	THE STARTUP ZONE
Address	:	NO.5B, 2ND FLOOR, 10TH CROSS, RMV EXTENSION, SADASHIVNAGAR BANGALORE - 560080, KARNATAKA, INDIA
Contact Person	:	MR. SHARATH SHYAMASUNDER
Designation	:	CEO
Website	:	https://thestartupzone.in/
Sector	:	Others

Profile:

At The Startup Zone, we understand the challenges faced by entrepreneurs when navigating the complex landscape of setting up and running a business. Since our founding in 2015, we've dedicated ourselves to simplifying the complex journey of starting and scaling businesses.The Startup Zone assists entrepreneurs in launching and growing their businesses by offering services such as business incorporation (in India and globally), regulatory compliance, accounting, intellectual property protection, legal documentation, marketing, and HR solutions.

TRIDENT TECHLABS LTD

Name of the Exhibitor	:	TRIDENT TECHLABS LTD
Address	:	2ND FLOOR, 1/18-20, WHITE HOUSE, RANI JHANSI ROAD DELHI - 110055, DELHI, INDIA
Contact Person	:	MR. PRASANNA SHANKAR
Designation	:	ASSOCIATE VICE PRESIDENT (INDIA & SAARC)
Website	:	https://www.tridenttechlabs.com/
Sector	:	Electronics

Profile:

Trident Techlabs Limited was established in 2000 with the vision of becoming a technology driven knowledge company in the engineering domain. The company began with a focused portfolio of specialized engineering software solutions and quickly developed expertise in delivering high-quality tools for Engineering. Trident Techlabs has continuously strengthened its technology ecosystem through strategic collaborations with leading global technology providers. These partnerships have enabled the company to expand its capabilities across simulation driven design, high-performance computing, semiconductor solutions, reliability engineering, cyber security, electrical power systems and many more..

VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

Name of the Exhibitor	:	VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI
Address	:	JNANA SANGAMA BELAGAVI - 590018, KARNATAKA, INDIA
Contact Person	:	PROF. DINESH RANGAPPA
Designation	:	PROFESSOR AND CHAIRPERSON
Website	:	https://vtu.ac.in
Sector	:	Environment/Energy

Profile:

Visvesvaraya Technological University (VTU), Belagavi, Karnataka, spread over 116 acres built in modern architectural elegance, provides abundant facilities to its students. There are 215 engineering and architecture colleges. VTU boasts more than 3 lakh students pursuing 42 UG & 94 PG programmes, 923 research centres with 9000+ research scholars pursuing doctorate and M.Sc. (Engr.). VTU is accredited and recognized by prestigious bodies like UGC, NIRF, AICTE, NAAC, and AIU, and recognized by World Education Services. It has regional campuses at Mysuru, Belagavi, Bengaluru, Muddenahahalli, Talkal, Kalburgi and Dandeli where B.Tech., M.Tech. MBA, MCA, M.Plan., M.Sc., Research Programs.

YOKSHANA PRIVATE LIMITED

Name of the Exhibitor	:	YOKSHANA PRIVATE LIMITED
Address	:	2-2, MIDDLE NATHAM, NARASIMHAPURAM, PALASAMUDRAM, BAKARA NARASINGA RAYANI PETA CHITTOOR - 517419, ANDHRA PRADESH, INDIA
Contact Person	:	MR. SHRIVISHNU S
Designation	:	FOUNDER AND DIRECTOR
Website	:	https://www.yokshana.com
Sector	:	Healthcare

Profile:

Yokshana Private Limited introduces TrioSeal, an advanced hemostatic dressing powered by proprietary TrioTechnology and built on indigenous, high-absorbency Khadi cotton. Why TrioSeal? Superfast Hemostasis: Stops severe arterial and venous bleeding in seconds. Easy & Painless Removal: Prevents re-bleeding and tissue damage during dressing changes. All-Weather Ready: Operates seamlessly from scorching deserts to sub-zero high altitudes. Multi-Use: Engineered for combat soldiers, road accidents, and postpartum hemorrhage (PPH) during childbirth. 80% Cost Savings: Premium trauma care delivered at just 20% of the price of current market options.

ZAKR NEUROTECHNOLOGY

Name of the Exhibitor	:	ZAKR NEUROTECHNOLOGY
Address	:	ZAKR PRIVATE LIMITED 102 EJAZ TRUSTFORT NEJI, 10, ASHOKA ROAD, SAINT THOMAS TOWN BENGALURU - 560084, KARNATAKA, INDIA
Contact Person	:	DR. HAZEEM S
Designation	:	FOUNDER, INVENTOR
Website	:	https://www.zakr.life
Sector	:	Healthcare

Profile:

ZAKR Neurotechnology is developing a closed-loop, on-device neural memory augmentation platform for Alzheimer's disease and mild cognitive impairment. Its NV-Band wearable senses brain activity and delivers EEG-verified neurostimulation, computing cognitive biomarkers entirely on-device - with zero raw neural data ever leaving the device. Protected by a 79-claim, three-layer patent portfolio across software, hardware, and AI governance, ZAKR is advancing toward prototype and clinical validation, and welcomes researchers, clinicians, and technology partners.

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New BEL Road, MSR Nagar, Bengaluru - 560 054

Ramaiah Technology Campus (RTC):
#470-P, Peenya Industrial Area, Peenya 4th Phase, Bengaluru - 560 058

Electronic City Campus (RUCE):
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