



MEMS, Microfluidics & Nanoelectronics Lab

BITS Pilani
Hyderabad Campus

J Block # 204

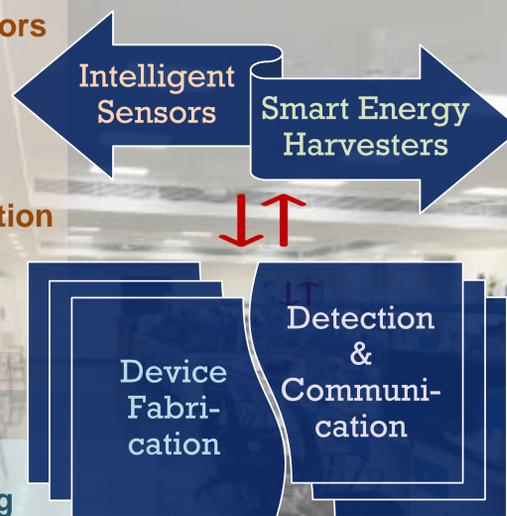


www.mmne.in

Overview

- **Key Focus:** Realizing futuristic smart sensors and intelligent energy harvesters encompassing various multidisciplinary domains
- **Highlights:** Global industry-academia-government collaboration to address scientific gaps & develop relevant technology while imparting state-of-the-art knowledge
- **Associated Courses:**
 - BITS F415: Introduction to MEMS
 - BITS F417: Microfluidics and Applications
 - MEL G611: IC Fabrication Technology

- MicroViscometer
- Bio/Chemical Sensors
- Cardiac-on-chip
- Water Monitoring
- Flexible Devices
- Wearable Devices
- Soil Nutrient Detection
- DNA Amplification
- DNA Detection
- Droplet-based Detection
- 3D Printing
- Direct Laser Writing
- Flexible Laser-Ablated
- Ink-jet Printing
- Nanomaterial Synthesis
- Paper-based
- Photolithography
- Soft-lithography



- Enzymatic Bio Fuel Cells (EBFC)
- Microbial Fuel Cells (MBFC)
- Flexible Solar Cells
- Flexible Memristors
- Under Water Solar Characterization
- Super Capacitors
- Electrical (Current / Capacitance / Impedance)
- Chemiluminescence
- Colorimetric
- Electrochemical
- Electrochemiluminescence
- High-Speed Vision
- Integrated Optics / WGs
- IoT
- AI / ML

Key Resources



List of Experiments

- Introduction Session
- Introduction to the software COMSOL and its application in MEMS/Microfluidics.
- Simulation of MEMS Sensors/Actuators using COMSOL
- Microfluidic simulations using COMSOL: Laminar Flow; Convection diffusion; Conjugate heat transfer.
- Development of PCB/ μ -devices using dry film resist based photolithography.
- Development of Micro-device using FDM based 3D printing.
- Development of electrically conductive polymers using CO2 Laser.
- Development of micro-devices using Direct Laser Writing (DLW) & Soft Lithography.
- Fundamentals of Cleanroom and demonstration of Electron Beam Vapour Deposition.
- Characterization I: Study of Scanning Electron Microscopy, Four Probe, Tensiometer, etc.
- Case Study: IoT in MEMS & Point of Care Devices

Contact Details

- **Faculty Lab In charge:** Prof. Sanket Goel
- **Lab Technician:** Mr. Sreekanth T
- **Research Scholar:** Mr. Sohan Dudala