Team

An interdisciplinary team of 8 faculty members and 50 graduate students (38 Ph.D., 12 M.Tech.) from four different departments (Chemical Engineering, Electrical Engineering, Physics, Material Science & Engineering), 2 research engineers, 3 project scientists, 2 visiting research engineers, and a 5 member technical support team

Major projects

- Integration of Corus Steel substrates with the organic solar cell and organic light emitting diodes in collaboration with Tata Steel Europe
- Design and development of organic solar cell sub modules in collaboration with Moser Baer and funded by MNRE
- White organic light emitting diodes for lighting in collaboration with Sahasra Electronics
- Printable Electronics in collaboration with Manipal Technologies and funded by DST
- Research and Development of Indium Gallium Zinc Oxide (IGZO) large area transparent electronics and its application to active matrix flat panel display funded by DST
- Fabrication of a conducting polymer based flexible printable temperature sensor array funded by DST

Collaborators/partners	Government Funding Agencies
Samtel Group of Industries	Department of Science and Technology (DST)
Tata Steel Europe	Ministry of Communications and Information Technology (MCIT)
Manipal Technologies Ltd.	Ministry of New and Renewable Energy (MNRE)
Moser Baer Ltd.	Office of the Principal Scientific Adviser (PSA), GOI
Sahasra Electronics Pvt. Ltd.	Defence Research and Development Organisation (DRDO)
TU Chemnitz, Germany	

Outreach activities

To create awareness and faciltate growth of R&D activity in large area electronics in the country, a summer school on organic electronics is offered every year in the second-third week of July

Highlights

- Interdisciplinary team with large number of graduate students
- Infrastructure and equipment for material synthesis, device and prototype fabrication and testing for a broad range of large area electronic technologies
- Twin focus on generation and harnessing of knowledge
- Ability to take ideas from concepts to industrial strength prototypes
- Strong collaboration with industry

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SCDT– A Centre for Large Area Electronics

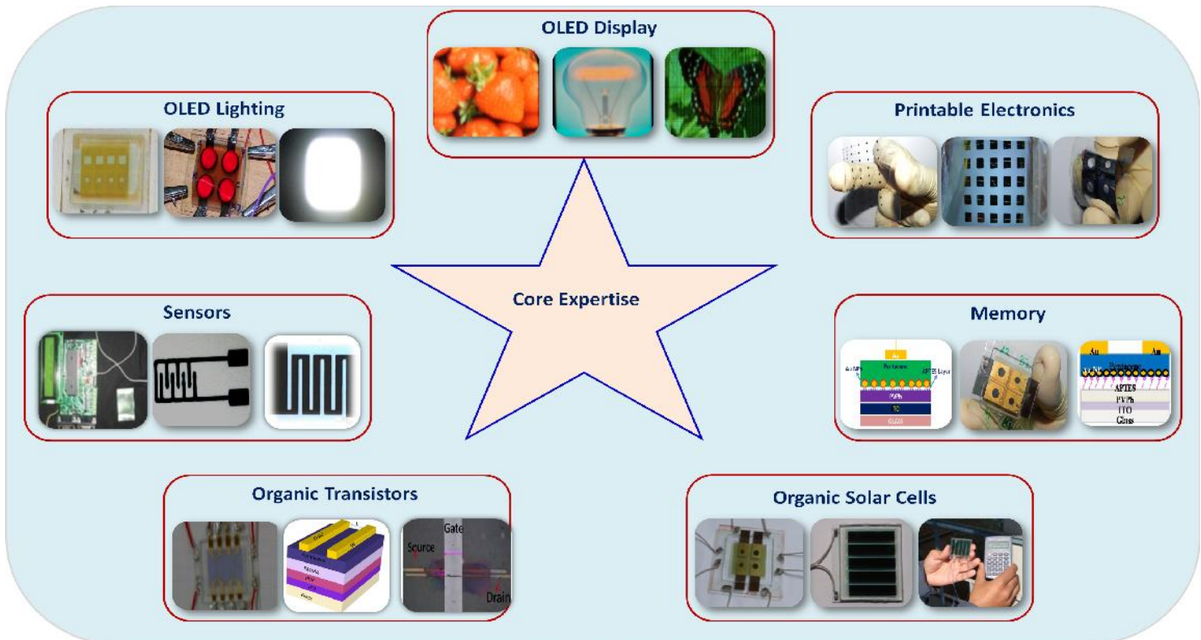
Indian Institute of Technology Kanpur

(Established in the year 2000 through a joint initiative of Samtel group of industries and IIT Kanpur)

Mission: Conduct research and development in large area electronics that serves as a foundation for development of domestic industry in this field.

Objectives

- Conduct basic research and development in the field of large area electronics
- Establish a tripartite relationship between industry, academia and government agencies to catalyse development of domestic industry
- Develop human resource and conduct outreach activities

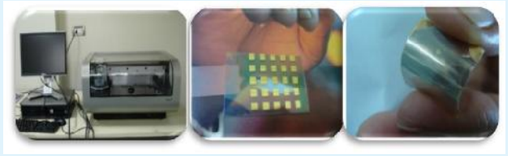


Organic Solar Cells

- Organic solar cells on steel substrate for rooftop applications (with TATA Steel)
- High efficiency organic solar cell sub-modules on glass and flexible substrate (with Moser Baer)
- Organic solar cells on paper using mass printing techniques (with TU Chemnitz, Germany)

Printable Electronics

- Fully inkjet printed electronic components including thin film transistors & diodes
- In-house synthesized nanogold ink based interconnect technology
- RFID and smart packages (with Manipal Technologies)

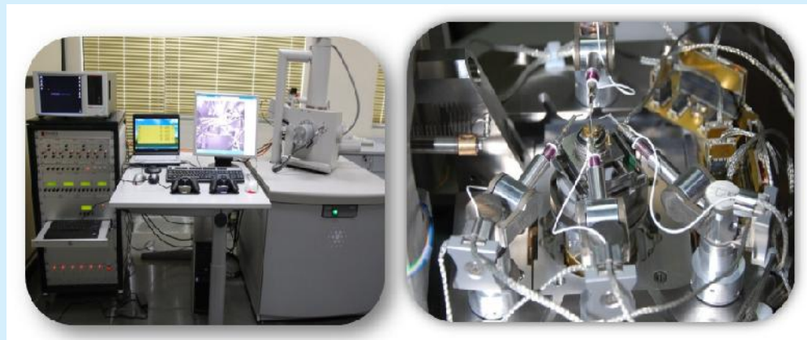


Organic Light Emitting Diode - Displays

- Passive matrix full color 1-inch (96 RGB X 64) and 1.5-inch (128 RGB X 128) displays fully developed and fabricated in-house (with Samtel Color Ltd.)

Facilities

- A 500 m^2 cleanroom with complete set of processing facilities for fabrication of full color passive matrix OLED displays, lighting modules, OPV modules, transistors and sensors
- Printing facilities such as inkjet, gravure & screen printer
- A wide range of Electrical, Optical and Imaging tools for characterisation of thin-films, devices and circuits



Organic Light Emitting Diode - Lighting

- Small molecule White Organic Light Emitting Diode (WOLEDs) devices on glass (with Sahasra Electronics)
- Polymer WOLED on steel substrates (with TATA Steel)
- Inorganic-organic hybrid structures (CdSe Quantum dots in a PFO matrix)

Sensors

- Application areas: healthcare, environmental monitoring, security
- Research focus: sensing mechanisms, transport, reactions, micro/nano fabrication
- Technology focus: programmable sensor arrays

Exemplary activities

i) flexible thermal sensors for monitoring body temperature
ii) gas sensors for breath analysis
iii) electrochemical sensors for detection of heavy metals in water
iv) microfluidic sensors for detection of disease biomarkers in body fluids