

Advanced Materials and Future Technologies for Solar Energy Conversion

Overview

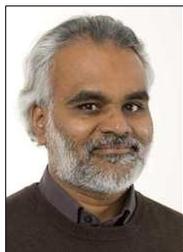
This is an interdisciplinary, short-course that provides a treatment of the conversion and conservation of solar energy using advanced materials. The course is designed for one credit and it will be divided into three themes:

- Introduction to solar energy materials and characterization techniques.
- Different assemblies of solar cells.
- Fabrication of new generation solar cells.

The organic semiconductors as well as hybrids of inorganic and organic materials have emerged out as technologically relevant materials capable of innovative processing methods such as coating and printing from solution. This has triggered new generation technologies in display technology, electronics and photovoltaics. The course will involve fundamental understanding of chemical and functional properties of these materials and structure-property relations. The physical nature of energy materials will be developed from a 'bottom up' perspective, beginning with the manner in which such materials can be synthesized. After synthesis, the technologist must know the quality of the materials that have been synthesized, and the course will cover a diverse range of contemporary structural/morphological characterization methods such as SEM, TEM and XRD. Finally, the course will focus on functional characteristics for a variety of solar energy conversion processes and fabrication of devices. Here, the course will cover basic functional characterization techniques with reference to state-of-the-art technologies. In this manner, the theoretical courses will be supplemented by practical hands-on training on solar cell preparation and characterization for young scientists.

Modules	Course Duration: 8 - 12 Jan, 2018 Last Date for registration: 20, December 2017 Number of participants for the course will be limited to fifty. It will be compulsory for registered participants to attend the entire module.
You should attend if...	<ul style="list-style-type: none">• You are a graduate student or an engineer interested in gaining an understanding of the fundamental elements of energy materials.• You are a researcher interested in developing skills to implement them for energy materials for solar energy conversion and utilization.• You are a research scientist or a young faculty interested in gaining practical hands-on training on solar cell preparation and characterization and interested in learning about innovative energy technologies of future relevance.
Course Fees	<ul style="list-style-type: none">• Academic Institutes and Government Aided Organizations: Rs. 1000• Industry/Private Organizations: Rs. 2000• Participants from abroad : US \$200 Above Course fees include course material and tutorials only. Accommodation will be made available at IITJ Guest House and Hostel on first come first serve basis upon payment.

The Faculty



Prof. Mukundan Thelakkat is working as Professor for Applied Functional Polymers at Bayreuth, Germany. A key theme running through his research activities is the design, development and application of complex, multifunctional organic and hybrid material systems, especially built up of charge transport molecules, charge generation materials, and chromophores. He has been working continuously in the field of organic semiconductors and devices for the last 25 years and has specialized in tailor-made synthesis of functional molecules and polymers for charge transfer and energy transfer processes. He is a member of director board of Indian-Bavarian Centre in Germany and is a Coordinator for the Multimillion Euro project of Bavarian Research Network, "Solar technologies Go Hybrid". At present, his research group, Applied Functional Polymers, is intensively involved in tailored multifunctional self-assembling copolymers, block copolymers, bridged donor-acceptor systems, light harvesting dyes, photoswitchable chromophore systems, conjugated polyelectrolytes, battery materials and bioelectronics. In the field of organic devices, Prof. Thelakkat has profound knowledge and experience on OLEDs, solar cells, and batteries, with focus on energy conversion and storage devices.



Prof. Ritu Gupta is Assistant Professor at Indian Institute of Technology, Jodhpur. Her research interest includes flexible and transparent devices, as well as scalable synthesis of nanomaterials for application in energy devices.

INSTRUCTION FOR REGISTRATION:

- (1) Register at the GIAN portal on the link <http://www.gian.iitkgp.ac.in/> by clicking on 'Course Registration/Participant Login'.
- (2) It shall state – 'Registration to the portal is one time affair and will be valid for lifetime of GIAN. Once registered in the portal, an applicant will be able to apply for any number of GIAN courses as and when necessary. One time Nonrefundable fee of Rs. 500/- is to be charged for this service. Please also note that mere registration to the portal will not ensure participation in the courses'.
- (3) Once done with registration, please select the course 'Advanced Materials and Future Technologies for Solar Energy Conversion' from the list of courses. 4. Send the copy of registration details from GIAN website to the following email; gianiitj@gmail.com

Course Coordinator

Dr. Ritu Gupta

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For registration, log on:
<http://www.gian.iitkgp.ac.in/GREGN/>