ORGANIC SOLAR CELLS

Overview

Amongst the major challenges of the 21st century, energy production has a pivotal role. One major potential contributor to the overall energy picture is to harvest solar energy, as it is a highly abundant resource. Therefore solar energy harvesting technologies sourcing from sustainable and abundant materials represent a necessary piece of the energy picture. Today, Si-based photovoltaic modules are the dominant solar technology with a cost that continues to decrease. However, Si modules do have inherent limitations such as an energy intensive fabrication that impacts heavily on the energy payback time (EPBT), typically on the order of 2-3 years, whereas organic solar cells are considered to have EPBT on the order of months, making them potentially more environmentally benign. Also, organic solar cell technology is among the most promising to satisfy applications for lightweight and nontoxic power generation. Such power generation is especially necessary for mobile applications or as façade panels for building integrated photovoltaics.

However, organic solar cells are unique in the solar cell realm, as two materials are required to even produce photocurrent. As such, additional training is needed to familiarize students with the fundamentals of this technology. Thus, in order to continue to maintain momentum in organic solar cell research and achieve further efficiency and stability (currently the two major bottlenecks to the adoption of this technology industrially) gains, this course seeks to start from first principles, developing the necessary chemistry background, followed by semiconductor physics specific to organic semiconductors, followed by a complete understanding of the photovoltaic effects in organic solar cells, and essential technology fundamentals such as materials processing, encapsulation, and stability considerations.

भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

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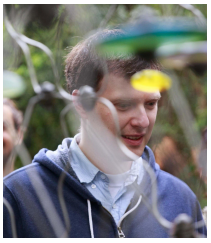
Modules	**Organic Solar Cells: 08.01.2018 - 12.01. 2018** **Number of participants for the course will be limited to fifty.**
You Should Attend If…	· Students of Electrical Engineering, Physics, Chemistry, Materials and Metallurgical Engineering from all reputed colleges/universities. · Faculty members and researchers from academic and research institutions. · Executive engineers and researchers from industry.
Fees	The participation fees for taking the course is as follows: **Students from IIT Hyderabad: No Fees but registration is compulsory.** **Students outside IIT Hyderabad: Rs. 1500** **Faculty/researchers/industry: Rs. 3000** **Participants from abroad : US $500** The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hr free internet facility. The participants will be provided with accommodation and food on payment basis. Please inform in advance if you require accommodation within the campus.
Course Coordinator	Dr. Swati Gupta E-mail: swati_gupta@iith.ac.in Contact no.: 040 2301 6152 (O) Dr. Sai Santosh Kumar Raavi E-mail: sskraavi@iith.ac.in Contact no.: 040 2301 8450 (O) * Please write an email to Dr. Swati Gupta for any communication related to GIAN course.
Fees Payment	**Within India** Branch code: 014182 SWIFT Code: SBIN0014182 Account No.: 30859878032 **Remittance from abroad** SWIFT code: SBININBB762, IMCR CODE: 502002528 Name of the Bank: State Bank of India, IIT Kandi, Hyderabad, India.
Accommodation	The accommodation has to be met by participants. There are number of hotels available nearby IIT Hyderabad. Limited accommodation on payment basis will be provided on a first come first serve basis in the IITH hostels @100 per day.
Food	An additional fee of Rs. 1000/- has to be paid for providing bottled water / Lunch / Coffee/Tea with snacks on all 5 days. This payment has to be done in cash at IITH at the time of registration on the first day of the course.

The Faculty



Barry P. Rand
Assistant Professor
Department of Electrical Engineering
Princeton University, USA

Barry Rand earned a BE in electrical engineering from The Cooper Union in 2001. Then he received MA and PhD degrees in electrical engineering from Princeton University, in 2003 and 2007, respectively. From 2007 to 2013, he was at imec in Leuven, Belgium, ultimately as a principal scientist. Since 2013, he is an assistant professor in the Department of Electrical Engineering and Andlinger Center for Energy and the Environment at Princeton University. He has authored more than 90 refereed journal publications, has 19 issued US patents, and has received the 3M Nontenured Faculty Award, DuPont Young Professor Award, DARPA Young Faculty Award (2015), and ONR Young Investigator Program Award (2016).

Swati Gupta
Assistant Professor
Department of Electrical Engineering
Indian Institute of Technology
Hyderabad

Dr. Swati Gupta received her B.Tech-M.Tech in the Department of Electrical Engineering from Indian Institute of Technology Kanpur in 2009. Then she earned PhD in Electrical Engineering from University of Strathcldye, UK in 2014. Since 2015, she is an assistant professor in the Department of Electrical Engineering at IIT Hyderabad. Her research interest is the development of low-cost fabrication technology of organic electronic devices.

Sai Santosh Kumar Raavi
Assistant Professor
Department of Physics
Indian Institute of Technology
Hyderabad

Dr. Raavi Sai Santosh Kumar, is an assistant Professor of Department of Physics, IIT Hyderabad from July 2014. He has authored more than 30 refereed journal articles. He has received FAPESP-Visiting Researcher award (2017) to visit IFSC-USP, Sao Carlos, Brazil. His research interests are "Exciton dissociation dynamics at a donor/acceptor interface in an organic photovoltaic (OPV) blends and development of optical techniques to address various device physics aspects of OPV.