

BioMEMS and Micro/Nanosystems

Overview

With the advent of powerful search engines on the internet, it has become fairly straightforward to acquire overall understanding of wide range of subjects. The convenient accessibility of information has fueled collaboration to solve complex problems of interdisciplinary nature because it has become possible for a physicist to learn biology, and vice versa. An aspect that is diminishing is fundamental understanding of the subject. In this series of lectures and discussions, the goal would be to introduce some of the ideas that are pervasively used in Nanotechnology and Nanoscience at more basic level so that its impact on current research is appreciated. Keeping the broadness in mind, list of topics chosen will do justice in kindling the audience excitement in micro/nanoscale science and technology. Underscoring the basic principle would optimistically aid the young audience to address problems in physical and life sciences, who may be considering a career in small scale research.

Content-wise, this course aims at providing fundamentals of design and manufacturing of miniaturized technology to engineers/researchers of various fields. It will develop understanding of microsystems design aspects, various characterization schemes/ biomedical/ chemical testing practices and processing at the nanoscale. This short term course would be highly relevant for sensor engineers and technologists, healthcare sector, nano/micro-manufacturing engineers, material scientists etc. A considerable portion of this short term course would also focus on current research and development reported in topical reviews and publications specially those which have resulted in technological revolutions. The course is intended to be highly interdisciplinary in nature and the discussions would be mostly based on practical research problems and solutions.

Modules	A: Introduction to Bio-MEMS B: Processing at nano-scale C: Measurements at nanoscale D: Bio-Nanodevices, biomedical applications of miniaturized systems E: Nano-electrochemistry and molecular biology on chip	May 11-16 2019
Who Should Attend...	<ul style="list-style-type: none"> • Senior undergraduate students, graduate students pursuing M. Tech/MS and Ph. D. Programme in the Mechanical/Chemical/Materials engineering Departments would benefit most. • Proposed course has been designed to update knowledge and improve understandings of the faculty members in new IITs, IISERs, NISER and other academic institutions in the country about the best practices and recent advances in the field; • Practicing engineers and scientists working in MEMS industries, as well as, in government research organizations will also be benefited. 	
Fees	<p>The participation fees for taking the course is as follows: Participants from abroad : US \$250 Industry/ Research Organizations: INR 8,000 Academic Institutions: Faculty - INR 5,000 and Students - INR 2,000 The above fee will include instructional materials, tutorials and assignments, etc. The participants will be provided with accommodation on payment basis.</p>	
Mode of Payment	<p>All prospective participants need to do web registration for the course on GIAN (http://www.gian.iitkgp.ac.in/GREGN/Index) portal by making onetime non-refundable payment of Rs. 500/. After the mandatory web registration, shortlisted participants will register for the course by making full payment of the course registration fee either by Demand Draft in favor of "CEP IIT Bhubaneswar" or through NEFT (Customer Name-CEP, IIT Bhubaneswar, Account No: 24282010001960, IFSC Code: SYNBO002428, Bank Name : Syndicate Bank, Branch Address: IIT, Bhubaneswar) latest by April 30, 2019.</p>	

The Faculty



Prof. Ravi F. Saraf is Lowell E. and Betty Anderson Distinguished Professor at the Department of Chemical Engineering, University of Nebraska at Lincoln (UNL). In the past 15 years, his research interest has been in interfacial properties of materials, nanometer scale devices and their processing. Recently his focus has been towards Biophysics and bioengineering. An author/co-author of 53 US Patents and over 100 scientific publications, the style of his research has been in basic sciences to solve practical problems. Before joining UNL, he spent ~5 years in Virginia Tech and ~10 years at IBM's corporate research lab – Thomas J. Watson Research Center at Yorktown Heights. Prof. Saraf obtained his PhD and MS in Polymer Science, University of Massachusetts, Amherst and B.S from Indian Institute of Technology, Kanpur, India.



Dr. Ankur Gupta is faculty in the School of Mechanical Sciences at Indian Institute of Technology Bhubaneswar. He received his PhD degree in Mechanical Engineering at IIT Kanpur. As foremost credentials, he received "ISEES Young Scientist" award in 2017 and was selected as delegate to participate in "BRICS Young Scientist Conclave" held in Zhejiang University, China, 2017. His research interest lies in Micro-systems fabrication.

Course Coordinator

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