Nanostructured Materials: Science and Technology

(October 8-12, 2018)

Venue: Indian Institute of Technology Roorkee, Roorkee-247667, Uttarakhand, India

Overview:

Nanotechnology represents an interdisciplinary area encompassing several fields including Materials Science, Chemical Engineering, Physics, Electrical engineering and more. This course is designed to introduce participants to some of the fundamental concepts behind nanotechnology as well as applications of nanomaterials. Lectures will cover Nanofabrication technology, Atomic scale structural characterization technology, Nanoelectronics, Nanomagnetics, Nanophotonics, and Nanostructured Biocompatible Materials.

Objective:

Main objective of this course is to provide participants with a fundamental understanding of various aspects of nanotechnology and the required skills to apply this knowledge in a wide range of careers in science engineering and related fields. Some of the topics to be covered in this course include:

(i) Introduction to Nanoscience & Nanotechnology
(ii) Quantum Confinement Effects
(iii) Nanofabrication Techniques
(iv) Atomic Scale Structural Characterization Techniques
(v) Nanoelectronics, Nanomagnetics and Nanophotonics
(vi) Nanostructured Biocompatible Materials.

By the end of this course you should be able to demonstrate:

• In-depth knowledge of Nanomaterials and Quantum Confinement Effects.
• Knowledge of synthesis and characterization of various different nanostructures such as nanopowders, thin films, and superlattices.
• Understanding of the fundamental science which makes nanomaterials special.

Course Information	**Duration: October 8-12, 2018**
Modules	**Module A: Introduction, Quantum Confinement Effects, NanoFabrication Techniques** **Module B: Atomic Scale Structural Characterization, Nano-electronics, Nanomagnetism, Nanophotonics, Nanobiotechnology**

	Number of participants for the course will be limited to fifty.
You Should Attend If…	▪ You are a chemical engineer, materials scientist or physicist interested in material science. ▪ You are a student or faculty member from academic institution interested in nanotechnology. ▪ You are a design engineer or research scientist interested in hands-on training in advanced materials characterization techniques.
Fees	The participation fees for attending the course is as follows: • Participants from abroad: US $500 • Industry/ Research Organizations: Rs. 15000.00 • Academic Institutions (Faculty): Rs. 7000.00 • Academic Institutions (Students): Rs. 5000.00 ➢ Students have to show the proof of their full time student enrollment in academic institute. The above fee include all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, free internet facility. **Fee does not include accommodation and food. On request basis, participants may be provided with accommodation on payment basis.** **Note:** **Accommodation:** **1. The registration fee should be sent in advance through bank draft drawn in favor of "Dean SRIC, IIT Roorkee" and payable at Roorkee latest by Feb. 28, 2018.** **2. The Complete form along with payment may please be sent to:** **Dr. Shishir Sinha, Department of Chemical Engineering, IIT Roorkee, Roorkee-247667, Uttarakhand,** **e-mail:shishir@iitr.ac.in,**

The Faculty:

Dr. Ashutosh Tiwari is a Professor of Materials Science and Engineering and the Director of the Spintronics group (IRG2) of the National Science Foundation's Materials Research Science and Engineering Center (NSF-MRSEC) at the University of Utah, USA. He received his Ph.D. in Experimental Condensed Matter Physics from the Indian Institute of Technology, Kanpur. After doing post docs at the University of Delaware and North Carolina State University, Dr. Tiwari joined the University of Utah in 2005 as a tenure-track Assistant Professor of Materials Science & Engineering. In 2010, he was promoted to the rank of Associate Professor with tenure and in 2016 to the rank of full Professor. Dr. Tiwari has to date published more than 130 peer reviewed research articles (100+ in international journals) and holds 7 US patents. As per google scholar his papers have received more than 4400

citations and his h-index is 37. Prof. Tiwari has been an active member of several scientific societies including Materials Research Society (MRS), The Minerals, Metals and Materials Society (TMS), American Physical Society (APS). He was also the president of the Superconducting and Magnetic Materials Committee of the TMS during 2008-2009. Dr. Tiwari has received several awards including prestigious NSF CAREER Award, TMS Young Leader Award and the U.S. Air Force Research Lab Summer Faculty Fellowship Award. Dr. Tiwari is an excellent teacher and has received 'one of the top instructors' recognition by the Univ. of Utah's College of Engineering four times. Dr. Tiwari has supervised a large number of Ph.D. students and scientists who are doing extremely well in industry, academia, as well as in government labs. Dr. Tiwari also serves on the editorial board of Scientific Reports, a journal from the Nature Publishing Group. More information about Prof. Tiwari's research and teaching accomplishments can be found on his web page: www.nmrl.mse.utah.edu

Dr. Shishir Sinha is a Professor of Chemical Engineering at the Indian Institute of Technology Roorkee, India. Prof. Sinha completed his Ph.D. from IIT Kanpur and has sixteen years of teaching and research experience. He has made several important scientific, technological and entrepreneurial contributions in the field of polymer science and engineering. He has also completed several sponsored research and consultancy projects. Presently, he is working on consultancy projects related to feasibility studies and rapid EIA (*environmental impact assessment)* for private enterprises. Prof. Sinha has developed an entirely new technique for preparation of anion exchange resin through gas phase nitration. He is also a board member in various institutional bodies and has memberships in various scientific and professional societies such as Indian Institute of Chemical Engineers, Institution of Engineers (India), Asian Polymer Association, Oil Technologists Association of India, International Association of Engineers, and Indian Society for Technical Education. Prof. Sinha has developed several MHRD and NPTEL sponsored courses. He has organized several national/international conferences and technical events during his academic career. Prof. Sinha has published 122+ articles in peer-reviewed journals and international conferences. He has supervised 10 Ph.D. and 43+ M.Tech students. His academic credentials have been recognized by several awards including CHEMCON-2000.

Course Coordinators
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Indian Institute of Technology Roorkee

Registration Form

Nanostructured Materials: Science and Technology

(MHRD Scheme on Global Initiative on Academic Network (GIAN))

October 8-12, 2018

- Name ……..……...…….
- Designation ……...……...
- Affiliation ……...……..
- Address for Correspondence …….…...….

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- Email: ……...……...
- Phone No: ……..
- Accommodation required: **Yes / No**
- Type: Hotel/Hostel/Guest House (accommodation shared basis may be available @Rs. 500/ per day)
- Cheque/DD No. …….……...
- Dated ……..….. for Rs. ……

Date Signature of the participant

Note:

1. The registration fee should be sent in advance through bank draft drawn in favor of "Dean SRIC, IIT Roorkee" and payable at Roorkee latest by Feb;28, 2018.

2. The Complete form along with payment may please be sent to:

Dr. Shishir Sinha, Department of Chemical Engineering, IIT Roorkee, Roorkee-247667, Uttarakhand,
e-mail:shishir@iitr.ac.in,