A Global Initiative of Academic Networks (GIAN) Course on

Understanding Nanotechnology and Engineering Nanomaterials for Diverse Technological Applications

18th to 22nd December 2017, NIT Tiruchirappalli

Overview

This course provides an insight into fundamental understanding and a diverse range of processes used in the development of the engineering nanomaterials which finds vast technological applications. The properties of a particular material differ from that of the conventional bulk due to its unique features at nanoscale. Again, these properties differ based on the particle size, morphology and composition. These nanomaterials of unique features have been used for various applications and not limited to colloidal dispersions, nanoemulsions for pharmaceutical purposes, biopolymers, metallic particles, antireflection coatings, sensors for cancer diagnosis, magnetic nanoparticles for medical imaging, energy storage materials to enhance heat transfer, nanoclusters for hydrogen storage, electronanocatalyst for fuel cells, catalyst for wastewater treatment and so on. The preparation methods of the nanomaterial decide their properties or have proper control on the morphology leading to the required properties of the end products and their subsequent applications. This course would deal with the synthesis methods that are most commonly used and the latest methods which are under intense research currently. This course would be beneficial to students of all levels (undergraduate, postgraduate and doctoral fellows), professors and young researchers of wide discipline such as physics, chemistry, chemical engineering, energy engineering, material science, environmental engineering, etc. and also industry persons.

The course participants will be given demonstration of the course contents through soft tools through which the topics covered will provide the motivation for the participants to undergo research.

Modules	**The course on "Understanding Nanotechnology and Engineering Nanomaterials for Diverse Technological Applications" from Dec 18-22, 2017 has lectures and Tutorials.** **The primary objectives of the course are as follows:** • Providing a clear & thorough understanding on nano-materials. • Providing an in-depth knowledge in controlling the morphology of the nano-materials for a specific application. • Exposing the participants in the field of nanoparticles application mainly in chemical, energy, environment, pharmaceutical fields and encouraging them to take up the learned methods to their requirements. **Number of participants for the course will be limited to fifty.**
You Should Attend If…	▪ Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. ▪ Students at all levels (B.Tech./M.Sc./M.Tech./Ph.D.) or Faculty from reputed academic institutions and technical institutions.
Fees	The participation fees for taking the course is as follows: **The participation fees (Excluding Lodging & Boarding) for attending the course is as follows:** **Student participants: ₹ 1,000/-** **Faculty (Internal & External) & Scientists: ₹ 2,000/-** **Persons from Industry/Consultancy firms: ₹ 6,000/-** **Student participants from abroad: USD 100** **Other participants from abroad: USD 200** **The above fee include all instructional materials, tutorials, assignments and internet facility. Fee does not include accommodation and food. On request, accommodation will be provided to the participants on payment basis.**
How to Register?	**Stage 1: Web (Portal) Registration:** Visit GIAN Website at the link: http://www.gian.iitkgp.ac.in/GREGN/index and create login user ID and Password. Fill up blank registration form and do web registration by paying ₹ 500/- on line through Net Banking/ Debit/ Credit Card. This provides the user with life time registration to enroll in any no. of GIAN courses offered. **Stage 2**: **Course Registration (Through GIAN Portal):** Log in to the GIAN portal with the user ID and Password created. Click on "Course Registration" option given at the top of the registration form. Select the Course titled "Understanding Nanotechnology and Engineering Nanomaterials for Diverse Technological Applications" from the list and click on "Save" option. Confirm your registration by Clicking on "Confirm Course". Only Selected Candidates will be intimated through E-mail by the Course Coordinator. They have to remit the necessary course fee in the form of DD drawn in favor of "**The Director, NIT, Tiruchirappalli – 620015**" payable at **NIT-Tiruchirappalli**. The DD has to be sent to the Course Coordinator after registration.

The Faculty

Prof. Sivakumar Manickam is working in the Department of Chemical and Nanopharmaceutical Process Engineering, University of Nottingham, Malaysia campus. He is also the Associate Dean of Research and Knowledge Transfer, Faculty of Engineering. Basically a Chemical Engineer specializing in Process Engineering of Nanomaterials especially Nanopharmaceuticals & works in the area of Ultrasound and Hydrodynamic Cavitation since 1997. His research group concentrates on the process development of cavitation based reactors towards technologically important nanomaterials. He is also heading the Manufacturing & Industrial Processes Research Division and is the Coordinator of the Centre for Nanotechnology and Advanced Materials (CENTAM). He was also the recipient of prestigious JSPS fellowship from the Goernment of Japan. He has published ~150 peer reviewed journal and conference papers. He is the Fellow of Higher Education Academy (UK) and member of Institute of Nanotechnology (IoN). He has received several awards and to name a few, Research Leadership Programme (UK), Hind Rattan (Jewel of India) Award, IChemE Innovator of the Year Award. He has completed more than 20 research/consultancy projects and several research projects are ongoing. He has guided more than 20 Ph.D. scholars and 10 ongoing.

Dr.T.Sivasankar is an Assistant Professor in the Department of Chemical Engineering, National Institute of Technology, Tiruchirappalli. His research areas are sonochemical wastewater treatment, Nanoparticle synthesis and Biodiesel synthesis processes. He had published several international journals, international conference presentations and book chapters. He was awarded with a project from Department of Science and Technology under DST-SERC Fast Track Project for Young Scientist during the year 2009. He is a constant reviewer for several international journals. He was awarded “IEI Young Engineers Award 2013-2014 under Chemical Engineering Division” by The Institution of Engineers (India). He has guided 2 Ph.D.’s and 20 M.Tech.’s students, several are ongoing.

Course Co-ordinator

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