One week Course on

NANOTECHNOLOGY ADVANCES IN ENGINEERING MATERIALS AND MANUFACTURING

July 08 – 13, 2019

By

International Faculty

Prof. Ajit Kelkar

Professor and Chair of Nanoengineering Department at Joint School of Nanoscience and Nanoengineering, North Carolina A & T State University NC USA

Course Coordinator

Dr. Dattaji K Shinde

Associate Professor, Department of Production Engineering, VJTI Mumbai

Dr. M R Nagare

Head, Department of Production Engineering, VJTI Mumbai

Organized by

Department of Production Engineering

Veermata Jijabai Technological Institute (VJTI), Mumbai 400019

ABOUT THE GIAN COURSE

The Ministry of Human Resource Development (MHRD), Government of India has launched an innovative program titled "Global Initiative of Academic Networks (GIAN)" in higher education, in order to garner the best international expertise into our system. As a part of this, internationally renowned academicians and scientists are invited to augment the country's academic resources, accelerate the pace of quality reforms and elevate India's scientific and technological capacity to global excellence. More details on GIAN courses can be seen at http://www.gian.iitkgp.ac.in/.

OVERVIEW OF THE PROGRAM

Nanotechnology has tremendous potential promises the possibility of significant changes in near future. Nano-manufacturing and Nanotechnology primarily deal with the synthesis, characterization, and exploration of nanostructured materials. These materials are characterized by at least one dimension in the nanometer range are known as nanomaterials. The nanomaterials have many applications in the field of automobiles, aerospace, defense and sports industries. This workshop has been developed to emphasize on nanotechnology development at nano-scaled material and its micro/nano manufacturing to the mass production, so as to foster the current need of the industry for advancement of material with various specific enabled properties in material and devices in manufacturing domain.

Modeling and simulation exercises based on the molecular dynamic simulation are used to teach participants how to analyze and optimize the weight proportionate of the nanomaterials in the engineering materials design to tailor the specific engineering properties for numerous application in the field of automotive, aerospace, defense and sports industries. The nanofabrication laboratory facilities will be visited to expose the fabrication environment to the participants and hands on training will be provided in the atomistic modeling and simulation using the molecular dynamic simulation with Software.

In this course, the instructor will share his extensive experience in collaborating with NASA, NSF, and US Army, on challenging research

projects related to Nanotechnology Advances and Challenges in the Engineering materials and Manufacturing. Internationally acclaimed academics, researchers and practitioners with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training in the field of nanotechnology in the material and manufacturing advancement will deliver lectures and discuss in-situ case studies in this course. The GIAN course will covers the recent trends in the development of nanotechnology and its challenges for engineering application.

PROGRAM OBJECTIVES

The primary objectives of the course are as follows:

- Participants will be benefited from the program by learning the fundamentals to recent developments of nanotechnology, learn nanomaterials characterization techniques, and will have the chance to meet and discuss their interests with lead researchers.
- The program will cover frontier topics including fundamentals, modeling, simulation, risk associated with nanomaterials and application of nanotechnology in energy, environmental, materials development, and health care/ biomedical fields. However the material development will be the major thrust.
- Develop the international networking to facilitate interaction among chemical engineers and interdisciplinary persons working in various academic institutes, research organization, government and private sectors
- Develop the nanotechnology enabling manpower to serve the need of industry and academia for overall Nation development

TEACHING FACULTY

Foreign expert: Dr. Ajit D. Kelkar

Dr. Ajit D. Kelkar is a Professor and Chair of Nanoengineering Department at Joint School of Nanoscience and Nanoengineering, North Carolina A & T State University NC USA for the past twenty five years he has been working in the area of performance evaluation and modelling of polymeric composites and ceramic matrix composites. He has worked with several federal laboratories in the area of fatigue, impact and finite element modelling of woven composites including US Army, US Air force, NASA-Langley Research Centre, National science Foundation, Office of Naval Research, FAA and Oak Ridge National Laboratory. Presently he is involved in the development of nanoengineered multifunctional materials using CNTs, BNNTs and electrospun fiber materials, nanoengineered radiation shielding materials. He has published over two hundred fifty papers in these areas. In addition he has edited two books in the area of Nanoscience and Nanoengineering. He has two patents in the area of composite manufacturing. He has received numerous awards including Senior Researcher Award, Intellectual Property Award at North Carolina A & T State University. He is Fellow of Maharashtra Academy of Science, India. He serves on editorial board for three journals in nanotechnology areas. He is member of several professional societies including ASME, SAMPE, AIAA, ASM, and ASEE.

Indian Faculty:Prof. Asim Tewari

Dr. Asim Tewari is Professor In-Charge of NCAIR (www.ncair.in) and faculty in the Department of Mechanical Engineering at Indian Institute of Technology Bombay and in charge of National Centre for Aerospace Innovation and Research (NCAIR). Prior to this he was a staff researcher at General Motors Global R & D center in Bangalore. He graduated with a B. Tech degree from IIT Kanpur, India followed by MS and PhD from Georgia Institute of Technology, Atlanta, USA. After his doctorate he was briefly with National Aerospace Laboratories. Subsequently, he joined IIT Kanpur where he served as assistant professor for over 3 years before joining General Motors Global R & D center in Bangalore. At IIT Bombay he has been instrumental in setting up a state-of-the-art 3D x-ray microscopy laboratory with capabilities of in-situ thermo-mechanical deformation and thermo-mechanical simulator.

His area of research is in mathematical models for microstructural-mechanics. He has publications extensively in peer reviewed journal and has been awarded many international patents. His pioneering work in 3D microscopy has been widely cited including reproduction in ASM handbooks. He is in the editorial board of several international Journals including Metallurgical and Materials Transactions and Image Analysis & Stereology. He is also a reviewer for several international journals with prominent ones being Proceedings of Royal Society of London and Acta

Materialia, He has served as advisory committee member for various national & international research boards and conferences. He has won several awards and recognitions for his research and teaching with the prominent ones being, Excellence in Teaching award, IIT Bombay, Cambell Award for excellence in Science General Motors, and membership of International materials honor society Alpha Sigma Mu.

Eminent Faculties from NITs and IITs

WHO SHOULD ATTEND

- Faculty, Graduate/Ph D. students from Engineering Colleges with major of Production/Industrial, Mechanical and Aerospace who are interested in Nanoengineered composites using Nanotechnology for materials and manufacturing advancement.
- Mechanical/Production/Industrial Engineers from Manufacturing and R&D Laboratories interested in obtaining improved knowledge in the field of Nanotechnology Materials and manufacturing break through.

HOW TO REGISTER

Stage – 1: One time Web (Portal) Registration: Visit GIAN Website: http://www.gian.iitkgp.ac.in/GREGN/index and create login User ID and Password. Fill up the blank registration form and do web registration by paying Rs. 500/- online through Net Banking/Debit/Credit card. This provides him/her with life time registration to enroll in any number of the 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 "NANOTECHNOLOGY ADVANCES IN ENGINEERING MATERIALS AND MANUFACTURING" from the list and click on "Save" option. Confirm your registration by Clicking on "Confirm Course".

COURSE / REGISTRATION FEES

- Participants from abroad: US $250
- Industry/ Research Organizations: Rs.10,000/-
- Academic Institutions: Rs. 6,000/-
- Students: Rs. 2,000/-
- All Reserve Category Students: Rs. 1,000/-

The above fees include all instructional materials, use of computer facilities for tutorials, internet facility and refreshments.

Boarding and lodging will be provided in the Institute Guest House on payment basis subject to availability.

PAYMNT OF FEES

Account Title: Director, VJTI Mumbai
Bank & Branch: SBI, VJTI Mumbai

CHIEF PATRON

Ms. Sandra Shroff
Chairperson, BoG, VJTI

PATRON

Prof. Dhiren R Patel
Director, VJTI Mumbai

GIAN Coordinator-VJTI

Dr. M. M. Chandane
Associate Professor, Department of Computer Engineering, VJTI, Mumbai.

COURSE COORDINATOR

Dr. Dattaji K Shinde
Associate Professor, Department of Production Engineering, VJTI Mumbai

ABOUT THE VJTI Mumbai

Veermata Jijabai Technological Institute (VJTI) was established in 1887. It initially started with two departments, namely the Sir J. J. School of Mechanical Engineering and the Rippon Textile School. In 1913, the institute was recognized by the then Government of Bombay as the Central Technological Institute, Bombay Province. In addition to other Departments, a Department of Sanitary Engineering and Plumbing was added in 1923. The Department started to conduct the 'Licentiate in Civil & Sanitary Engineering Programme'. The institute was granted

administrative, academic, financial and managerial autonomy from June 21, 2004. The Institute is reputed for excellent teaching and training in Engineering and Technology at Diploma, Degree, Post Graduate levels and for Research. Presently VJTI offers Diploma in 6 disciplines of Engineering, B. Tech programmes in 9 disciplines, 17 M. Tech. programmes, M.C.A. and Ph.D. programmes. Since the time of inception, VJTI has been playing a vital role in producing quality Engineers, introducing new programmes and electives in emerging areas. In 1998, the Institute was renamed from “Victoria Jubilee Technical Institute” to the present name “Veermata Jijabai Technological Institute”. It was one of the fourteen institutes selected by the Central Government for further development with grant-in-aid from the Centre under Technical Education Quality Improvement Programme (TEQIP - I & II). VJTI is selected for establishment of Centre of Excellence (CoE) in "Complex & Nonlinear Dynamical Systems (CNDS)" under TEQIP-II with a funding of Rs. 5 Crores by World Bank through National Project Implementation Unit (NPIU), MHRD, New Delhi. VJTI is selected for TEQIP –III funding and mentoring Two Institutes Gaya College of Engineering, Gaya Bihar State and Government College of Engineering Ajmer, Rajasthan State.

ABOUT THE PRODUCTION ENGINEERING DEPARTMENT

The Department of Production engineering was established in 1959 as the department of industrial engineering to conduct part time course leading to postgraduate diploma in production engineering. At present the department offers undergraduate and postgraduate and doctoral programmes. B. Tech. Production programme is of sandwich type and is recognized by the board of apprenticeship training. Because of this, the students undertake live projects in various industries as a part of their curriculum. Postgraduate students also undertake industrial projects. The department has very good industrial interaction through these projects and industry visiting faculty. The department has major laboratories namely Production Process laboratory, Meteorology laboratory, Computer laboratory and Centre for Advanced Material Research and Innovative Manufacturing (CAMRIM). Electrospinning, Composite Manufacturing and Mechanical Material Characterization and also we have started with the Molecular Dynamic Simulation for Materials study and analysis at Nano-scale. Currently 30 Ph. D Students are working on materials and Manufacturing topic of research.

For Correspondence

Dr. Dattaji Shinde
Department of Production Engineering, VJTI Mumbai
H R Mahajani Road, Matunga Mumbai 400019
Email: dkshinde@pe.vjti.ac.in
Mobile: 7045809458

REGISTRATION FORM

Course on
NANOTECHNOLOGY ADVANCES IN ENGINEERING MATERIALS AND MANUFACTURING
(JULY 8-13, 2019)

Veermata Jijabai Technological Institute (VJTI), Mumbai 400019

Name: Mr./Ms/Dr._____
Designation:_____
Department: _____
Organization: _____
Address for Correspondence: _____
_____
_____
E-mail ID: _____
Field of specialization: _____
Experience :_____(in Years)

Details of
Fees_____
_____Cash/DD/NEFT_____

Signature_____
Date_____

RECOMMENDATION OF THE SPONSORING AUTHORITY:
The applicant is hereby sponsored and will be permitted to attend the GIAN Program, if selected.

Date: _____Signature and Seal of Sponsoring Authority