GLOBAL INITIATIVE OF ACADEMIC NETWORK (GIAN)

Ministry of Human Resources Development
Government of India

5 DAY COURSE ON

Energy Materials and Innovative Challenges and its Applications

6th October – 11th October, 2018

Venue

JNTUH College of Engineering, Kukatpally, Hyderabad

About GIAN:

Govt. of India approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education, viz., all IITs, IIMs, Central Universities, IISc Bangalore, IISERs, NITs and IIITs subsequently cover good State Universities where the spinoff is vast. The GIAN website may be visited for detailed information.

Overview

Energy challenges are always the most researched and in high demand work worldwide to overcome them in the most efficient approach. In such direction, recent advancement of technologies provide hope to overcome such challenges. However, from the past few years' research has boomed to extensive heights in all directions. Now is the best time to do interdisciplinary sciences and research, in such aspect materials and nanotechnology come in good collaboration. Energy in all forms can be harvested to sustain global demand for energy. This pathway of energy demand is where our interest lies, by molding both the parameters responsible for this demand. One is increasing the production and second is to reduce the utilization. This interdisciplinary collaboration between nanotechnology and materials could address the issue effectively. By improving the efficiency of the organic and perovskite solar cells and thermoelectric devices. And to use MEMS and NEMS to miniaturize the devices of consumption such as Thin Film Transistors, CNT wires. We are in such a quest of science to achieve success from both ends of the situations.

Main Topics:

- Overview of Thermoelectric materials and devices
- Nanocarbon materials in Energy, CNT-yarn, Forest, Carbon Nano horns
- MEMS, NEMS
- Thin Film, Transistor Technology, Organic & Inorganic Solar Cells
- Overview on future applications

Number of participants for the course will be limited to fifty.

Benefits of Attending the Course (Course Objectives):

Candidates who have attended the course will understand the current research in energy materials and familiarize with its potential to solve the global energy and application issues, get motivated in new research directions such as thermoelectric materials and CNTs Yarns MEMS, NEMS, lithography, transistors fabrication challenges, help showcasing the advance instruments used for developing the said topics and also help improving the knowledge and understanding of the participants and enabling to visualize from research and future point of view.

Who should attend:

This course is intended to provide students, teachers, researchers, executives, engineers and researchers from manufacturing, service and government, organizations including NGOs and R&D laboratories.

Students at all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions are invited to attend.

For the participation in the course, registration with GIAN is mandatory.

Registration to the portal is one-time affair and will be valid for the lifetime of GIAN. Once registered in the portal, an applicant will be able to apply for any number of GIAN courses as and when necessary. One-time Non-refundable fee of Rs. 500/- is to be charged for this service. For registration, the website **is:** *www.gian.iitkgp.ac.in/GREGN/index*

Course Fee:

The participation fees for taking the course is as follows:

Participants from abroad (US dollars): $500
Industry/ Research Organizations : Rs. 5000/-
Academic Institutions : Rs. 3000/-
Full time Students : Rs. 1000/-
Full time SC/ST students : Rs. 500/-

There will be a concession of 50% of the fee for the faculty working in the constituent and affiliated colleges of JNTUH. The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, 24 hours free internet facility, Tea, Snacks, Lunch.

Evaluation and Grading

There will be evaluation at the end of course on the understanding of the concepts by the participant made during the course. Based on the evaluations finally a letter grade will be awarded to the participant. A completion certificate shall also be issued.

The Faculty

Prof Yasuhiko Hayashi: Professor at Divisional of Innovative Sciences, Graduate school of Natural Sciences and Technology Okayama University of Nanomaterials and Device Science Group Okayama Japan. Yasuhiko does research in Electrical Engineering, Material Engineering has over 26 years of experience in providing scientific and program support for nano- devices and Spintronics.

Prof. Yasuhiko Hayashi has performed interdisciplinary research collaborating with experts from Nano Device Design and Technology , Environmental Technology and Urban Planning ,Industrial Innovations Sciences ,Advanced Nano carbon research Innovative, Environmental Engineering, Material technology. Prof. Yasuhiko Hayashi is an international expert in Nano devices with extensive experience in developing MEMS and NEMS applications as well as novel functional Materials . His research has spanned a broad spectrum from scientific and innovation support for nano devices and energy conversion activities to developing innovative model applications to study multiple source sectors and perform source attributions. Over the past 18 years, he has served as the special supporting member or technical lead on several projects for various state/regional agencies, Japan, . Most of his research during this period has focused on device design technology and materials sciences that support nanodevices for Spin electronics and NEMS application. Prof. Yasuhiko Hayashi has served as the Special Supporting member for Japan Fine Ceramics Center, The Fullerenes, Nanotubes and Graphene Research Society since 2003, and selected member of the visible light communications consortium ,The Japan sciences of Applied Physics, Material research society and IEEE as well as worked as visiting Scientist, department of Engineering, Cambridge University UK. His focus on"Synthesis and characterization of new carbon-basednanomaterials towards novel nanodevices","Polymer based organic semiconductor devices:Field Effect Transistors, Solar Cells, Spintronic","Nanoparticles towards novel nanodevices" ,"Nanostructure II-VI oxide ferromagneticsemiconductor devices""One-Dimensional Nanowires for Electronics,Spintronics and Energy Conversion". Prof Yasuhiko Hayashi has published extensively 198 research items.

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Dr.K.Venkateswara Rao Is working as Professor of nanotechnology & Head at Centre for nano science and technology, Institute of Science and Technology, JNT University, Hyderabad (JNTUH).He completed his Ph.D. with the Specialization of Nano-Materials and characterization at Central University of Hyderabad. He has completed his Post Doc research at John Hopkins School of Medicine, Baltimore, USA and visited different foreign universities like University of Louisville, National University of Singapore . He received Best Teacher Awardee from Telangana Government for academic year 2017. He published 161 International journal papers with relatively high impact factor. **His interests are** Nanomaterial Synthesis, Characterization of Nanostructured materials, Oxide Nano Materials, Graphene Based Materials, Humidity sensing, Gas sensing, Glucose sensing, Battery Materials, solar cells , Seed Generation, cancer nanotechnology.

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Dr.Ch. Shilpa Chakra is an Assistant Professor, Centre for Nanoscience and Technology Jawaharlal Nehru Technological University Hyderabad (JNTUH), India. She received Ph. D in Nano science & Technology JNTU Hyderabad. She participated in 8 International conferences and had published more than 50 international journals. Her research focuses on Green technology ,Bio medical application of Nanomaterials ,Nanotechnology for Environmental application, Nanotechnology for agricultural application and Nano Ayurveda.

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About the JNTUH:

The J.N.T University was in existence since 1972. It is ateaching and research oriented university consisting of 4 constituent engineering colleges JNTUH College of Engineering, Hyderabad (JNTUHCEH), JNTUH College of Engineering, Jagityala (JNTUHCEJ), JNTUH College of Engineering, Manthini (JNTUHCEM), JNTUH College of Engineering, Sulthanpur (JNTUHCES) and more than 400 affiliated colleges. In addition to the constituent colleges, the other units of JNTUH are School of Information Technology (SIT), Institute of Science and Technology (IST), School of Management Studies (SMS) and Academic Staff College (ASC). The university has numerous collaborative, teaching and research programs with universities from abroad and within India and with industries in the state of Telangana. The university offers engineering programs at both UG and PG level and many science and humanities programs at PG level. In addition, university also offers Ph. D. in engineering, science and humanities disciplines.

Contact Information:

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