



**DEPARTMENT OF BIO AND NANO TECHNOLOGY
GURU JAMBHESHWAR UNIVERSITY OF SCIENCE & TECHNOLOGY
HISAR-125001 (HARYANA)**

ORGANIZES ONE WEEK WORKSHOP-COURSE

ON

**NANOTECHNOLOGY: Nanoparticle Synthesis and Conjugation
Chemistry for Bioapplications**

16th July to 20th July, 2018

BROAD AREA: Nanotechnology/Biochemistry

OVERVIEW

Nanotechnology is a technology that relies in the regime between one to hundred nanometers, viz. billionths of the meter. In this course, students will learn about basic physics for nanomaterial science and wide ranges of chemistry for the bioconjugation of nanoparticle which are being used to develop a breakthrough technology in bioscience area. For example, biosensors for ultrasensitive and multiplexed detection of biomolecules such as DNA or protein target have been developed by use of colloidal AuNPs with DNA or protein modification. In the development of sensitive and useful bioimaging, drug delivery and therapeutic system, understanding of the chemistry for nanoparticle synthesis and its conjugation chemistry as to the applications are essential parts to achieve their intended goals. The course will be planned and offered as per the norms set by Guru Jambheshwar University of Science and Technology.

OBJECTIVES

The primary objectives of the course are as follows:

- i) To provide an introduction to nanotechnology and the role played by basic properties of plasmonic materials and related applications;
- ii) To teach fundamental concepts in nanoparticle synthesis and bioconjugation chemistry for applications;
- iii) To teach the basics of simulation studies, CHEMDRAW, COREL and photoshop tool for scientific paper writing and presentation.

<p>Module A: July 16, 2018 (MONDAY)</p> <p>July 17, 2018 (TUESDAY)</p>	<p>NANOTECHNOLOGY: Nanoparticle Synthesis and Conjugation Chemistry for Bioapplications</p> <p>16th July to 20th July, 2018</p> <p>Nanotechnology and Nanoparticle Synthesis</p> <p>Inauguration: 9:00 AM</p> <p>a. Lecture 1: 9:30 to 11:00 AM Introduction to nanotechnology b. Lecture 2: 11:30 to 1:00 PM Introduction to nanoparticle synthesis c. Tutorial 1: 2:00 to 4:00 PM Simple experiments for solution-based NP synthesis and analysis</p> <p>a. Lecture 3: 9:30 to 11:00 AM Introduction to the synthesis of plasmonic nanoparticle and related nanoscale materials-1 b. Lecture 4: 11:30 to 1:00 PM Introduction to the synthesis of plasmonic nanoparticle and related nanoscale materials-2 c. Tutorial 2: 2:00 to 4:00 PM Simulation of the interaction between light and plasmonic nanoparticle with Comsol physics</p>
<p>Module B: July 18, 2018 (WEDNESDAY)</p> <p>July 19, 2018 (THURSDAY)</p> <p>July 20, 2018 (FRIDAY)</p>	<p>Conjugation Chemistry for Bioapplications</p> <p>a. Lecture 5: 9:30 to 11:00 AM Introduction to Biosensor b. Lecture 6: 11:30 to 1:00 PM Conjugation chemistry for Biosensors c. Tutorial 3: 2:00 to 4:00 PM How to use CHEMDRAW and COREL for scientific paper</p> <p>a. Lecture 7: 9:30 to 11:00 AM Introduction to Bioimaging b. Lecture 8: 11:30 to 1:00 PM Conjugation chemistry for Bioimaging c. Tutorial 4: 2:00 to 4:00 PM Best practices for data processing and presentation</p> <p>a. Lecture 9: 9:30 to 11:00 AM Introduction to drug delivery system b. Lecture 10: 11:30 to 1:00 PM Conjugation chemistry for drug delivery system c. Tutorial 5: 2:00 to 3:00 PM Exam of participants</p> <p>Number of participants for the course will be limited to fifty only.</p>
<p>You should attend if...</p>	<ul style="list-style-type: none"> You are executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories. You are a student (at all levels including BTech/MSc/MTech/PhD) or faculty from reputed academic institutions and technical institutions.
<p>Registration</p>	<p>The participants are required to get themselves register on GIAN web portal (http://www.gian.iitkgp.ac.in)</p> <p>The course registration fee is separate. The participation fees (Demand draft drawn in favour of Registrar, GJUS&T, Hisar or NEFT/RTGS at PNB A/C No. 4674000100036542 IFSC: PUNB0467400) for taking the course is as follows:</p> <p>Foreign delegates: US \$500</p> <p>Participants from Industry: ₹ 10,000/-</p> <p>Participants from Indian Academic Institutions/ Research Organizations: ₹ 2,500/-</p> <p>Participants from Host-Department: ₹ 1,000/-</p> <p>The above fee includes all instructional materials, computer use for tutorials and assignments, equipment usage charges, and internet facility. However, the participants will be provided with accommodation on payment basis, subject to availability.</p>

Foreign Faculty



Dr. Dong-Kwon Lim is a Professor at the Korea University, Seoul, South Korea. D.K received his Ph. D from Seoul National University, Department of Chemistry (Advisor: Prof. Jwa-Min Nam), and postdoctoral research at MIT, David H. Koch Integrative Cancer Research Center (advisor: Robert Langer) from 2011 to 2013. Before starting his Ph. D at SNU, he worked at CJ pharmaceutical research institute for 10 years.

He started his independent research at Chonbuk National University from 2013. He has worked in synthetic organic chemistry at company to develop generic drug, new drug entity and specialty drugs such as antihypertensive, lipid lowering and anticancer drugs. Some of them were commercialized in Korean market. He is the key author of world leading journals in nanoscience such as Nature Materials, Nature Nanotechnology, Nano Letters and ACS Nano. He has also co-organized and participated in several international conferences in the areas of Materials Science and Nanoscale Science including Korean Chemical Society, Korea polymer science and Nanomedicine in Korea.

Host Faculty



Dr. Sandeep Kumar, Assistant Professor, is a researcher of international recognition at Department of Bio and Nano Technology, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India. Dr. Sandeep Kumar has received his PhD degree from Panjab University, Chandigarh. His current research interests include synthesis and characterization of nanomaterials, nano-carriers for healthcare applications,

nanomaterials based sensors, biomaterials and nanotoxicity. Dr. Kumar has one patent and published more than 80 research papers in international journals of repute. Dr. Kumar has international and national sponsored research projects from different funding agencies like DST, DBT, DRDO etc. Dr. Kumar visited Hanyang University, Seoul, South Korea as a visiting Professor and also Australia, UK, Scotland, Thailand, United Arab Emirates under different schemes of Govt. of India. Dr. Kumar has recently received Haryana Yuva Vigyan Ratna Award 2015-16.

Course Co-Coordinator



Prof. Neeraj Dilbaghi completed his Masters and Doctorate degree in Microbiology from CCS Haryana Agricultural University, Hisar and is presently working at the Department of Bio and Nano Technology, Guru Jambheshwar university of Science and Technology, Hisar, Haryana, India. Prof. Dilbaghi holds position of Director, UGC- Human Resource

Development Centre, Institutional Coordinator of RUSA & Incharge, Radio-Ecology Centre of GJUS&T, Hisar. He has over 23 years of research and 20 years PG Teaching experience. During his professional career, Dr. Neeraj Dilbaghi has guided nine Ph.D. and over 40 M.Tech. students. Presently, 8 Ph.D. students are pursuing research under his guidance. His current research focuses on microbial biotechnology, bionanotechnology, nanosensors for healthcare and environmental applications, nanomedicine, and toxicological Evaluation of nanomaterials. Prof. Neeraj Dilbaghi has published over 120 research papers in peer reviewed international and national journals of repute with over 1900 citations and H-index of 24. Dr Dilbaghi has received several grants from national and international funding agencies like DST, UGC, BARC-BRNS, LSRB-DRDO etc to manage his research activities.

INTERNATIONAL WORKSHOP

on

“NANOTECHNOLOGY: Nanoparticle Synthesis and Conjugation Chemistry for Bioapplications”

An event under



16th July to 20th July, 2018



Organized by

**Department of Bio & Nano Technology
Guru Jambheshwar University of Science and
Technology, Hisar**

**Course Co-ordinator
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