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

Organizes Five Day Workshop-Course
18th December to 22th December, 2023

Biomedical Nanotechnology for Personalized Health Management

BROAD AREA:

- ★ Nano-biotechnology/engineering, Nano-Carriers, Nano-medicine, Nano-formulation, Electrochemistry, biosensor, Gas sensor, Wearable sensors, BioMEMS and Micro/Nano fabrication

Overview

Biomedical nanotechnology is dedicated to explore nanoscience and nanotechnology for human wellness with the ultimate aim towards personalized health management. Fact reports released by health agencies and experts have confirmed the significant role of technology in disease monitoring, treatment, and progression management. This is also evident that the introduction of nanotechnology assisted approaches makes diagnostics and treatment of a targeted disease more sensitive, affordable, and accessible. The tunable performance of nano-system investigated for biomedical research is advantageous to design and develop a therapy according to patient profiles i.e., personalized health management. Besides salient features of nano-assisted approaches, the introduction of numerical approaches i.e., artificial intelligence (AI), deep & machine learning, and bioinformatics are emerging as very useful tools to predict the trends. Such information is also useful to understand the epidemic, optimization of a therapeutic agent, and associated risk assessment. The simultaneous management of bioinformatics is very crucial to optimize an analysis timely and effectively. Presently, significant efforts are being made to promote the internet of medical things (IoMT) in biomedical nanotechnology for data sharing, storage, and analysis. The IoMT assisted approaches are very much useful for biomedical technology, transition from the laboratory to the field. Overall, electronic health can be transformed into intelligent health with favorable outcomes.

Objectives:

- ★ Describing multi-culture academic and research environment.
- ★ Teaching advance courses involving biomedical nanotechnology at the interface of chemistry-biology-physics.
- ★ Supervision of researchers of host institute.
- ★ Motivate students to conduct future research towards developing technologies for health wellness.
- ★ Exploring overseas opportunities for motivated students.
- ★ Encouraging students for multidisciplinary and translational research.
- ★ Impelling scientific writing.
- ★ Meeting with faculties to evaluate courses and to explore opportunities of working together
- ★ Strategic advanced workshops for student training.
- ★ Exploring exchange education, research, and training programs.
- ★ Teaching Faculty with allotment of Lectures and Tutorial

Teaching Faculty

Foreign faculty



Dr. AJEET K. KAUSHIK, Ph.D

Dr. Kaushik, as Assistant Professor of Chemistry at Florida Polytechnic University (FPU), is exploring nano-technology, material science, thin films, miniaturized sensors, electrochemistry, electrochemical biosensors, nanomedicine, drug delivery to CNS, and biomedical engineering for health wellness.

Dr. Kaushik has worked as an Assistant Professor to explore “Magnetic nanomedicine along with drug delivery to the brain for the CNS diseases management and miniaturized electrochemical sensing systems for personalized health wellness” at Center of Personalized Nanomedicine, Institute of

NeuroImmune Pharmacology, Department of Immunology and Nano-Medicine, Herbert Wertheim College of Medicine, Florida International University (FIU), Miami USA.

He is also the recipient of various reputed international awards (10) for his service in the area of nano-biotechnology for health care which is supported by his various invited talks (22). Dr Kaushik is an accomplished scholar (supported by more than 250 publications, editorial roles, 10 edited books, 3 patents, and numerous international collaborations) and the recipient of several international awards. His research interests include Green Chemistry, Electrochemistry, Chemical Sensors, Biosensors, Nanomedicine, Point-of-Care Sensing, and Personalized Sensing. Dr. Kaushik is focused on cutting-edge research of societal importance and seeks collaborations with scientists/academicians working in similar domains.

Course coordinators

Prof. Neeraj Dilbaghi



Prof. Neeraj Dilbaghi completed his Masters and Doctorate degree in Microbiology from CCS Haryana Agricultural University, Hisar and is presently working as Chairman, Department of Bio and Nano Technology, Guru Jambheshwar university of Science and Technology, Hisar, Haryana, India. He has over 28 years of research and 25 years PG Teaching experience. During his professional career Dr. Neeraj Dilbaghi has guided 3 PDF, 11 Ph.D. and over 50 M.Tech. students. Presently, 8 Ph.D. students and one PDF are pursuing research under his guidance. His current

research focuses on Microbial Biotechnology, Bionanotechnology, Nanosensors for

healthcare and environmental applications, Nano medicine and Drug Delivery and Toxicological evaluation of nanomaterials. Prof. Neeraj Dilbaghi has published over 200 research papers in peer reviewed international and national journals of repute with over 8900 citations and H-index of 51. He is also the Life Member of Association of Microbiologists of India and Society for Conservation of Domestic Animal Biodiversity. Dr Dilbaghi has received several grants from national and international funding agencies like SPARC, DBT, DST, UGC, BARC-BRNS, LSRB-DRDO & Adama Agan Ltd, Israel etc to manage his research activities.

Prof. Sandeep Kumar



Dr. Sandeep Kumar is presently working as Professor, Department of Physics, Punjab Engineering College (Deemed to be University), Chandigarh and was earlier faculty at the Department of Bio and Nano Technology, Guru Jambheshwar University of Science and Technology, Hisar, Haryana, India. Dr. Kumar did his PhD from Panjab University, Chandigarh. His research interests include synthesis of nanomaterials, nanocarriers for healthcare applications, nanomaterials-based sensors, biomaterials, and nanotoxicology. Professor Kumar has guided 10 PhD students, 2 Post Docs and more than 40 M Tech/PG students. He has one patent and more than 170 research papers in many reputed international journals with high impact factors.

The quality research work carried out by Dr Kumar (h index 50) attracted huge citations globally (>11,000) and made him featured among top 2% most influential scientists in 2023 as per Stanford Univ. Report. Dr. Kumar runs both international and national sponsored research projects from different funding agencies. Dr. Kumar visited Hanyang University, Seoul, South Korea; University of Florence, Italy as a visiting Professor and University of Nebraska, Lincoln, USA as Water Advanced Research and Innovation (WARI) fellow. Dr Kumar has been to Australia, UK, Scotland, Germany, Spain, Belgium, France, Italy under different supporting schemes (DST) of Govt of India. Dr Kumar has also received Haryana Yuva Vigyan Ratna Award in 2017.

December 18, 2023 Monday	<p style="text-align: center;">Module A: Nanotechnology for health care and diagnostics</p> <ul style="list-style-type: none"> ★ Lecture 1: 9:30 AM to 11:00 AM Emergence of personalized health wellness management ★ Lecture 2: 11:30 AM to 1:00 PM Introduction of biomedical nanotechnology ★ Tutorial 1: 2:00 PM to 5:00 PM Exploring analytical techniques for biomedical applications
December 19, 2023 Tuesday	<ul style="list-style-type: none"> ★ Lecture 3: 9:30 AM to 11:00 AM Smart diagnostics systems ★ Lecture 4: 11:30 AM to 1:00 PM Smart diagnostics systems for personalized health care ★ Tutorial 2: 2:00 AM to 5:00 PM Exploring suitable nano-component to design and develop smart sensor.
December 20, 2023 Wednesday	<p style="text-align: center;">Module B: Biomedical nanotechnology for therapeutics and health management</p> <ul style="list-style-type: none"> ★ Lecture 5: 9:30 AM to 11:00 AM Nanomedicine for health wellness ★ Lecture 6: 11:30 AM to 1:00 PM Drug delivery systems for personalized health care ★ Tutorial 3: 2:00 PM to 5:00 PM Exploring suitable nanoparticles for targeted therapy.
December 21, 2023 Thursday	<ul style="list-style-type: none"> ★ Lecture 7: 9:30 AM to 11:00 AM Nano-enabled biotechnology for drug delivery ★ Lecture 8: 11:30 AM to 1:00 PM Drug system to get into the brain ★ Tutorial 4: 2:00 PM to 5:00 PM Scientific writing, training and demonstration
December 22, 2023 Friday	<ul style="list-style-type: none"> ★ Lecture 9: 9:30 AM to 11:00 AM Nanotechnology-assisted combinational approach for health care ★ Lecture 10: 11:30 AM to 1:00 PM Challenges and Future Prospects ★ Tutorial 5: 2:00 PM to 5:00 PM Exam of participants
Who can attend?	<ul style="list-style-type: none"> ★ Executives, engineers, and researchers from manufacturing, service and government organizations including R&D laboratories. ★ Students of all levels (BTech/MSc/MTech/PhD) or Faculty from reputed academic institutions and technical institutions.
Registration	<ul style="list-style-type: none"> ★ The participants are required to get themselves register on GIAN web portal (http://www.gian.iitkgp.ac.in) and select this course. ★ The selected candidates will be intimated through email to pay course registration fee. ★ 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: ★ Foreign delegates: US \$500 ★ Participants from Industry: ₹5,000/- ★ Participants from Indian Academic Institutions/ Research Organizations: ₹3,000/- ★ Participants from Host-University: ₹2,000/- ★ <i>The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, working lunch and free internet facility. The participants will be provided with accommodation on payment basis, subject to availability.</i>
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