



Short Term GIAN Training Program
Nanomedicine with nanoparticle-based diagnostics and therapy

Board area of Interest: Life Sciences & Healthcare & Chemical, Bio-Chemical & Material Sciences

November 6-10, 2017

Organized by
Department of Chemistry
Motilal Nehru National Institute of Technology
Allahabad-211 004

Venue: Motilal Nehru National Institute of Technology Allahabad 211004

About the Course: The course covers both the areas like (1) Life Sciences & Healthcare, and (2) Chemical, Bio-Chemical & Material Sciences. The knowledge of Chemistry, Biology, Physics, Engineering & Medical Sciences will be useful to deliver their services to our society in various field of life. Most of the cases, use of materials are vulnerable and their identity to specific functions, especially for medicinal applications are very important. Owing the property of biocompatibility, nontoxicity and biodegradable nature, biomaterials in broad sense give a better option to be used in advancement of biomedical field.

At the same time, nanomedicine is the application of nanoparticles in medicine. This field of advanced medicine seeks to address various medical challenges and shortcomings faced by conventional medicine, which include poor bioavailability, impaired target specificity, systemic and organ toxicity. It is a multidisciplinary field with great opportunities for Chemists, Physicist, Engineers, Biomedical researchers and physicians as well as for pharmaceutical Industries. Polymeric nanoparticles intended for medical use have drawn inspiration from the various “natural” nanoparticles discovered in the body. Nowadays, nanodiagnostics and nanoparticle-mediated drug delivery are being recognized as complementary technologies, with the popular term “theranostic” being used to describe their combination, which can bring about unprecedented advances in medicine.

Topics to be covered: This course will cover nanomedicine, defining its scope and providing an account of the use of nanostructures, particularly polymeric nanoparticles for imaging and sensing, as well as their function as nanocarriers to effect therapy. A special emphasis will be placed on highlighting the role of nanochemistry in advancing nanomedicine. It will present how nanoparticles play a key role in nanomedicine in efficiently carrying and delivering imaging probes, therapeutic agents, or biological materials to targeted sites such as a specific organ, tissue, or even underlying cell. Also, some nanoparticles can provide active functions that facilitate their use as nanoprobe for imaging/sensing or agents for novel therapies. The course will present some principal nanoparticle formulations that have been amply utilized for biomedical applications.

List of Speakers: **PARAS N PRASAD, Ph.D.** is the SUNY Distinguished Professor of Chemistry, Physics, Electrical Engineering and Medicine; the Samuel P. Capen Chair of Chemistry; and the Executive Director of the Institute for Lasers, Photonics and Biophotonics at the University at Buffalo, the internationally acclaimed academician, and researcher with proven knowledge, experience, and demonstrable ability in teaching, consultancy, research, and training will deliver lectures and discuss problems in the course. He was named among the top 50 sciences and technology leaders in the world by

Scientific American in 2005. He has published over 740 scientific and technical papers in high-impact journals; he has published four monographs that practically defined the fields of organic nonlinear optics, Biophotonics, Nanophotonics, Nanobioengineering and Nanomedicine; eight edited books; and holds numerous patents. He is the recipient of many scientific awards and honors (Morley Medal; Schoellkopf Medal; Guggenheim Fellowship, Sloan Fellowship; Western New York Health Care Industries Technology/Discovery Award; Excellence in Pursuit of Knowledge Award of the SUNY Research Foundation; the University's First Innovation Impact award; Fellow of the APS, OSA, and SPIE). He is on the Thompson Reuters "Highly Cited Researchers" list for 2014.

Prasad's numerous contributions to the development of Scientific and Technical infrastructure in India has been highly exemplary. He has recruited and trained a large number of students and post-doctoral fellows from India and served as a role model for them. He encouraged them to return to India to start new directions, thus contributing to the growth of skilled workforce in high tech areas. He has produced scientific leaders for India, some examples are: Professors A. Patra and G. B. Talapatra, both full professors at the Indian association for cultivation of science, Calcutta; Professor B. P. Singh, a full professor at IIT, Mumbai; Professor D. N. Rao, a full professor at the Central University of Hyderabad; and Professor I. Roy at Delhi university. Prasad has also been a regular invitee to give lectures, educating Indian young scientists and engaging Indian researchers in International collaboration. A recent example is a main lecture he was invited to give on February 18, 2015 at the International Symposium on Nanotechnology Cancer Theranostics, Mumbai. Prasad has also tried to help India in developing high tech industries for the economic growth of India. He founded a company called Advanced Laser Systems (ALS) in Faridabad in 1995 in partnership with an Indian Party.

PRADIP K. DUTTA, Ph.D. (host faculty) is Professor & Former Head, Department of Chemistry, Motilal Nehru National Institute of Technology, Allahabad, India and founder editor of Asian Chitin Journal, An International Journal since 2005. He obtained his M.Sc. (1987) and Ph.D. (1993) both from IIT Kharagpur. His specialisation in Physical/Polymer Chemistry and research interests include modification, physical, chemical and biological properties of engineering polymers: chitosans, scaffolds for biomedical applications, nanocomposites preparation and application to tissue engineering, nano carriers for drug delivery, food preservation, health care and wound management.

GOPAL K. MEHROTRA, Ph.D. (host faculty) is Associate Professor Head, Department of Chemistry, Motilal Nehru National Institute of Technology Allahabad, India. He has vast experience in teaching, research and administration. He has extensively worked on Coordination Chemistry, Materials Chemistry and Metal Organic Framework Materials.

TAMAL GHOSH, Ph.D. (host faculty) is Asst. Professor, Department of Chemistry, Motilal Nehru National Institute of Technology Allahabad, India. He has vast experience in teaching, research and administration. He has extensively worked on chemosensors for anions/cations & photochemistry for versatile applications.

Who can attend

- Executives, engineers and researchers from materials science & engineering, chemical engineering, biotechnology, medical professionals service and government organizations including R&D laboratories.
- Student at all levels (BTech/MSc/MTech/MBBS/MD/MS/MPharm/PhD) or Faculty from reputed academic institutions and technical institutions.

Travel and accommodation: No travel & accommodation will be provided. However, the participants as per their request and the availability of room the accommodation on payment basis may be arranged (Please see the institute EDC tariff for room rent).

The participants will be provided with double bedded accommodation on payment basis provided subject to availability.

Number of seats: Limited to 40 candidates only (First cum first serve basis)

Registration Fees

Participants from abroad : US \$250

Industry/ Research Organizations: Rs. 3000/-

Academic Institutions: Faculty : Rs. 2000/-

Academic Institutions: Student : Rs. 1000/-

The above fee include all instructional materials, computer use for tutorials, 24 hr free internet facility.

NOTE: All the participants are required to register in GIAN portal (www.gian.iitkgp.ac.in) by paying an amount of Rs.500/- besides the Course Registration Fee.

Application: Applications are invited in the registration format as printed overleaf

Contact details & last date: Applications are to be sent at the following address:

Prof.P.K.Dutta, Coordinator, GIAN Course Nanomedicine, Department of Chemistry, Motilal Nehru National Institute of Technology Allahabad 211004, E-mail: pkd@mnnit.ac.in, gkmehrotra@mnnit.ac.in, tamalghosh@mnnit.ac.in, Mob No.: 9936740953, 9936407575, 9235604785

The applications should reach not later than 16 October 2017. The list of selected candidates will be displayed on Department Notice Board 17 October 2017.

Interested candidates may visit institute website: www.mnnit.ac.in



REGISTRATION FORM

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Mr./Ms./Dr. _____

Institution _____

Correspondence Address: _____

Registration fee: US \$250, Rs.3000/-, Rs.2000/- & Rs.1000/- (Cash/RTGS/Online transaction (with ref.no.) in favour of *NANOMEDICINE*, A/c No. **718400301000263**, Vijaya Bank, MNNIT Allahabad Branch, IFSC: VIJB0007184)

Accommodation required: Yes/No
(Please see the institute EDC tariff for room rent)

Mobile : _____

Email: _____

Certified that the information given above is true to the best of my knowledge and that I shall abide by the instruction of the Course Coordinators.

Signature of the participant with date