



## **NANOBIOTECK-2019**

NANOBIOTECK-2019, 4<sup>th</sup> annual conference of Indian Society of Nanomedicine (ISNM) was organised at Aerocity, New Delhi from 21<sup>st</sup> – 23<sup>rd</sup> November 2019 in partnership with BIRAC and Department of Biotechnology, GoI in concurrence to Global Bio-India 2019. The conference was initially planned to be organised at IISER – Bhopal in collaboration with IISER - Bhopal and AIIMS – Bhopal. Due to clash of dates, and seeing a better opportunity of exposure of our participants to global platform and networking with international experts, it was decided to change the venue. Along with the registration, the delegates attending NANOBIOTECK – 2019 were provided with a unique “Promo-Code” which enabled them to register at Global Bio-India 2019 at no extra cost.

The conference is aimed at providing an interdisciplinary and interactive platform for nano-scientists, engineers, clinicians, regulators, industry representatives, policy makers and related stakeholders to advance research and promote innovations and commercialization of Nano-enabled products to address various issues related to HealthCare.

The conference will focus deliberations around the following thematic areas:

- Targeted Drug Delivery/Nanocarriers, Organ Bio-distribution
- Biological & Medical Nanodevices and Biosensors
- Tissue Engineering and Regenerative Medicine
- Nano-Imaging for Diagnosis, Therapy and Delivery in Preclinical and clinical fields
- Nano and Micro-systems for Artificial Biology and Biocatalysis
- Nanotechnology and Translational Medicine: From the Bench to the Bedside



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- Tailoring of Polymeric Nanoparticles, Organic-Inorganic Nanocomposites and Biohybrids.
- Stakeholders View-B2B
- Safety and regulations for nano-products and processes.

The conference reflected various sessions, in which discussions were held on the following major scientific tracks:

- Biological and Bioinspired Nanomaterials
- Nanobiosensor and Point-of-Care devices
- Panel Discussion on Safety and Regulatory Issues in Nanotechnology
- Nanotechnology Application in Tissue Engineering
- Oral Presentation by Early Career Faculties/Scientists and PhDs/Post-Docs.

Overall, NANOBIOTECK – 2019 hosted 6 plenary talks, 10 invited talks, 17 oral presentations (7 by Young Career Faculties/Scientists, 10 by Post-Docs/PhDs) and 47 poster presentations. The pattern of the conference sessions were as follows:

- 1 Plenary Talk – reviewing, showcasing the challenges and opportunities in specific thematic area
- 2 - 3 Invited Talks – illustrating their interest, work and results.

NANOBIOTECK – 2019 was attended by around 235 delegates including the ISNM members, young researchers, students, company representatives and volunteers.

NANOBIOTECK – 2019 was financially supported by:

- Nanobiotechnology TaskForce, DBT, Gol;
- Nano-Mission, DST, Gol;
- American Chemical Society – Sponsored 7 Poster Awards (Award includes - Cash Prize, ACS certificate and 1-year membership of ACS);



- Royal Society of Chemistry – Sponsored 3 Poster Awards (Award includes Cash Prize, RSC Certificate);
- Company Sponsors – Anton-Paar and Forevision Instruments.
- Rest of financial expenditures were covered from the registration fee received from the delegates.

NANOBIOTECK – 2019 was officially inaugurated post-lunch on 21<sup>st</sup> November 2019 in presence of **Prof. K. N. Ganesh** (*President, ISNM*), **Dr. Suchita Ninawe** (*Advisor, DBT*), **Prof. Y. K. Gupta** (*Former President – ISNM*) and **Prof. A. K. Dinda** (*General Secretary – ISNM & Professor, AIIMS*). The dignitaries emphasized on the deep impact that Nanobiotechnology has in the current generation and also highlighted the platform ISNM provides for collaborations within nanomedicine community in India.

Brief one-liner of important talks delivered by speaker:

**Session I: - Biological and Bioinspired Nanomaterials**

- Prof. Abhay Pandit, National University of Ireland, Ireland; the first speaker of NANOBIOTECK – 2019 discussed on current research on biomaterials used in redefining identity of disease, tissue and cells. He also shared the opportunities offered by Ireland for start-ups.
- Dr. Gaurav Sahay, University of Oregon, USA; presented the work done on naturally occurring lipid assisting in cytosolic delivery of mRNA for production of therapeutic proteins.
- Dr. Xu Chenjie, Nanyang Technological University, Singapore; showcased the Transdermal drug delivery (TDD) technique which offers a convenient method for drug administration, given its non/minimally-invasive nature, great patient compliance, and direct entry route which bypasses systemic metabolism.



- Dr. Anita Kamra Verma, University of Delhi, Delhi; and Dr. Avinash Bajaj, Regional Centre for Biotechnology, Faridabad; presented their work on use of drug loaded nanoparticles as therapeutic agent against Rheumatoid arthritis (RA) and tumour, respectively.

## **Session II: Nanobiosensors and Point-of-care devices**

- Dr. Pranjal Chandra, IIT – Guwahati; discussed on biosensors based on engineered surface and nanomaterials.
- Dr. Shalini Gupta, IIT – Delhi; presented a novel approach of Combined Impedance Spectroscopy and Dielectrophoresis (IS-DEP) Platform for Live Bacterial Cell Monitoring and Analysis
- Dr. K. K. Maiti, CSIR – NIIST, Kerala; showcased his team's work on SERS based sensors for spectroscopic Detection and Bioimaging of Human Lung Cancer and Metastatic Melanoma.
- Dr. Pratima Solanki, Jawaharlal Nehru University, Delhi; pitched on use of nanofibers as sensors for detection of Vitamin D.

## **Session VI: Nanotechnology Application in Tissue Engineering**

- Prof. Rupak Banerjee, University of Cincinnati, USA; illustrated their findings on use of magnetic microbeads in electroosmotic flow driven microfluidic device for bacteria isolation
- Prof. Sujata Mohanty, All India Institute of Medical Sciences, Delhi; shared the overview of potentials offered by Human Mesenchymal Stem Cells in regenerative medicine.
- Prof. Deepthy Menon, Amrita Institute of Medical Sciences, Kochi; talked on how modulations of nanoscale structural features of biomaterials can help to alter cellular interactions in vivo.



- Prof. Deepa Ghosh, Institute of Nanoscience and Technology, Mohali; discussed on aspects of interaction of Carbon dots with Endothelial cells for Biomedical Applications.
- Prof. Narayan C Mishra, Indian Institute of Technology, Roorkee; showcased his group's work on use of decellularized scaffolds in regenerative medicine.

#### **Session IV: Panel Discussion on Safety and Regulatory Issues in Nanotechnology**

- Prof. Dinda emphasized on understanding the regulatory perspective while working in the field of nanomedicine. He also discussed a few points mentioned in the "Guidelines for Nanopharmaceuticals in India".
- Prof. Dinda also answered a few queries of the delegates on nano-regulatory issues.

#### **Session III and Session VI: Oral Presentation by Early Career Faculties/Scientists and Post-Docs/PhDs**

- This session was planned to showcase the young talents and minds working in the area of nanomedicine in India. Each delegate were provided with 10 minutes presentation slot (8 minutes presentation + 2 minutes Q&A). The delegates presented their work in various fields including regenerative medicine, Nanobiosensors, drug delivery, bio-imaging, DNA nanostructures. The delegates who presented their work are as follows:
  - Early Career Faculties/Scientists
    - Dr. Rashi Mathur, Scientist, INMAS, New Delhi
    - Dr. Abhijit Singh, Assistant Professor, Manipal University, Jaipur
    - Dr. Karuvath Yoosuf, Scientist, CSIR – NIIST, Trivandrum
    - Dr. Suchetan Pal, Assistant Professor, IIT – Raipur
    - Dr. VHS Moorthy, Associate Professor, Manipal University, Manipal



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- Post-Docs/PhDs
  - Aleena Mary Cherian, AIMS, Kochi
  - Ankit Gangrade, IIT – Guwahati
  - Nidhi Gupta, INST, Mohali
  - Reethu Haridas, CSIR-NIIST, Trivandrum
  - Sanhita Ray, University of Kolkata, Kolkata
  - Sonali Rawat, AIIMS, Delhi
  - Subhajit Chakraborty, IISER, Bhopal
  - Vineeta Panwar, INST, Mohali

NANOBIOTECK - 2019 was structured to cover the most recent international developments in the field of Nanobiotechnology and Nanomedicine. It was structured to provide a complete overview on the state of the art in these fields and on the research carried out and the latest results, recent advances, difficulties and breakthroughs as well as emerging and future trends of the converging fields of Nanotechnology, Biotechnology and Medicine will be discussed. The event offered the participants from both science and industry the opportunity to discuss new cooperation projects.

The mega event, NANOBIOTECK – 2019 concluded on 23<sup>rd</sup> November with Award ceremony where 10 students were rewarded with a certificate and a cash prize for best poster under thematic areas of the conference.

Award ceremony was followed by announcement of venue for NANOBIOTECK – 2020. Prof. Dinda announced **Indian Institute of Technology – Guwahati as the venue for NANOBIOTECK – 2020**. Dr. Biman Mandal, Professor, Department of Biosciences and Bioengineering, IIT – G accepted the offer and invited the delegates for the next event.

Vote of Thanks was delivered by Prof. A. K. Dinda, General Secretary, ISNM with acknowledgements to Government agencies, delegates and volunteers.