नैनो विज्ञान एवं प्रौद्योगिकी संस्थान
(विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार का एक स्वायत्त संस्थान)
Institute of Nano Science and Technology
(An Autonomous Institute supported by Department of Science and Technology, Government of India)

No. 9(1)/2024-INST Dated: 26.02.2024

Ph.D. PROGRAM - AUGUST 2024 SESSION

Institute of Nano Science and Technology (INST), Mohali invites applications from prospective candidates for admission into its Ph. D. Program in several areas of nanoscience and nanotechnology for the session beginning in August 2024. Selected students will be provided fellowship as per the norms of INST and Government of India. **Students with an independent source of fellowship, for example, CSIR/UGC-JRF, are also encouraged to apply**. Selected students will be enrolled in the Ph. D. program of the Indian Institute of Science Education and Research (IISER), Mohali, and the Ph. D. degree will be awarded by IISER, Mohali.

If you have any queries, email apply@inst.ac.in

The major ongoing research areas at INST are given at the end of this document.

a) ELIGIBILITY

- M. Sc. or M. Pharm. or M. Tech. in Basic or Applied Sciences, Engineering or related areas. Students who have appeared for the final year/semester examinations are also eligible, provided that the degree will be granted by the time of joining.
- Qualified at least one national examination out of GATE, CSIR/UGC-NET, JEST, JGEEBILS (TIFR/ NCBS), ICMR-JRF, DBT-JRF, DST-INSPIRE or GPAT.
- Age limit: As per the guidelines of CSIR-UGC and DST.

b) SELECTION PROCEDURE

- Interested candidates are requested to **submit an online synopsis** to express their interest in attending the interview: https://forms.gle/A351e9v3enQH4GN19
- A hard copy of application (affixing a recent passport size photograph) along with the self-attested copy of certificates providing age, educational qualifications, experience (if any) and reservation category should be sent to "The Director, Institute of Nano Science and Technology, Knowledge City, Sector 81, Mohali 140306 (Punjab). The envelope containing the application form should be super scribed as "Application for the Ph. D. Program – August 2024".
- Eligible candidates will be shortlisted for interview and the date and mode of interview will be communicated to the email address provided by candidate. The list of shortlisted candidates will also be uploaded on INST website.
- No TA/DA will be paid for attending the interview.
- After the interview, the list of candidates selected for Ph. D. will be uploaded on INST website and the candidates will be intimated by email.
- Selection of students shall be done as per the provisions of The Central Educational Institutions (Reservation in Admission) Act, 2006 and amendments made thereto.
- The candidates are advised to visit INST website frequently to track the latest developments.
- Number of students required for admission SC/ST (16), OBC (19), EWS (8), and GEN (36).

c) APPLICATION FEES

- Candidates will be required to remit the application fees online on the date of interview.
- **Rs.590/-** for General, OBC and EWS candidates, and **Rs.295/-** for SC, ST and PH candidates.
- Online to the bank account of INST noted below. Full name of the applicant shall be mentioned as the purpose of transaction. The details of the online transaction should be attached along with the application.

Account Name: Director, INST Mohali **Account number:** 2452201001102
IFS code: CNRB0002919 **Bank:** Canara Bank, SECTOR-64, PHASE 10, MOHALI-160062

d) LAST DATE

- The duly filled applications along with the supporting documents should reach INST through Registered/ Speed Post/ Courier/ By Hand on or before **2nd April 2024.**
- Applications received after the last date shall not be entertained in any case.

Research Units at INST

Chemical Biology

Cancer Nanomedicine
- Epigenetic based
- Hyperthermia based
- Photo-thermal therapy
- Photo-therapy
- Combinatorial nanomedicine approach

Nano-therapeutics
- Infectious diseases: tuberculosis, leishmaniosis
- Neurodegenerative diseases: Alzheimer's disease, Parkinsonism
- Lifestyle diseases: rheumatoid arthritis, osteoarthritis
- Autoimmune disease: ulcerative colitis

Bio-mimetic and Tissue Engineering
- Regenerative nanomedicine
- Stem cell nanomedicine
- Supramolecular nanomaterial scaffolds
- Smart hydrogels
- Hybrid organic-inorganic nanomaterials

Biomolecular Phenomenon at Nanoscale
- Disease mechanism
- Self-assembling bio-nanomaterials
- Nano-confinements
- Biological nano-machines

Nano-diagnostic
- Biosensors: SERS, electrochemical or fluorescence based techniques
- Theranostics: biomaterials for theranostics

Agri-nanotechnology
- Nano-fertilizers
- Nano-pesticides

Nano-toxicology
- Cell and tissue toxicity
- Nanomaterial toxicity
- Developmental, neurological, behavioural nano-toxicity

Energy & Environment

Inorganic & Materials Chemistry
- Electrochemistry (fuel cells, batteries & supercapacitors)
- Energy storage & conversion
- Framework materials (COF & MOF)
- Photocatalysis (water splitting & CO_2 reduction)
- Solar cells (perovskites, quantum dots & dye sensitized solar cells)
- Solid state chemistry
- X-ray scattering

Organic & Polymer Chemistry
- Biomaterials & drug delivery
- Chemosensors
- Flexible optoelectronics
- Luminescent materials
- Catalysis (organic transformations, photocatalysis, biomass conversion)
- Nanomotors & micropumps
- Synthetic methodology
- Small molecule & polymer synthesis
- Stimuli-responsive supramolecular materials

Spectroscopy & Physical Chemistry
- Biosensing
- Device fabrication
- Luminescence spectroscopy
- Nanophotonics
- Single molecule spectroscopy
- Ultrafast spectroscopy

Environmental Chemistry
- CO_2 sequestration & N_2 fixation
- Microfluidics based sensing of pollutants
- Sensing
- Waste management
- Water & air purification

Quantum Materials & Devices

Experimental aspects of Material and Device Physics
- Low dimensional materials and artificial superstructures
- Nanoscale piezo, ferro and pyro-electricity
- Photovoltaics
- Micro and nano structured device
- Nano devices and sensors
- Spintronics
- Organic-inorganic hybrid nanostructured devices, self-powered electronics, sensors and actuators
- Flow fabrication of nanostructures for light driven properties
- Microfluidics for sensing and delivery
- Physics in Nano dimension objects
- Renewable energy storage & transfer devices
- Green H_2 production

Computational Nanoscience
- Theoretical condensed matter physics
- Exploiting piezoelectricity, electronic charge, spin and valley degrees of freedom at the nanoscale for next-generation electronics
- Nanomaterials and their interfaces for power conversion: e.g., photovoltaics, photocatalysis, sensors
- Designing of spin-interfaces and spintronics materials
- Single molecule magnets and molecular magnetism

Computational Chemistry
- Electron transfer in proteins & enzymatic chemical reactions
- Electron transport at molecular nano-junctions

Computational Biology and Biophysics
- Molecular Dynamics Simulations of Protein and Protein-Ligand Interactions
- Anti-malarial drug activities and drug designing
- Regulation of enzymatic activities of CBS enzymes

Further details are available at www.inst.ac.in