

No. 9(1)/2021-INST

Dated 29th January 2021

Ph.D. PROGRAM - AUGUST 2021 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 2021. Selected students will be provided fellowship as per the norms of INST and Government of India. **Students with an independent source of fellowship, such as CSIR/UGC-JRF, are also encouraged to apply.** Selected students will be enrolled in the Ph. D. program of Indian Institute of Science Education and Research (IISER), Mohali and the Ph. D. degree will be awarded by IISER, Mohali.

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

a) ELIGIBILITY

Candidates must have

- 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.
- Students registered with IISER, Mohali for BS-MS program can apply as per the norms of IISER Mohali.

b) APPLICATION & SELECTION PROCEDURE

- Candidates must submit application in the prescribed format available at <https://inst.ac.in/careers>.
- In addition to the above application, the candidates are required to submit an online synopsis ([click here: https://docs.google.com/forms/d/e/1FAIpQLSd-LesA-Efu4QDsn0oqa62ev4azldHEICAKwBp0c4CNKBGM6Q/viewform?vc=0&c=0&w=1&flr=0&gxids=7628](https://docs.google.com/forms/d/e/1FAIpQLSd-LesA-Efu4QDsn0oqa62ev4azldHEICAKwBp0c4CNKBGM6Q/viewform?vc=0&c=0&w=1&flr=0&gxids=7628)).
- A hard copy of application (affixing a recent passport size photograph) along with the self-attested copy of certificates proving 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 140308 (Punjab). The envelope containing the application form should be super scribed as "Application for the Ph. D. Program – August 2021".
- 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.
- Ph. D. interviews will be conducted online through google meet. The link to access google meet will be provided prior to the interview. In case the interviews are conducted in person, the candidates called for interview will be paid sleeper class rail fare or non-AC bus fare from the place of residence to INST and back on production of ticket.
- 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.
- The candidate are advised to visit INST website frequently to track the latest developments.

c) APPLICATION FEES

- **Rs.590/-** for general, OBC and EWS candidates, and **Rs.295/-** for SC, ST and PH candidates.
- Application fees may be transferred 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
IFS code: CNRB0002452

Account number: 2452201001102
Bank: Canara Bank, Sector 34A, Chandigarh 160022

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 **12th March 2021**.
- 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
- Photocatalysis
- Solid state chemistry
- Energy storage & conversion
- Solar cells
- Framework materials

Organic & Polymer Chemistry

- Small molecule & polymer synthesis
- Catalysis
- Supramolecular materials
- Luminescent materials
- Chemosensors
- Biomaterials

Spectroscopy & Physical Chemistry

- Ultrafast spectroscopy
- Single molecule spectroscopy
- Nanophotonics
- Biosensing
- Luminescence spectroscopy

Environmental Chemistry

- Water & air purification
- Sensing
- CO₂ sequestration
- Waste management

Computational Chemistry

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

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 nanodimension objects

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