



भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

Research Opportunity



**Department of Materials Science &
Metallurgical Engineering**

Academic Programs
Offered:

B. Tech.
M. Tech.
Ph.D.

the department

Broad Research Areas

Structural
Materials

Functional
Materials

Computational
Materials
Science

Energy
Materials

Health care &
Biomaterials

Nano
materials



Faculty & Research

Dr. Suhash Ranjan Dey

PhD, Paul-Verlaine Metz, France

Emerging alloys (solar cells, biomaterials, thermoelectrics) design through Combinatorial Approach, Materials processing, testing & characterization, thermomechanical processing-phase transformation-microstructures-properties of Titanium alloys, 3D Manufacturing of binary & ternary Ti-based alloys for biomedical applications.

Contact: suhash@iith.ac.in, +91(40)23016096



Dr. Rajesh Korla

PhD, IISc Bangalore

Deformation at room temperature, creep and superplasticity, micro mechanical deformation, molecular dynamic simulations, nano-indentation.

Contact: rajeshk@iith.ac.in, +91(40)23016199



Dr. Subhradeep Chatterjee

PhD, IISc Bangalore

Phase Transformations and Microstructure Development, Laser and Electron Beam Processing, Welding and Surface Treatment, Modelling and Simulation (Phase Field/FEM/CVM).

Contact: subhradeep@iith.ac.in, +91(40)23017075



Dr. Sairam K Malladi

PhD, TU-Delft Netherland

In situ Transmission Electron Microscopy, In situ characterization and technique development using MEMS devices (lab on chip), Phase transformations in materials, Electrochemistry and Corrosion, Graphene based super capacitors, Materials for Energy Applications.

Contact: srkm@iith.ac.in +91(40)23017003



Dr. Pinaki Prasad Bhattacharjee

PhD, IIT Kanpur

Bulk ultrafine and nanostructured materials by severe plastic deformation processes, structure-property relationship, Crystallographic texture, Electron microscopy, Recrystallization behavior, Mechanical behaviour, Development of Light metals (e.g. Al, Mg, Ti) alloys for novel applications, High entropy alloys

Contact: pinakib@iith.ac.in, +91(40)23016069



Dr. Atul Suresh Deshpande

PhD, MAX Plank, Potsdam, Germany

Nanoparticle synthesis and self-assembly, sol-gel processes, templating techniques, novel nanostructured materials for advanced applications including catalysis, solid oxide fuel cells (SOFC), ferroelectric materials

Contact: atuldeshpande@iith.ac.in, +91(40)23017044

Faculty & Research

Dr. Ranjith Ramadurai PhD, IISc Bangalore

Multiferroic oxide thin films for fundamental science & functional devices, Surfaces & Interfaces of oxide hetero structures on silicon and single crystalline oxide substrates, Influence of process conditions, strain engineering & interface engineering on domains & domain dynamics of multiferroic thin films utilizing scanning probe microscope.

Contact: ranjith@iith.ac.in, +91(40)23017046



Dr. Shourya Dutta Gupta PhD EPFL Switzerland

Nanophotonics, Plasmonics, Biosensors, Self-assembly of nanoparticles, Alternative nanofabrication techniques, Nano-optical biosensors, Gold/Silver nanostructures and nanoparticles, Chemical synthesis of nanoparticles, Graphene based ultrafast devices, Lab-on-a-chip based optical devices, Microfluidics, Photo-catalysis.

Contact: shourya@iith.ac.in, +91(40)23017023



Dr. Chandrasekhar Murapaka PhD NTU Singapore

Spintronic based memory & logic devices, Nanomagnetic materials, Domain wall dynamics in ferromagnetic networks, Spin torque nano-oscillators for RF applications, Spin-orbit torque induced magnetization switching and dynamics, Magnetic tunnel junctions, Micro and Nanofabrication techniques

Contact: mchandrasekhar@iith.ac.in



Dr. Mudrika Khandelwal, PhD, Cambridge, UK

Bacterial cellulose & natural materials-understanding structure-mechanism-applications, high performance green composites, liquid crystals and self-assembly of rod-like entities, fibre spinning, strategies for developing anti-fouling and anti-microbial materials, materials for tissue scaffolding, Drug delivery, Paper (heritage) restoration, artificial muscle, actuators.

Contact: mudrika@iith.ac.in, +91(40)23017118



Dr. Saswata Bhattacharya PhD IISc Bangalore

Phase transformations in alloys and oxides, phase-field modeling of microstructural evolution, microstructure-property correlations, modeling deformation behavior using discrete dislocation dynamics, continuum crystal plasticity, multi-scale modeling of functional materials.

Contact: saswata@iith.ac.in, +91(40)23017107



Dr. Bharat B. Panigrahi PhD, IIT Kharagpur

Powder Metallurgy, Sintering Mechanisms, Nanostructures and Nanoparticles, High Entropy Alloys, Porous Titanium Alloys and Implants, MAX Phases, MXene for Energy Storage, Bio-ceramics, Additive Manufacturing, High Temperature Materials, Advanced Composites, Tool Materials, Microstructure-Properties correlation of steels

Contact: bharat@iith.ac.in, +91(40)23017072,

Facilities

SYNTHESIS/ PROCESSING:

- Pulse Laser Deposition
- E-beam deposition
- Planetary Ball mill
- Electrochemical analyzer
- Rolling mill,
- Uniaxial Compaction Press
- Cold-Isostatic Press

FURNACES:

- Induction-melting furnace
- High Temperature Vacuum Furnace
- Infra-red rapid heating furnace
- Muffle furnace
- Tube furnace
- Salt-bath furnace
- Autoclave

MICROSTRUCTURE:

- TEM
- SEM-EBSD
- Optical Microscopes,
- Ion-milling, PIPS

MECHANICAL PROPERTIES:

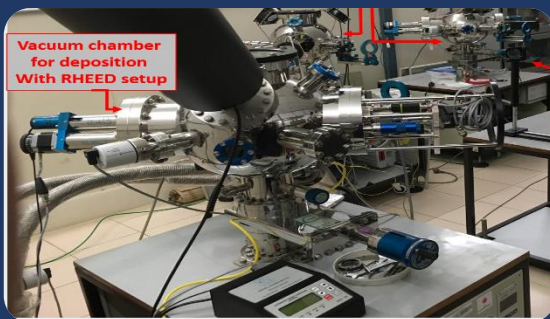
- Universal testing machine (MTS, Instron),
- Hardness Tester
- Wear (Pin-on-disk)

CHARACTERIZATION:

- Thermal analysis & properties: DTA, DSC, TGA, Dilatometer
- Surface Area: BET
- Phases: XRD, Thin Film XRD, Raman
- UV visible
- AFM

OTHERS:

- Ovens
- Incubator shaker
- Freeze drier
- Bio-safety cabinet
- Glove-box
- Glass vacuum sealing



PhD Program

The Doctor of Philosophy (Ph.D.) program is for enthusiastic students, who are willing to take up challenging research problems in various areas of Materials Science and Metallurgical Engineering, as mentioned in the research profiles of the faculty members (but not limited to). New ideas, inventions and innovations are most welcome.

ELIGIBILITY CRITERIA FOR ADMISSION TO PHD PROGRAM:

Candidates interested in Institute scholarship (MHRD) and Candidates with external funding (DST-INSPIRE/ joint CSIR-UGC JRF QUALIFIED/ industry sponsorship/ external registrants from national research laboratories) with required qualifications (mentioned below) are highly encouraged to apply.

QUALIFICATIONS:

1. M.Tech./ M.E. or equivalent degree in Materials Science and Engineering, Metallurgical Engineering, Ceramics, Mechanical Engineering, Nanoscience, Polymer Technology, and closely related areas.
2. B. Tech. / B.E. (Non- I.I.T.) in the above disciplines with CGPA of 8.5 and above, along with a valid GATE score OR B. Tech. students graduating from an I.I.T. with a CGPA of 8.0 or above are eligible to apply OR B.S. (4 Year) students graduating from I.I.Sc. Bangalore or an I.I.S.E.R. The GATE criterion is not mandatory for B.Tech. or BS students graduating from an I.I.T/ IISc-B (who has CGPA 8.0 or above).
3. MSc in Materials Science/ Physics/ Chemistry or equivalent degree with valid GATE Score in CY/PH/ XE or joint CSIR-UGC JRF qualified.

APPLICATION PROCEDURE & LAST DATE:

Visit www.iith.ac.in for detail information and apply online

SELECTION PROCESS:

Selection process will take place in two steps: A written test followed by an interview.

Candidates shortlisted from written test will be called for an interview. Candidates selected in interview will be offered PhD positions.

Contact for PhD Program:

Dr. Shourya Dutta Gupta

Assistant Professor

Department of Materials Science &
Metallurgical Engineering

Email: shourya@iith.ac.in

Phone: +91 (40) 2301 7023

Institute Address:

Indian Institute of Technology Hyderabad

Kandi, Sangareddy - 502285

Telangana, INDIA,

Email: info@iith.ac.in,

Web: <http://www.msme.iith.ac.in/>