MATERIALS SCIENCE PROGRAMME
DEPARTMENT PH.D. PLACEMENT BROCHURE 2021-22
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Interdisciplinary programme in Materials Science here at IIT Kanpur is one of the initial degree program started in Jul 1971, to make collaborative works between various streams of science and technology. It helps in development and improvements of materials properties for electronic, semiconductor, mechanical, nanotechnology, energy storage, stealth technology and sensing applications. Our students go through rigorous course works with laboratory hands on experience to characterize various materials properties using techniques like Scanning Electron Microscopy (SEM), Raman Spectroscopy, Transmission Electron Microscopy (TEM), X-Ray Diffraction (XRD), X-Ray photoelectron spectroscopy(XPS), and numerous materials characterization techniques. In past many enriching collaborations have been made with various institutions like ISRO, DRDO, DST, etc.

Various academic institutions and research organizations also make use of the department’s knowledge to develop and improve the process and products. Inter-disciplinary knowledge of students from their graduating courses along with the specific in-depth domain knowledge in doctoral work make them good candidate for industrial application and academia, which is reflected in huge alumni profile.
MESSAGE FROM HoD’s DESK

It is a pleasure to write this note for recruiters considering to potentially hire students from the Interdisciplinary Programme on Materials Science at IIT Kanpur. This interdisciplinary initiative was started more than 50 years back to encourage people from varied backgrounds to collaborate and come up with an academic programme to train manpower for harnessing the potential of materials to power our technological growth. The technologies of today use a large variety of materials with tailor-made properties, and stringent demands on performance much beyond that can be obtained from naturally occurring materials. Materials Science Programme here at IIT Kanpur has a very strong interdisciplinary approach with both students and faculties coming from different backgrounds.

Our student intake is generally from engineering streams such as electrical, mechanical, materials, chemical and science streams of physics and chemistry. These students are put through a rigorous coursework giving them a solid grounding in fundamentals and application of material science. Subsequently, these students pursue independent projects with faculty members for their thesis in areas such as chemical sensors, Nano-composites, batteries, microwaves, multiferroic oxides. We believe that potential employers would find tremendous value in the training programme imparted here at IIT Kanpur.

Prof. Rajeev Gupta
Professor and HoD,
Inter-Disciplinary Programme on Materials Science
Indian Institute of Technology, Kanpur
ASSOCIATED FACULTIES

Dr. Rajeev Gupta
Ph.D., IISc Bangalore
Experimental Condensed Matter Physics, Raman Scattering

Dr. Jaleel Akhtar
Ph.D., University of Magdeburg
Microwave sensors & absorbers, Stealth Technology, Non-Destructive Testing.

Dr. Kamal K. Kar
Ph.D., IIT Kharagpur
Fuel cell, Battery, Thermoelectric, Supercapacitor, Advance Polymer Composites

Dr. Y. N. Mohapatra
Ph.D., IISc Bangalore
Printable Electronics, Organic LED and Lighting, Hybrid Inorganic/Organic Devices

Dr. Siddhartha Panda
Ph.D., University of Houston
Chemical sensors, Transport and reactions, Microfluidics, Micro/nano fabrication, Semiconductor devices

Dr. Sri Sivakumar
Ph.D., University of Victoria
Ln-doped nanodevices, Multifunctional nanomaterials for drug delivery, Nanocatalysts, Nanomaterials for solar hydrogen generation, Photonic crystals

Dr. R.G.S. Pala
Ph.D., University of Utah
Electrochemical, Catalysis and Separations Engineering
COURSES OFFERED

- MS601A: STRUCTURAL AND MAGNETIC PROPERTIES OF MATERIALS
- MS602A: ELECTRIC AND DIELECTRIC MATERIALS
- MS603A: MECHANICAL PROPERTIES OF MATERIALS
- MS604A: CHARACTERIZATION OF MATERIALS
- MS605A: MATERIALS ENGINEERING
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<th>LAB FACILITIES</th>
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| **ADVANCED NANOENGINEERING MATERIALS LABORATORY**  
Carbon nanotubes, Nanostructured materials, Functionally graded materials, Fuel cell, Solar cell, Li-ion battery, Polymer, Thermoelectric materials, Nanocomposites  
Location: ACMS 208 |
| **MATERIALS SCIENCE INSTRUCTIONAL LABORATORY**  
Nano, electronic, magnetic recording and hydrogen energy storage materials, Thin films, Electron microscopy  
Location: ACMS 210 |
| **OPTICAL SPECTROSCOPY**  
Experimental condensed matter physics with emphasis on using spectroscopy tools such as Raman scattering to probe the nanoscale dynamics in novel and interesting materials  
Location: ACMS 107 |
| **PHOTONIC AND ELECTRONIC MATERIALS LABORATORY**  
Electronic and optoelectronic materials, Physics of semiconductor devices and defects  
Location: ACMS 110B |
| **THIN FILMS LABORATORY**  
Nano, electronic, magnetic recording and hydrogen energy storage materials, Thin films, Electron microscopy  
Location: ACMS 108B |
| **MICROWAVE MATERIALS PROCESSING LABORATORY**  
Microwave absorbers, Microwave sensors, Stealth technology, Dielectric properties  
Location: ACMS 207A |
COLLABORATORS

Hindustan Aeronautical Limited (HAL)
Department of Atomic Energy (DAE)
Council of Scientific and Industrial Research (CSIR)
Indian Space Research Organization (ISRO)

Ministry of Human Research Development (MHRD)
Department of Biotechnology
Department of Science and Technology (DST)
Ministry of Human Resource Development (MHRD)
The Indian National Science Congress Association

Defence Research and Development Organization (DRDO)
Department of Education and Training (DAE)
Department of Science and Technology (DST)
RECOGNITIONS & ACHIEVEMENTS

- Mr. Arun Rajput, "Awardee of SAKURA Exchange Program in Science (2019), administrated by JAPAN Science and Technology Agency.

- Ms. Moumita Mistry, "Women Scientist award in poster presentation in 'Nanotechnology in better living', Indian Institute of Technology Kanpur, India, April 2019 on ‘Suspension Plasma Spray: An Industrially Emerging Route to Nanometric Deposition.

- Ms. Alekha Tyagi, 1st place in the ‘Science as art’ competition in MRS spring 2021 meeting & exhibit; Title: Separated yet connected.


- Ms. Alekha Tyagi, Best presentation award at International Conference on Soft Materials-2018 at MNIT, Jaipur, India. Title: Biowaste derived mesoporous activated carbon electrocatalyst for oxygen reduction reaction.

- Mr. Mukesh Kumar, Best Poster Presentation award at 7th edition of Hybrid International Conference on Nanotechnology for Better Living, NIT Srinagar, India, 2021; Title: “Holey reduced graphene oxide for supercapacitor application”.

PAST RECRUITERS

ABB
SAMSUNG
APPLIED MATERIALS
ORACLE
TATA
TATA ADVANCED SYSTEMS
BHEL
TIGER ANALYTICS

THERMAX
Sustainable solutions
Energy & Environment

IBM
JSW
HSBC
Intel

Schlumberger
ASHOK LEYLAND
VIZAG STEEL
Pride of Steel

EXL
GE
EY
SanDisk

FINISAR
TATA STEEL

Clarice Technologies

Gurukul CLASSES

CAREER POINT

ATC Labs
Audio Technologies and Codecs

ADITYA BIRLA GROUP

Rio Tinto
Students’ Placement Office
109, Outreach Building, IIT Kanpur, 208016, U.P., India
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Phone: +91-512-259-4433/34
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