

**INDIAN
INSTITUTE OF
TECHNOLOGY
KANPUR,
INDIA**



MATERIALS SCIENCE PROGRAMME
DEPARTMENT PH.D. PLACEMENT BROCHURE 2021-22

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ABOUT US

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

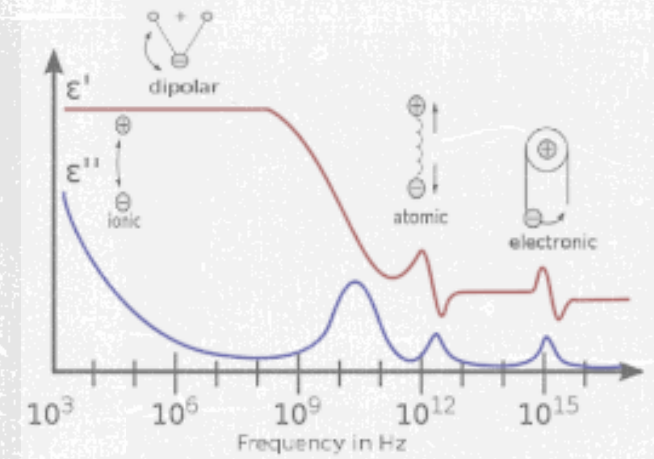
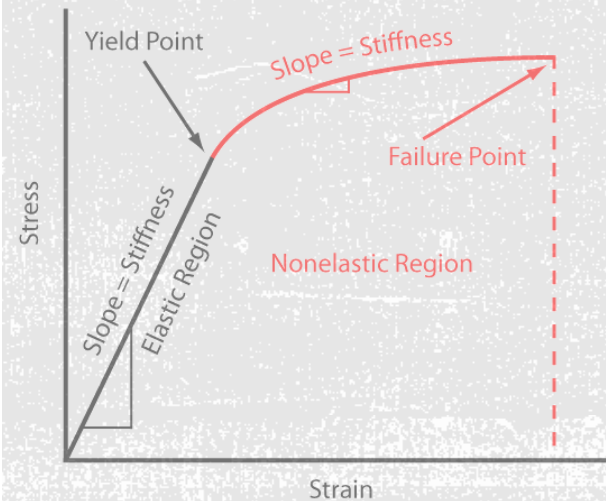
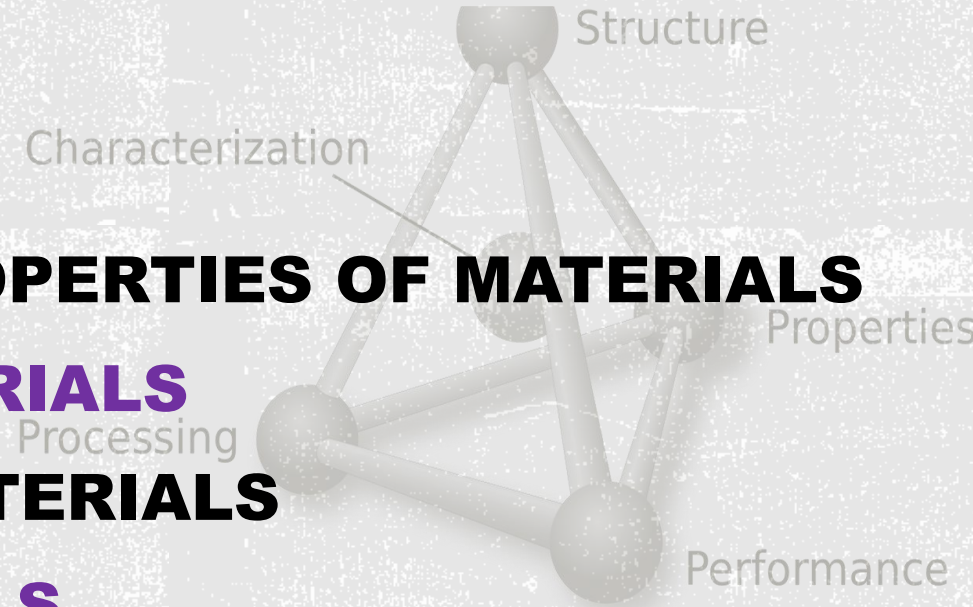


Dr. R.G.S. Pala

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**



LAB FACILITIES



ADVANCED NANOENGINEERING MATERIALS LABORATORY

Carbon nanotubes, Nanostructured materials, Functionally graded materials, Fuel cell, Solar cell, Li-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)



Defence Research and Development Organization (DRDO)



Department of Biotechnology



Department of Science and Technology (DST)



Ministry of Human Resource Development (MHRD)

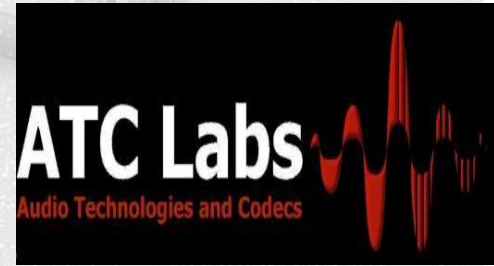


The Indian National Science Congress Association

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. Perna Sinha, **Best Oral Presentation award** at 7th edition of Hybrid International Conference on Nanotechnology for Better Living, NIT Srinagar, India, 2021; Title: ‘Zero value waste human hair to high value functional carbon nanosheets for superior charge storage supercapacitor.
- 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





Prakrati Azad

- Department Placement Coordinator (Student)
- Email: prakrati@iitk.ac.in
- Mobile: +91-9451779408

CONTACT US:

Students' Placement Office
109, Outreach Building, IIT
Kanpur, 208016, U.P., India

Website: <http://spo.iitk.ac.in/>

Phone: +91-512-259-4433/34

Fax: +91-512-259-4434

E-mail: spo@iitk.ac.in



Prof. Dr. M. J. Akhtar

- Department Placement Coordinator (Faculty)
- Email: mjakhtar@iitk.ac.in
- Phone : +91-512-259-6523