Information Brochure

M. Tech.
PETROCHEMICALS & POLYMER TECHNOLOGY
(DEPARTMENT OF CHEMICAL ENGINEERING)

मालवीय राष्ट्रीय प्रौद्योगिकी संस्थान जयपुर

Malaviya National Institute of Technology Jaipur

[AN INSTITUTE OF NATIONAL IMPORTANCE]

Program Overview

Petrochemical and polymer engineers design and optimize processes for the production of chemicals, fuels, and polymer materials that form the backbone of modern industry. The ***M.Tech. in Petrochemicals and Polymer Technology program*** offers comprehensive learning in chemical process design, polymer synthesis, sustainability practices and environmental safety. Students are prepared for employment in chemical industries, research organizations, and/or to pursue higher education and research in petrochemical engineering, polymer science, and allied chemical engineering disciplines.

Program Objectives

1. To develop expertise in designing safe, efficient, and sustainable petrochemical processes and polymer manufacturing systems that meet industry standards and environmental regulations.
2. Develop graduates with a strong understanding of chemical reaction engineering, process optimization, and polymer characterization techniques.
3. Impart knowledge on petrochemical refinery operations, polymer processing technologies, and advanced separation techniques.
4. Impart knowledge and industry-oriented skills in process simulation, plant design, and scenario analysis for decision making in the rapidly evolving petrochemical and polymer industries.

Target Groups

- Students seeking advanced knowledge of Petrochemical Engineering and Polymer Science.
- Professionals from Chemical/Petrochemical industry background
- Government functionaries/administrators in petroleum and chemical sectors
- PSU officials (ONGC, IOCL, BPCL, HPCL, etc.)

PROGRAM COURSES

Core Courses

- Advanced Polymer Processing
- Advanced Reaction Engineering
- Petroleum Refining and Petrochemical Production Engineering
- Polymer Characterization and Testing
- Polymer Technology

Research Domains

- Biocatalysis, Fermentation Technology, Downstream Processing
- Modelling and Simulation, AI and ML in Process Control
- Fluid Particle Mechanics, Adsorption, Energy Storage
- Process Intensification, Separation Processes
- Heterogeneous Catalysis for Environmental Applications
- Polymeric composite membranes, Industrial Gas Separation
- Computational Fluid Dynamics and Microfluidics
- Polymeric materials, Polymer solar cell, Polymer Process Modeling , Polymer, Additive Manufacturing

Elective Courses

- Advanced Polymer Process Modelling
- Advanced Process Instrumentation
- AI and ML in Process Engineering
- Catalysis Science and Technology
- Computational Techniques for Engineers
- Energy Management in Petrochemical Industries
- Hydrogen and Fuel Cell Technologies
- Petroleum Industry and Business
- Polymer Composites and Blends
- Safety and Risk Management in Petrochemical Industries
- Statistical Methods
- Waste Management in Petrochemical and Polymer Industries

Course Duration

Full-Time – 2 Years

Part-Time – 3 Years

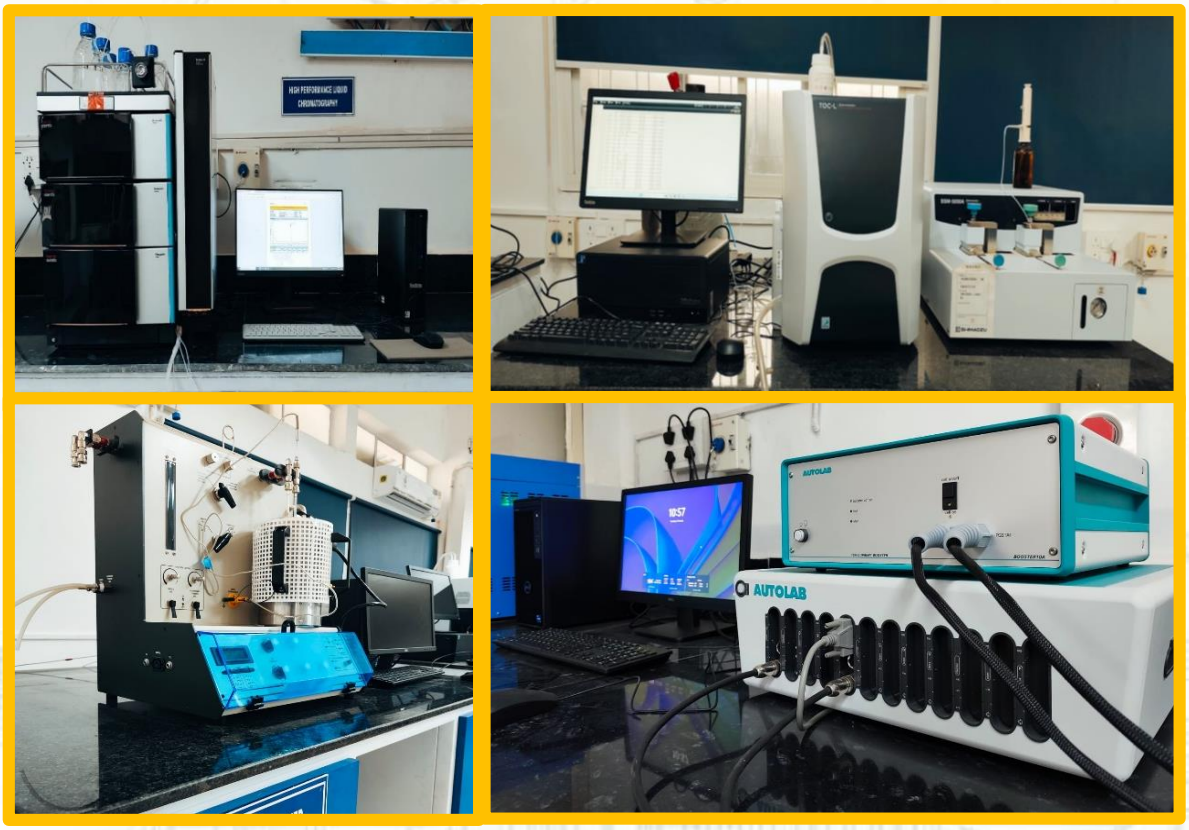
For more information

https://www.mnit.ac.in/dept chemical/

RESEARCH FACILITIES

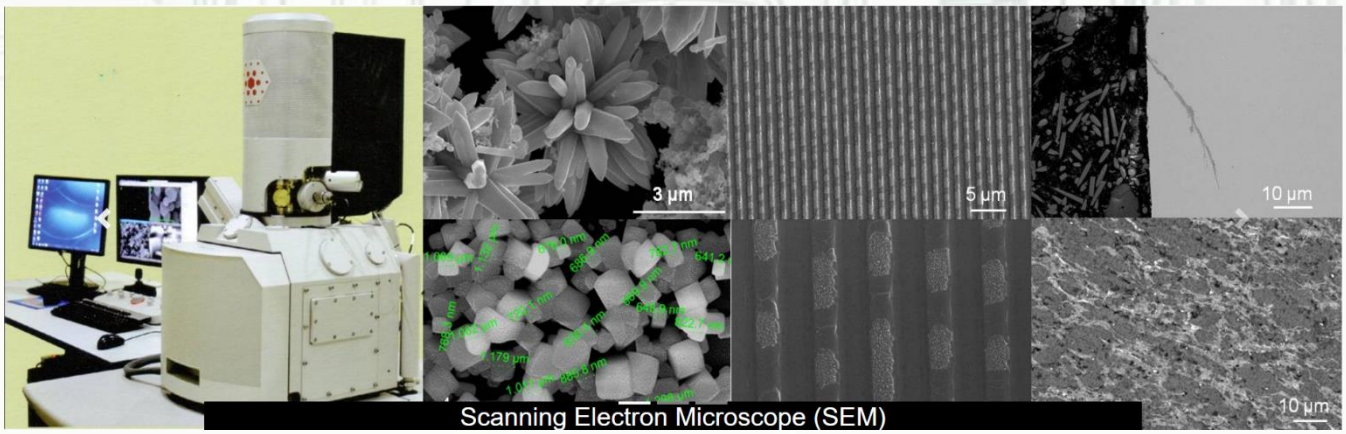
Departmental Analytical Instrumentation Lab:

The departmental analytical instrumentation lab is a state-of-the-art centre of excellence set up to promote interdisciplinary research with cutting-edge instruments, such as HPLC, Chemisorption apparatus (TPR/TPD), TOC analyzer, Electrochemical work station, etc.



Institute Research Facilities at Material Research Centre:

The Material Research Centre (MRC) is a state-of-the-art centre of excellence set up to promote interdisciplinary research. It has an extensive suite of cutting-edge instruments, such as TEM, FESEM with EDS, AFM, XRD, XPS, NMR, AAS, Raman and FTIR spectrometers, plus advanced sample prep & thin film deposition tools.

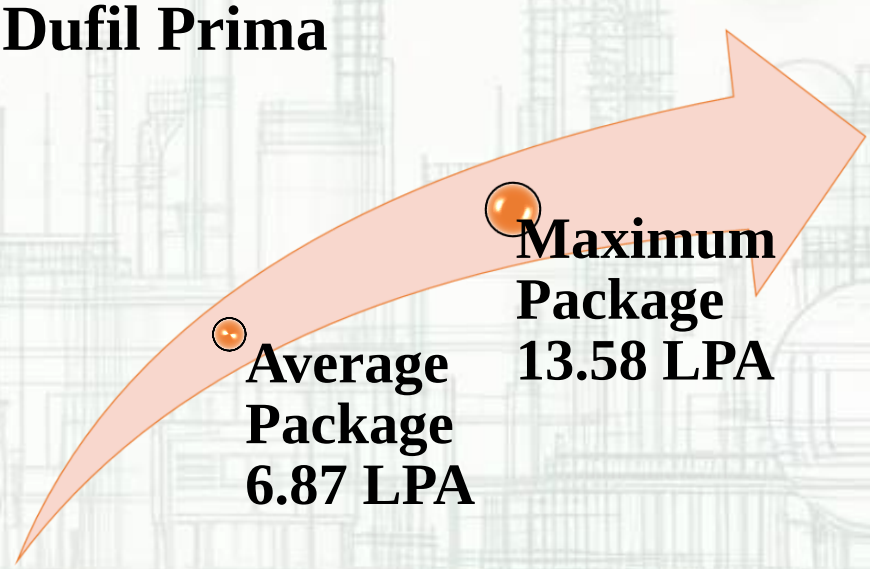


Scanning Electron Microscope (SEM)

PLACEMENTS

List of Employers:

- **Tata Consulting Engineers (TCE)**
- **Capgemini**
- **Prism Johnson**
- **Aakash institute**
- **Jaipur Rugs**
- **Dufil Prima**



2022–23

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