



“Online Workshop on Electron Microscopy”

Dates: 25-29th May, 2020

Online Mode: Through Google classroom

Who can participate? Ph. D. students, and Post-graduate students of MNIT Jaipur **only**, who are interested to learn about electron microscopy techniques which will be useful for research in the broad areas of Physics, materials chemistry, materials science, and engineering.

Aim and scope of the workshop: Electron Microscopy is a fast-evolving research tool in several advancing fields of science including, materials science, solid-state physics, metallurgy including coating, corrosion, biology, pharmaceutical and formulation industries, dye and paint industry, polymer industries etc., specifically in the domain of nanoscience and nanotechnology. It exploits the very small wavelengths of high-energy electrons to probe solids at the atomic scale. In an electron microscope, a focused beam of electrons generates various signals at the surface of a solid sample which reveals the details of surface morphology, chemical composition, crystalline structure and the orientation of materials constituting the sample. This workshop will introduce the basics of electron-matter interactions, introduction to SEM, TEM and HRTEM, various special modes of electron microscopy, possible scientific information from electron microscopy, data acquisition and analysis. Extended analyses such as EDS will enable elemental mapping and even phase mapping possibilities at sub-micron to few nano-meters scales. Techniques of sample preparation for optical microscopy, SEM and TEM will also be taught. On completion, the participant would be able to know the fundamentals of various electron microscopic techniques, data collection and data analysis to interpret into scientific information needed for research and industry.

On successful completion, the students will be able to analyze their own/standard data using these technique(s).

The workshop will include 2 hours' online lectures and 2-3 hours of home exercise/assignments (as needed) each day on the related topics. Tentative time schedule of the workshop is as follows:

Date/Time	Title/Topic
25. 05. 2020 (3:00-5:00 pm)	Introduction to microscopy
26. 05. 2020 (3:00-5:00 pm)	TEM – Diffraction contrast and analysis
27. 05. 2020 (3:00-5:00 pm)	TEM – Defect contrast and analysis
28. 05. 2020 (3:00-5:00 pm)	Scanning Electron Microscopy – ImageJ analysis of SEM micrographs
29. 05. 2020 (3:00-5:00 pm)	Sample preparation techniques for optical microscopy, SEM & TEM.

There is no participation fees. The participants will be selected based upon their statement-of-purpose filled in the registration form. **The shortlisted participants will be notified to join the Google Classroom for online lectures.** A performance report/certificate will be issued to the successful candidates.

Contact: mnit.phy@gmail.com

[Register Here](#)

Before 22-05-2020

Co-ordinators: Prof. Kanupriya Sachdev, Dr. Kamendra Awasthi, Dr. Nisha Verma
Dr. Subhayan Mandal, Dr. Srinivasa Rao N., Dr. Manoj Kumar, Dr. Anirban Dutta, and Dr. Debasish Sarkar