Learning Objective

This course will equip students with the analytical tools and methods needed to conduct nanometric assessments of inorganic materials at the atomic scale. This course is designed to prepare students for the solution of real-world problems in industry or to support postgraduate studies that will rely heavily upon advanced X-ray and electron beam methods for nanomaterials characterization.

Content

This course focuses on advanced crystallographic techniques, with emphasis in the following topics:
1. Basics of Crystallography
2. Advanced X-ray Diffraction Techniques
3. Advanced Transmission Electron Microscopy
4. Integration of results for nanomaterials analysis

Learning Outcome

Upon successful completion of the course, students will be able to:
- Understand the capabilities and limitations of each of the materials characterization techniques covered in the syllabus.
- Select the appropriate technique for an investigative work.
- Operate the various equipments safely and effectively with the sufficient theoretical knowledge taught in the course.
- Perform data analysis and interpretation of results obtained from the various characterization methods.

Textbooks/References


Nanyang Technological University,
School of Materials Science & Engineering