X-Ray Diffraction (XRD) Analysis

X-ray diffraction (XRD), is a versatile, non-destructive analytical technique that reveal detailed information about the chemical composition, crystallographic structure and physical properties of materials. In the case of powder diffraction, this technique is used to characterize the crystallographic structure, crystallite size and preferred orientation in polycrystalline or powdered solid samples. Powder diffraction is also commonly used to identify unknown substance by comparing the diffraction data against a database maintained by the International Centre for Diffraction Data (ICDD).

LABORATORY FACILITY

PANanalytical X'Pert Pro

Fitted with the award-winning Xe proportional detector which offers high speed, high-quality data collections and featured with the Theta-Theta geniometer that allows sample to always stay horizontal.

HighScore Plus Software

- Complete full powder pattern analysis tool
- Powerful search-match algorithm for phase identification
- Comprehensive crystallographic analysis for indexing routines and unit cell refinement task
- Powerful Rietveld analysis or structure refinement
- Comprehensive and updated ICDD database

APPLICATIONS

- **Nano-materials** – determining phase composition, crystallite size and shape, lattice distortions, compositions variations, orientation etc.
- **Catalyst characterization**
- **New material development**
- **Polymers and composites –** crystalline form, crystallinity, crystalline perfection, orientation
- **Pharmaceuticals and organics** – polymorphs, crystallinity, orientation