Rigaku High Resolution X Ray Difrractometer

XRD is an X-ray imaging technique based on Bragg diffraction. In an X-ray diffraction measurement, a crystal is mounted on a goniometer and gradually rotated while being bombarded with X-rays, producing a diffraction pattern of regularly spaced spots known as *reflections*. The two-dimensional images taken at different rotations are converted into a three-dimensional model of the density of electrons within the crystal using the mathematical method of Fourier transforms, combined with chemical data known for the sample

The High resolution x-ray diffractometer can be used for analysis of epitaxial and polycrystalline thin films. As the installation is not yet completed, following measurements can only be carried out for the time being with operator assistance.

- theta-2-theta scans (Standard and High resolution)
- XRR measurements

Specification:

X-ray Generator:

- 3 KW solid state x-ray generator

X-ray tube:

- Anode – Copper (Cu) Sealed Type, Ceramic insulation, Long Fine Focus type with at least 0.4 mm focal spot and High Resolution type.
- Should stabilize within five minutes after switch ON with high resolution Kα1 Optics mounted.
- Recommended operating power should be between 1.5 – 2.0 KW

Goniometer:

The base goniometer should be with independent theta and 2-theta drives for accurate positioning

- Operating Mode : Horizontal theta/2theta decoupled
- Minimum Step size : +/- 0.0001 deg.
- Angle reproducibility : +/- 0.0001 deg
- Goniometer Diameter : > 500 mm

Power requirement:

- 230 VAC single phase or 440 V three phase, 50 Hz