



X-Ray Diffractometer



Instrumentation Details

Make : Rigaku, Japan

Model : Ultima IV X-Ray Diffractometer

Specification :

1. X-RAY Tube:

Type: Cu, Ceramic Glass and 2.2KW

2. X-Ray generator:

Max.output: 3kW

Output stability: +/- 0.05%

(at 10% power supply fluctuation)

Max. Tube voltage: 50 kV

Max. Tube current: 60mA

Voltage step width: 1kV

Current step width: 1mA

Overload limit setting: Setting changeable with tube type

Automatic Ageing of Xray tube with the system going to standby automatically at 2mA and 20KV after every run or while idling.

3. X- Ray tube protection: Against under voltage, Over load, over voltage, over current and/or failure of water supply.

4. Safety mechanisms: Door interlock mechanism (X-Ray can be generated only after door is closed) Emergency stop

5. Goniometer: UTIMA IV: Type:ThetaTheta type

Scanning Radius: 285 mm(Dia-570mm)

Min. step angle: 0.0001 deg.

Angle Reproducibility: +/- 0.0001 deg.

Scanning angle range -D/S -3 to +162 deg.



6. Computer Controlled Automatic Slits

Divergence slit (DS) - 0.05 - 7.0 mm with 0.01mm step

Scattering slit (SS) - 0.05 - 7.0 mm with 0.01mm step

Receiving slit (RS) - 0.05 - 20.0 mm with 0.01mm step

Height slits: 2.0 mm, 5.0 mm, Open

K β filter: Ni-filter for Cu radiation

Soller Slits: (For high resolution focusing method)

Incident Soller Slit 2.5°,

Receiving Soller Slit 2.5°. No realignment is necessary after exchange.

Scan Speed: θ / ω coupled 0.02 - 100°/min. (2 θ) θ / ω independent 0.01 - 50°/min.

Maximum Scanning Speed: 500°/min (ω / θ coupled). 250°/min (ω , θ independent) Minimum Step width (ω , θ): 0.0001°.

7. Automatic Alignment: Automatic Slit Exchanger System with automatic Alignment and Control with automatic systematic error correction.

8. APPLICATION SOFTWARE (9240J751): Rigaku PDXL data processing software (Academic License).

9. Thin Film Analysis Options: Thin Film Sample Spinner Z movement for sample alignment -5 to 2mm. Spinning of the sample 60 to 120 rpm.

X-ray powder diffraction (XRD) is a rapid analytical technique primarily used for phase identification of a crystalline material and can provide information on unit cell dimensions. The analyzed material is finely ground, homogenized, and average bulk composition is determined. Further, thin film samples such as membranes, nanolayer coating on solid substrates etc. also can be analyzed.

User Instructions

1. Provide solid samples in powder form. Minimum amount required 100-150 mg.
2. Samples can be submitted as thin films.

Contact Us

Faculty in charge: Dr. Mahaveer Kurkuri

E-mail: mahaveer.kurkuri@jainuniversity.ac.in

Contact number: +91 9449293499