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X-RAY DIFFRACTOMETER(XRD)

D8 ADVANCE DA VINCI fully automatic

Model

Specificatios

MAKE: Bruker, Germany

Traditional X-ray powder diffraction (XRPD) Grazing incidence diffraction Rotating sample stage Accuracy in peak positions $\leq 0.01^{\circ}2\theta$ LYNXEYE XE-T detector TRIO and TWIN optics Dynamic Beam Optimization AntonPaarHTK16N for nonambient conditions (25 to $1600^{\circ}C)$

About Equipment

The D8 ADVANCE is based on the unique D8 diffractometer family platform & is perfectly designed for all X-ray powder diffraction and scattering applications.

Applications

- Identification of both crystalline and amorphous phases and determination of specimen purity
- Texture (preferred orientation) analysis
- Microstructure analysis(crystallite size, micro-strain, disorder)
- Quantitative analysis of both crystalline and amorphous phases in multi-phase mixtures
- Indexing, ab-initio crystal structure determination and crystal structure refinement





SCANNING ELECTRON MICROSCOPE (SEM)

MAKE: HITACHI, Japan

Model SU3500

Specificat

	Resolution SE 4.0nm at 30 kV (Variable Pres
	10.0nm at 5 kV (High Vacuun
	Magnification ×5~300.00(on photo) ×5~300
ions	Accelerating Voltage 0.3 ~ 30kV
	Variable pressure range 6 ~650Pa
	Image shift ±50 µm (WD=10mm)
	Maximum specimen size 200 mm diameter 8

About Equipment

Scanning Electron Microscope (SEM) used for surface characterization of all kind of solid samples. The equipment consists of both secondary electron (SE) and back scattered electron (BSE) detectors and enables observing surface morphology in micron/nano level. The SEM is integrated with an Energy Dispersive Spectroscopy (EDS) system of Oxford INCA x-act model.

Sample Requirement

- The specimen needs a conductive surface and has to be placed inside high vacuum.
- Sample must be solid and they must fit into the chamber.
- Powdered samples/polymer composites to be prepared/coated prior to testing

ssure Mode) n Mode) 0.00(on Display)





Applications

- Elemental analysis of advanced materials and biological specimens.
- Morphology and grain analysis
- Micro / Nano structural analysis
- Line scanning.
- Mapping of the present elements in the sample.

ION SPUTTER COATER

MAKE: Mascotek Scientific, India

Model SNCC-180R Specifications

Operating current: 10-40 mA Procesee voltage: 3-5 V (for manual thread flash evaporation) and 7-9 V (for manual flash rod evaporation) Process gas: Ambient air, Argon Chamber pressure: 8*10^-2 - 3*10^-1 bar Process time: 0-999 sec Degassing voltage: 3 V (for 15-20 sec)

About Equipment

The SNCC-180R is an automated system used to coat thin films of Gold, Paladium, Platinum, Silver using Argon as process gas with the sputter coating source mount. Replacing the sputter coating source mount, the same system can be used to coat carbon films using carbon rod and thread in Pulse mode and Flash mode respectively. Sample and Target **Applications**

- Target materials: Gold, Platinum and Carbon (rod and thread) To deposit thin layer of conductive material onto substrate to be analysed by Scanning Electron Mocroscope.
- Diameter of Gold and Platinum target: 57 mm and thickness: • To improve conductivity, reducing electric charge effects. 0.1 mm.
- •Dia of carbon rod: 6 mm
- •Sample size: maximum 16 mm (dia)



• To enhance the level of structural protection against the electron beam.



3D PRINTER MAKE: HP, USA

Model HP JET FUSION 540

Specifications

Print head Resolution 3DPrint Speed Material Build Volume Supported File Types Included Software Layer Thickness Power Consumption

1200dpi 1,817 cm3/hr (111 in3/hr) White PA12 Nylon 332 x 190 x 248 mm 3MF, STL, OBJ, VRML HP Smart Stream 3D Build Manager 0.08 mm (0.003 inches) 4.5-6.3 kW (typical), 200 – 240 V (line-to-line), 36 A max, 50/60 Hz

About Equipment

3D printing, also known as additive manufacturing, is a method of creating a three dimensional object layer-by-layer using a computer created design. By this additive process, layers of material are built up to create a 3D part.

Requirement

- 3D CAD model of supported file.
- Model file should be restricted under given build volume



- at an affordable price.
- No support material required

To avail the instrument facility, download and complete the form using below link:

Analysis Charges CRF.pdf

For queries: <u>coordinator.crf@vssut.ac.in</u>

CATEGORY	USER	Charge for SEM/EDS per Sample (INR)	Charge for XRD per Sample (INR)	3D PRINTER per Sample (INR)
VSSUT	Faculty/UG/PG/PhD Students/Project	Rs.250/-	Rs.100/-	Rs.15/-/gm
	Consultancy	Rs.500/-	Rs.300/-	Rs.20/-/gm
College/University other than VSSUT		Rs.700/-	Rs.500/-	Rs.25/-/gm
R & D Institute/ Industry/Commercial/any other		Rs.1500/-	Rs.1000/-	Rs.50/-/gm

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