Field Emission - Scanning Electron Microscope (FE-SEM) Facility
(Thermo Fisher FEI Quanta 250 FEG)
CDMM Ground Floor, VIT , VELLORE-632014

❖ Introduction

VIT Vellore proudly equips Field Emission Scanning Electron microscope (FE-SEM) Thermo Fisher FEI QUANTA 250 FEG for morphological studies of materials. The Instrument is equipped with Schottky Field Emission Electron Gun as source of Electrons with operating voltage range 5kV-30kV offering high resolution of 1.2 nm at 30 kV at high vacuum conditions. FE-SEM at VIT has detectors viz., Everhart Thornley Detector (SED), Large Field Detector (LFD), Backscattered Electron Detector(BSED) and Gaseous Secondary Electron Detector(GSED) to address a wide range of samples.

Thermo Fisher FEI-Quanta 250 FEG (FE-SEM)

❖ Detectors and Corresponding Modes in FE-SEM

- Everhart Thornley Detector for Secondary Electrons at High-Vacuum for Conducting/Gold Coated samples.
- Backscattered Electron Detector for Atomic contrast imaging at High/Low-Vacuum Modes.
- Large Field Detector for Secondary Electrons at Low-Vacuum/ESEM modes for Semi/Non-Conducting samples offering 3nm resolution at 30kV.
- Gaseous Secondary Electron Detector for Secondary Electrons in ESEM mode for live/Wet biological samples.
- Energy Dispersive Spectroscopy (EDS) and Electron Backscatter Diffraction (EBSD) for compositional analysis-to be incorporated with FE-SEM soon.

❖ Applications of FE-SEM

- Nanotechnology,
- Material Science
- Biology
- Microstructural Imaging
- Compositional Analysis of materials

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