FESEM Imaging & Electrochemical Materials Characterization Core Facility (FEMCC)

Instrumentation and technical assistance for institutional and industry researchers

Equipment

The ZEISS Sigma500VP FESEM is an advanced field emission SEM that produces exceptional images at high and low accelerating voltages. With its analytical capabilities, this instrument is suitable for a wide range of applications. The instrument owns a high-resolution field emission column with a high-stability Schottky field gun, the beam current ranges from 1 pA to 400 nA, and the acceleration voltage range is from 200 eV to 30 keV.

Detectors: In-lens secondary electron, Everhart-Thornley secondary electron, variable pressure secondary electron, backscattered electron

The instrument is equipped with an Oxford energy dispersive spectroscopy (EDS) system for elemental and chemical analysis of a sample inside the SEM.

Capabilities

- Examine high-resolution imaging with a magnification range from 10 to 400,000 times for various specimens, such as semiconductors, insulating materials, biological samples, cellulose fibers, biological cells, inorganic materials, polymers, nanocrystalline, etc.
- The energy dispersive X-ray spectrometer (EDX) is coupled with the high-resolution imaging function that resolves the chemical elemental mapping of the samples.
- The inert chamber is capable of handling air-sensitive samples without having samples exposed in air.
- Electron backscatter diffraction (EBSD) is capable of determining the local crystal structure and the crystal orientation at the surface of the samples.
- The solid-state Scanning Transmission Electron Microscopy (STEM) detectors allow transmitted electrons to be directly detected and thus allow for angular selectivity and the independent acquisition of BF, ADF, and HAADF images.

Dr. Niya Sa
Associate Professor of Chemistry & FEMCC Director

As director of the FEMCC, Dr. Sa and her highly skilled research staff are available for technical assistance and training to internal and external clients. Dr. Sa's areas of expertise include electrochemistry, analytical chemistry, and green chemistry.

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