Instrument Package

SEMTech-AMRAY Variable Pressure Scanning Electron Microscope (ECO Mode)
4Pi Energy Dispersive X-ray Spectrometer (EDS)
Accompanying Roughing Pumps

The SEM was remanufactured by SEMTech Solutions which replaced/upgraded much of the original electronics used for beam control and digital image acquisition in 2014. 1K images can be acquired using the secondary electron and backscattered electron detectors. The 4Pi EDS provides chemical analysis and elemental maps.

Source: W or LaB_6
Resolution: 4nm @ 30kV (HV)
6nm @ 30kV (LV)
Stage Travel: Motorized 100mm X/Y, Joystick Control
Manual 50mm Z-axis, 360° Rotation, and Tilt -10°/+90°
Large Chamber: Up to 8" Sample
LV Cham. Pressure: Up to 4 Torr (25 mTorr Increments)
Image Capture: 1280x960 4Pi, 1200x960 SEMView

SEMTech-Amray Model 3200C, Ser. No. 32137206
Everhart-Thornley Secondary Electron Detector (ET-SED)
Robinson Backscatter Detector (Retractable), S/N 2481 (BSED)
SEMTech SEMView™ Imaging Software, v1.0.4.179, on a networkable Windows 7 Pro computer system.
Detailed 34-page operation/maintenance procedure in addition to the original SEMTech & Amray manuals.

Two (2) Roughing Pumps:
Edwards RV8 Rotary Vane Vacuum Pump
Alcatel Adixen Pascal 2010 SDX Rotary Vane Vacuum Pump
Diffusion Pump (requires chilled cooling water)
Ion Pump for 10^{-7} Torr vacuum

Energy Dispersive X-ray Spectrometer (EDS)

4Pi Analysis, Inc. EDS Analysis System using Revolution™ Software v1.6.0
EDAX EDS Detector with Liquid Nitrogen Dewar
Original 4Pi Operating Manual and Screen Captures of Configuration Settings Used

Facility Requirements

120 VAC
Nitrogen or argon gas for venting the chamber
Dry/filtered 60 psi air to power the vacuum valves
Chilled water*

* e.g., that provided by a NESLAB Recirculating Chiller, Model CFT-33

General Information

- Any known problems?

  The SEM, EDS, and all Pumps are functional. Our water chiller failed, preventing further operation of the SEM. The instrument was put into safe storage awaiting reactivation.

- When was the instrument last time used?

  The SEM, EDS, and pumps were operational and under a continuous service contract with SEMTech Solutions until September 2018. For the bulk of the time since then the roughing pumps have maintained vacuum on the column and chamber. The EDS detector was deactivated under guidance from SEMTech and has remained powered down in the “shipping state”.

- Instrument package sold as is.