

FACILITIES, EQUIPMENT, AND OTHER RESOURCES

Institute of Materials Science and Engineering (IMSE) User Facilities

The IMSE currently has approximately 14,000 net ft² of facility space which includes a nanofabrication facility and a materials characterization facility (see <http://imse.wustl.edu/facilities.html>). It is supported by 3.75 FTE professional technical and administrative staff.

The IMSE materials characterization facility includes:

- Bruker Dimension Icon-PT Scanning Probe Microscope (AFM)
- JEOL 2100F Field Emission STEM with high-angle annular dark field (HAADF) detector and a Gatan Imaging Filter (GIF) for EELS.
- JEOL 2000-FX LaB₆ TEM with EDS and EELS capabilities and a heating/cooling stage
- JEOL JSM-7000FLV Field Emission SEM with Oxford Instruments EDS and EBSD detectors and Nability Nanometer Pattern Generation System (from NSF-MRI)
- Physical Electronics® 5000 VersaProbe II Scanning ESCA (XPS) Microprobe (from NSF-MRI)
- Rigaku Geigerflex X-ray Powder Diffractometer
- Quantum Design Physical Property Measurement System (PPMS)

Sample Preparation

- Gatan Model 600 ion-beam mill and South Bay chemical jet thinner for TEM sample preparation.
- Gatan Model 691 Precision Ion Polishing System
- South Bay Technology, Inc., Dimpler D500i

The IMSE nanofabrication facility includes class 100, 1000, and 10000 clean rooms, which houses and maintains the following equipment:

- Heidelberg DWL66+ high resolution laser writer (from NSF-MRI)
- Oxford Instruments Plasmalab 100 ICP/RIE Plasma etcher with deep silicon etching – *available in mid-March, 2017*
- Karl Suss MJB3 Mask Aligner
- Brewer Science CEE 200X Spin Coater
- AJA International E-beam Evaporator
- Edwards 306 Vacuum Thermal Evaporator
- Kurt J. Lesker PVD75 RF/DC Sputter Deposition Tool
- Lindberg/Blue M Tube Furnace
- UVOCS UV Ozone Cleaner
- Kulicke and Soffa wedge bonder Wire Bonder
- Asher
- Disco DAD 323 Dicing Saw (located outside of cleanroom)
- Oxford Instruments Nanofab 1200 PECVD system – *installation date TBD*
- Three Fume Hoods for lithography processing and wet etching
- Three Fume Hoods (located outside cleanroom)

Testing/Characterization:

- KLA-Tencor Alpha-Step D-100 Profilometer
- J.A. Woollam alpha-SE spectroscopic Ellipsometer
- Signatone S-1008 Probe station with Keithley 238 high current source-measurement unit
- Two Zeiss Optical Microscopes