Microanalytical Fields of Application:

- Thin Film Characterization
- Trace Elements
- Diffusion Profiles
- Corrosion Studies
- Nanoscale Materials
- Microscale Materials
- Opto-Electronic Materials
- Igneous, Metamorphic and Sedimentary Petrology
- Ceramics and Glasses
- Metallic Alloys
- Organometallic Phases
- Art History and Archeological Materials

Microanalytical Facility
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Microanalytical Facility

The Microanalytical Facility is a component of the Center for Advanced Materials Characterization in Oregon (CAMCOR).

The CAMCOR facilities comprise a comprehensive suite of capital-intensive instrumentation for the characterization of novel nanoscale and microscale materials, operated by dedicated expert personnel. The facilities are available to academic researchers and industrial scientists.

Mission Statement

• To provide state-of-the-art materials characterization facilities to researchers at regional academic institutions and companies
• To foster collaborative interactions between faculty and researchers at academic institutions and industries in the Regional Northwest
• To provide short courses, seminars and workshops on characterization techniques and provide hands-on training facilities for the participants

Electron Probe MicroAnalyzer

• Compositional analysis on the micrometer and submicrometer scale
• Elemental identification (qualitative analysis)
• Quantitative compositional analysis (Be-U), at 100% to ppm levels
• Thin film characterization (composition and thickness simultaneously)
• X-ray shift measurements for bond properties
• Element mapping (qualitative and quantitative)
• Secondary and backscatter imaging

Scanning Electron Microscope

• High resolution backscatter and secondary electron imaging
• Cathodo-luminescence imaging of non-conductors and semi-conductors
• Qualitative and Quantitative element composition
• Elemental x-ray mapping of 16 elements simultaneously
• Quantitative spatial characterization of surfaces using 3-D reconstruction
• Electron beam lithography of novel devices at the nanometer scale
**EPMA instrument/software features:**

- Dynamic correction for beam sensitive materials allows quantitative compensation of elemental intensity changes over time.
- Quantitative correction for spectral interferences and wavelength dispersive spectrometers allow quantification of previously difficult analyses such as Na in the presence of Zn, or Si in the presence of Ta.
- Peak shape and shift characterization allows studies of valence-induced peak artifacts.
- Comp...the...nation allows faster data acquisition of major and minor elements.
- Detailed homogeneity, sensitivity and detection level statistics provide t-test statistics on analytical sensitivity and error analysis.

**SEM instrument/software features:**

- Quantitative image analysis allows determination of image composition and size and/or shape features using metrification and modal analysis processing software.
- Ability to characterize spatial information, surface texture, topography, porosity, etc., quantitatively using stereo reconstruction in 3 dimensions.
- Automated beam and stage for nano-lithography allows for rapid and automated creation of prototype nano-patterns with 50nm resolution or better.
Ni-P oxide thin film on Si substrate. Multiple voltage EPMA analysis of thin film materials provides fast and accurate characterization over a wide range of composition and thickness.