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.
Dynamic correction for beam sensitive materials allows quantitatve 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. Complete stage, spectrometer and column automation for unattended operation provides round the clock operation for rapid turn around. High speed modeling for background corrections 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. Remote Access for instrument operation.

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 down to nm scales. Remote Access for instrument operation.

EPMA (Electron Probe Micro Analysis) SEM (Scanning Electron Microscopy)

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 ( Cameca SX50 and SX100)
- 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 ( Zeiss Ultra High Vacuum and Variable Pressure SEM)
- 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
- 2 nm spatial resolution
- High sensitivity in-lens detection
- Imaging of uncoated insulators/artifacts

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
- Complete stage, spectrometer and column automation for unattended operation provides round the clock operation for rapid turn around
- High speed modeling for background corrections 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
- Remote Access for instrument operation

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 down to nm scales
- Remote Access for instrument operation

Corrosion resistant concrete, quantitative x-ray map of sodium concentration
High strength cement mortar, quantitative x-ray map of sodium concentration
Tin-tungsten oxide sputter target, electron backscatter image
Fast high-resolution spectrum acquisition and qualitative analysis of unknown materials

Thermo-electric thin film material (precursor), electron backscatter image
Reconstructed digital elevation model (DEM) of wrinkled glass surface at 500 k, using stereo imaging in the SEM
Natural and synthetic porous materials, secondary electron image
Sub micron scale quantitative profile of wrinkled glass surface