Materials Characterization via Morphological and Elemental Analyses

Scanning Electron Microscopy (SEM) and Energy-Dispersive Spectroscopy (EDS)

Overview

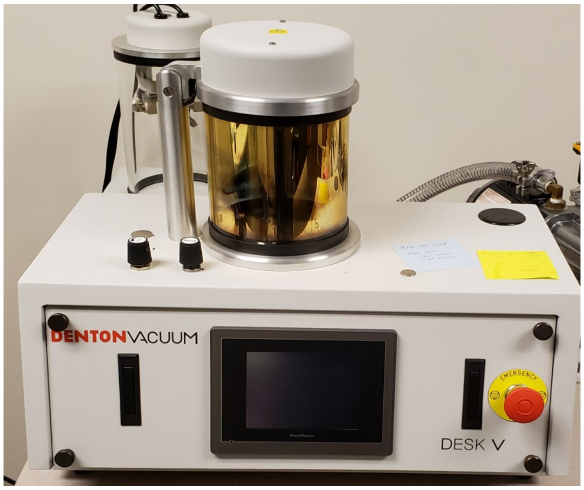
The Russ College provides the JEOL JSM-6010PLUS/LA, which is available for use by interested researchers at Ohio University for characterization of metallic, ceramic, polymeric and composite materials. This instrument includes a microscope for geometric and morphological characterization of conductive and non-conductive samples as well as a spectroscope for elemental analyses and distribution. This instrument is complemented by the Denton Vacuum Desk V for pre-treatment of non-conductive samples prior to characterization.

The instrument is located in Stocker Center 409

Microscope equipped with touchscreen computer and characterization software

Highlights

- Micro and nano-scale characterization of geometric and chemical distribution in sample
- Qualitative elemental analyses for atoms larger than lithium via point, linear or areal mapping. Quantitative elemental analyses for atoms larger than oxygen.
- Low vacuum mode for characterization of non-conducting samples without pre-treatment
- SEM and EDS conducted within the same software, with the ability to switch from morphological to elemental characterization in seconds.



Denton Vacuum for gold or carbon pre-treatment to increase conductivity

- Export results in a variety of formats including .jpeg, .docx and .pptx for handling ease.

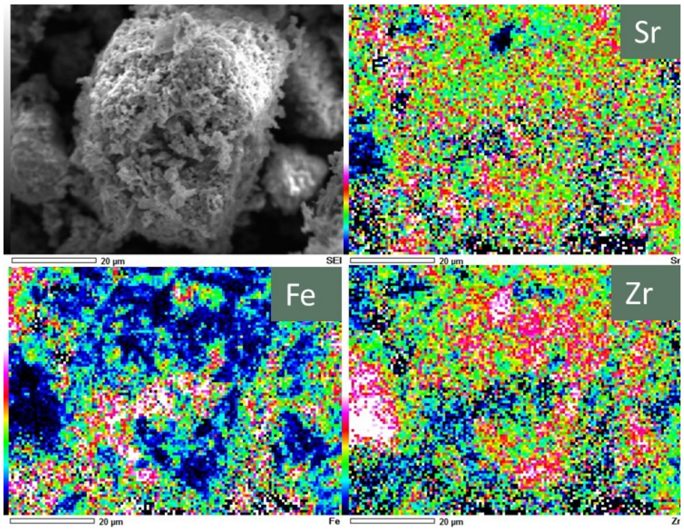
OHIO UNIVERSITY

Materials Characterization via Morphological and Elemental Analyses

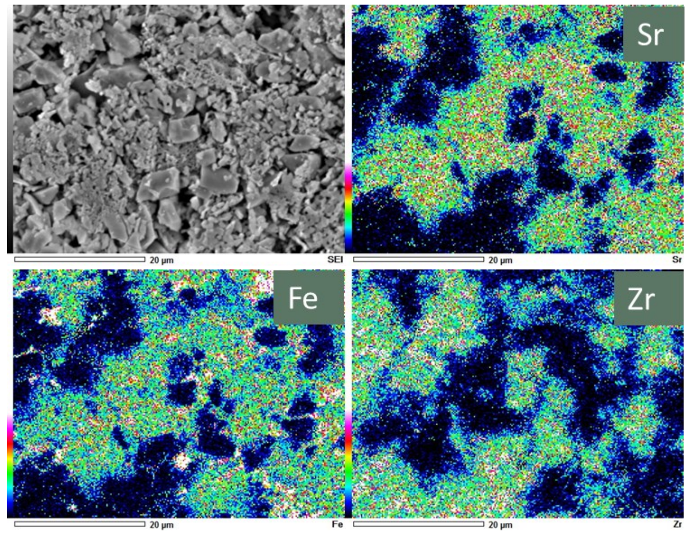
Scanning Electron Microscopy (SEM) and Energy-Dispersive Spectroscopy (EDS)

Application Examples

- Elemental Distribution in ceramic catalyst treated at different temperatures

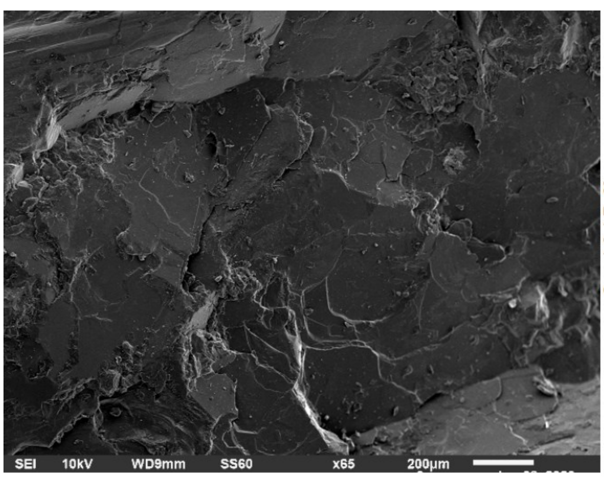


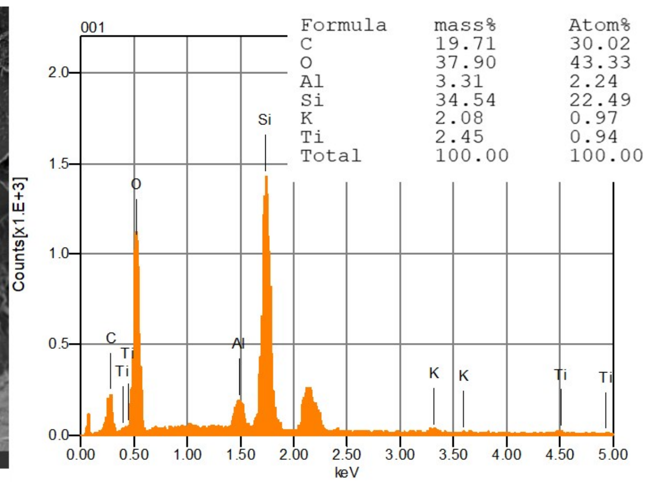
Analyses of a Sr-Fe-Zr system treated at 1200°C depicting the Fe in one phase, Zr in a second phase and Sr associated with both phases using qualitative EDS.



Analyses of a Sr-Fe-Zr system treated at 900°C depicting the Sr and Fe in one phase and Zr in another phase using qualitative EDS.

- Geochemical Composition of inorganic ore





Morphology and Quantitative Areal distribution of elements

Instrument Information

Usage Rate: **$55 per hour**
Location: Stocker Center 409
Contact: daramola@ohio.edu

OHIO UNIVERSITY