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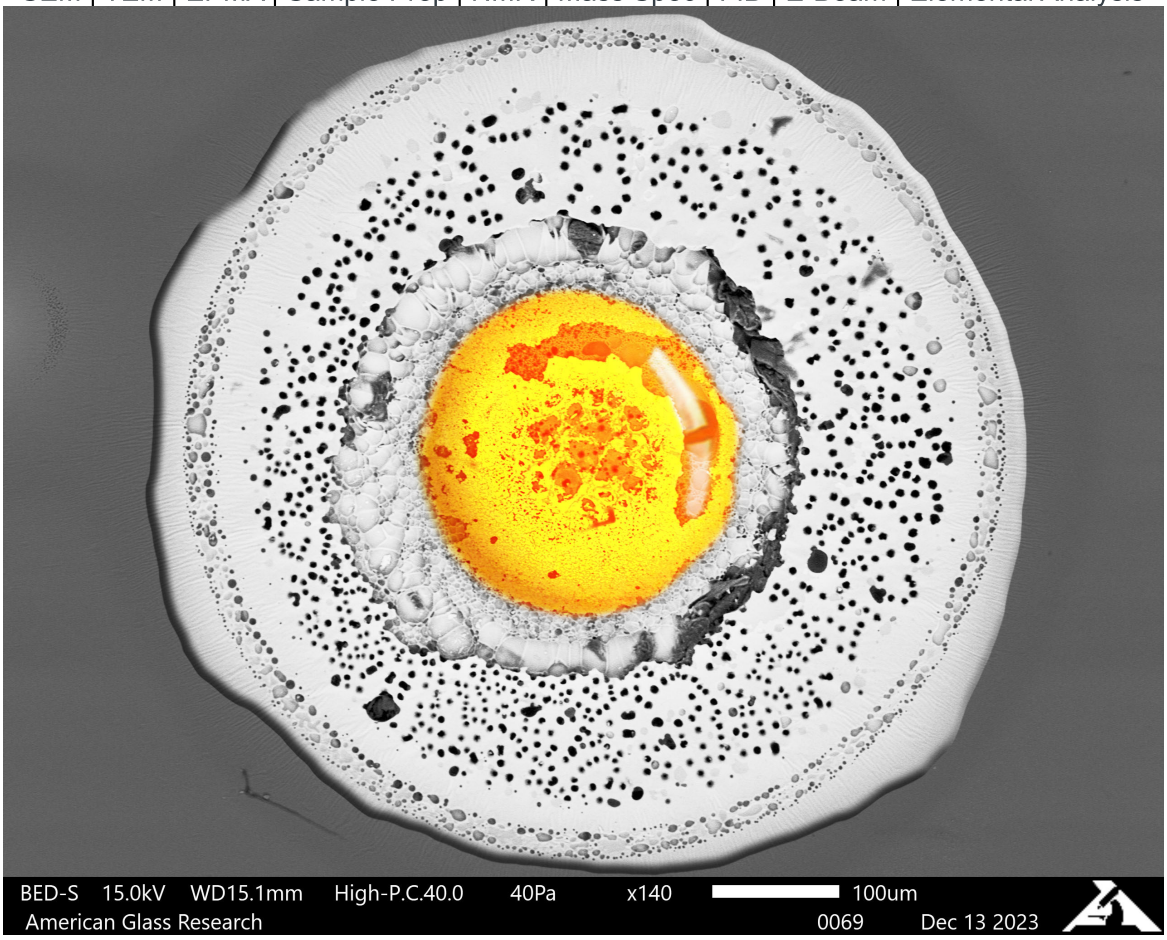
JEOLink Newsletter

ELECTRON MICROSCOPY | ELEMENTAL ANALYSIS | SAMPLE PREPARATION

JEOL USA MICROSCOPY NEWS | FEBRUARY 2024

SEM | TEM | EPMA | Sample Prep | NMR | Mass Spec | FIB | E-Beam | Elemental Analysis



JEOL Image Contest

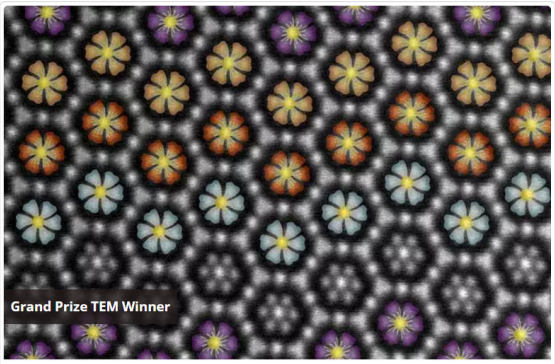
Things are looking Sunny-Side-Up for the 2024 JEOL Image Contest, now in its 11th year. We appreciate all the wonderful entries over the past 10 years and have increased our prizes! Check out the guidelines here.

Congratulations to Brandon Aldinger at American Glass Research - winner for January 2024 - for this image of a particle in molten glass. Read more about it on the Image Contest page.

Congratulations to the 2023 Grand Prize SEM and TEM winners! Yeonjin Baek, Auburn University (Flower Power) and Hongkui Zheng, University of California, Irvine (Atomic Daisy).

We hope you'll consider submitting an image in 2024! [Check here] for guidelines and to see the past 10 years of our favorite SEM, TEM, and EPMA images.

TITLE: Flower power; SUBJECT: Vanadium oxide nano structure synthesized from two-dimensional vanadium carbide MXenes; CREDIT: Yeonjin Baek, Auburn University; METHOD/INSTRUMENT: JEOL JSM-7000F SEM



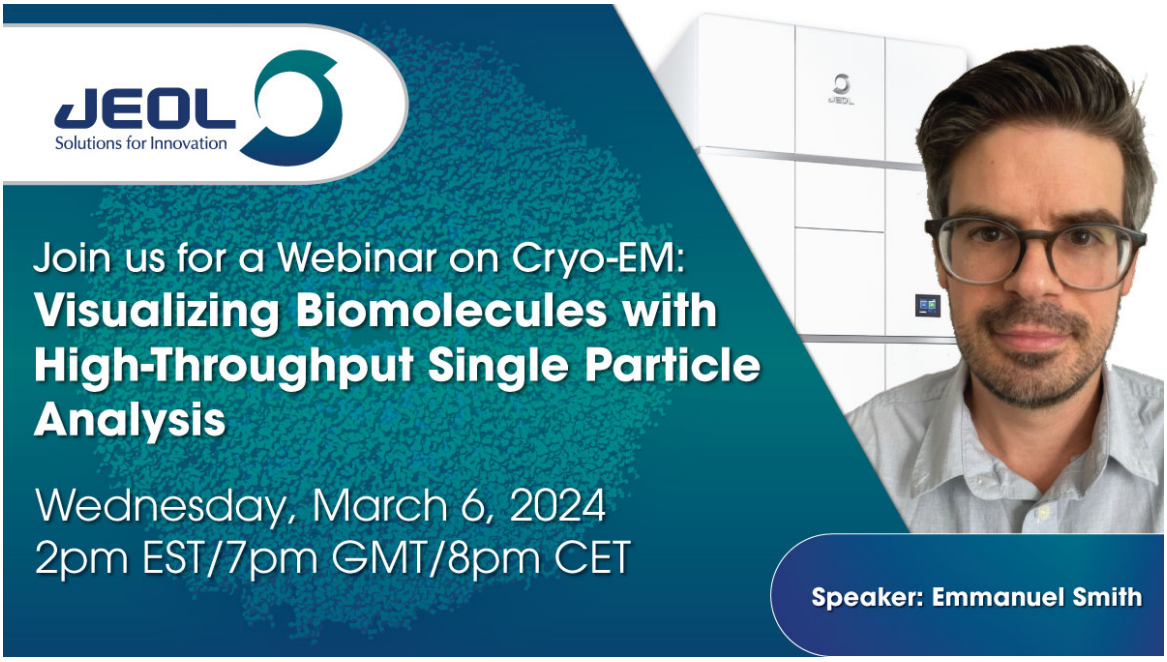
TITLE: Atomic Daisy; SUBJECT: Atomic structure of LLZO solid electrolytes; CREDIT: Hongkui Zheng, University of California, Irvine; METHOD/INSTRUMENT: JEM-ARM300F Grand ARM TEM

Microscopy at LSSU - Investigating Fresh Water Sponges and Particulate Contamination in Hemp

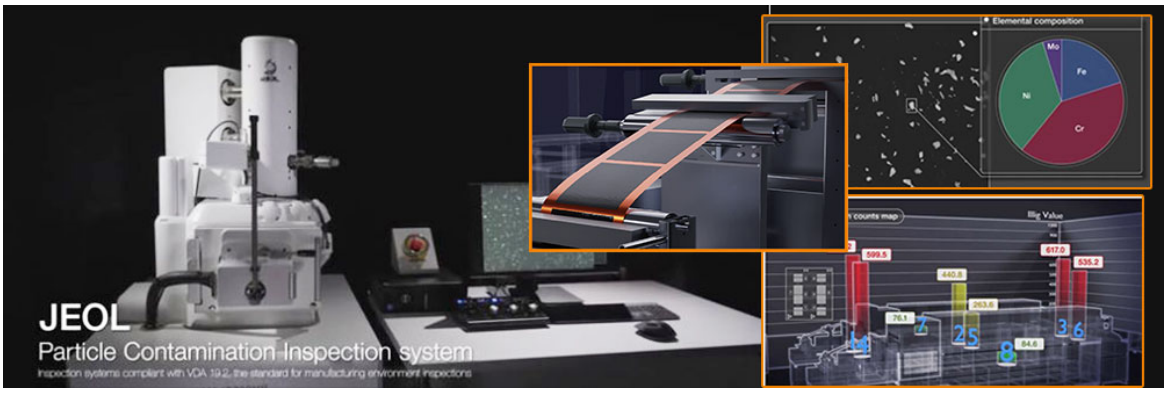
At Lake Superior State University, Dr. Stephan Kolomyjec, Assoc. Prof. of Biology, and Dr. Derek Wright, facility coordinator of the Micro Analysis and Spectroscopic Characterization Lab, use SEM to help update 90-year-old

data on Michigan's fresh water sponges, and looking at contaminants in cannabis. [Read our latest REALab feature story.]

Save the date for JEOL's CRYO-EM Webinar



Don't miss this opportunity to attend a Cryo-EM webinar live and ask your questions of our Cryo-EM scientist Dr. Emmanuel Smith. Manny is working daily with JEOL CRYO ARMs and brings a hands on perspective to the presentation. [Register here.]



Particle Contamination Inspection System for Battery Materials

Particle control during manufacturing of Lithium-Ion Batteries is crucial to meeting clean automotive standards. Scanning Electron Microscopy (SEM)

with automated Particle Control Inspection software and Energy Dispersive X-Ray Spectrometry (EDS) determines composition and morphology of sub-micron particles to identify the root cause of contamination and improve product safety and yield. View the video and applications note.

Focus on Pharmaceuticals

Throughout the discovery and manufacturing phases of bringing pharmaceuticals to market, scanning electron microscopy plays a pivotal role in design and quality control. In this new applications note, we investigate how the NeoScope benchtop SEM provides a new level of imaging and analysis for pharmaceuticals. Here's why.

Introduction to Scanning Electron Microscopy and Energy Dispersive X-ray Spectroscopy for Advancing Materials Research

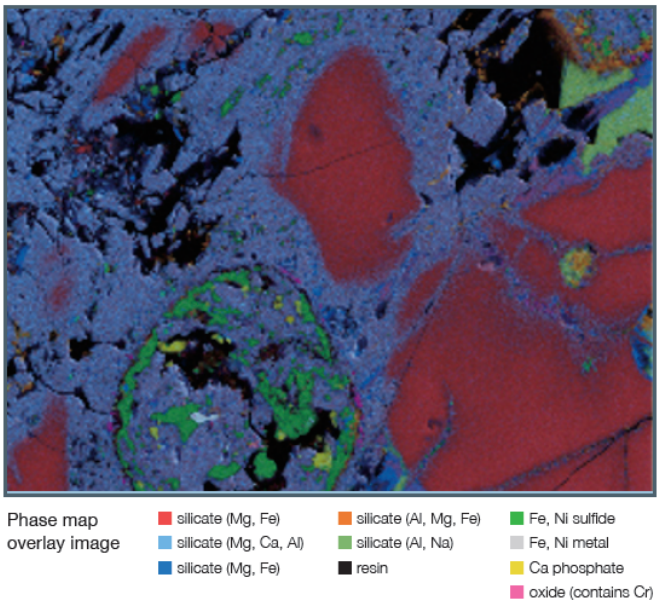
If you can see it, you can analyze it! Our expert Donna Gosselin is teaching a Short Course at PITTCON 2024, Feb 26 1-5PM in San Diego.

"Introduction to Scanning Electron Microscopy and Energy Dispersive X-ray Spectroscopy for advancing materials research" will sharpen your SEM knowledge. Click here for information and registration

Phase 2 Analysis Software

EDS mapping with the SEM makes it possible to visualize elemental distribution across a specimen. Phase Analysis2 extends EDS with automatic 1-click creation of cluster and VCA phase maps from the EDS map data. See applications note.

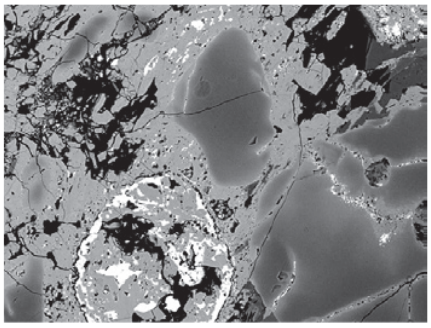
VCA Phase Analysis Mode



Phase map overlay image

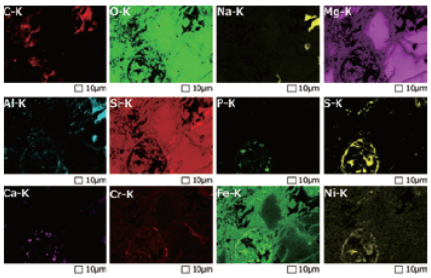
- silicate (Mg, Fe)
- silicate (Mg, Ca, Al)
- silicate (Mg, Fe)
- silicate (Al, Mg, Fe)
- silicate (Al, Na)
- resin
- Fe, Ni sulfide
- Fe, Ni metal
- Ca phosphate
- oxide (contains Cr)

Backscattered electron compositional image



10 µm

Elemental map



Sample: chondrite meteorite

Featured Papers and Microscopy News

► EVQ-218: Characterization of High-Energy Nanoparticles that Measure up to NIST Standards

► Ultrathin silicon nitride microchip for in situ/operando microscopy with high spatial resolution and spectral visibility

► Direct Observation of Heat at Nanoscale

► What Are the Advantages of a FE-EPMA or FE-SEM (Even when not analyzing submicron features at low kV and high beam current)?

► Observation of Pd catalytic reactions using an in-situ gas reaction observation system that connects a transmission electron microscope (TEM) and a mass spectrometer (MS) [GC-QMS × TEM Application]

► Recent developments in STEM-based characterization of energy materials

CRYO ARM Bibliography*[Link to PDF]*

Do you have a published paper or news to share related to your applications with the JEOL microscopes? Please let us know! Contact jeolink@jeol.com.

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