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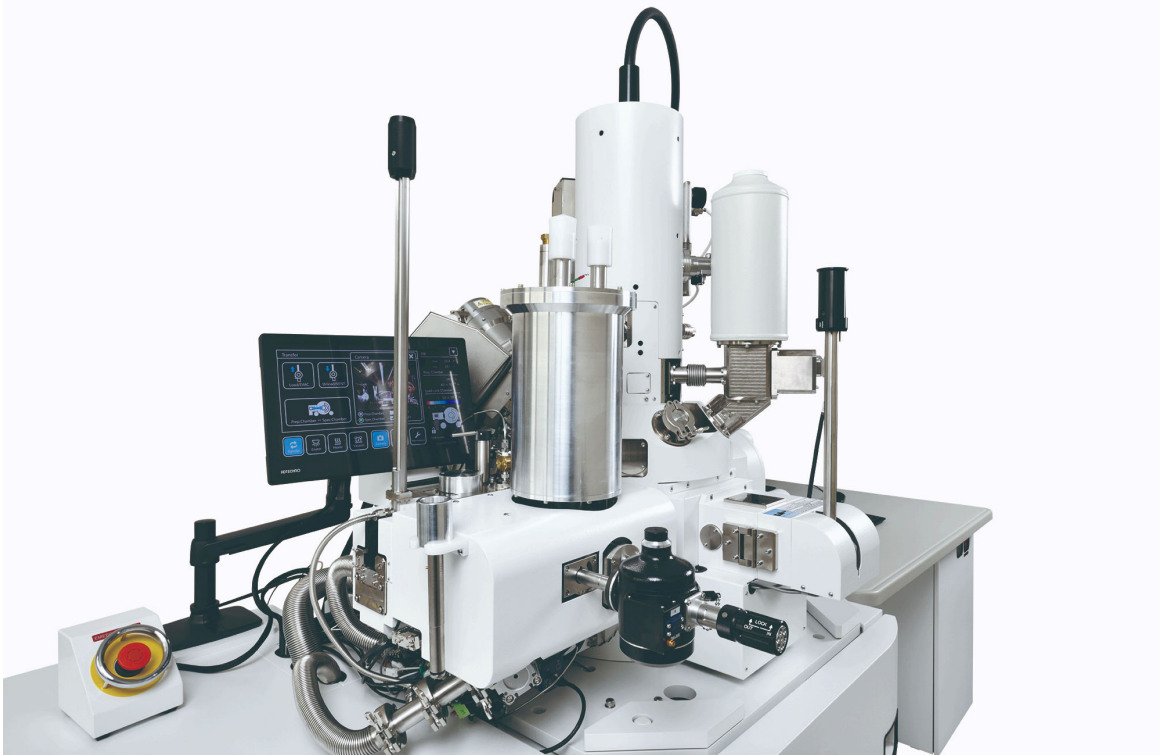


JEOLink Newsletter
ELECTRON MICROSCOPY | ELEMENTAL ANALYSIS | SAMPLE PREPARATION



JEOL USA MICROSCOPY NEWS | APRIL 2024

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



New CRYO FIB-SEM

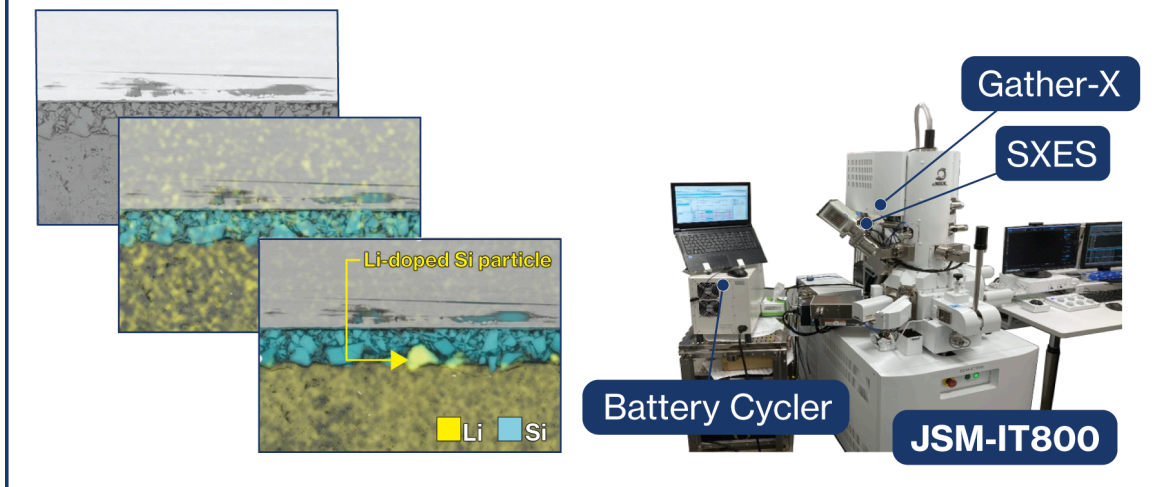
A new [CRYO-FIB-SEM](#) specifically designed for creating thin, frozen samples for Cryo-Electron Microscopy, complements JEOL's existing Cryo-TEM technology and provides a comprehensive solution for preparing and imaging vitreous frozen biological and biopolymer samples to be observed in the [CRYO ARM 200](#) and [CRYO ARM 300II](#) Transmission Electron Microscopes. Introduced in March, this is JEOL's second new FIB-SEM to be introduced in a year. The multipurpose [JIB-PS500i](#) was introduced in 2023.



Studying Viruses at the Center for Biologic Imaging at the University of Pittsburgh

A unique application for electron microscopy is virus imaging. In recent years, our applications team has worked with universities to obtain images of viruses by using samples that their labs already prepared. Among the studies we've seen or assisted with, the Watkins Lab at the University of Pittsburgh Division of Cell Biology used SEM to produce images of cells infected with Covid-19. They also used Correlative Light and Electron Microscopy (CLEM). [Read more about their techniques](#) and see examples in our REALab Applications story.

SEM-EDS in-situ Li mapping



Real-time in situ charge/discharge for Lithium-ion Batteries

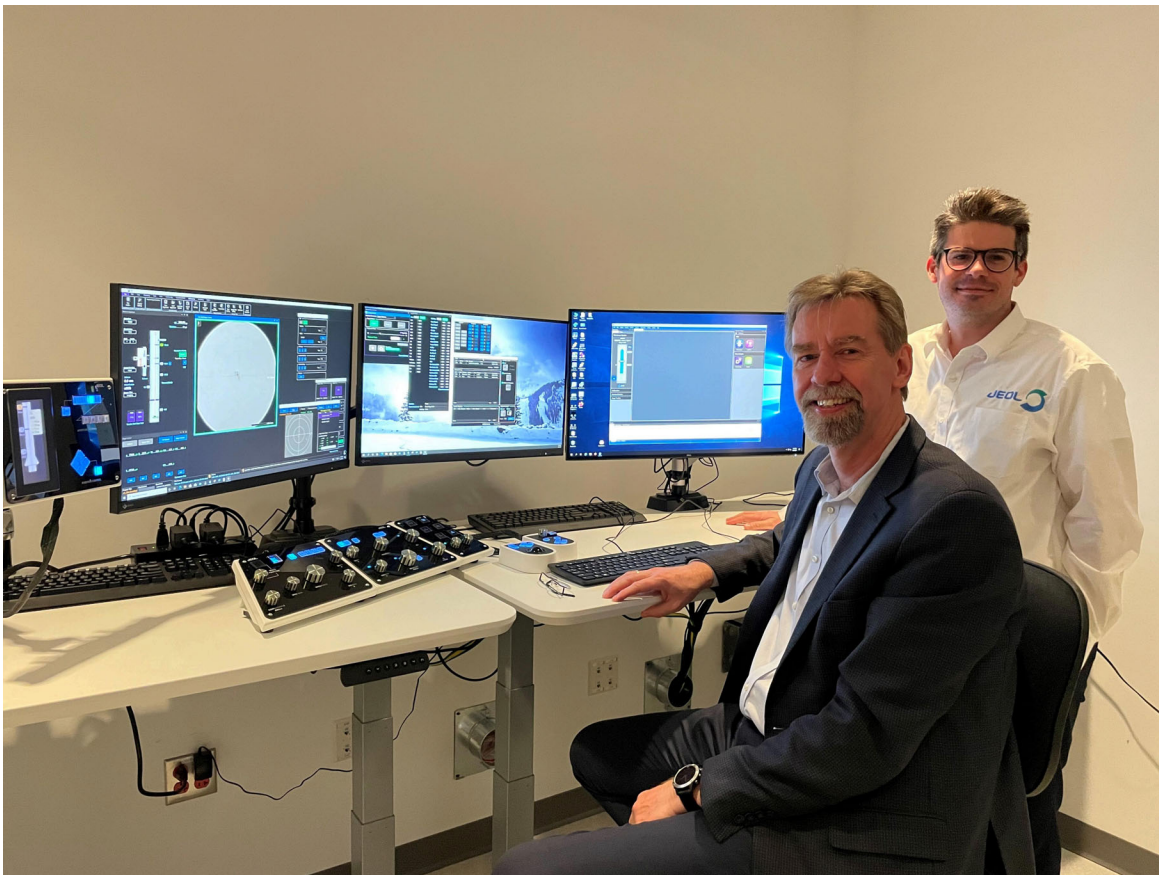
Now you can observe lithium behavior in real time during charging and discharging cycles using JEOL's latest advancement in Scanning Electron Microscopy for battery analysis. A specially designed sample holder allows in situ analysis using live SEM-EDS. A battery cycler can be integrated with the air-isolated microscopy workflow, from sample preparation to imaging and analysis with the SEM.

In-situ Charge/Discharge in Brief

- In situ charging/discharging analysis for lithium migration
- Performing operando experiments using SEM-EDS
- A new pressure stack holder that supports air-isolated imaging and analysis workflow

[Download the brochure.](#)

Cryo-EM Webinar and Applications Notes



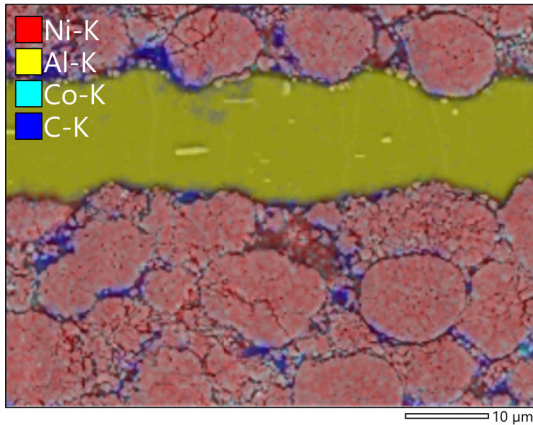
In March, Cryo-EM scientist Dr. Emmanuel Smith presented a live webinar "Visualizing Biomolecules with High Throughput Single Particle Analysis". Manny is working daily with JEOL CRYO ARMs and brings a hands on perspective to the presentation. [View the recorded webinar here.](#) Interested in other recorded webinars? We have a variety of SEM and TEM topics on our [Resources page.](#)

Cryo-EM scientist Dr. Jaap Brink has written a new applications note, "[SPA Data Collection with the Osaka Framework](#)". This and other applications notes are on our [CRYO ARM](#) product pages for download.

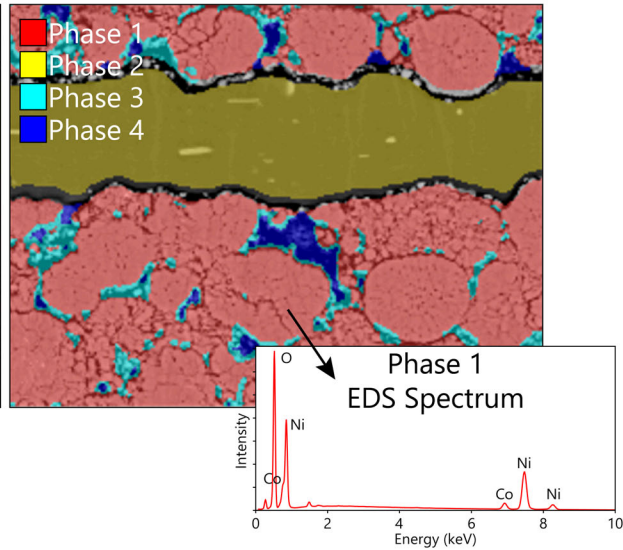


Did you know JEOL is celebrating our 75th Anniversary this year? Come celebrate with us at M&M this summer!

Hyperspectral EDS Map



Phase Map Calculated from EDS Map Data



Visualizing Elemental Distributions with SEM-EDS Mapping

The successful application of SEM-EDS mapping requires a thorough understanding of both its capabilities and limitations. Software solutions including automatic peak identification and deconvolution as well as intuitive data reporting have greatly helped simplify EDS map processing. Utilizing cluster or vertex component analyses using Phase Analysis 2 software enables more advanced processing, including automatic identification and characterization of discrete chemical phases within a sample. [Learn more>](#)



New in-situ SEM-Raman Capability

In March Renishaw installed a new inLUX™ Raman interface on our [JSM-IT710HR FE SEM](#) for in-situ SEM-Raman. True correlative microscopy for relating topographical, structural and chemical information. Now in our demo lab at JEOL USA!

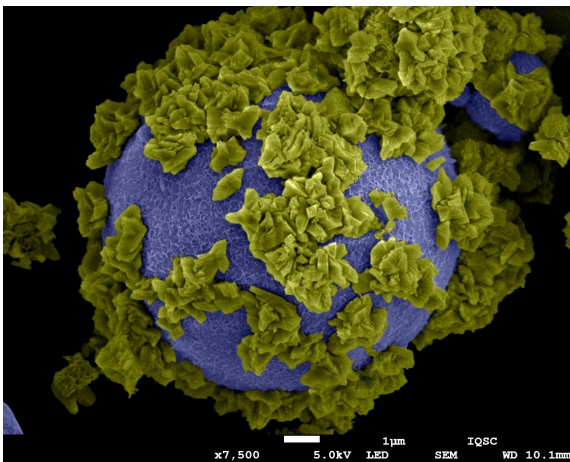


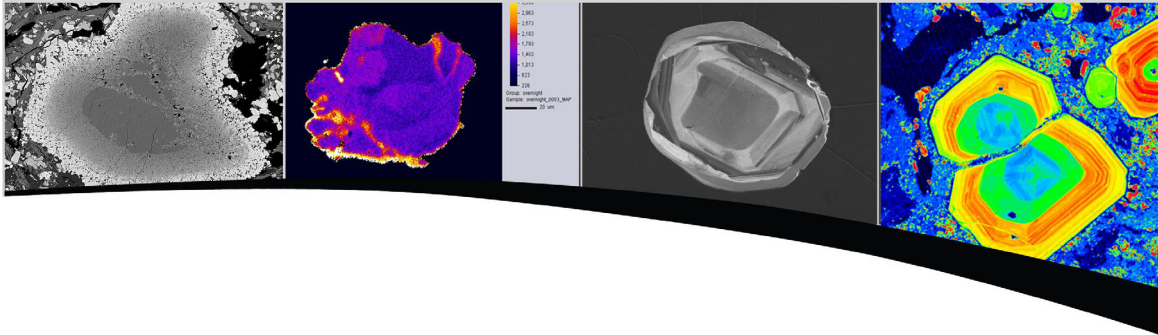
Image Contest winners - February and March

February: "The World of Alumina Silicate". Material obtained from reaction

of alumina silicate with 0.1M NaOH for 7 hours under reflux. CREDIT: Marcio de Paula, Institute of Chemistry of São Carlos - University of São Paulo (IQSC-USP); JSM-7200F FE SEM.

March: "Gypsophila Blooming+." Gypsophila paniculatta; CREDIT: Silvia Andrade, Centro de Investigacion Cientifica de Yucatan. JEOL-6360LV SEM.

Visit the JEOL Image Contest Gallery or submit your image [here](#).



Application Spotlight: Geology

JEOL has extensive experience in the field of geological sciences. Visit our [updated web page](#) featuring a comprehensive library of geology applications notes.

Posters for Your Lab

Check out our new EELS poster! This and other posters are available [on our website](#).



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Featured Papers and Microscopy News

- ▶ Large-area fabrication of nanometer-scale features on GaN using e-beam lithography - NASA JPL
- ▶ Mighty MXenes Are Ready for Launch
- ▶ STEM in situ thermal wave observations for investigating thermal diffusivity in nanoscale materials and devices
- ▶ 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.



Learn how JEOL is committed to sustainable development goals

Glossary of Terms - TEM

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