

Pristine Sample Preparation Using Broad Ion Beam

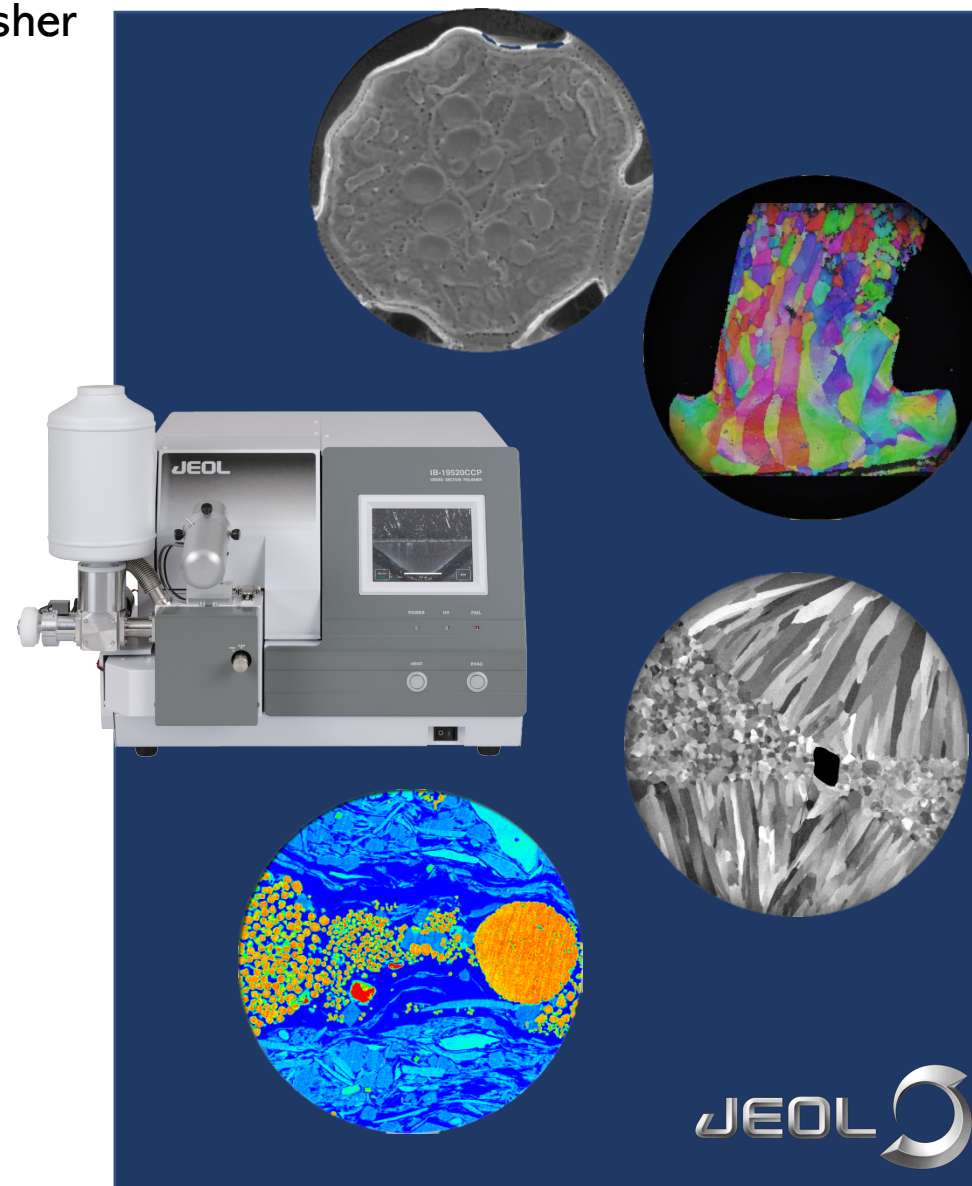
New High Throughput Milling System – Cross Section Polisher

Traditional mechanical preparation of specimen surfaces suffers from various artifacts, such as scratches and embedded polishing media, that obscure the original microstructure, crystallographic information and precise layer thickness measurements. Broad ion beam polishing using the JEOL cross-section polisher (CP) offers pristine surface preparation with minimal artifacts. CP is a tabletop instrument that is ideally suited for preparation of a variety of environmentally-sensitive and beam-sensitive materials, including metals, polymers, ceramics and composites. The instrument includes both cryo-preparation (down to LN₂ temperature) and air-isolated transfer and preparation environment.

The recently upgraded configuration includes:

- Large specimen polishing – specimens up to 40mm in diameter can be prepared
- Controlled cooling environment – down to LN₂ temperature (8hr cooling retention)
- Controlled air isolated preparation and transfer of specimens for subsequent SEM observation
- Large area preparation – up to 8mm wide cross-sections
- Milling rate - up to 1.2 mm/hr*
- Accelerating voltage - up to 10kV*
- Intermittent milling – automated duty cycle for beam sensitive materials

*IB-10500HMS



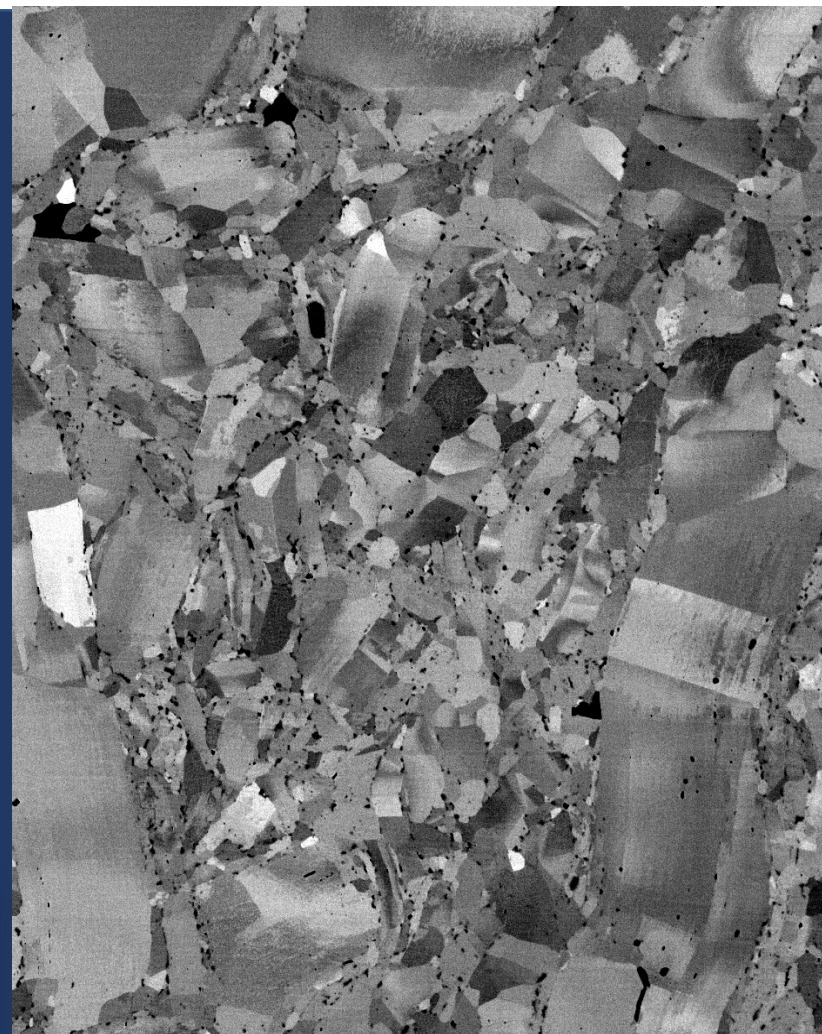
Ion Beam Cross Section Polisher

Pristine Sample Cross Sections for SEM

Metallurgy

Traditional mechanical preparation of metal surfaces suffers from various artifacts, such as scratches and embedded polishing media, that obscure the original microstructure and grain orientation information. Broad ion beam polishing using the JEOL cross-section polisher (CP) offers pristine surface preparation with minimal artifacts.

CP is a tabletop instrument ideally suited for obtaining precise crystallographic information, including **grain orientation**, **grain boundary** and **strain information**.

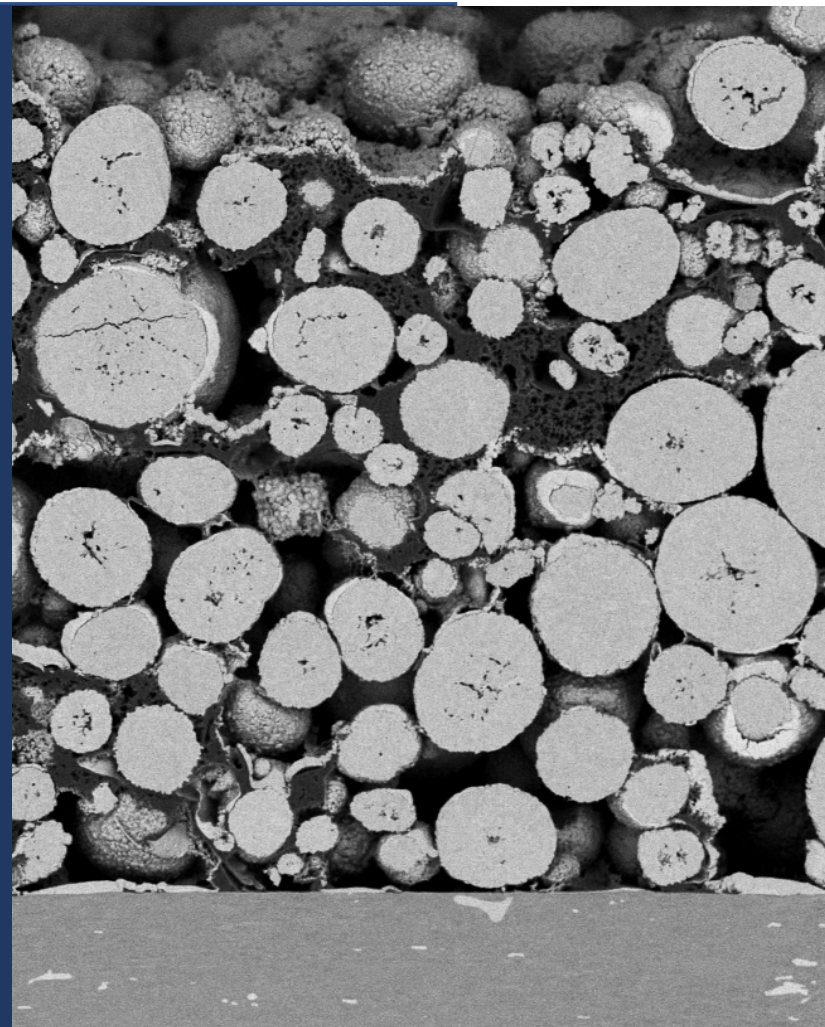


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Battery Materials

LIB composed of ceramics, metallic foils and polymers present a complex system that presents challenges for traditional mechanical specimen preparation techniques. Broad beam ion milling with JEOL CP polisher is a robust way to obtain pristine artifact-free cross sections and is the **only reliable technique to get a clear sense of different layers as well as interfaces between layers**. JEOL CP combines cryogenic and air-isolated environments to provide extreme versatility and resulting sample fidelity.

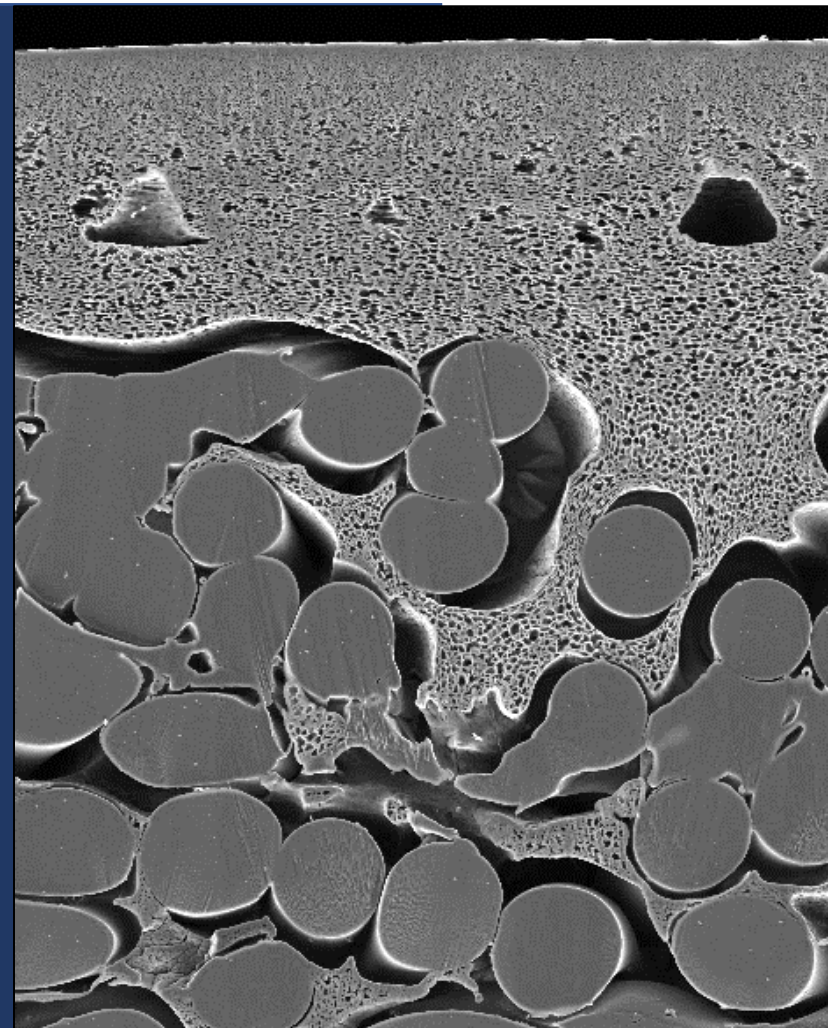


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Soft Materials

Traditional mechanical preparation of polymer films and interfaces suffers from various artifacts that obscure the original microstructure. Broad ion beam polishing using JEOL cross-section polisher (CP) offers pristine surface preparation with minimal artifacts including the ability to cryogenically cool samples while ion milling. CP is a tabletop instrument ideally suited for obtaining precise cross-sections of various **polymer blends** and **thin films**.

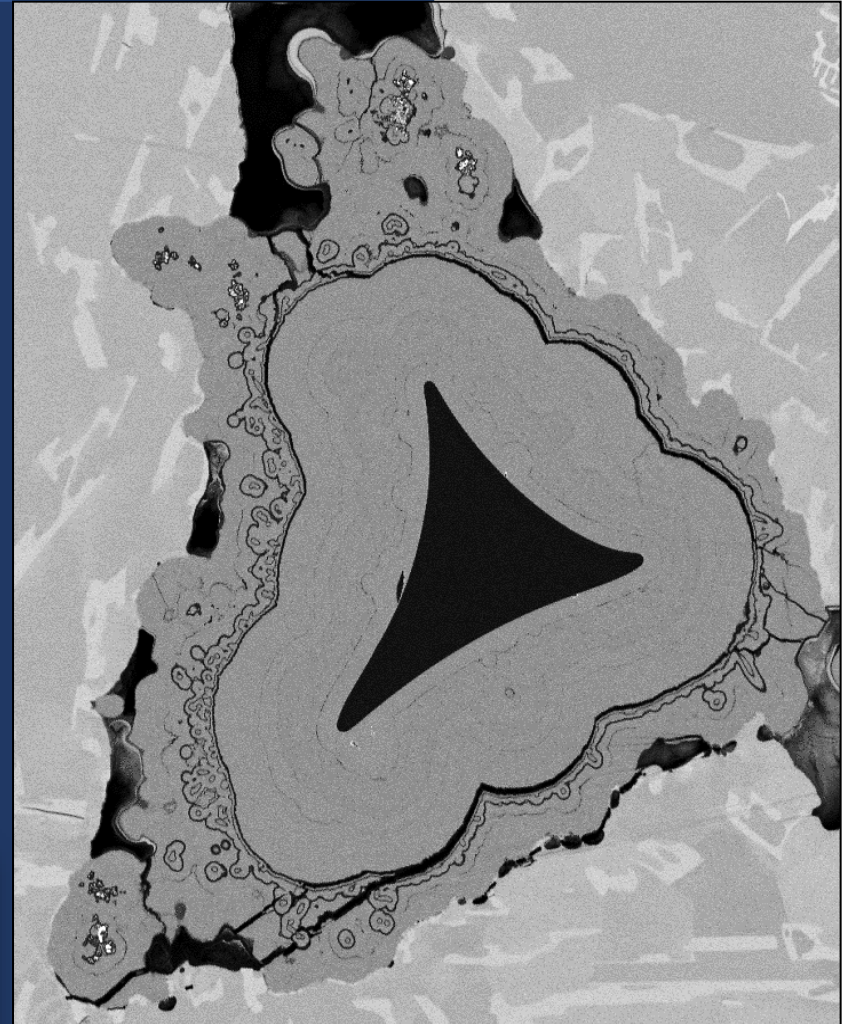


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Composite Materials

Traditional mechanical preparation of composite materials suffers from various artifacts due to differences in hardness and thermal expansion of individual constituents. Broad ion beam polishing using JEOL cross-section polisher (CP) offers pristine surface preparation with minimal artifacts; the instrument includes cryogenic capability for additional flexibility. CP is a tabletop instrument ideally suited for obtaining **precise microstructural information, including grain orientation, material interface and strain information.**

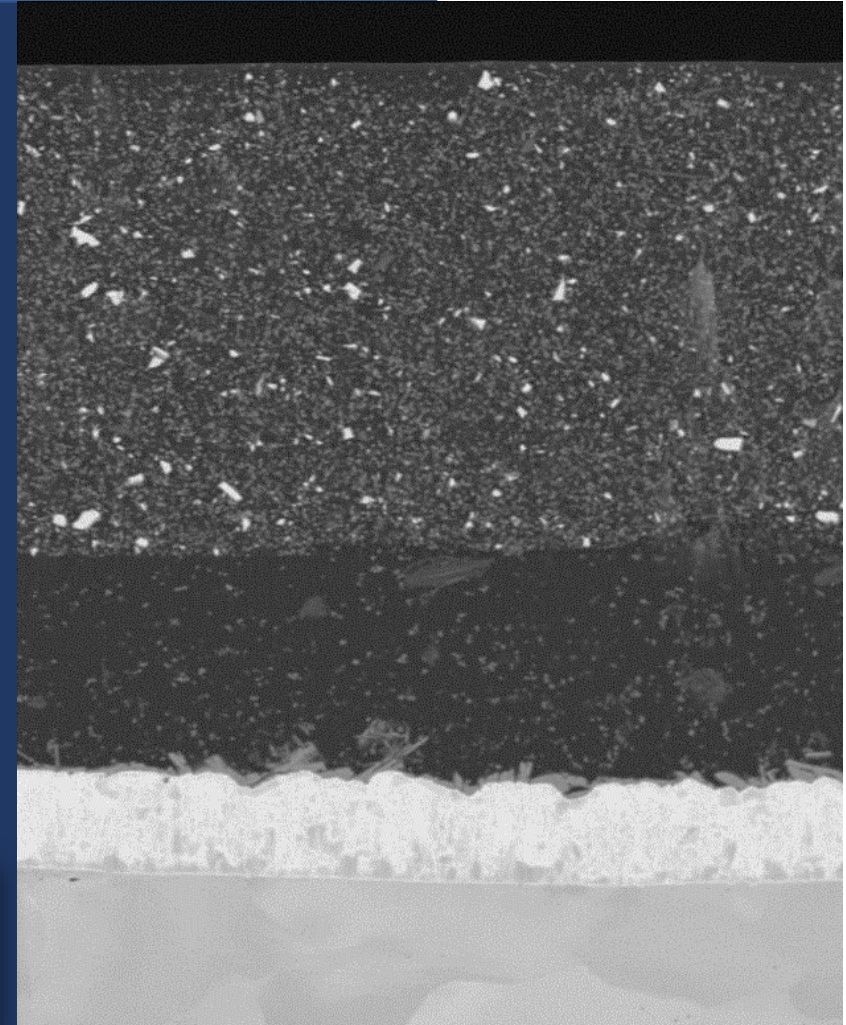


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Coatings & Paint

Traditional mechanical preparation of coatings and paint layers suffers from various artifacts due to differences in hardness and thermal expansion of individual layers. Broad ion beam polishing using JEOL cross-section polisher (CP) offers pristine surface preparation with minimal artifacts; the instrument includes cryogenic capability for additional flexibility. CP is a tabletop instrument ideally suited for obtaining **precise microstructural information, including layer thickness, grain orientation, material interface and strain information.**



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Pristine Sample Cross Sections for SEM

Paper

Traditional mechanical preparation of fragile and porous materials, such as paper suffers from various artifacts that obscure the original interfaces and microstructure. Broad ion beam polishing using JEOL cross-section polisher (CP) offers pristine surface preparation with minimal artifacts; the instrument includes cryogenic capability for additional flexibility. CP is a tabletop instrument ideally suited for obtaining **precise information about filler distribution, layer thickness and overall microstructure of the most fragile specimens without the need for embedding.**

