

SEMPrep2 (model SC-2000)



High-quality site-specific sample preparation in SEM applications.
just a click away... 2spi.com/semprep2

Today's advanced SEM investigations require high-quality, artifact-free SEM samples with minimal amount of damage on their surfaces. Building off of proven ion beam milling techniques, the SEMPrep2 provides sample surfaces which fully meet these requirements.



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SEMPrep2 SEM Sample Preparation System

Specifications

Features:

- Cross-sectional sample preparation by slope cutting
- Final polishing and cleaning of traditional SEM and EBSD samples
- High-energy ion gun for rapid milling
- Low-energy ion gun for gentle surface polishing and cleaning
- Automated parameter settings and operation
- Sample rotation and oscillation
- Site-specific sample preparation with high-precision positioning
- Real-time monitoring of the milling process by high-resolution CCD camera and TFT monitor

Ion Sources:

- Two ion guns with continuously adjustable milling energy:
 - focused low-energy ion gun in the range of 100 eV to 2 keV
 - focused high-energy ion gun operating from 2 keV to 10 keV
 - ultra-high-energy ion gun optional, (2 keV to 16 keV)
- Beam current density:
 - max. 10 mA/cm² for focused low-energy ion gun
 - max. 100 mA/cm² for focused high-energy ion gun
 - max. 150 mA/cm² for ultra-high-energy ion gun
- Milling rate:
 - 28 μm/hour at 2 keV on Si at 30° for focused low-energy ion gun
 - 150 μm/hour at 10 keV on Si at 30° for focused high-energy ion gun
 - 550 μm/hour on Si at 30° for ultra high-energy ion gun

Sample stage:

- Sample size:
 - slope cutting sample holder (available with 30°, 45°, 90° tilted platforms)
 - for 30°, 45° holders: max. 20 mm (l) x 16 mm (w) x 7 mm (th)
 - for 90° holder: max. 20 mm (l) x 16 mm (w) x 5.5 mm (th)
 - sample holder for surface cleaning (EBSD) using 3 different head types:
 - flat head type: max. Ø36 mm x 0-5.5 mm
 - standard type: max. Ø26 mm x 3-14 mm
 - hollow type: max. Ø24 mm x 13-19 mm
- Sample stage tilting: 0° to 30°
- Sample rotation: in-plane rotation, 360°
- Sample oscillation: in-plane oscillation in ±10° to 45° range

Vacuum system:

Oil-free diaphragm and turbomolecular pump with combined (Pirani/Penning) vacuum gauge

Gas supply system:

- 99.999% purity argon
- High-precision working gas flow control with motorized needle valve

Imaging system:

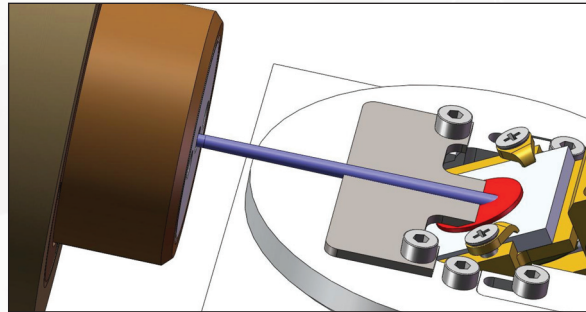
High resolution CCD camera with manual zoom video lens of 50–400× magnification

Computer control:

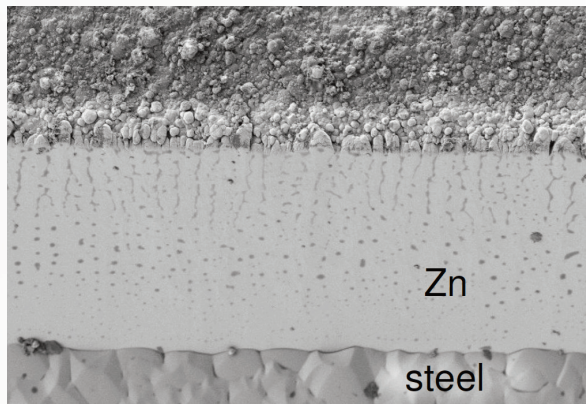
- Easy-to-use graphical interface with optional image processing module
- Automated ion source setup, milling parameter setting and operation control

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Ion-Beam Slope Cutting

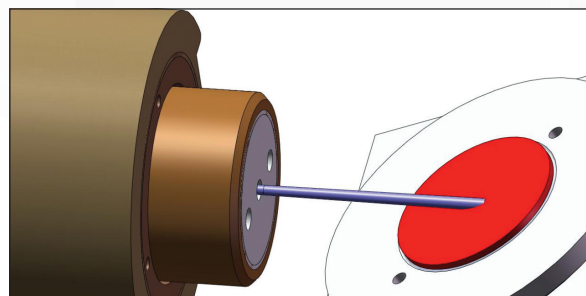


To produce planar cross-sections of different quality of solid state materials for SEM imaging and microanalysis



Cross-sectional specimen of Zn coated steel was prepared by ion beam slope cutting process cut into the near surface layer of the bulk sample

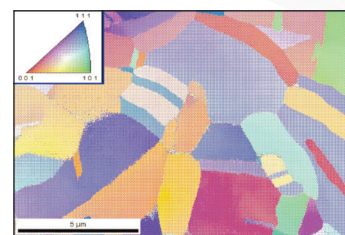
Final Polishing



To produce samples for Electron Back Scatter Diffraction (EBSD) study and Orientation Imaging Microscopy (OIM)



EBSD pattern of copper sample



Inverse Pole Figure (IPF) of the same copper sample