

SC-1000 Sample Preparation System

High-quality site-specific sample preparation in SEM applications.
just a click away...2spi.com/sc-1000



- 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

Today's advanced SEM investigations require high-quality, artifact-free SEM samples with minimal amount of damage on their surfaces. The new Technoorg SC-1000 SEM Sample Preparation System, built on proven ion beam milling techniques, provides sample surfaces that totally meet these requirements.

Description:

The SC-1000 model is equipped both with high- and low-energy ion sources. Rapid slope cutting with the high-energy ion gun followed by gentle surface cleaning with the low-energy ion gun provides cross-sectional SEM samples suitable for geological, semiconductor failure analysis and other analytical purposes. The system also provides an ion milling based solution for improving and cleaning of mechanically polished SEM samples and preparation of damage-free surfaces for EBSD techniques.



SPI Supplies Division of **STRUCTURE PROBE, Inc.**

P.O. Box 656 • West Chester, PA 19381-0656 USA

Phone: 1-610-436-5400 • 1-800-2424-SPI (USA and Canada) • Fax: 1-610-436-5755 • 2spi.com • E-mail: sales@2spi.com



SC-1000 SEM Sample Preparation System

Specifications

Ion sources:

- Two ion guns:
focused high-energy ion gun operating from 2keV to 10keV
focused low-energy ion gun in the range of 100eV to 2keV
continuously and independently adjustable milling energy
- Beam current density:
max. 240mA/cm² for focused high-energy ion gun
max. 10mA/cm² for focused low-energy ion gun
- Milling rate:
180 $\mu\text{m}/\text{hour}$ at 10keV on Si at 30° for focused high-energy ion gun
28 $\mu\text{m}/\text{hour}$ at 2keV on Si at 30° for focused low-energy ion gun

Sample stage:

- Sample size:
slope cutting sample holder: max. 20mm x 20mm x 4mm
sample holder for surface cleaning (EBSD): max: \varnothing 25mm x 15mm
- Sample positioning:
high precision sample positioning for slope cutting:
with <math><2\mu\text{m}</math> accuracy
- Angle of slope cutting: 30°
- Sample stage tilting: 0° to 30°
- Sample rotation: in-plane rotation, 360°
- Sample oscillation: in-plane oscillation in $\pm 10^\circ$ to 45° range

Vacuum system:

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

Gas supply system:

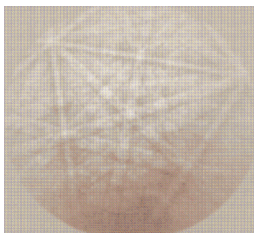
- 99.999% purity argon
- High-precision working gas flow control with motorized needle valve

Imaging system:

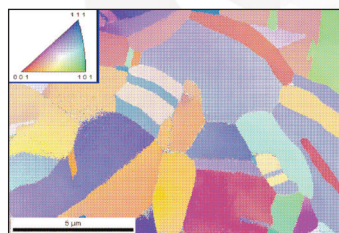
High resolution CCD camera with manual zoom video lens of 50–400 \times magnification

Computer control:

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



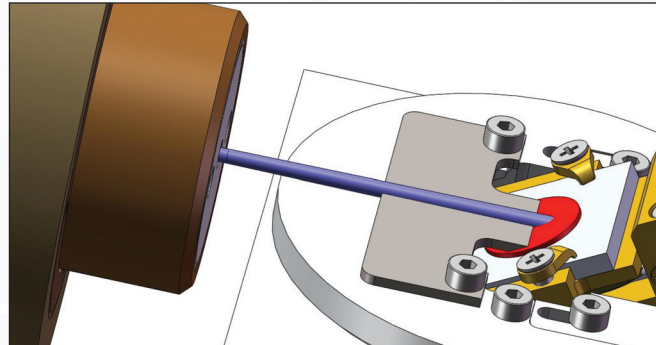
EBSD pattern of copper sample



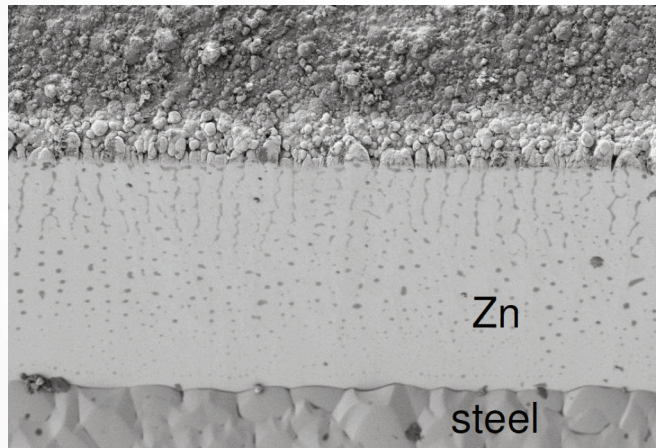
Inverse Pole Figure (IPF) of the same copper sample

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Ion-Beam Slope Cutting

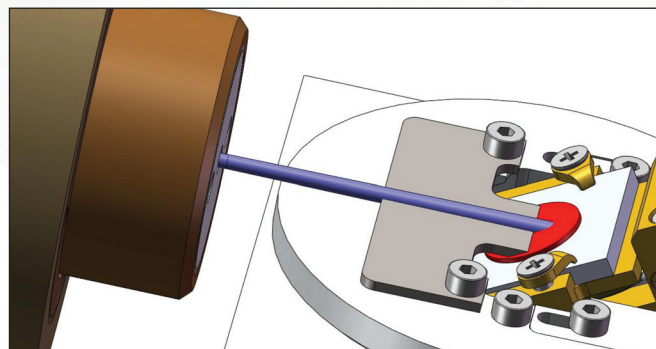


To produce planar cross-sections of different quality of solid state materials for SEM imaging and microanalysis



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)



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