

## SEMPrep2

High-quality and site-specific sample preparation for SEM application



- Cross-sectional sample preparation by slope cutting in 90° and 30° angles using dedicated sample holders
- Final polishing and cleaning of traditional SEM and EBSD samples
- Load-lock system for faster, easier and safer sample exchange
- High-energy ion gun for rapid milling and low-energy ion gun for gentle surface polishing and cleaning
- Optional ultra-high-energy ion gun, recommended for ion milling of extra hard materials and for extreme fast milling
- Automated parameter settings and operation
- Sample rotation and oscillation
- Real-time monitoring of the milling process by high-resolution CMOS camera and TFT monitor

### DESCRIPTION

The SC-2100 model is equipped with both high- and low-energy ion sources. Rapid slope cutting with the high-energy ion gun provides cross-sectional SEM samples for semiconductor industry, material sciences, geology and other scientific and industrial purposes. The system also delivers a solution to improve and clean mechanically polished SEM samples and to prepare damage-free surfaces for EBSD measurements. The new 16 keV ultra-high-energy ion source is more powerful and has a higher sputtering rate than before. For the most gentle surface treatment of the delicate samples, the low-energy ion source is also available.

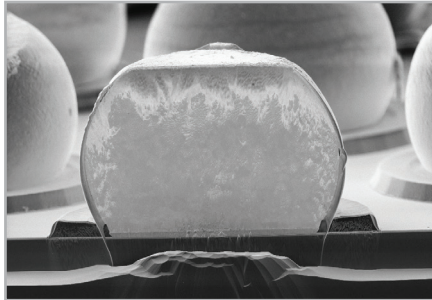
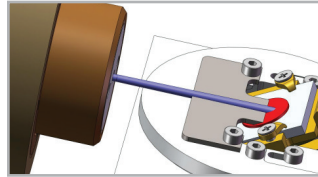
### SPECIFICATIONS

- |                     |                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| • Ion sources       | Two ion guns:                                                                                                                                  | - high-energy ion gun operating up to 10 keV or ultra-high-energy ion gun operating up to 16 keV (optional)<br>- low-energy ion gun in the range of 100 eV to 2 keV continuously and independently adjustable milling energy                                                                                                                                                                                                       |
| • Sample stage      | Sample size:                                                                                                                                   | slope cutting sample holder (available with 30° and 90° tilted platforms)<br>for 30° holder: max. 42 mm (l) x 16 mm (w) x 5.5 mm (th)<br>for 90° holder: max. 20 mm (l) x 16 mm (w) x 7.0 mm (th)<br>sample holder for surface cleaning using 3 different head types:<br>flat head type: max. Ø33,5 mm x 8 mm<br>standard type: max. Ø33,5 mm x 9 mm<br>hollow type 1: max. Ø26 mm x 21 mm<br>hollow type 2: max. Ø32 mm x 19,5 mm |
|                     | Sample tilting:                                                                                                                                | 0° to 30° in 0.1° increments                                                                                                                                                                                                                                                                                                                                                                                                       |
|                     | Sample rotation:                                                                                                                               | in-plane rotation, 360°                                                                                                                                                                                                                                                                                                                                                                                                            |
|                     | Sample oscillation:                                                                                                                            | in-plane oscillation from ±10° to ±120° in 5° steps                                                                                                                                                                                                                                                                                                                                                                                |
| • Sample cooling    | LN <sub>2</sub> cooling to prepare heat-sensitive samples (optional)<br>Peltier cooling to protect the samples from thermal overrun (optional) |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| • Vacuum system     | Oil-free diaphragm and turbomolecular pumps with combined (Pirani/Penning) vacuum gauge                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| • Gas supply system | 99.999% purity argon<br>High-precision working gas flow control                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| • Imaging system    | High-resolution CMOS camera with fix zoom                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| • Computer control  | Easy-to-use graphical interface, automated ion source setup, milling parameter setting and operation control                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                    |

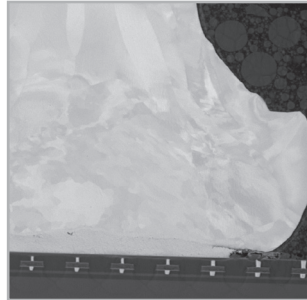
# APPLICATIONS

## ION BEAM SLOPE CUTTING

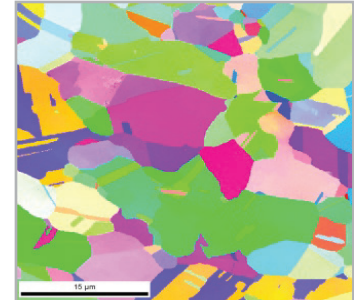
To produce excellent quality planar cross-sections of different solid state materials for SEM/EBSD imaging and microanalysis.



Sn-Ag solder ball grid array (BGA)



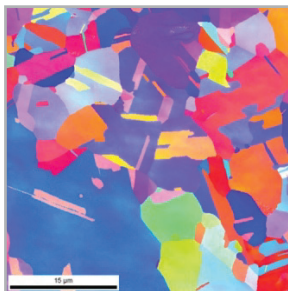
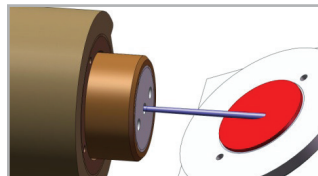
Metal wire bonding



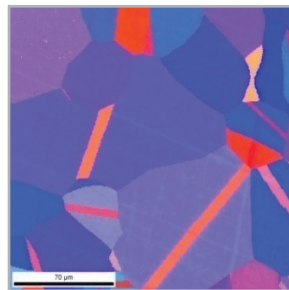
EBS image (OIM) made on an as-cut surface of copper

## FINAL POLISHING

To produce samples for Electron Backscatter Diffraction (EBSD) study and Orientation Imaging Microscopy (OIM).



Copper



Nickel



Martensitic steel



Limestone

