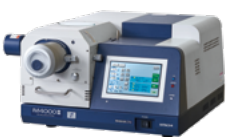


# Sample Preparation and Cross-Section Preparation



IM4000 II /  
IM4000 II-CTC





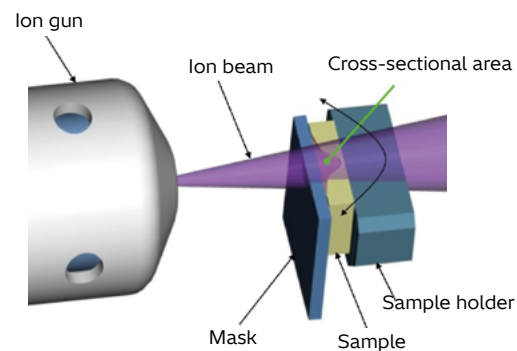
# Argon ion Polishing Systems of the IM Series

The clever alternative to FIB technology

The IM series systems are indispensable for SEM sample preparation. They are ideal for when high-quality, millimetre-scale cross-sections or surfaces are needed and conventional mechanical preparation methods don't give satisfactory results. The two systems IM4000 II and ArBlade 5000 are presented on the following pages.

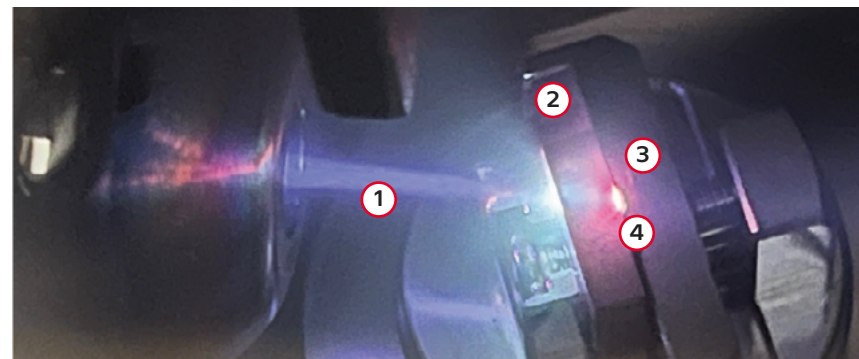
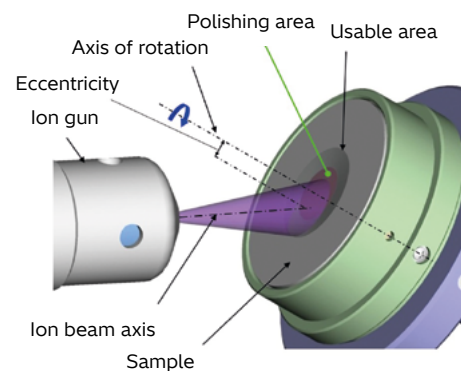
## Cross-section preparation

Sharp, precisely positionable and mechanically undisturbed cross-sections in millimetre widths through almost all materials and composites. Even heat-sensitive materials such as polymers can be processed successfully, and an optional temperature-controlled cryogenic version is available if required. A sample height of up to 8mm also allows for larger workpieces.



## Surface polishing (flatmilling)

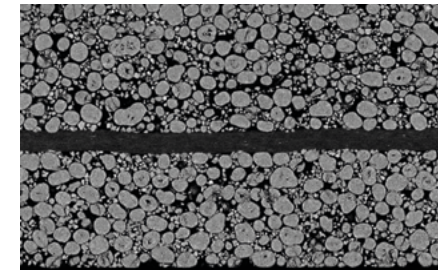
Post-processing of mechanically pre-polished surfaces on samples up to 50mm in diameter and 25mm in height. By freely selecting the angle of incidence of the ion beam, various effects can be achieved, from surface smoothing and cleaning for EBSD analyses to relief generation through selective sputtering.



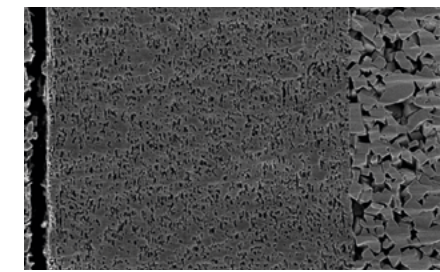
- 1 Argon ion beam
- 2 Mask
- 3 Sample stub
- 4 Sample

Insight into the ArBlade 5000 sample chamber during cross-sectioning at an NCM LiB cathode

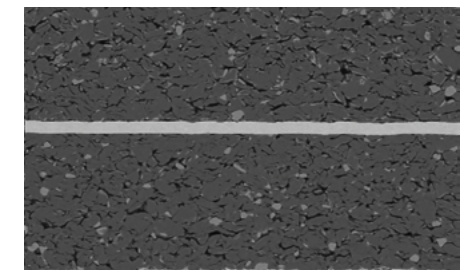
## Energy systems



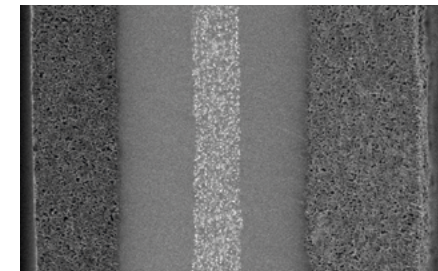
LiB NCM Cathode



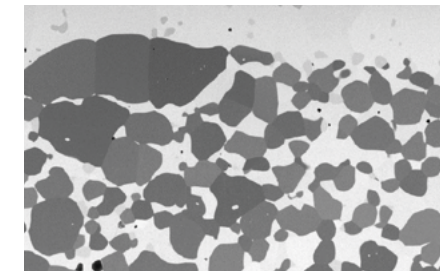
LiB separator film



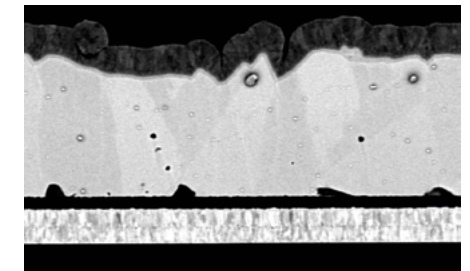
LiB Anode



Polymer fuel cell

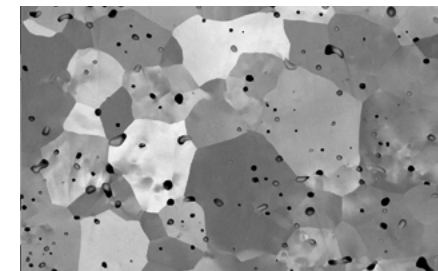


Ceramic fuel cell (La-Ce/NiO)

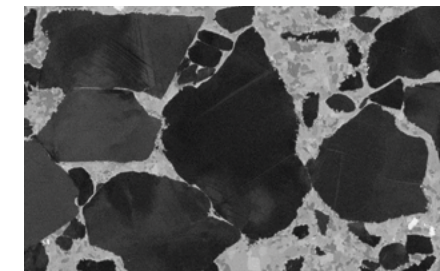


CIGS solar cell

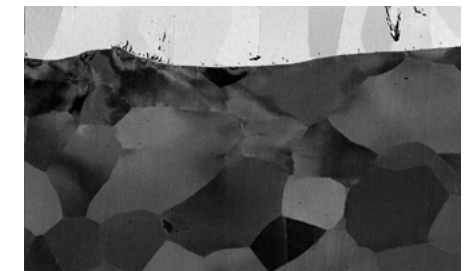
## Metals



Tungsten alloy

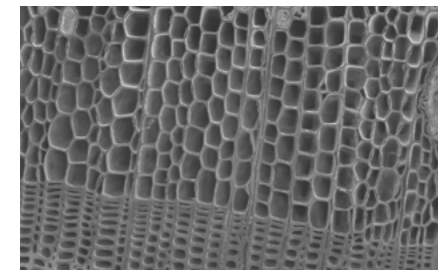


Boron nitride

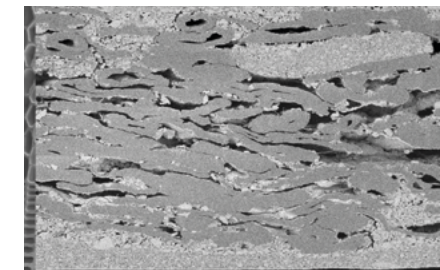


Zinc coating on steel

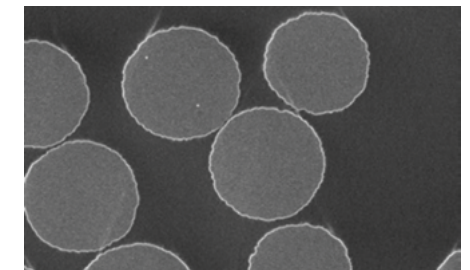
## Organics



Wood



Paper

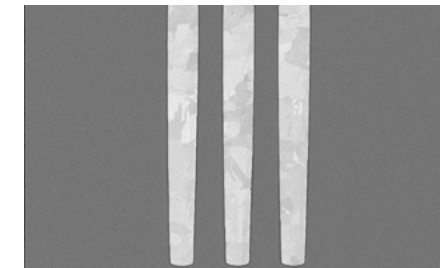


Carbon fibre reinforced plastic

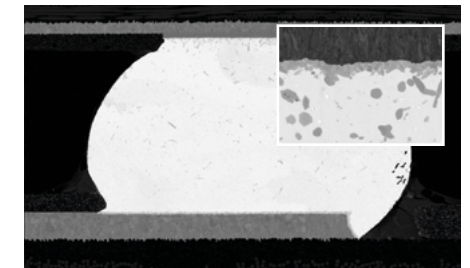
## Semiconductors



Chip bonding wires



Cu TSV



Bonding ball on PCB



# IM4000 II / IM4000 II-CTC

Standard Ar+ cross-section and surface polisher



IM4000 II is a modular computer-controlled argon ion polishing system that can be equipped as a pure surface polisher, as a cross-section polisher or as a hybrid system, depending on the desired functionality. With a beam energy selectable in 100eV steps from 0.1keV to 6.0keV, a wide range of applications can be covered, from the finest polishes to larger cross-sections. In cross-section operation, IM4000 II achieves a maximum removal rate in Si of 500µm/hour (6keV, protrusion over the mask edge 100µm, stage oscillation ±30°).

Functions such as auto-start/time preselection, interval polishing or two-stage processes are available. The IM4000 II-CTC offers the option of process temperatures down to -100°C in cross-section operation.

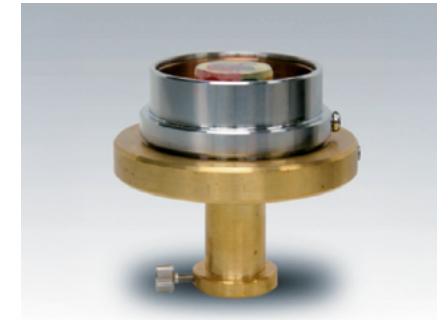
## Product Features

- Single, robust and maintenance-friendly Penning-type ion gun with independent control of beam current and acceleration voltage. Allows intensive ion beams at all acceleration voltages (0-6kV)
- Cross-sectional process depth in Si with 100µm protrusion above mask, stage oscillation +/-30°, is 500µm per hour or more
- Surface polishing can be carried out at tilt angles from 0° to 90°, angle can be changed during the process
- Large sample chamber with a fully retractable multi-axis stage attached to the chamber door to accommodate the various application modules

## Optional Accessories

- Flatmilling equipment for specimen up to 50mm Ø and 25mm height
- Cross-section equipment for standard samples up to 20mm wide / 12mm deep / 8mm high
- Cross-section holder for large samples up to 35mm wide / 17mm deep - 8mm high
- Stereo microscope (also with camera connection) for live process observation
- Inert gas transfer function "air protection" for cross sections and surface polishing
- Special cryo cross-section holder for

## Extensions and additional functions for IM



**Flatmilling-Set**  
Polishing of grindings up to 50mm Ø and 25mm Ø



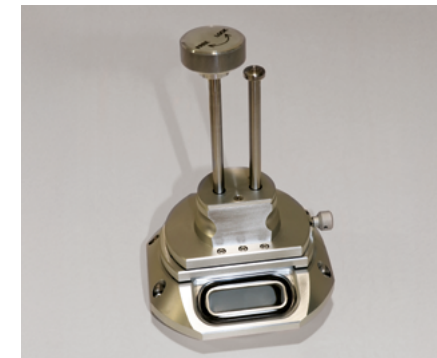
**Cross-section set**  
Preparation of cross sections



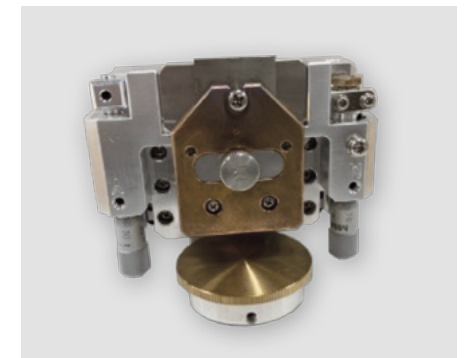
**Active cooling**  
Of cross-sections using liquid nitrogen



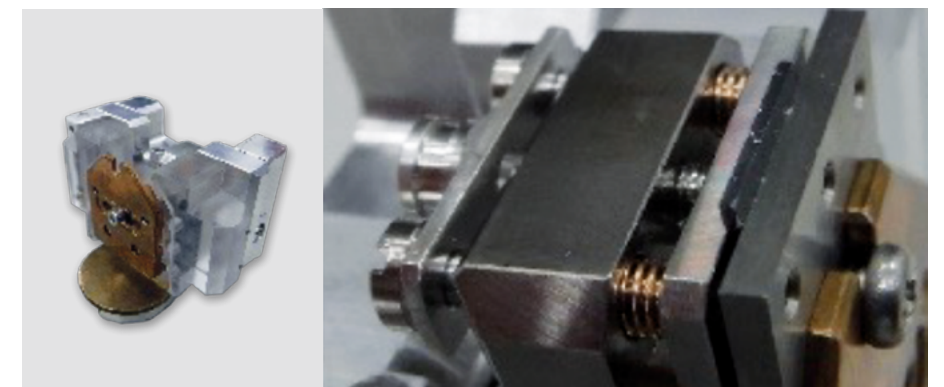
**Zoom Stereo OM**  
For process observation in real time. As bi-ocular or additionally with C-mount camera adapter



**Air Protection-Set**  
Inert gas transfer for cross-sections and surfaces



**Cross-section holder for large samples**  
Up to 35mm width, 17mm depth, 8mm height



**Optimised cryo cross-section holder**  
Made of polycarbonate, samples are pressed against the cooled mask by spring force for optimum heat transfer. Only for CTC version.

## Not sure which product aligns with your needs?

Our experts are here to provide guidance and help you make the best choice.

[Speak with an expert >](#)

### More information

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