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FIB on GCS

Fully integrated dual beam FIB

Information about the chemical composition in 2D and 3D are of increasing interest.
The TOF.SIMS 5 is a powerful tool to provide this kind of information on most sample systems.

However, the 3D analysis of extremely rough samples, samples with voids, and samples that exhibit strong local variations in density or sputter yield is almost impossible for conventional SIMS depth profiling.

The option FIB on GCS for the TOF.SIMS 5 allows to overcome these limitations by combining FIB with high resolution SIMS imaging. In this setup a gallium beam is used to mill a crater into the sample. By serial sectioning of the crater sidewall and intermediate SIMS imaging analysis, full three-dimensional tomography measurements can be performed.

Heisenbergstraße 15
48149 Münster
Germany

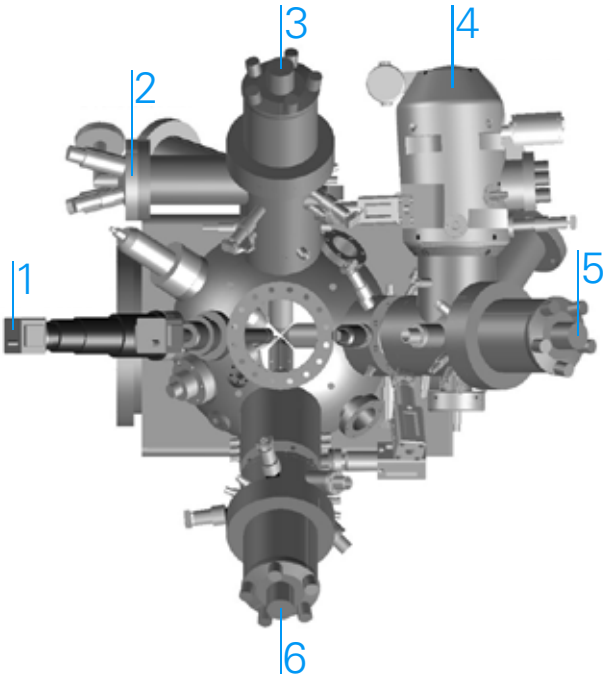
Phone +49 251 1622-100
Email sales@iontof.com
Internet www.iontof.com

Full configuration without compromises

Today, TOF-SIMS instruments provide valuable information in many research areas. The TOF.SIMS 5 combines in a unique way ultimate instrument performance with configuration flexibility. Key features of the FIB on GCS option are:

1. Fully integrated hard and software solution
2. No sample movement required between FIB milling and SIMS imaging
3. Real-time monitoring of the milling process
4. Automated 3D tomography
5. No compromise in instrument configuration

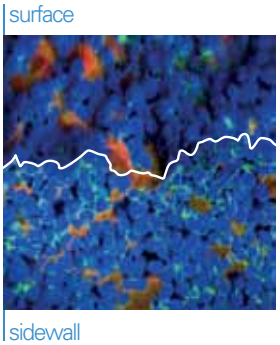
1 Real-time video
2 EI source
3 Cs source
4 Gas cluster source
5 FIB on GCS
6 Bi Nanoprobe

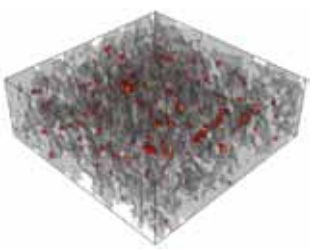


Top view of a full instrument configuration of a TOF.SIMS 5 with Bi Nanoprobe, DSC-S with EI Source and Cs Source, Gas Cluster Source and FIB on GCS. TOF analyser not shown.

Lithium ion battery analysis

The example below shows a sidewall image and three-dimensional analysis of a lithium ion battery electrode. The images clearly show the distribution of the different elements inside the porous and rough sample structure.





Combined FIB crater sidewall and surface image of a lithium ion battery electrode showing the distribution of O (blue), F (green) and C (red).

Three-dimensional tomography analysis of a lithium ion battery electrode showing the distribution of Li (grey) and Na (red).