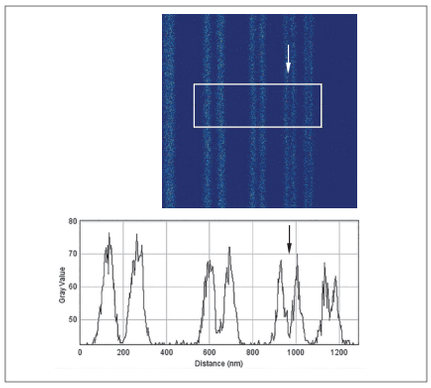
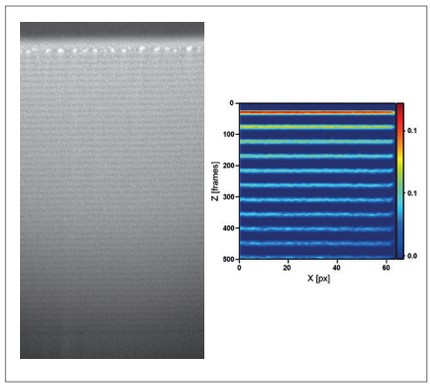
ZEISS Crossbeam Family

Introducing ToF-SIMS enables High Throughput in 3D Analysis



Calibration Standard *Top: Al (27 amu) map of a calibrated BAM L200 sample. The FOV is 2 µm. Bottom: Line profile for the area within the green frame. Lines with a width and separation of 33.75 nm can be resolved clearly (arrows).*



Multi-layered System *Left: SEM image of the cross section of an AlAs GaAs multilayer system. The AlAs layers are 10 nm thick. Right: Corresponding SIMS depth profile showing the aluminum signal at 27 amu for the top 11 layers.*

Add the ToF-SIMS (time of flight secondary ion mass spectrometry) spectrometer to your ZEISS Crossbeam 350 or Crossbeam 550 and profit for your materials research.

Combine imaging and analytical performance of a high resolution field emission scanning electron microscope (FE-SEM) with the processing ability of a next-generation focused ion beam (FIB). You may be working in a multi-user facility, as an academic or in an industrial lab. Take advantage of ZEISS Crossbeam's modular platform concept and upgrade your system with growing needs.

Maximize Sample Insights by Adding ToF-SIMS

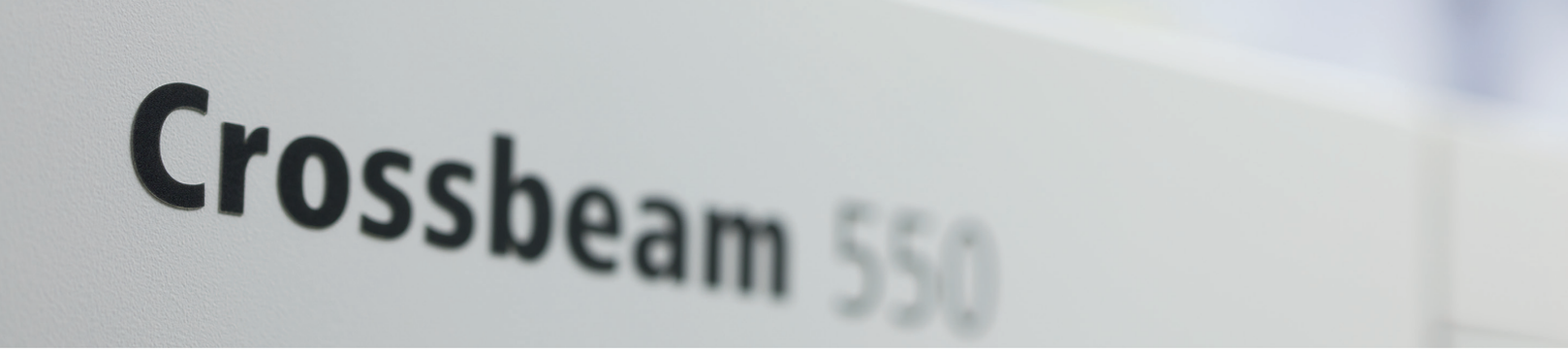
Secondary Ion Mass Spectroscopy (SIMS) is an established means of analyzing surfaces that gives you excellent sensitivity and mass resolution, along with the ability to differentiate between isotopes. Adding ToF-SIMS (time of flight secondary ion mass spectrometry) to your Crossbeam brings unique analytical capabilities to the FIB-SEM.

Benefit from:

- parallel detection of atomic and molecular ions down to the ppm level
- analysis of light elements, e.g. lithium
- analysis of isotopes
- analytical mapping and depth profiling
- better than 35 nm lateral resolution, 20 nm depth resolution
- post-mortem retrieval of any signal from the ROI

ZEISS

Seeing beyond



ZEISS Crossbeam Family

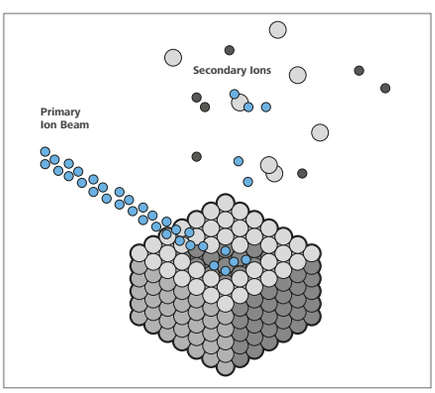
Introducing ToF-SIMS enables High Throughput in 3D Analysis

SIMS Working Principle

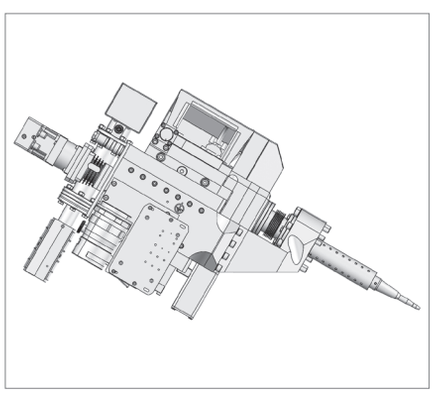
The Gallium focused ion beam (blue in illustration at the top left) removes material from the top few nm of the sample surface. Different sputtered ion species (light and dark grey) are collected and transferred to the ToF-SIMS detector.

Suitable Applications

- Surface sensitive analysis
- Battery research
- Solar cell research
- Polymer research
- Semiconductor research
- Geosciences



Working principle of SIMS



Retractable ToF-SIMS spectrometer for parallel mass detection with excellent spatial resolution.

Retractable ToF-SIMS spectrometer for ZEISS Crossbeam 350 and ZEISS Crossbeam 550
Detection limit: < 4,2 ppm boron in silicon
Lateral resolution: < 35 nm
Mass/charge range: 1-500 Th
Mass resolution: m/Δm > 500 FWTM
Depth resolution: < 20nm AlAs/GaAs multilayer system

microscopy@zeiss.com
www.zeiss.com/crossbeam