
Focused Ion Beam (FIB)



Leibniz Institute
for high
performance
microelectronics

Technical parameters

FIB-SEM system:

NVision 40 (Carl Zeiss Microscopy GmbH)

Primary beams:

SEM (Zeiss Gemini): e^- 1 - 30 kV

FIB (Seiko Zeta): Ga^+ 2 - 30 kV

Lateral resolution: SEM: 1.1 nm @ 20 kV

2.5 nm @ 1 kV

FIB: 4.0 nm @ 0.1 pA

Signals detected:

Secondary electrons

Backscattered electrons

(SE, In lens, EsB, STEM detectors)

Gas injection system (GIS):

C, W, Pt, SiO_2 precursor

EDX system: SDD Bruker Xflash 4010

Elements detected: B – U

Energy resolution: 125 eV

Detection limits: 0.1 – 1 at%



Application areas

- High resolution cross-section images of small sample features
- SEM and STEM imaging
- TEM sample preparation
- „on-chip“ circuit modification (FIB cuts, deposition of C, W, Pt, SiO_2)
- Surface patterning
- Chemical microanalysis by EDX (point analysis, line scan, mapping)

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