Electron beam lithography and SEM

A RAITH e-LINE Plus electron microscope and electron lithography system (EBL) is accessible both for electron microscope imaging and nanolithography purposes. The EBL device enables the writing of high-resolution nanostructures and additionally, it serves the whole institute with standard SEM imaging. The electron source of the device is thermal field emission (TFE) Schottky type. The beam energy is selectable between 100 eV – 30 keV and its spotsize is smaller than 2 nm (20 keV, 30 μm aperture). The device is equipped for imaging with Everhart-Thornley secondary, in-lens secondary and backscattered electron detectors; rotation and tilt module for samples of 10 x 10 mm^2. The available X-ray spectrometer and energy dispersive microanalysis system allows qualitative and quantitative composition analysis.

The device is equipped with a 20 MHz pattern generator and fast electrostatic beam blanker allowing the production of nanopatterns with a minimum grating periodicity: ≤ 40 nm and a minimum feature size: ≤ 8 nm. Sample positioning is ensured by a 100 x 100 mm travel range laser interferometer-controlled stage. For nanofabrication the whole lift-off technological chain is available with a plasma cleaner, spincoater, fume-hood, hotplate, ultrasonic bath and metallization.