

Zeiss Merlin VP compact

Scanning Electron Microscope

Instrument Description:

The Zeiss Merlin VP Compact is a field-emitter scanning electron microscope with a resolution down to 1nm (scanning transmission electron microscopy, STEM). The instrument is equipped with Zeiss in-lens, SE, AsB and STEM detectors as well as a Bruker Quantax X-ray detector. These allow for high-resolution imaging in SEM and STEM mode. Owing to the attached Leica cryo load-lock and a cryo-stage SEM measurements can also be conducted at cryogenic temperatures. The Quantax X-ray detector allows for energy-dispersive X-ray spectroscopy and imaging. The Merlin is equipped with a nitrogen charge-compensator. The electron energies range from 500V to 30kV.

Application Examples:

- biology and microbiology:
 - imaging of bacteria, viruses and bacteriophages
 - investigation of bioleaching and biomineralisation processes
 - imaging of sections of tissue samples
 - imaging of algae, pollen, funghi etc. ...
- geology:
 - elemental composition of rock samples
 - nano-pores
- solid state physics and materials science:
 - investigation of surfaces
 - semiconductor quantum wells and quantum dots
 - nanoparticles and nanowires

Requirements for Samples:

Any type of sample can be measured as long as it is water-free and does not outgas in the base vacuum (10^{-6} mbar range). Conductive samples are desirable. If this is not the case either the samples can be sputter-coated with a thin layer of Au/Pd or Cr or the installed nitrogen charge-compensator can be used.

The sample size must not exceed a diameter of 50mm and a height of 10mm such that they can be mounted on SEM stubs. TEM grids can be measured as well.

Contact:

scientist: Dr. Matthias Schmidt
phone (office): +49 (0) 341 235 1358
phone (lab): +49 (0) 341 235 4678
fax: +49 (0) 341 235 450822
e-mail: matthias.schmidt[at]ufz.de

Picture captions (from top):

- section of a juncus root
- gluconobacter cells
- groove layer of a DVD
- T4 bacteriophages

