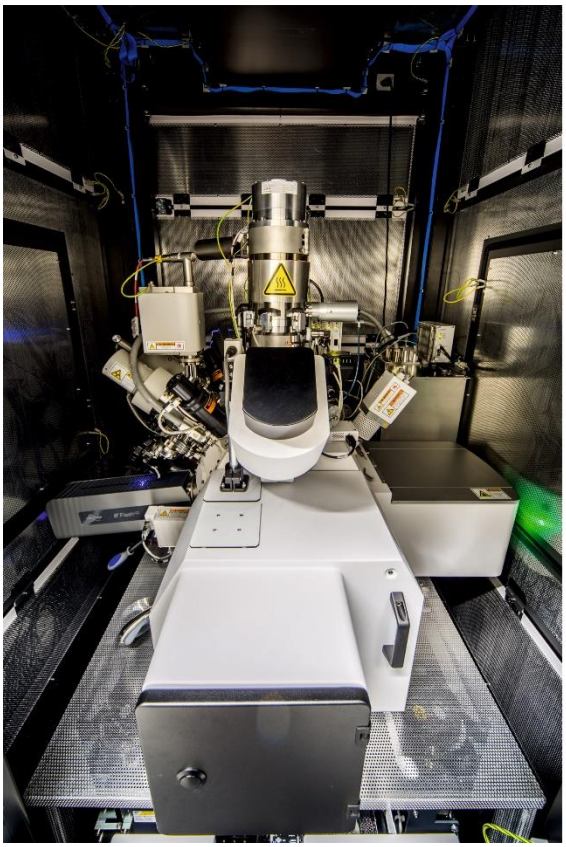

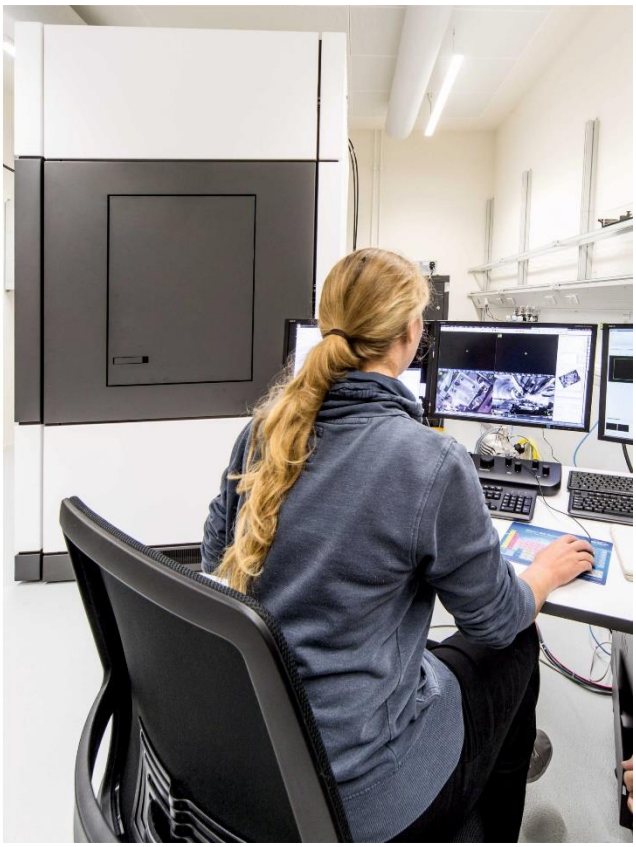

New FIB-SEM system went in operation

A new combined focused-ion-beam(FIB)/scanning-electron-microscope (SEM) system went into operation in April 2017. The instrument is installed in the new MZE (Materials Research Center for Energy Systems) building. The FEI Helios G4 FX belongs to a new generation of FIB-SEM instruments with completely novel imaging capabilities which are not only interesting for bulk samples but also electron-transparent specimens which are traditionally studied in transmission electron microscopes. With a maximum electron energy of 30 keV, knock-on damage of electron-beam-sensitive materials is avoided. Samples consisting of light elements like polymers and samples from life sciences can be imaged with particularly high contrast. In the scanning transmission electron microscopy (STEM) mode a resolution of 0.34 nm is achieved which allows imaging of lattice plane distances in a scanning electron microscope. Transmission electron diffraction patterns can be acquired by an on-axis CCD-camera to analyze the crystal structure and orient specimens in defined orientation. With these new capabilities STEM in a scanning electron microscope approaches the capabilities of STEM in a transmission electron microscope with the advantage that SEM and STEM images can be taken from the same specimen region. Electron-transparent specimens from bulk materials can by prepared by the focused Ga-beam and investigated without being taken out from the system, which is interesting for reactive materials.