A- High resolution Imaging and Nanoanalytics with ZEISS Crossbeam.
B- Correlative workflows open new possibilities for Cryo-Microscopy

Antonio Casares, Carl Zeiss Microscopy, Carl Zeiss Str. 22, 73447 Oberkochen, Germany

A - ZEISS Crossbeam; Imaging and Nanoanalytics: With ZEISS Focused Ion Beam Scanning Electron Microscopes you speed up nanotomography and nanofabrication applications. Crossbeam offers a complete solution for preparing TEM lamellae, 3D EDS and 3D EBSD analysis of your samples as well as precisely targeting, imaging and reconstruction of your sample to get 3D information.
In addition to the mentioned techniques, Zeiss offers an extended Secondary Ion Mass Spectroscopy (SIMS) portfolio, TOF-SIMS and Quadrupol-SIMS, for compositional analysis at all length scales.

With the new femtosecond laser ablation, the ZEISS Crossbeam offer unique capability for rapid micro-mechanical sample preparation.

B - ZEISS Crossbeam; correlative workflows for Cryo-Microscopy: Technical improvements in imaging technologies and correlative workflows open new possibilities for Cryo-Microscopy. Those workflows allow studies of wet samples under high vacuum conditions.

The availability of different imaging modalities under cryogenic conditions leads to a demand of correlative Cryo-Workflows, combining Cryo-Light and Cryo-Electron Microscopy. By applying Zeiss Cryo-Confocal-Airyscan, sensitive and high-resolution imaging of a fluorescence tagged region of interest (ROI) can be localized in in X, Y and Z under cryo-conditions on a given sample carrier. As a next step, the sample is transferred to Cryo-FIB SEM. With the help of our correlative software the fluorescence signal can be used to prepare a TEM lamella at the exact ROI position in 3D. The ZEISS Cryo-FIB SEM demonstrates, that impressive imaging contrast can be obtained from native non-contrasted biological material, such as plunge frozen cells or high-pressure frozen tissue. By milling towards the lamella, the FIB SEM does not just remove layers of frozen biological material, but acquires serial images, exhibiting high imaging contrast from subcellular structures. This way the TEM lamella preparation is not a blindfold approach anymore but becomes a targeted workflow with additional 3D image information from and around the actual lamella.