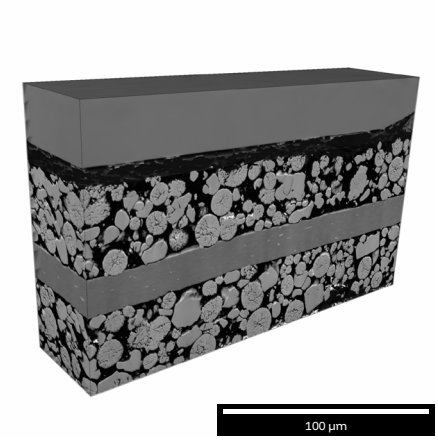
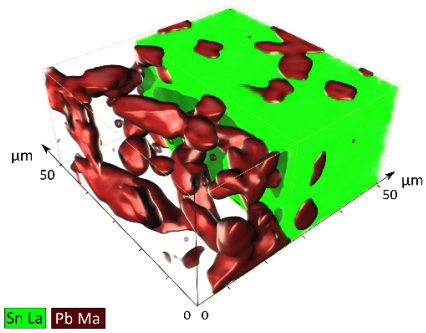
Tescan Essence™ FIB-SEM 3D Multimodal Tomography

Analyze materials of all kinds in 3D by exploring elemental, chemical, phase and crystallographic data simultaneously in the specimen's volume.

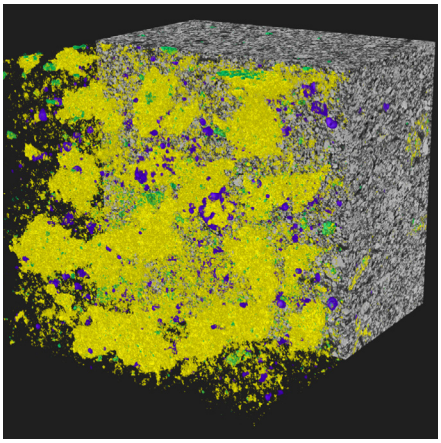
Tescan Essence™ Tomography enables multi-modal characterization of samples of all kinds. Elemental (EDS), crystallographic (EBSD), chemical and isotope (ToF-SIMS) mapping is utilized in serial FIB slicing with SEM (SE/BSE) characterization to deliver the most complete information about an individual sample's features. Acquiring the highest number of datasets from the single spot on the sample's slice enables researchers to better connect feature properties with their chemical, phase and crystallographic state enabling exceptional understanding of the features' role in the context of the materials matrix.



FIB-SEM tomography of a Li-ion battery, 200 x 50 x 100 µm @ 100 nm voxel resolution



3D EDS elemental analysis of a solder microstructure



Chemical data visualization together with SEM (BSE) images for the selected elements and molecule. Analyzed volume 60 x 60 x 60 µm^3

Key benefits:

Get the most comprehensive information about the sample with the multi-modal characterization approach combining SEM imaging with analytical data such as EDS, EBSD, and even ToF-SIMS

Visualize distribution of most elements, including C, O, Li and their isotopes in 3D with Tescan integrated 3D ToF-SIMS

Complement your 3D EDS analysis with quantitative information and improve 3D EDS map resolution using the new Multi-angle FIB-SEM tomography allowing the collection of 3D EDS maps in preferred—perpendicular—plane to the SEM electron beam

Analyze large volumes faster to gather more meaningful information by increasing Analysis throughput with Tescan Rocking Stage and Tescan TRUE-X-Sectioning on Plasma FIB-SEM

Collect high quality 3D EDS/EBSD data reliably without sample displacement utilizing Tescan unique static 3D EDS/EBSD position

Improve SEM image resolution in 3D datasets by moving the sliced volume into the optimum working distance between the serial FIB slicing

Prepare and acquire 3D Multimodal data with ease by using fully Essence™ integrated step by step 3D Tomography wizards which feature automated volume preparation routines for unattended sample processing

Obtain datasets from the optimum sample´s direction, avoid signal shadowing and achieve more precise spatial feature's sizing by slicing the sample in preferred e.g., planar geometry

Get your 3D data sets and final visualization quickly with utilized step-by-step wizards in FIB-SEM Tomography module and Tescan 3D Viewer Software

Acquire large datasets reliably with the support of automatic adjustment procedures that assure system stability

Cater to special and 3D acquisition requirements by tailoring acquisition routines through open access Python scripting