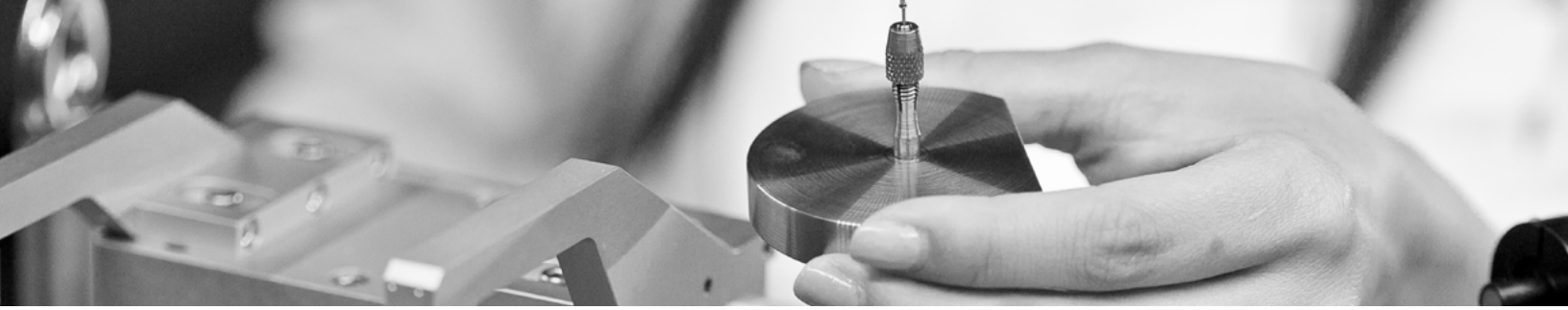
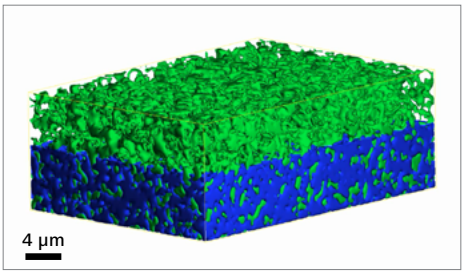


ZEISS Xradia Ultra Family

Your Synchrotron-quality Nanoscale 3D X-ray Microscope



PEFC Catalyst Layer – Porosity and connected pore space; Sample: courtesy of Carnegie Mellon University

Tight carbonate rock – High resolution 3D X-ray microscopy demonstrating pore connectivity; Jianghan Oil Field

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Non-destructive 3D Imaging Down to 50 nm Resolution

Experience unparalleled performance and flexibility with the non-destructive 3D imaging that plays a vital role in today's breakthrough research. The innovative Xradia Ultra architecture, with unique X-ray optics adapted from synchrotron technology, features absorption and phase contrast. Accomplish unrivaled *in situ* and 4D capabilities, otherwise only accessible with destructive methods like cross-sectioning, for studying material evolution over time and extend the limits of X-ray imaging in materials science, life sciences, natural resources, and diverse industrial applications.

ZEISS Xradia 810 Ultra

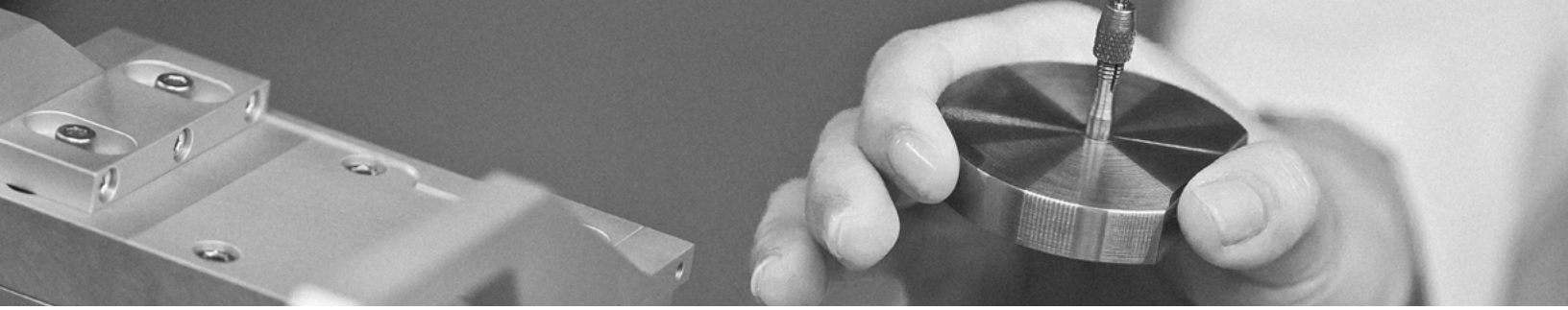
Xradia 810 Ultra increases the throughput of nanoscale, three-dimensional X-ray imaging by up to a factor of 10. This innovative X-ray microscope (XRM) operates at 5.4 keV, delivering optimized contrast and image quality for medium to low Z samples and other materials used throughout science and industry.

ZEISS Xradia 800 Ultra

Xradia 800 Ultra combines a high-flux laboratory X-ray source with highly specialized and proprietary X-ray optics to create a standalone ultra-high resolution X-ray microscope. It bridges the gap between traditional micro CT and existing nanometer imaging modalities such as SEM or TEM.

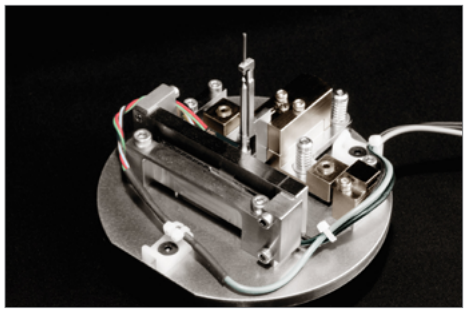
Ultra Load Stage

Xradia Ultra Load Stage uniquely enables *in situ* nanomechanical testing - compression, tension, indentation – with non-destructive 3D imaging. Study the evolution of interior structures in 3D, under load, down to 50 nm resolution. Understand how deformation events and failure relate to local nanoscale features. Complement existing mechanical testing methods to gain insight into behavior across multiple length scales.

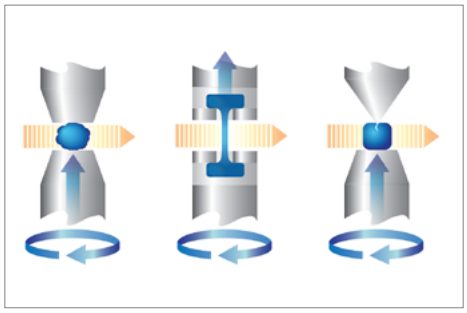


ZEISS Xradia Ultra Family

Your Synchrotron-quality Nanoscale 3D X-ray Microscope



Ultra Load Stage for in situ nanomechanical testing in compression, tension and indentation mode (optional)



Load stage modes: compression, tension, indentation

Imaging	High Resolution Mode (HRES)	Large Field of View Mode (LFOV)
Spatial resolution	50 nm	150 nm
Field of view	16 µm	65 µm
Voxel size	16 nm	64 nm
Absorption contrast	Standard	Standard
Zernike phase contrast	Optional	Optional

X-ray source	ZEISS Xradia 810 Ultra	ZEISS Xradia 800 Ultra
Source type	Rotating anode	Rotating anode
Target material	Chromium	Copper
X-ray photon energy	5.4 keV	8.0 keV

Features:

- Integrated visible light microscope for sample inspection and alignment
- Comprehensive software suite for data acquisition, reconstruction and visualization
- GPU-accelerated tomographic reconstruction
- ORS Visual SI Advanced: advanced 3D data visualization and analysis software package (optional)

Benefits:

- Non-destructive 3D imaging down to 50 nm resolution
- *In situ* and 4D research capabilities: Study microstructural evolution under varying conditions and over time
- Correlative imaging: bridge the gap between micro CT and nanometer resolution, but destructive, serial sectioning techniques such as FIB-SEM or TEM
- Absorption and Zernike phase contrast for a wide variety of materials
- 3D nanoscale imaging under load for mechanical testing: compression, tension and indentation

Applications:

- *Materials Research:* study and design functional materials and obtain realistic 3D microstructure data to improve computational models for bottom-up design of materials.
- *Natural Resources:* non-destructively extend the description of carbonates, tight sand and shale reservoirs down to 50 nm resolution.
- *Life Sciences:* study the properties of soft and hard tissue, or nanoparticle distribution in organic materials.
- *Electronics:* Optimize package development processes through nanoscale visualization

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