

Class-leading resolution at a distance.

ZEISS Xradia 515 Versa 3D X-ray Microscope

The workhorse for your research

ZEISS X-ray microscopes (XRM) are advanced research solutions that have removed major technological hurdles for micro-computed tomography, achieving high contrast and submicron resolution even for relatively large samples. ZEISS Xradia 515 Versa uses a two-stage magnification technique that enables you to achieve resolution at a distance (RaaD). Combined with the stability of the ZEISS Versa platform and deep learning technology, these ground-breaking advances empower a breadth of technical disciplines for a diverse range of sample sizes, geometries and compositions.

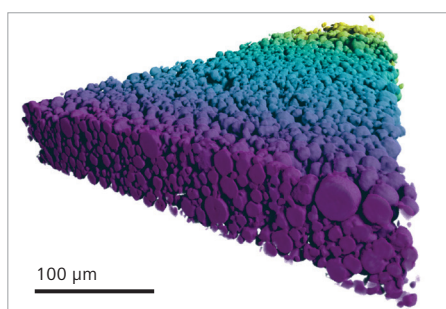
The versatility of the platform enables unique applications like interior tomography, phase contrast, 4D, and high resolution *in situ* imaging. ZEISS 3D X-ray microscopes are built on upgradeable, extendable, and reliable platforms, protecting your capital investment. Additional flexibility is offered by a wide range of reconstruction, visualization, and quantification software.

Materials Research: Characterize materials in 3D, observe failure mechanisms and degradation, investigate properties at multiple length scales, quantify and analyze microstructural evolution.

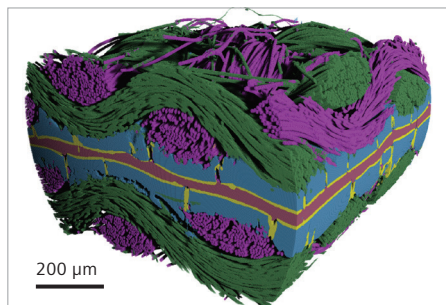
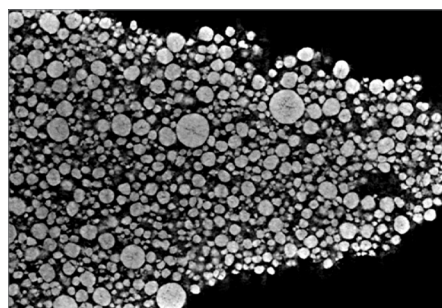
Battery and Energy Storage: Perform failure analysis, quality inspection, and track aging mechanisms.

Electronics and Semiconductor: Image and characterize regions of interest during failure analysis on intact packages before cutting or polishing.

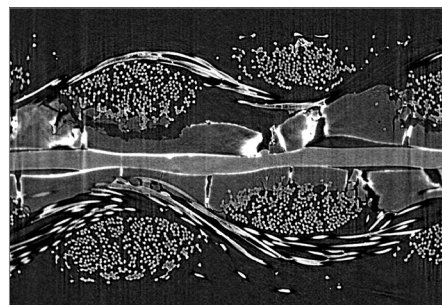
Geoscience: Characterize and quantify pore structures, measure fluid flow, acquire multi-phase particle information and large-volume statistics for oil and gas, mining, planetary geology, and other geo research.



3D rendering (left) and virtual cross section (right) of a section of a lithium ion battery cathode showing the particles that comprise the electrode, as well as internal particle cracking



3D rendering (left) and virtual cross section (right) of a polymer electrolyte fuel cell showing gas diffusion layer fibers (purple/green), microporous layer (blue), catalyst layer (yellow), and electrolyte (orange)



Manufacturing Technology: Analyze internal tomographies of 3D printed parts and perform *in situ* mechanical testing. Expand the field of view (FOV) to image larger samples with optional Flat Panel Extension (FPX).

Life Sciences: Visualize and characterize tissues, cells, and microstructures within entire plants and fixed small animal models with high contrast.



Seeing beyond

Imaging	ZEISS Xradia 730 Versa	ZEISS VersaXRM 615	ZEISS Xradia 515 Versa
Spatial Resolution ^[a]	450 nm	500 nm	500 nm
Resolution Performance ^[b] (ZEISS Resolution Target at 160 kV/LE6, equivalent to 1.3 mm Al and 40x-P objective)	500 nm		
Resolution at a Distance (RaaD) ^[c] (50 mm working distance)		1.0 µm	1.0 µm
Resolution Performance at a Distance (ZEISS Resolution Target at 140 kV/LE4, equivalent to 0.6 mm Al)	700 nm @ 50 mm 750 nm @ 100 mm		
Minimum Achievable Voxel ^[d] (Voxel size at sample at maximum magnification)	40 nm	40 nm	40 nm
X-ray Source			
Architecture	Sealed transmission, fast activation	Sealed transmission, fast activation	Sealed transmission, fast activation
Voltage Range	30 – 160 kV	30 – 160 kV	30 – 160 kV
Maximum Output	25 W	25 W	10 W
Detector System			
ZEISS X-ray microscopes feature an innovative detector turret with multiple objectives at different magnifications. Each objective features optimized scintillators that deliver the highest absorption contrast details.			
Standard Objectives	0.4x, 4x, 20x	0.4x, 4x, 20x	0.4x, 4x, 20x
Optional Objectives	40x-P, Flat Panel Extension (FPX)	40x, Flat Panel Extension (FPX)	40x, Flat Panel Extension (FPX)
Stages			
Sample stage load capacity, 25 kg; travel (x-50 mm, y-100mm, z-50 mm)			
Features			
Control System	ZEN navx	ZEN navx	Scout-and-Scan
Scout-and-Zoom	Volume Scout in ZEN navx	Volume Scout in ZEN navx	Manual or with 3D World ZEISS edition
Flat Panel Extension (FPX)	Optional FPX: FAST or STEP mode	Optional FPX: FAST or STEP mode	Optional FPX: STEP Mode only
Wide Field Mode	4x		
Vertical Stitch	■	■	■
XRM Python API	■	■	■
ZEISS SmartShield	SmartShield, SmartShield Lite	SmartShield, SmartShield Lite	SmartShield
Source Filters	Automated Filter Changer (AFC) 24-filter capacity, 12 standard filters included	Single manual filter holder, 12 standard filters included	
High Aspect Ratio Tomography (HART)	■		
Dual Scan Contrast Visualizer (DSCoVer)	■		
ZEISS LabDCT for Diffraction Contrast Tomography	Optional		
GPU CUDA-based Reconstruction	Dual	Dual	Dual
Secondary High Performance Workstation	■	■	Optional 1 year or perpetual license
ZEISS Autoloader	Optional	Optional	Optional
ZEISS Versa <i>In Situ</i> Interface Kit	Optional	Optional	Optional
ZEISS DeepRecon Pro	Included with 2-year license	Included with 2-year license	Optional
ZEISS DeepScout	Optional	Optional	Optional
ZEISS PhaseEvolve	Optional	Optional	Optional
ZEISS MARS	Optional	Optional	Optional
ZEISS OptiRecon	Optional	Optional	Optional
ZEN AI Toolkit with Intellesis	Optional	Optional	Optional
3D World ZEISS edition from Dragonfly	Optional	Optional	Optional

[a] Spatial resolution measured with ZEISS XRM 2D resolution target, normal field mode, optional 40x-P (730) or 40x (615, 515).

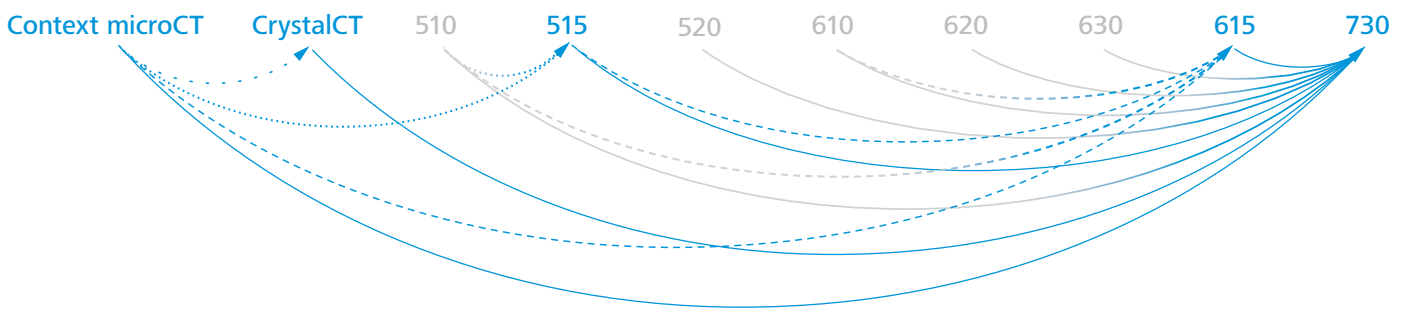
[b] Resolution performance measured with ZEISS XRM 2D resolution target, normal field mode, optional 40x-P objective.

[c] RaaD working distance is defined as clearance around axis of rotation (sample radius). Resolution is measured with ZEISS 2D resolution target.

[d] Voxel is a geometric term that contributes to but does not determine resolution and is provided here only for comparison. ZEISS specifies resolution via spatial resolution for Versa XRM, the true overall measurement of instrument resolution.

Protect Your Investment

ZEISS X-ray microscopes are designed to be upgradeable and extendable to future innovations and developments so that your initial investment is protected. This ensures your microscope capabilities evolve with the advancements in leading technology, a key differentiator in the 3D X-ray imaging industry.



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