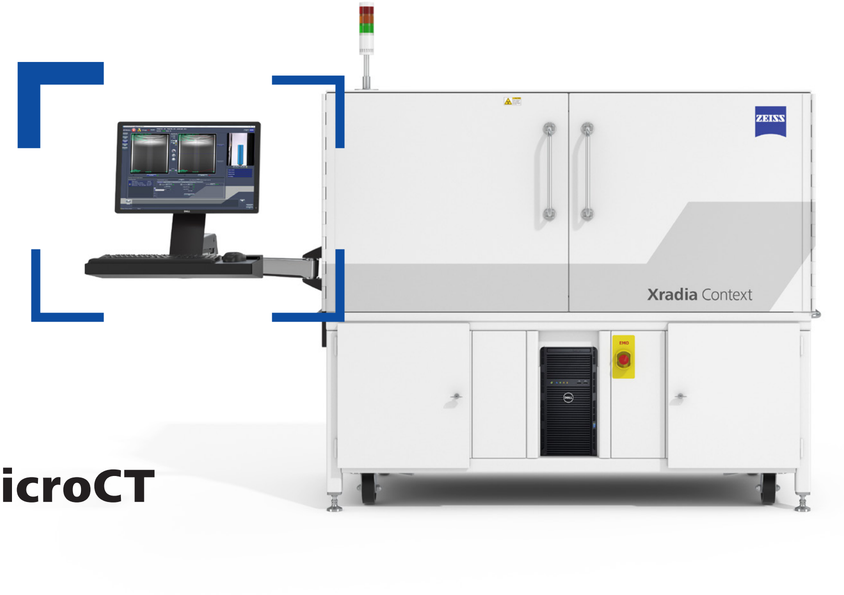
Advance your R&D with high resolution, non-destructive 3D imaging



ZEISS Xradia Context microCT

High Resolution in 3D

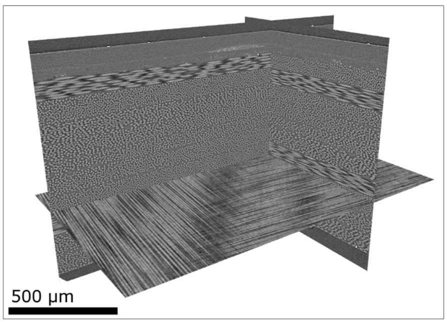
Modern materials development increasingly relies on a three-dimensional design approach. Complex devices like batteries and electronics packages, structural materials including fiber composites and additive manufactured components, and biomaterials such as tissue scaffolds or implants all have intricate microscopic 3D structure that directly impacts their performance. Accordingly, ZEISS Xradia Context microCT delivers high contrast micron-scale imaging in three dimensions so you can appropriately characterize your samples and accelerate the materials R&D process. Reveal features, defects, structures, and phases down to the single micron scale, with consistent high performance across the full range of research applications from low-Z or delicate porous samples to dense high-Z materials.

Foundation for 4D and Correlative Imaging

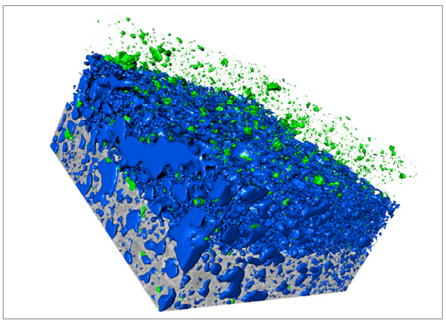
Observing 3D structure provides unique and valuable insight into materials performance. Furthermore, by leveraging the nondestructive nature of X-ray imaging, researchers gain exciting opportunities to observe not only the static structure, but its change or evolution over time in response to applied stimulus or environmental conditions. Repeated 3D imaging produces so-called '4D' data sets, revealing how internal micron-scale structures relate to very localized dynamic processes. With ZEISS Xradia Context, create 4D datasets whether by *ex situ* experiments or by utilizing the optional *in situ* interface kit and mechanical/thermal load stages. After X-ray imaging, explore further with subsequent characterization using other techniques such as correlative microscopy approaches to LM, SEM, or FIB-SEM using ZEISS Atlas 5 and ZEN Connect software.

Optimized Imaging for Quantitative R&D

In materials research, experimental results are only as useful as the ability to describe, measure, and quantify them. For image-based characterization, this typically occurs via image segmentation followed by a variety of measurement and quantification metrics. Of these steps, segmentation presents an enduring and critical challenge, as the success of image segmentation and all downstream steps hinge upon the quality and contrast of the input image. With X-ray microCT, this means instrument stability and image quality are of paramount importance. ZEISS Xradia Context is built upon the renowned ZEISS Xradia instrument platform and employs a sensitive high-contrast flat panel detector to give your characterization workflow the best possible starting point: excellent high contrast 3D image data.



Carbon fiber-reinforced polymer composite sample imaged to analyze fiber distribution as well as defects and voids.



3D segmentation of pores and high-Z particles in a composite ceramic

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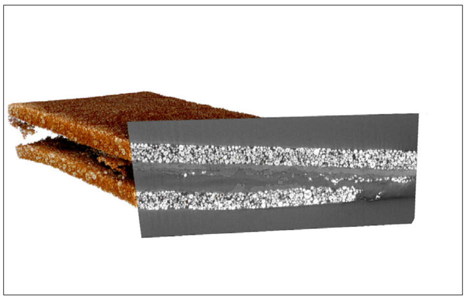
Seeing beyond

ZEISS Xradia Context microCT

High Resolution 3D Imaging for Demanding Materials R&D Applications

Applications

- Characterize porosity, cracks, or other details in structural and raw materials including additive manufactured parts, composites, ceramics, polymers, protective coatings, concrete, foams, or rocks.
- Perform 4D evolutionary studies, through *ex situ* treatment or *in situ* sample manipulation, to understand phenomena like corrosion, material deformation, fluid flow, or electrochemical cycling.
- Image large sample volumes like intact batteries or electronics, large rock cores, mechanical components, or biological specimens



Cathode layers of a lithium ion battery

Own Your Investigation

- Proven ZEISS image quality and resolution
- Scout and Scan intuitive software control
- 6MP high-speed large-array detector
- 30-160 kV spot size stable X-ray source
- Optimized contrast high purity filter set
- Smart positioning sample navigation stage
- 25 kg sample capacity
- Long-object vertical stitching
- MultiGPU fast reconstruction
- Temperature-controlled enclosure

Upgrade and Grow Your Lab

- Autoloader: 14-station sample handler
- *In situ* interface and load / temperature cells
- OptiRecon Iterative reconstruction module for up to 4X throughput or improved image quality
- DeepRecon Pro Artificial intelligence-based reconstruction module for up to 10X throughput or image quality enhancement

System Extendibility

In the future, if or when your 3D imaging needs grow even further, ZEISS Xradia Context can be converted in the field to a ZEISS Xradia Versa X-ray Microscope, offering additional functionality related to flexibility, imaging resolution, and advanced modalities.

Specifications	
Spatial Resolution [a]	0.95 µm
Minimum Achievable Voxel [b] (Voxel size at sample at maximum magnification)	0.5 µm
Achievable Voxel at Working Distance [b,c]	0.5 µm / 0.5 mm 0.8 µm / 2.5 mm 2.5 µm / 12.5 mm 4.0 µm / 25 mm 12.1 µm / 100 mm
Tube Voltage / Power Range	Spot stabilized 30-160 kV / 10 W
High Speed, Large Array CMOS Flat Panel	3072 x 1944 pixels
Single Field of View (diameter / height)	140 mm / 93 mm
Maximum Field of View [d] (diameter / height)	140 mm / 165 mm

[a] Spatial resolution measured with ZEISS Xradia 2D resolution target.

[b] 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, the true overall measurement of instrument resolution.

[c] Working distance defined as clearance around axis of rotation. This value can be interpreted as the radius of the sample.

[d] Maximum Field of View uses the Vertical Stitching software feature to extend the total reconstructed volume.

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