

# nanoXCT-100

## Ultra-High-Resolution 3D X-ray Imaging System

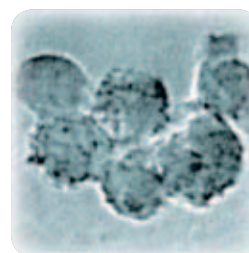
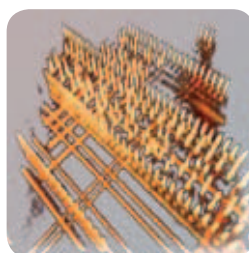
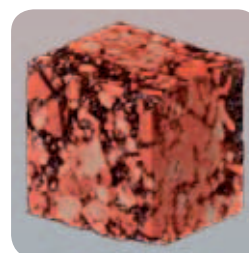
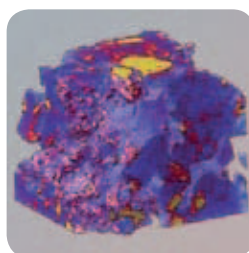


### Spatial resolution to 50 nm Laboratory X-ray source



### Key Benefits

- Non-destructive 3D X-ray imaging
- Ultra-high resolution to 50 nm
- Switchable field-of-view ranging from 15 to 60  $\mu\text{m}$
- X-POSE technology employing Zernike phase contrast imaging



### Overview

Xradia's revolutionary nanoXCT-100 combines a high-flux laboratory X-ray source with proprietary X-ray optics into a stand alone ultra-high resolution CT scanner. The non-destructive imaging with X-rays provides detailed 3D volumetric data of internal structures without the need for cutting or sectioning at the region of interest. The nanoXCT-100 helps bridge the gap between existing high resolution imaging modalities such as SEM, TEM and AFM, to optical microscopy and MicroXCT.

### Application Examples

- Porous media: input data for porespace microstructure and flow modeling
- Composite materials: characterization of features such as porosity, cracks, and phase distribution
- Semiconductor and MEMS: defect investigation and failure analysis of interconnects
- Wafer-level packaging: through-silicon via (TSV) defect characterization

With a resolution as fine as 50 nm, the nanoXCT-100 provides insight into microscopic structures and processes previously not accessible with conventional lab based X-ray technology. Operating with 8 keV X-rays, the nanoXCT-100 enables observation of structures and materials in their natural state.

Xradia's integrated X-POSE technology employing Zernike phase contrast imaging enhances the visibility of grain boundaries and material interfaces when absorption contrast is low. The nanoXCT-100 delivers reliable internal 3D information otherwise only accessible by cross-sectioning or other destructive methods.

Technical specifications System		
Spatial Resolution	Field of View	Radiation Safety
150 nm	60 $\mu\text{m}$	<1 $\mu\text{S/hr}$
50 nm	15 $\mu\text{m}$	<1 $\mu\text{S/hr}$

Resolution as measured on the Xradia X50-30-7 resolution test pattern.

Specification Components				
Sample Stage				
	X-axis	Y-axis	Z-axis	Rotation
Travel	15 mm	10 mm	15 mm	$\pm 180^\circ$
Load Capacity	3 kg			

Source	
Source Type	Laboratory
Max Voltage	40 kV
Min Voltage	20 kV
Max Power	1.2 kW
X-ray Photon Energy	8 keV