X-ray Solutions

BRINGING THE SYNCHROTRON TO YOUR LAB TO ACCELERATE YOUR RESEARCH

Quantum Design

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SIGRAY

Patented Innovations

What's the difference between a synchrotron system and a laboratory system? The x-ray illumination.

X-ray Source

Standard x-ray sources use a bulk metal anode which produce x-rays when bombarded with an electron beam. This sets an upper brightness limit related to the power at which the anode melts. Sigray has developed a patented[1] x-ray source with a microstructured anode that offers substantial advantages over a conventional x-ray source anode. The source comprises metallic microstructures in close thermal contact with a diamond substrate, providing brightness equivalent to the brightest, state-of-the-art rotating anodes and with the unique flexibility of multiple x-ray targets, with each target providing a different x-ray spectrum.

X-ray Optics

Each of the multiple x-ray targets in Sigray's high brightness x-ray source are coupled to an x-ray optic that maximizes the brightness of the spectrum provided by the target. These double paraboloidal x-ray optics require advanced fabrication techniques only achieved by Sigray. The inherent advantages of Sigray's optics have led to its rapid adoption by leading synchrotrons worldwide.

Sigray's portfolio of x-ray systems employ a combination of its patented x-ray source and optics described above. Customized x-ray source and optics may also be purchased through Sigray, including: multi-target high brightness microfocus x-ray sources, x-ray optics (collimating or focusing), and microstructured x-ray sources designed for Talbot-Lau imaging.

[1] US Patents 9/543,109. US 10/466,185. US 10,658,145. US 10,991,538. EP 3168856.

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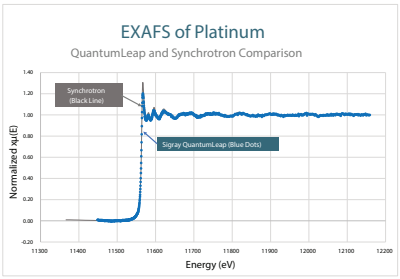
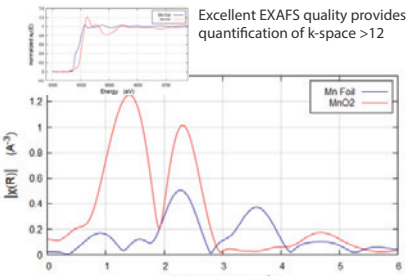
QuantumLeap XAS

CHEMICAL STATE INFORMATION

First laboratory based X-ray Absorption Spectroscopy (XAS) system with synchrotron-like capabilities based on patented acquisition method.

For: energy (battery), nanoparticle chemistry, catalysts, in situ





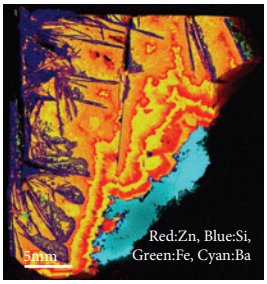
Excellent EXAFS quality provides quantification of k-space >12

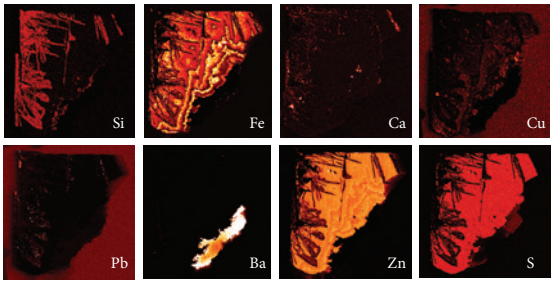
AttoMap XFM

COMPOSITIONAL MICROSCOPY

X-ray fluorescence microscope that images the concentration of major elements to ultra-trace (sub-ppm) elements simultaneously at microns-scale resolution.

For: metallomics, mineralogy, thin film/dopants (semiconductor), materials



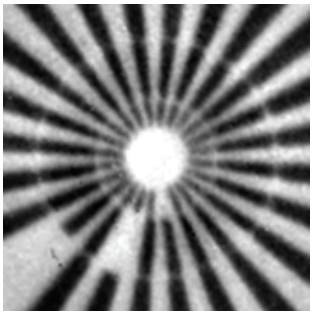


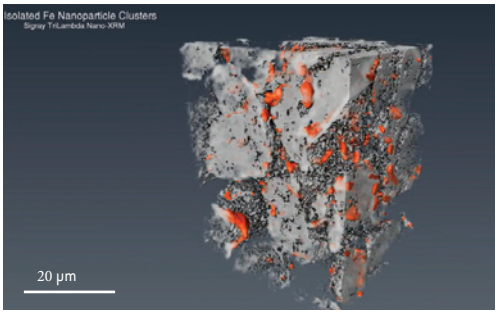
TriLambda XRM

3D NANO X-RAY MICROSCOPY

Highest resolution 3D x-ray microscope reaching down to 30-40 nm resolution. Multiple x-ray energies, each optimize for different applications: 2.7 keV (bio/polymers), 5.4 keV (geo), 6.4 keV (transition metals), and 8 keV (heavy metals)

For: cellular organelles, polymer blends, pores (rocks & pharmaceuticals)





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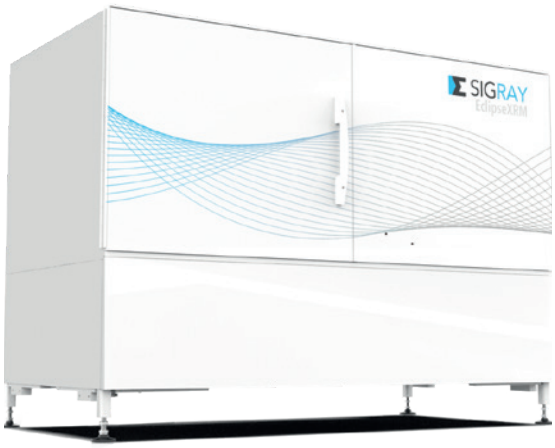
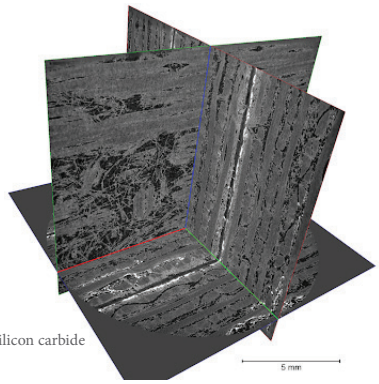


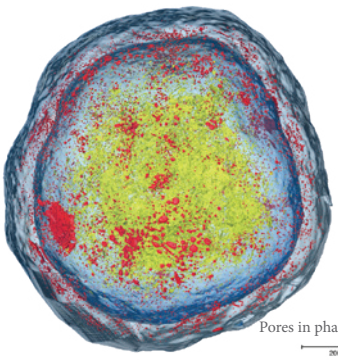
EclipseXRM

3D MICRO X-RAY MICROSCOPY

Highest performing 3D XRM on the market, achieiving 0.3µm spatial resolution. Designed for central laboratories, this versatile 3D XRM is equipped with dual sources and multiple detectors, enabling optimizing of the widest range of sample types, sizes, and materials in bio, geo, mat sci, and semi.



Silicon carbide

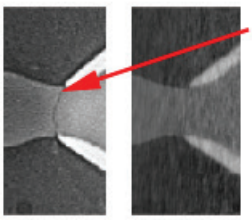


Pores in pharmaceutical

Apex XCT

3D X-RAY CT SYSTEM FOR FLAT SAMPLES

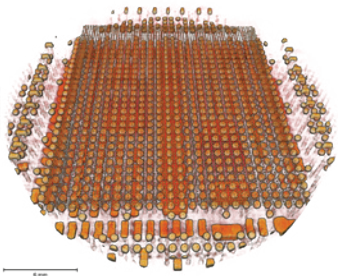
Designed for optimized performance on extended flat samples such as semiconductor packages, wafers, boards, battery pouch cells, fiber reinforced boards, and more. Apex provides >10X the throughput of leading 3D XRMs on such samples, enabling 3D 0.5 µm resolution (0.1 µm voxel) in minutes.



Sigray Apex

Other

Left: Crack clearly visualized in a large package with Apex XCT. Even leading XRM could not resolve.



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