Synchrotron beamline capabilities for x-ray microanalysis (XAS, µXRF, and Nano-XRM) in the laboratory

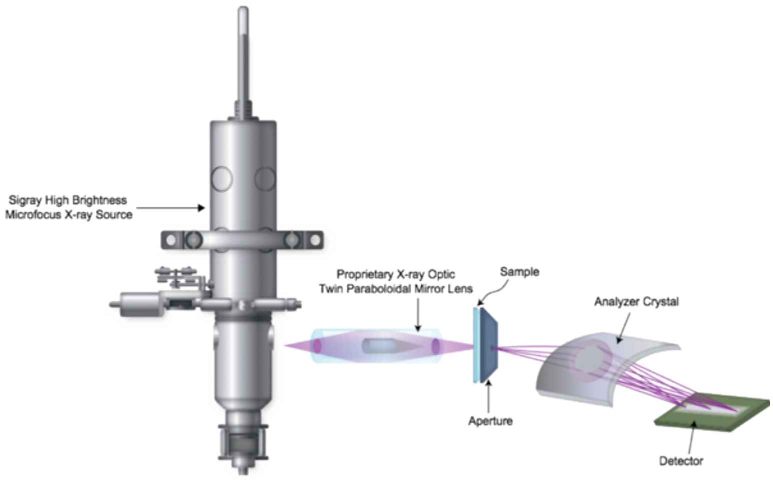
Summary

We have developed a suite of laboratory x-ray instrumentation, including x-ray absorption spectroscopy (XAS), nano-scale X-ray microscopy (nano-XRM), and micro x-ray fluorescence spectroscopy (micro-XRF) with synchrotron-like capabilities.

- XAS: Identify chemical state, coordination number
- XRM: Visualize 3D microstructure and 4D microstructure evolution
- XRF: Identify chemical compositions with spatial localization (correlative radiography)

Chemical state analysis: QuantumLeap XAS

Sigray QuantumLeap is a commercially-available laboratory x-ray absorption spectrometer. It pairs a cutting-edge multi-energy x-ray source with state-of-the-art capillary optics and switchable analyzer crystals for high energy resolution and fast acquisition times. QuantumLeap provides access to XANES and EXAFS data without the need for a synchrotron.



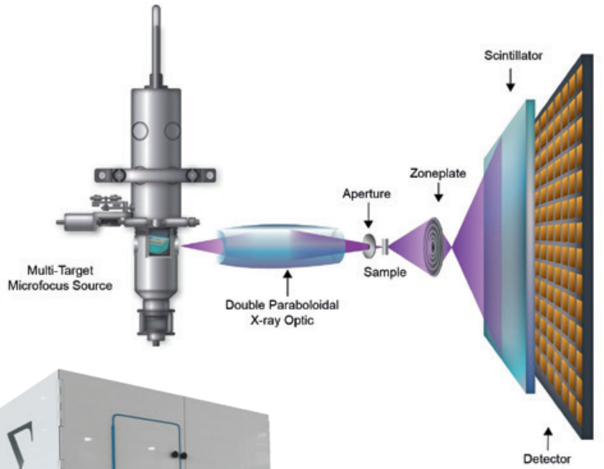
Key application areas:

- Batteries & Fuel cells
- High-Kdielectrics
- Catalysts

QuantumLeap XAS

3D Microstructure visualization: TriLambda Nano-XRM

Sigray TriLambda is a commercially-available laboratory nano-scale x-ray microscope. It provides easy access to 3D-4D microstructure with resolution down to 40 nm.



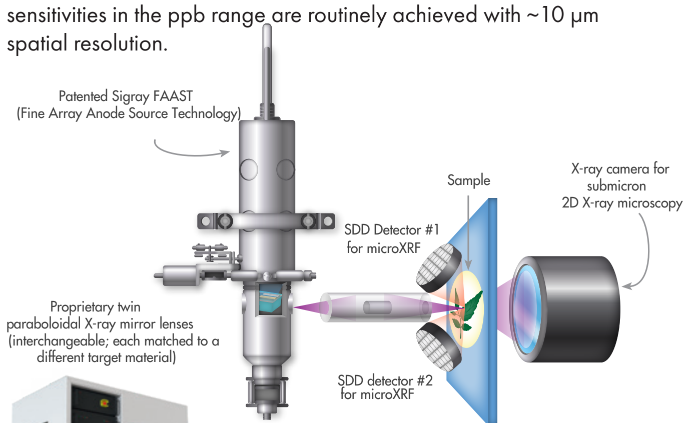
Key application areas:

- Particle size & shape
- Phase segregation
- Porosity analysis
- Semiconductor R&D
- Polymers & soft materials

TriLambda Nano-XRM

Elemental identification: Attomap µXRF

Sigray Attomap µXRF is a commercially-available laboratory x-ray fluorescence spectrometer. By combining a high-brightness microfocus x-ray source with proprietary x-ray optics, elemental sensitivities in the ppb range are routinely achieved with ~10 µm spatial resolution.



Key application areas:

- Metallomics
- Mineralogy
- Contaminants
- Correlative microscopy
- Thin films

Attomap Micro-XRF

Quantum Design EUROPE

Quantum Design GmbH
Im Tiefen See 58
D-64293 Darmstadt

Dr. Andreas Bergner: +49 6151 8806-12
bergner@qd-europe.com
Find your local contact at: www.qd-europe.com

SIGRAY