

EXCALIBUR

Experimental X-ray CALIBration UseR Facility



“SYNCHROTRON IN A BOX”

EXCALIBUR is a benchtop X-ray metrology system that delivers synchrotron-grade measurement capability in a compact laboratory setup. Combined with automation, its modular and configurable design gives it a wide range of capabilities on-demand, making it an invaluable tool for applications readily requiring high-precision measurements.

From x-ray Bragg crystal calibration to foil thickness mapping and areal density quantification, this system provides data that reduces diagnostic uncertainties and experimental inferences. The platform already supports characterization of laser targets and diagnostic components for fusion research, but EXCALIBUR benefits span applications in semiconductors, sensors, academic research and space technologies.

KEY SPECIFICATIONS

Source

- Mo, W, Cu, Cr (Windowless)
- Cu, Ti, Pt (Windowed)
- 30 kV up to 10 mA

Detector

- Silicon Drift Detector (SDD) (1 – 30keV)
- X-Ray CCD (30 eV – 10 keV)
- Photon Counting Camera (5.4 – 22 keV)

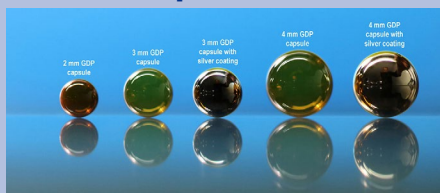
Automation & Control

- Motorized Stage (200 mm travel)
- Motorized Slit (few μm to 8 mm)
- Goniometer Control (0-15°)

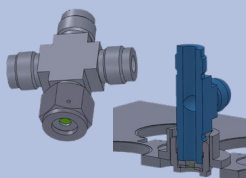


SAMPLE COMPATIBILITY

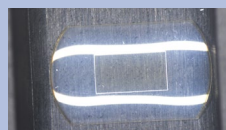
Spheres



Gases



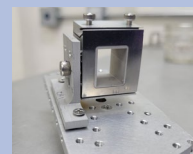
Flats



Crystals



Reflective



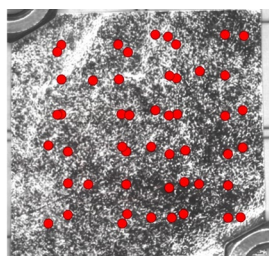
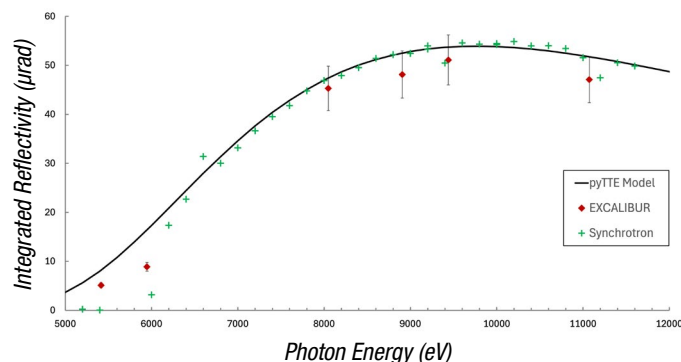
Transmission

CAPABILITIES AND SERVICES

- Non-destructive Areal Density Measurements
- Crystal Calibration
- Gas Cell Measurements
- Film and Coating Composition Analysis
- Detector Cross-Calibration

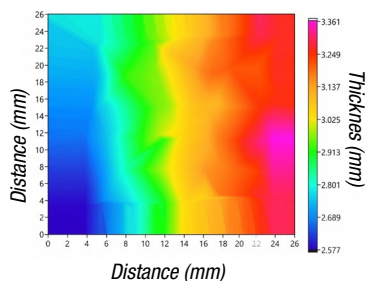
Bragg Crystal Performance

Example: Cylindrically-bent Quartz in Laue geometry



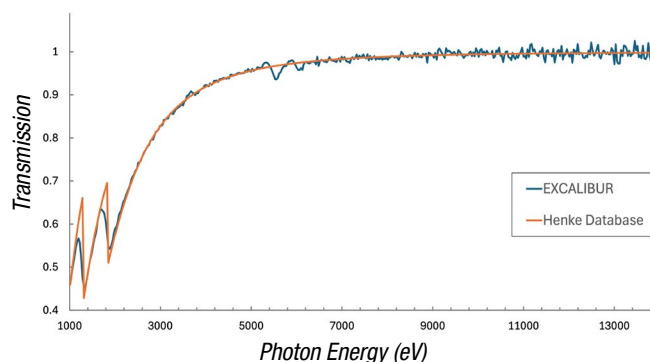
Measurement points on a foil

Thickness Map



Composition and Areal Density

Example: Measured determination Mg - 0.49 μm , SiO₂ - 0.86 μm



For inquiries or more information, contact: Ruben.Santana@ga.com