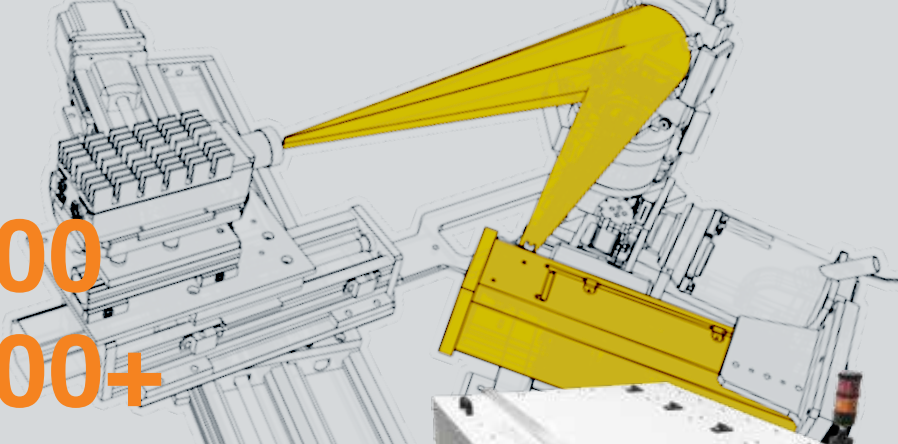


easyXAFS 600

easyXAFS 600+

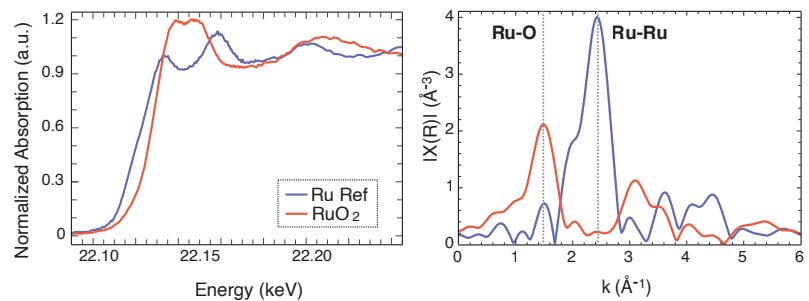


Pushing the Bounds of Laboratory XAFS

easyXAFS® has established laboratory X-ray Absorption Fine Structure (XAFS) spectroscopy as a key research tool across the scientific community. Our newest family of instruments, the easyXAFS600, takes the next step in delivering synchrotron-quality spectra performance for academic and industrial use cases. From 4.5-25+ keV, the easyXAFS600 spectrometers provide reliable element-specific sensitivity across the periodic table to explore chemical phenomena for next generation technologies.

High Performance XAFS to 25+ keV

The easyXAFS600 spectrometers offer exceptional XANES and EXAFS capabilities with direct insights into oxidation state, chemical environment, and local structure. Expanded high energy resolution performance enables reliable characterization of real-world 4d transition metal systems used in batteries, catalysts, and more. Example high performance Ru metal versus RuO₂ spectra, shown to the right, highlight the ability to directly probe oxidation state and the Ru coordination environment.

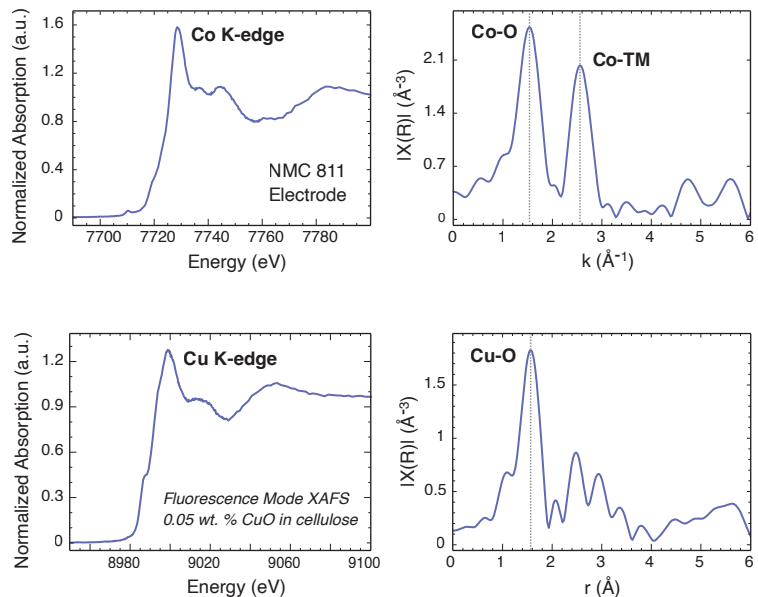


Fluorescence mode Operation

The high flux of the easyXAFS600 spectrometers enhances fluorescence mode XAFS capabilities. Routine measurements are feasible on <100nm thin films and low transition metal loading, e.g. <0.5 wt. % concentration.

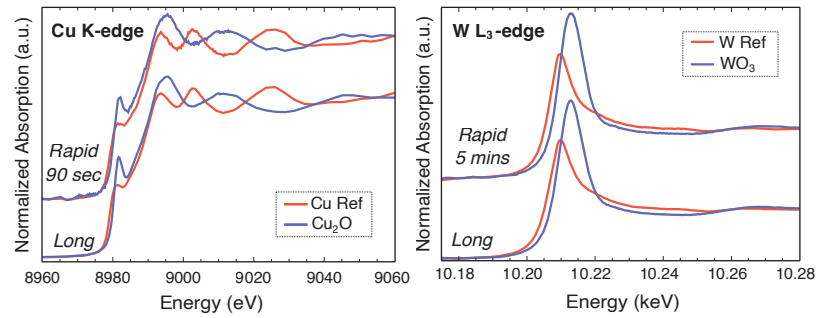
For battery cathodes, fluorescence mode enables reliable characterization of critical elements within the active material. As shown to the top right, high quality Co K-edge spectra for an NMC811 electrode provides sensitivity to the Co³⁺ environment and corresponding local structure.

For catalysts, easyXAFS spectrometers offer direct sensitivity to the active sites. High quality spectra are even achievable down to <0.1 wt. % as highlighted to the bottom right with Cu K-edge of dilute 0.05 wt.% CuO.



Rapid XAFS: 3d and 5d transition metals

Improved flux within the optimal energy range allows for real-time monitoring of oxidation state and chemical environment. Rapid, high quality Cu K-edge/W L3-edge XANES is achieved in <5mins, as demonstrated in the results to the right. The easyXAFS600 spectrometer is well-suited for in-situ characterization from battery cycling to heterogeneous catalysis and more.



Specifications

INSTRUMENT SPECIFICATIONS

		easyXAFS600+	easyXAFS600
Energy Range*		standard operations from 4.5-15 keV extended operations up to 25+ keV	
Reproducibility		<50 meV energy scale drift with no monochromator realignment	
Software		Python-based GUI for calibration, regular operations, scripted scans, easy integration with external equipment, and data processing.	
Crystal Analyzers		Spherically-bent Si or Ge analyzers with 10-cm diameter and 50-cm radius of curvature	
Detector		Large-area SDD with 150-300 eV resolution for rejection of background and harmonics in order to boost signal to noise	
X-ray Source	XAFS	2 kW liquid-cooled (depending on tube anode)	
	XES	100-W air cooled	NONE
Flux	XAFS †	~10 keV: 2,500,000 photons/s 16 keV: 300,000 photons/s	20 keV: 50,000 photons/s
	XES	Core-hole generation rate of ~10 ¹² /s for concentrated samples.	NONE
Resolving Power (E/ΔE)		typ. >5000, (i.e. 1.4 eV @ 7 keV) for Bragg ≥ 76 deg	

*Depends on selection of crystal analyzers

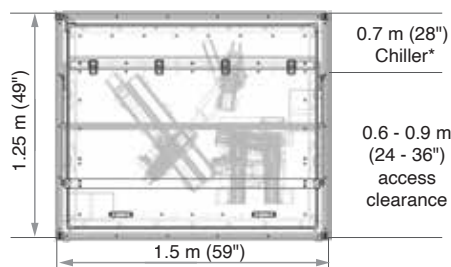
† Flux rates indicate real flux (photons going through the sample during measurement). This is not the same as what can be measured with the SDD without saturating the detector. The maximum achievable flux measurable by the detector in a given measurement depends on the energy/element being measured, the crystal analyzer harmonics, the x-ray tube anode, and the sample thickness.

UTILITY REQUIREMENTS

Helium	Helium gas for flight path
Spectrometer drive and electronics	110-220 V/50-60 Hz, 1000-W
Water chiller	220-240VAC 60Hz or 50 Hz, 2900-W water chiller
HV Power Supply	220VAC @ 29.5A, single phase
Control Computer	110-220 V/50-60 Hz, 300-W

Dimensions

TOP VIEW



User access through gas spring assisted lifting door.

SIDE VIEW

