

# easyXAFS300+



- Rapid transmission mode XAFS
- Proven research-quality performance
- High throughput for sample characterization or product testing
- Suitable for in situ R&D in electrical energy storage, catalysis, etc.
- Virtual beamline appearance with fully supported, easy to use software
- Run multiple samples or sample conditions with scripted operations
- Easy integration with ancillary equipment for control of sample conditions.
- Extremely low maintenance

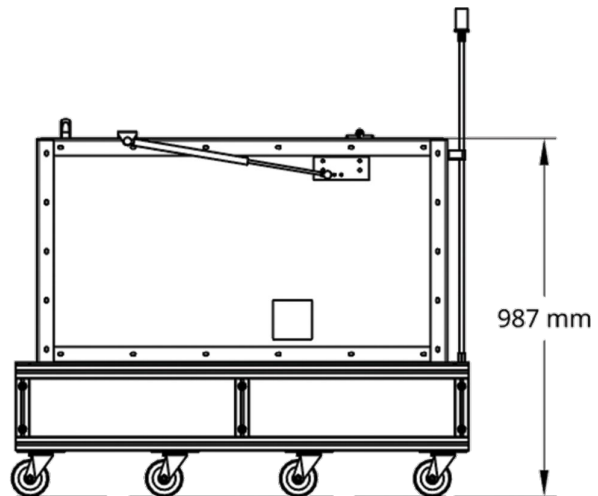
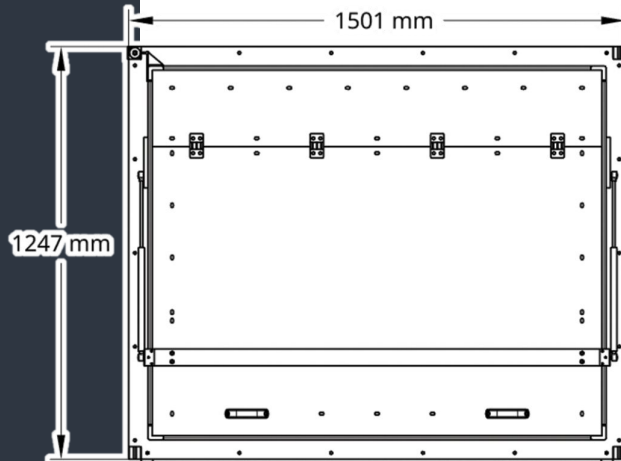
## PRODUCT SPECIFICATIONS

<b>Energy Range</b>	Standard operations from 5-12 keV*. Some utility up to 19 keV. *Depends on selection of crystal analyzers	<b>Reproducibility</b>	<50 meV energy scale drift with no monochromator realignment
<b>Angular Range</b>	55-85 degrees Bragg angle	<b>Analyzer Crystals</b>	Spherically-bent Si or Ge analyzers with 10-cm diameter and 50-cm radius of curvature
<b>Resolving Power (E/ΔE)</b>	typ. >5000, (i.e. 1.4 eV @ 7 keV) for Bragg ≥ 76 deg	<b>Analyzer Alignment</b>	Pre-aligned with “clock angle protocol” (pat. pend.) for rapid (~5 min) and reproducible swapping
<b>Flux (XAFS)</b>	Typical monochromatic flux of 300,000 - 500,000 photons/s when working near backscatter for 7-9 keV	<b>Detector</b>	Large-area SDD with 150-300 eV resolution for rejection of background and harmonics
<b>Flux (XES)</b>	Core-hole generation rate of ~10 <sup>12</sup> /s for concentrated samples.	<b>Sample Turret</b>	7-position, motorized sample wheel available for programmable XAFS studies
<b>X-Ray Source (XAFS)</b>	1200-W XRD style, water-cooled tube with W/Mo or Ag anode. 40 kV maximum accelerating potential. 30 mA maximum filament current.	<b>Software</b>	LabVIEW-based GUI for calibration, regular operations, scripted scans and easy integration with external equipment. Python-based GUI for data processing for final spectra.
<b>X-Ray Source (XES)</b>	100-W XRF-style, air-cooled tube with W/Pd anode. 35 kV maximum accelerating potential. 4 mA maximum filament current.	<b>Utility Requirements</b>	<ul style="list-style-type: none"> <li>• Helium gas for flight path</li> <li>• 110-220 V/50-60 Hz, 1000-W for spectrometer drive and electronics</li> <li>• 110-120 V/60 Hz OR 220-240 V/50 Hz, 1200-W water chiller</li> <li>• 180-264 V/47-63 Hz, 1200-W for HV power supply</li> <li>• 110-220 V/50-60 Hz, 300-W for control computer</li> </ul>



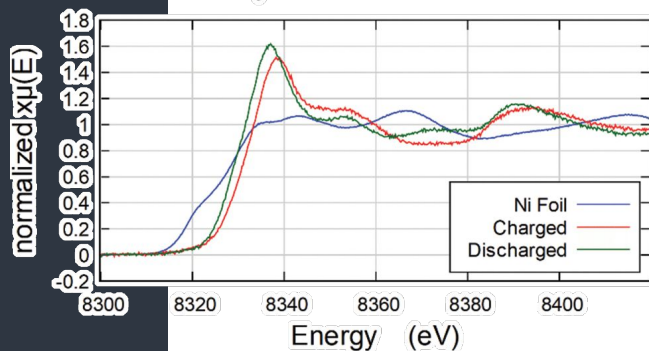
# easyXAFS300+

## Dimensions

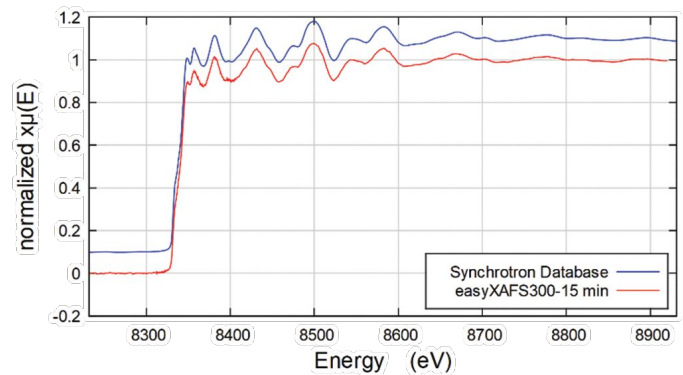


## Example Data

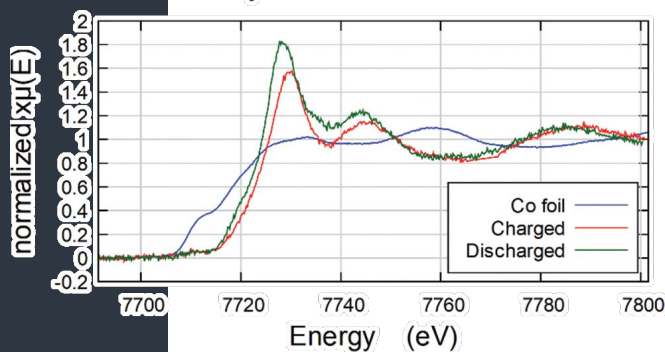
Battery Pouch Cell: Ni XANES



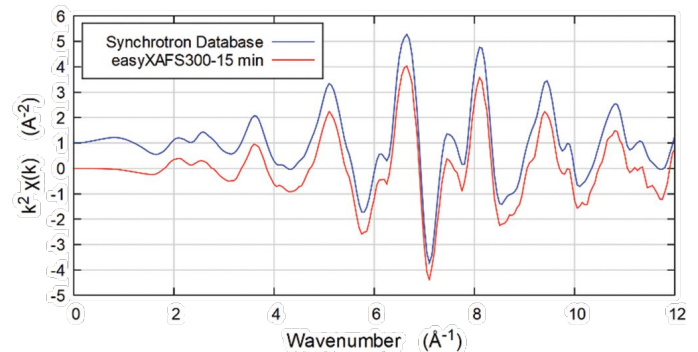
Ni EXAFS



Battery Pouch Cell: Co XANES

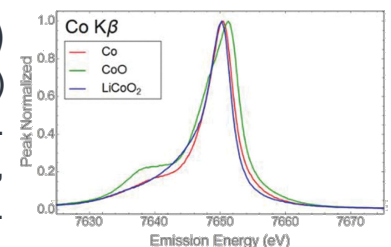


Ni EXAFS



## XES (high-resolution XRF)

Research-quality x-ray emission spectroscopy (XES) measurements in synchrotron-comparable integration times. Laboratory XES may facilitate insights into oxidation state, spin state, and ligand identity, even for very dilute samples.





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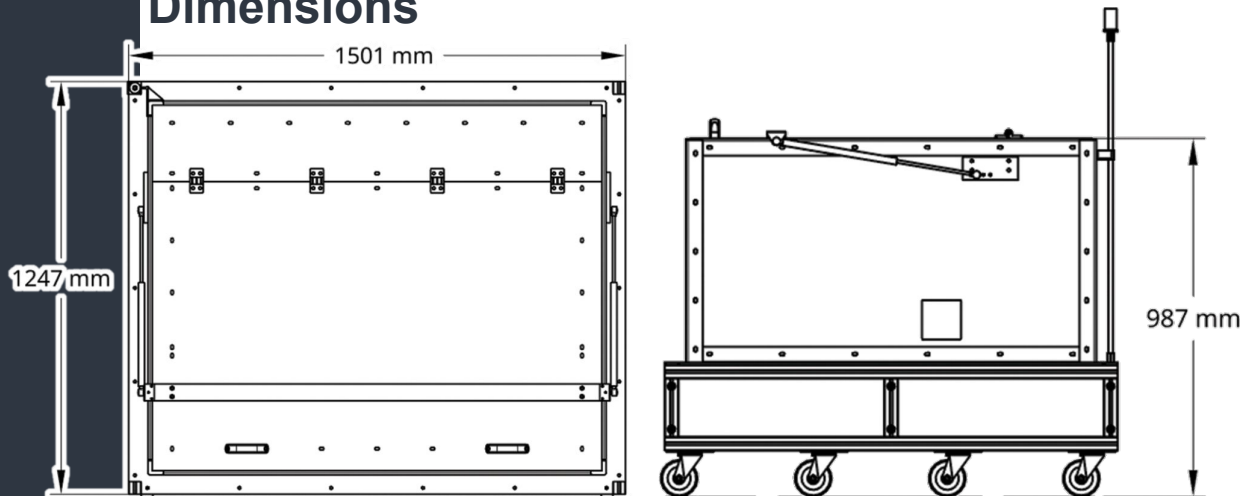
## PRODUCT SPECIFICATIONS

<b>Energy Range</b>	Standard operations from 5-12 keV*. Some utility up to 19 keV. *Depends on selection of crystal analyzers	<b>Reproducibility</b>	<50 meV energy scale drift with no monochromator realignment
<b>Angular Range</b>	55-85 degrees Bragg angle	<b>Analyzer Crystals</b>	Spherically-bent Si or Ge analyzers with 10-cm diameter and 50-cm radius of curvature
<b>Resolving Power (E/ΔE)</b>	typ. >5000, (i.e. 1.4 eV @ 7 keV) for Bragg ≥ 76 deg	<b>Analyzer Alignment</b>	Pre-aligned with “clock angle protocol” (pat. pend.) for rapid (~5 min) and reproducible swapping
<b>Flux (XAFS)</b>	Typical monochromatic flux of 300,000 - 500,000 photons/s when working near backscatter for 7-9 keV	<b>Detector</b>	Large-area SDD with 150-300 eV resolution for rejection of background and harmonics
<b>Flux (XES)</b>	<i>XES capabilities available with easyXAFS300+ and easyXES150 systems</i>	<b>Sample Turret</b>	7-position, motorized sample wheel available for programmable XAFS studies
<b>X-Ray Source (XAFS)</b>	1200-W XRD style, water-cooled tube with W/Mo or Ag anode. 40 kV maximum accelerating potential. 30 mA maximum filament current.	<b>Software</b>	LabVIEW-based GUI for calibration, regular operations, scripted scans and easy integration with external equipment. Python-based GUI for data processing for final spectra.
<b>X-Ray Source (XES)</b>	<i>XES capabilities available with easyXAFS300+ and easyXES150 systems</i>	<b>Utility Requirements</b>	<ul style="list-style-type: none"> <li>• Helium gas for flight path</li> <li>• 110-220 V/50-60 Hz, 1000-W for spectrometer drive and electronics</li> <li>• 110-120 V/60 Hz OR 220-240 V/50 Hz, 1200-W water chiller</li> <li>• 180-264 V/47-63 Hz, 1200-W for HV power supply</li> <li>• 110-220 V/50-60 Hz, 300-W for control computer</li> </ul>



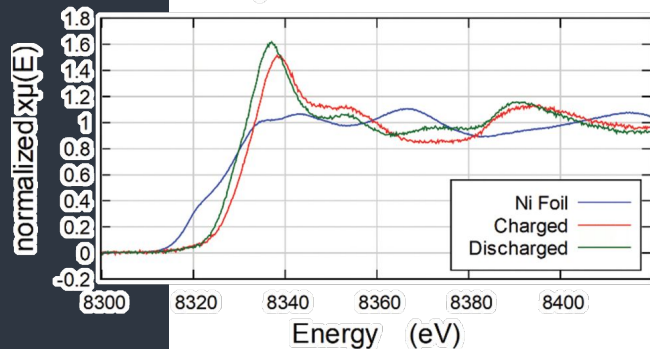
# easyXAFS300

## Dimensions

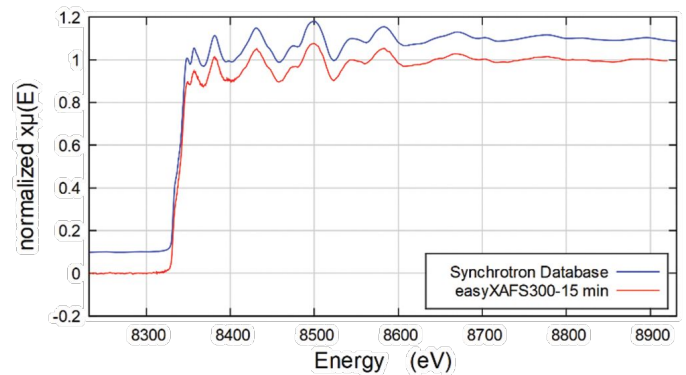


## Example Data

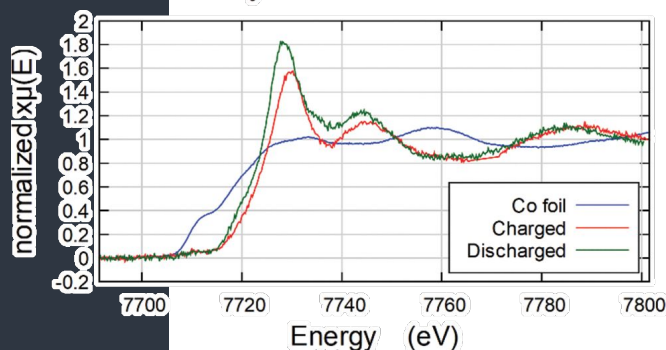
Battery Pouch Cell: Ni XANES



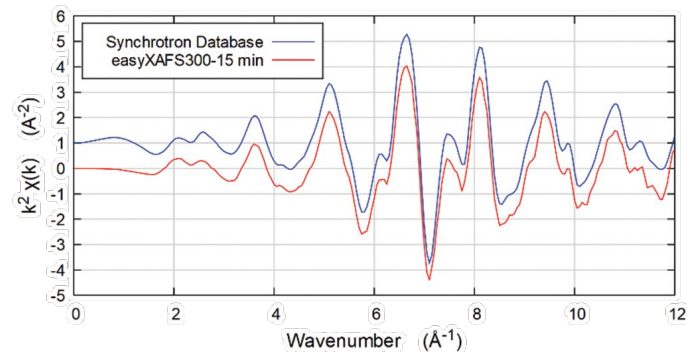
Ni EXAFS



Battery Pouch Cell: Co XANES

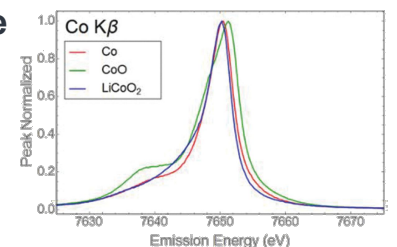


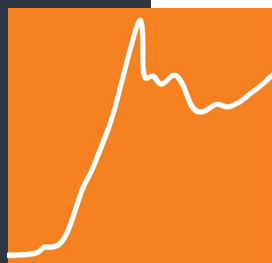
Ni EXAFS



## XES (high-resolution XRF) Upgrade

The “easyXAFS300+” option adds on an auxiliary 100-W tube for research-quality x-ray emission spectroscopy (XES) measurements in synchrotron-comparable integration times. Laboratory XES may facilitate insights into oxidation state, spin state, and ligand identity, even for very dilute samples.





# easyXES150



- Rapid transmission mode XAFS
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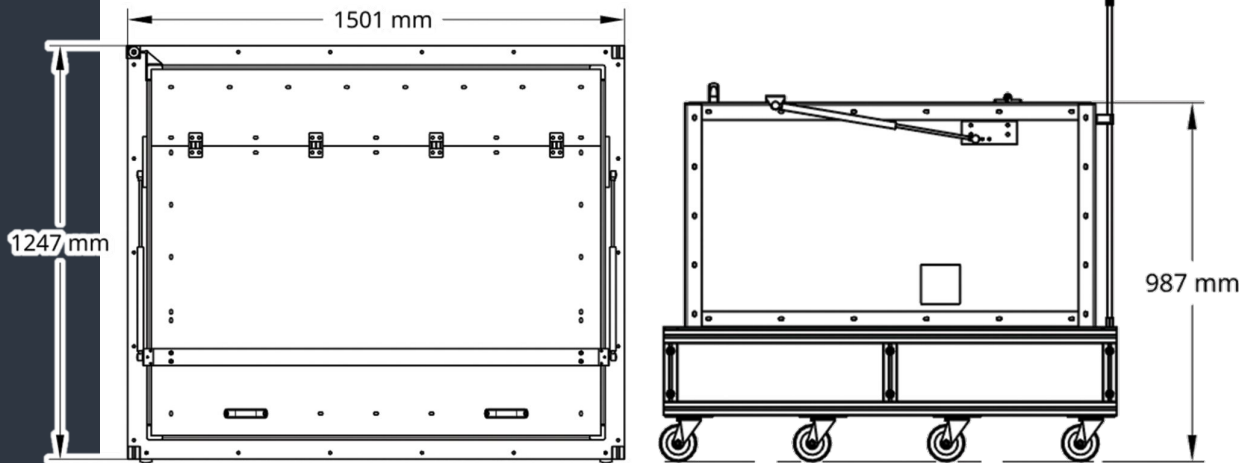
## PRODUCT SPECIFICATIONS

<b>Energy Range</b>	Standard operations from 4.5-12 keV*. Capabilities up to 19 keV with reduced throughput. *Depends on selection of crystal analyzers	<b>Reproducibility</b>	<50 meV energy scale drift with no monochromator realignment
<b>Angular Range</b>	55-85 degrees Bragg angle	<b>Analyzer Crystals</b>	Spherically-bent Si or Ge analyzers with 10-cm diameter and 50-cm radius of curvature
<b>Resolving Power (E/ΔE)</b>	typ. >2800 (i.e. 2.5 eV @ 7 keV) for Bragg ≥ 80deg	<b>Analyzer Alignment</b>	Pre-aligned with “clock angle protocol” (pat. pend.) for rapid (~5 min) and reproducible swapping
<b>Flux (XAFS)</b>	Typical monochromatic flux of >100,000/s when working near backscatter for 7-9 keV	<b>Detector</b>	Large-area SDD with 150-300 eV resolution for rejection of background and harmonics
<b>Flux (XES)</b>	Core-hole generation rate of ~10 <sup>12</sup> /s for concentrated samples.	<b>Sample Turret</b>	7-position, motorized sample wheel available for programmable XAFS studies
<b>X-Ray Source (XAFS)</b>	100-W XRF-style, air-cooled tube with W/Pd anode. 35 kV maximum accelerating potential. 4 mA maximum filament current.	<b>Software</b>	· LabVIEW-based GUI for calibration, regular operations, scripted scans and easy integration with external equipment. Python-based GUI for data processing for final spectra.
<b>X-Ray Source (XES)</b>	100-W XRF-style, air-cooled tube with W/Pd anode. 35 kV maximum accelerating potential. 4 mA maximum filament current.	<b>Utility Requirements</b>	· Helium gas for flight-path · 110-220 V/50-60 Hz, 1000-W for spectrometer drive and electronics · 110-220 V/50-60 Hz, 300-W for control computer

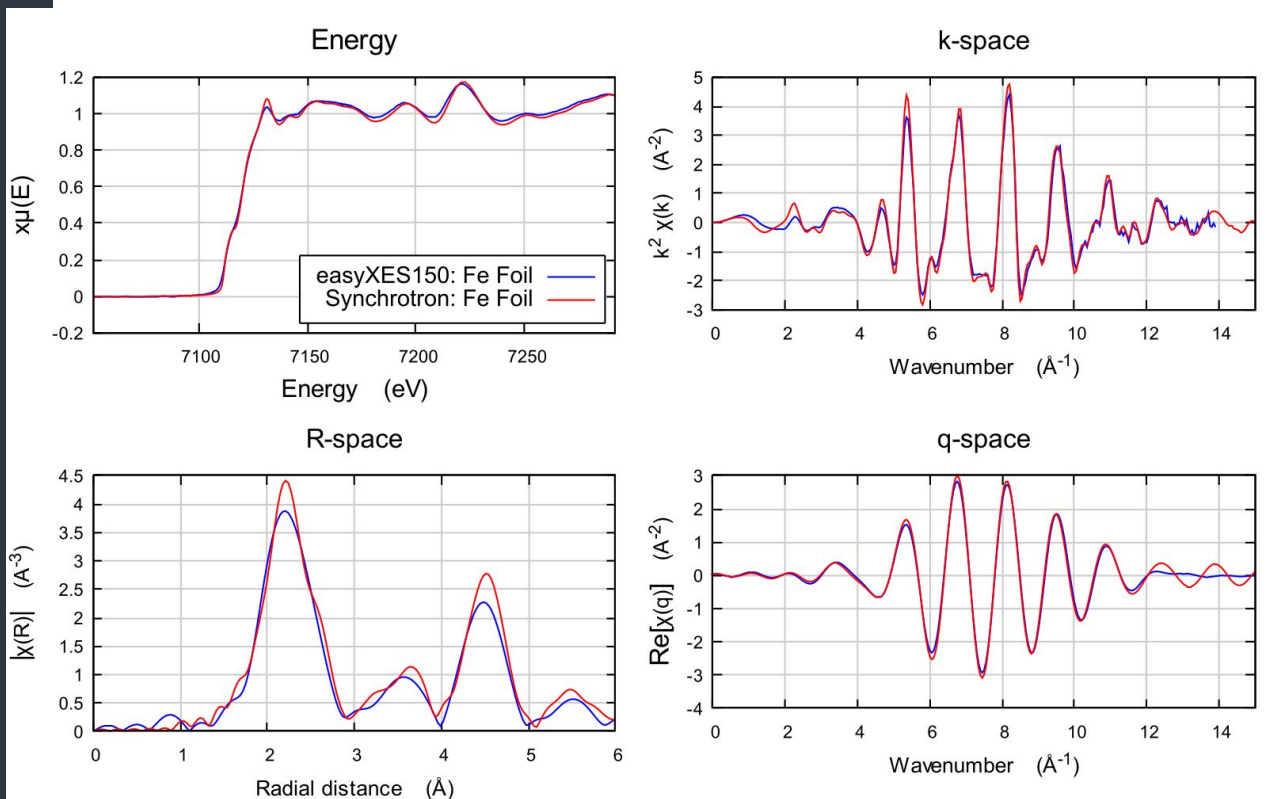


# easyXES150

## Dimensions



## Example Data - XAFS



**XES (high-resolution XRF)**  
 Research-quality x-ray emission spectroscopy (XES) measurements in synchrotron-comparable integration times. Laboratory XES may facilitate insights into oxidation state, spin state, and ligand identity, even for very dilute samples.

