



UltraFast
Innovations

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Soft X-ray / XUV / VUV Spectrometer **EVEREST**

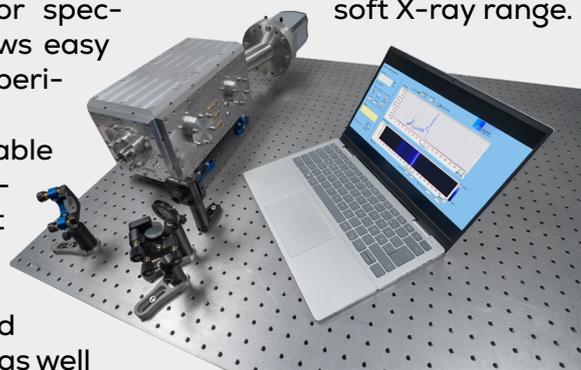


Our spectrograph EVEREST provides aberration-corrected flat-field imaging for precise and efficient characterization of radiation in the soft X-ray, XUV, and VUV spectral ranges.

Its compact, flexible design supports measurements with or without an entrance slit, allowing users to maximize either spectral resolution or light collection efficiency depending on

their experiment. An integrated filter holder accommodates thin metallic filters for spectral selection and allows easy switching between experimental configurations. EVEREST is an invaluable diagnostic tool for coherent and incoherent XUV sources, including high-harmonic generation (HHG) and laser-plasma sources, as well

as for general metrology and spectroscopy in the VUV and soft X-ray range.



Key Product Features:

- Flat-field grazing-incidence spectrograph
- Wavelength coverage with single gratings:
 - Soft X-Ray: 1-6 nm (206-1240 eV)
 - XUV: 5-20 nm / 20-80 nm (62-248 eV / 15-62 eV)
 - VUV: 50-200 nm (6-25 eV)
- Operation with and without entrance slit
- Integrated filter holder for metallic bandpass filters
- Compatible pressure range $< 10^{-6}$ mbar
- Flexible detector choice: X-ray CCD camera (13.5 μm or 26 μm pixel) or MCP camera system
- User-friendly alignment, acquisition, and analysis software
- Optional features:
 - Slit-less operation and various geometry adapters
 - Oil-free pump system available for stand-alone vacuum operation
 - Beam-profiler mode – use EVEREST to characterize spatial intensity distribution of HHG or laser-plasma sources
- In-vacuum switching between gratings (2-4)
- Extended wavelength ranges upon request

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Characteristics:

| | Grating 1 | Grating 2 | Grating 3 | Grating 4 |
|----------------------|-------------|-----------|-----------|-----------|
| Wavelength range | 1-6 nm | 5-20 nm | 20-80 nm | 50-200 nm |
| Photon energy range | 206-1240 eV | 62-248 eV | 15-62 eV | 6-25 eV |
| Resolution* | 0.010 nm | 0.028 nm | 0.11 nm | 0.28 nm |
| Split-less operation | optional | | | |

* Detector-limited resolution for CCD pixel size 13.5 μm

Example Measurements:

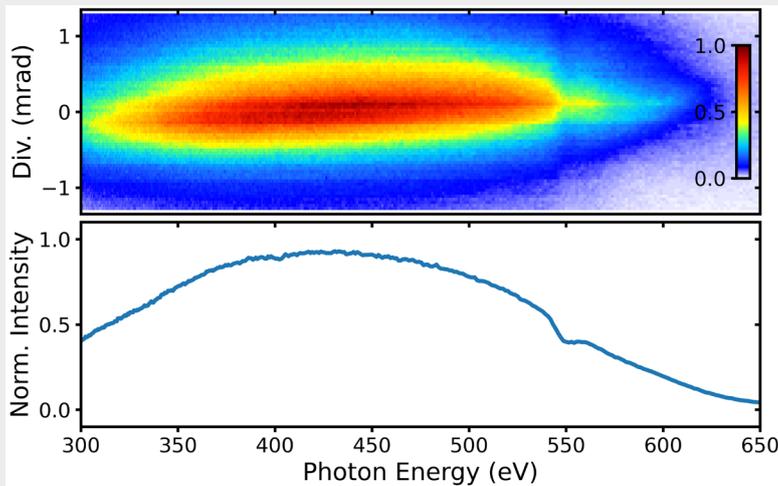


Figure 1. Soft-X-ray spectrum recorded with EVEREST. Radiation generated via HHG in gases driven by a few-cycle 2 μm OPCPA system.

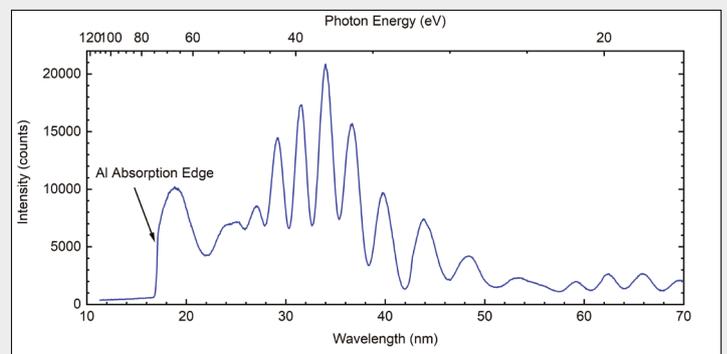
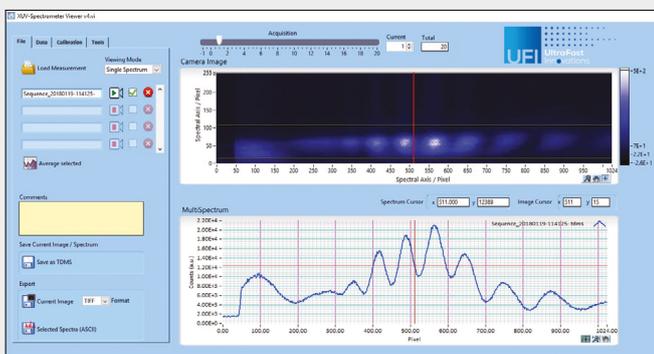


Figure 2. Left: Screenshot of our user-friendly software displaying the measurement of high-harmonic generated radiation in the XUV photon range. Right: Corresponding calibrated spectrum in wavelength and energy.

References:

[1] M. Behrens et al., Rev. Sci. Instrum. **95**, 093101 (2024)
 [2] D. Walke et al., Opt. Express **33**, 10006 (2025)