



**UltraFast**  
Innovations

YOUR KEY to innovation and success

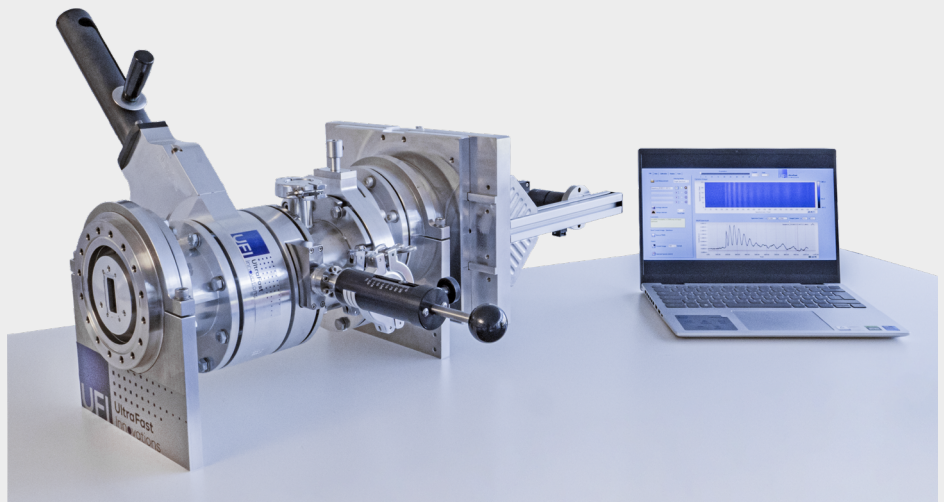


## Soft X-ray / XUV / VUV Spectrograph **EVEREST**

Our soft X-ray / XUV / VUV spectrograph features aberration-corrected flat-field imaging and is available with three gratings covering the spectral ranges 1-17 nm (73-1240 eV), 5-80 nm (15-248 eV) and 30-200 nm (6-41 eV). In order to maximize light collection, the spectrometer can be used without an entrance slit over a variety of source distances, with 3-17 nm, 10-80 nm and 30-200 nm spectral coverage. Its modular design is able to match different experimental geometries and configurations. It features

an integrated slit holder, gate valve and filter insertion unit,

as well as motorized grating positioning along 3 axes.



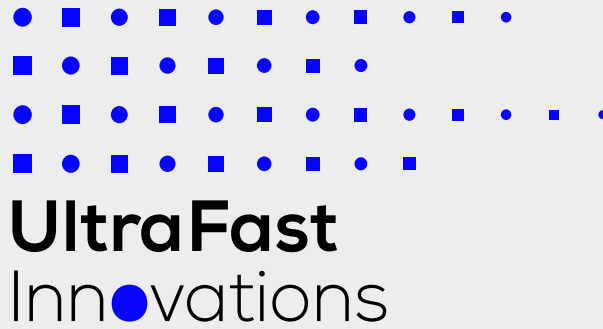
### Key Product Features:

- Flat-field grazing-incidence spectrograph
- Wavelength coverage with single gratings:
  - Soft X-Ray: 1-17 nm (73-1240 eV)
  - XUV: 5-80 nm (15-248 eV)
  - VUV: 30-200 nm (6-41 eV)
  - Motorized three grating version possible
- Operation with and without entrance slit
- Adapters for different geometry options
- Integrated gate valve and filter insertion unit
- Operating pressure  $<10^{-6}$  mbar  
Oil-free pump system for stand-alone vacuum operation optionally available
- Flexible choice of detectors:  
X-ray CCD camera or MCP camera system
- User-friendly alignment, acquisition and viewer software, including post-processing tools.

UltraFast Innovations GmbH  
Dieselstr. 5  
85748 Garching  
Germany

phone: +49 89 36039 - 437  
fax: +49 89 36039 - 453  
info@ultrafast-innovations.com  
www.ultrafast-innovations.com





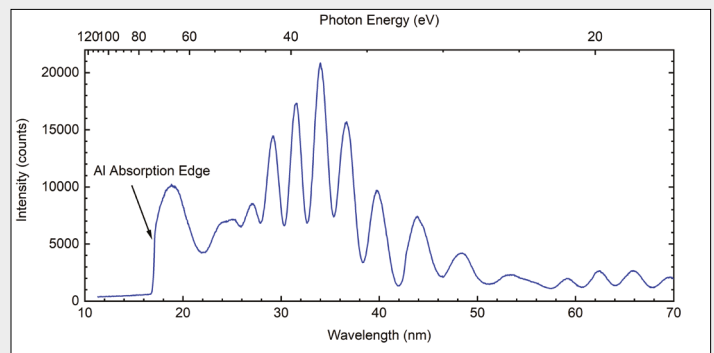
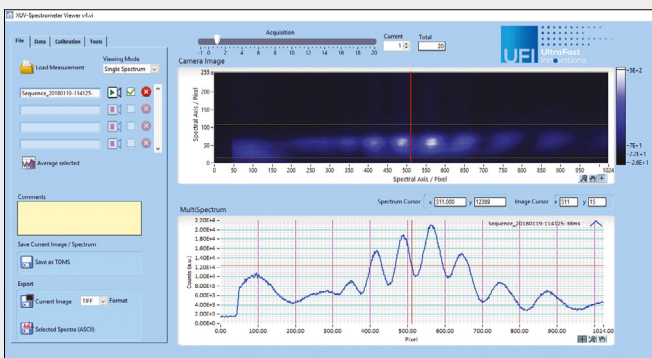
**Characteristics:**

	Grating 1		Grating 2			Grating 3	
Wavelength range	1-6 nm	3-17 nm	5-20 nm	10-60 nm	25-80 nm	80-200 nm	30-200 nm
Photon energy range	207-1240 eV	73-413 eV	62-248 eV	21-124 eV	15-50 eV	6-15 eV	6-41 eV
Operation mode	entrance slit	slit-less	entrance slit	slit-less	slit-less	entrance slit	slit-less
Source distance*	any	0.4-0.6 m	any	0.4-0.6 m	0.5-1.5 m	any	2-10 m
Resolution	0.01 nm	0.03 nm	0.02 nm	0.09 nm	0.1 nm	0.05 nm	0.2 nm

\* Others on request

**Sample Measurement:**

As a sample measurement, the image below demonstrates the capabilities of our soft X-ray / XUV / VUV spectrograph and software. It shows the acquired image with a soft X-ray / XUV CCD camera, containing the high harmonic spectrum generated by the interaction of a femtosecond laser pulse with a gas target and subsequent spectral filtering. Post-processing tools are also provided to calibrate, merge and analyse large amount of raw data, as shown below. The final XUV spectrum resolves the finest substructures inherent to the generation process.



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, L. Englert, T. Bayer, and M. Wollenhaupt, „XUV-beamline for photoelectron imaging spectroscopy with shaped pulses“, Rev. Sci. Instrum. **95**, 093101 (2024)