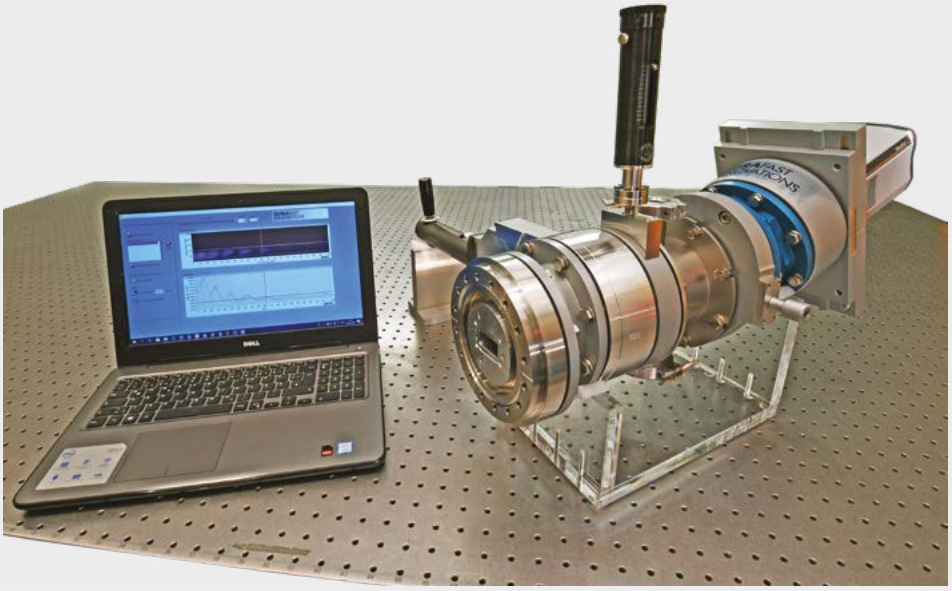
UltraFast Innovations

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 acquisition and viewer software**, including post-processing tools.

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UltraFast Innovations is a spin-off from the LMU Munich and the Max Planck Society.

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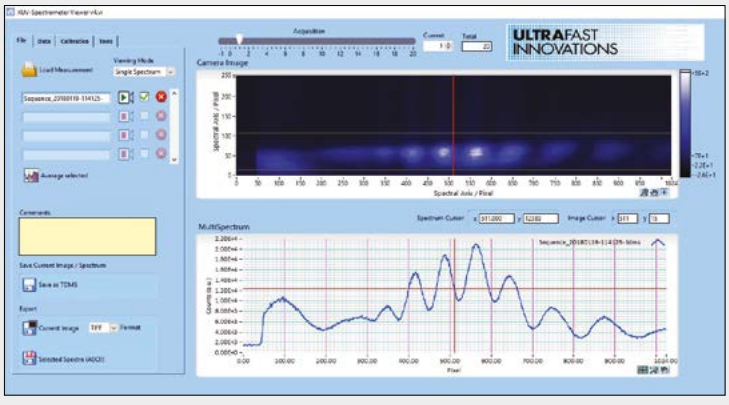
Characteristics:

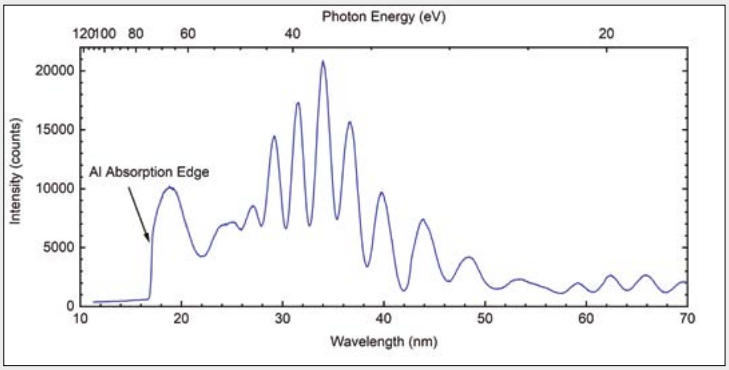
	Grating 1		Grating 2			Grating 3	
Wavelength range	1-6 nm	3-17 nm	5-20 nm	10-60 nm	25-80 nm	80-200 nm	30-200 nm
Photon energy range	207-1240 eV	73-413 eV	62-248 eV	21-124 eV	15-50 eV	6-15 eV	6-41 eV
Operation mode	entrance slit	slit-less	entrance slit	slit-less	slit-less	entrance slit	slit-less
Source 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 single 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.





Top: Screenshot of our user-friendly software displaying the measurement of high-harmonic generated radiation in the XUV photon range.

Bottom: Corresponding calibrated spectrum in wavelength and energy.