



## Unprecedented flexibility on ultrafast time scales

The first discretely tunable tabletop VUV laser source for angle-resolved photoemission spectroscopy

### Applications

- Angle-resolved photoemission spectroscopy (ARPES)
- Time-resolved ARPES
- Photoemission electron microscopy (PEEM)
- Photo-ionization mass spectroscopy (PIMS)
- Molecular time-of-flight (ToF) studies
- Applications that require tunable VUV light
- Applications that require femtosecond pulses of VUV light

### Features

- Discretely tunable between 6.0–10.8 eV
- Highly focusable
- High energy resolution (<10 meV)
- Large k-space coverage
- High momentum resolution
- Ultrafast



After being dispersed with a lithium fluoride prism, the bright VUV beams generated by the Hyperion VUVV induce bright fluorescence on a Ce:YAG scintillator. In the commercial Hyperion VUV, a monochromator selects a single wavelength to deliver to the users experimental chamber.

## Probe material and molecular properties with unprecedented flexibility on ultrafast time scales

**Hyperion VUV** is the first tunable commercial femtosecond source in the vacuum ultraviolet (VUV) region. Discretely tunable from 6.0–10.8 eV, Hyperion VUV enables you to study a wide range of materials and materials properties. For example, in angle-resolved photoemission (ARPES) experiments, this tunability allows researchers to distinguish surface effects from bulk effects. For time-of-flight (TOF) studies of molecules, the tunability can distinguish otherwise identical isomers.

Hyperion VUV is “application ready,” with appropriate focusing and beam-steering elements that will enable fast integration with your experimental apparatus. Hyperion VUV can also be used with a window between the source and the experimental chamber, guaranteeing that applications demanding ultrahigh vacuum (such as ARPES) will remain contamination-free.

## Hyperion VUV Benefits

- Discrete tunability of the photon energy overcomes the limitations of fixed wavelength sources, bringing the power of the synchrotron to the laboratory
- Near diffraction-limited beam can achieve a small spot size to measure many types of samples, including materials that are polycrystalline, spatially inhomogeneous, faceted, or simply very small
- Femtosecond pulse durations to probe ultrafast dynamics of molecules and materials
- 1 MHz repetition rate enables rapid data collection and avoids space-charge effects

# Hyperion VUV

## Hyperion VUV Specifications

### Parameter

Photon Energy (eV)	User selectable: 6.0, 7.2, 8.4, 9.6, 10.8	
Repetition Rate	100 kHz- 1 MHz	
Power Stability	<5% [RMS] over one hour	
Photon Flux	Full bandwidth (~40 meV)	Moderate bandwidth (<5 meV)
7.2 eV	$10^{12}$ ph/s delivered	$5 \times 10^{10}$ ph/s delivered
10.8 eV	$10^{10}$ ph/s delivered	$5 \times 10^8$ ph/s delivered
Laser-head size	0.75 x 1.5 meters	
Electrical power	110/230 V, 20 A (x2)	