

Visible-to-UV Achromatic frequency doubling modules

Femto-DUVALight is a family of compact and portable devices able to generate very broadband (70-100 nm at 300 nm) and powerful (>1 mJ/pulse) femtosecond UV pulses (270-370 nm), based on achromatic doubling of broadband ultrafast visible pulses. They guarantee an aberration-free propagation, an easy installation and minimal dispersion. Each device is compact, portable and cost effective. Its innovative design makes it user-friendly and maintenance-free.

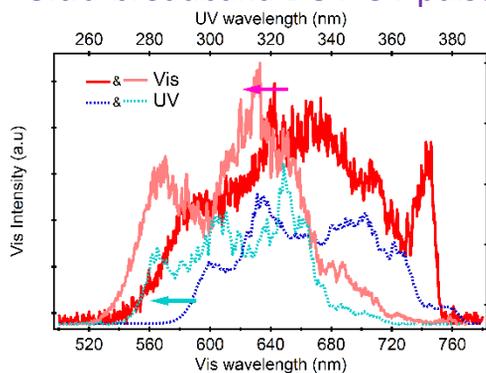
- Ultra-broadband femtosecond DUV-UV pulse source ($\Delta\lambda \sim 100$ nm)
- Wide tuning range : 540-740 nm (input) to 270-370 nm (output)
- Visible to UV doubling efficiency up to 20%
- No limitation to the input/output pulse energy
- Aberration-free
- No movable or motorized parts
- Portable and compact design
- Easy to align and maintenance-free
- Doubling simultaneously multiple beams
- Minimal dispersion, suitable for ultrafast science and applications

They are designed to be operated with visible femtosecond sources as (non-collinear) optical parametric amplifiers and supercontinuum generated with nonlinear fibers. It can generate pulses with central wavelength tunable between 270 and 370 nm and bandwidth from few nm to 100nm, depending on the spectral properties of the visible input beam. Doubling efficiency of 20% are achieved regardless the central wavelength and bandwidth of the input pulse. Therefore Femto-DUVALight can go beyond the limitation of all the other commercially available devices which can improve bandwidth and pulse length only at the cost of a dramatic reduction of the doubling efficiency. It allows also the simultaneous doubling of several pulses and there is no upper limit to the visible pulse energy. Last, they preserve the phase of the visible pulse allowing pulse shaping of UV pulses upon shaping the visible one. It can also work with more standard 10-20nm broadband pulses allowing to replay all the currently available solutions, which rely on motorized rotational stages, with a device without movable parts. None of commercially available devices can by far match femto-DUVALight in terms of performances and handiness.

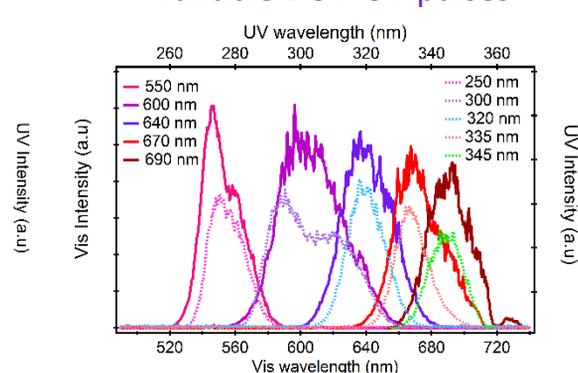
Typical performances

Output Spectra

Ultra-broadband DUV-UV pulses



Tunable DUV-UV pulses



Specifications

Input Bandwidth (nm)	Output Bandwidth ¹ (nm)	Tunability range (nm)	Max Efficiency	Max Input beam diameter ² (mm)	Max input pulse Energy ³ (mJ)
< 200	< 100	540-740 (270-370)	20%	4	1

1) Half of the input bandwidth
2) Upon request up to 1 cm
3) Estimated for 50 fs pulses with 2 mm diameter

