

HALCYONE Femto *Fluorescence Upconversion Spectrometer*

**Fluorescence
Spectral Range
270 - 1600 nm**

Computer-Controlled



HALCYONE Femto is a fully automated Fluorescence Upconversion Spectrometer. It features our patented automated beam alignment system and can measure fluorescence decays with femtosecond time resolution over an 8 ns time window.

Broad fluorescence spectral range

Fluorescence can be measured across the following spectral ranges:

Spectral Range	With Ti:Sapphire laser (center λ ~800 nm)	With Yb laser (center λ ~1030 nm)	With optional gate OPA
UV	270 – 350 nm	260 – 340 nm	
VIS	450 – 770 nm	370 – 950 nm	340 – 1000 nm
NIR	> 850 nm	> 1100 nm	

Computer controlled non-linear crystal

To maximize the upconverted signal intensity the non-linear crystal needs to be rotated to a certain angle, depending on the fluorescence wavelength. HALCYONE automatically adjusts this angle during the experiment, so no input from the user is needed.



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Nanosecond time window

An up to 8 ns time window is covered by using an optical delay line. Our delay line features a low GVD dielectric retroreflector for high optical throughput and a shorter IRF; a direct drive linear motor for fast scanning; as well as computer-controlled steering mirrors for true hands-off operation.

Optical Delay Line Specifications:

- Time window: 8 ns
- Resolution: 14 fs
- Minimum step size: 2.8 fs
- Max. translation speed: >10 ns/s
- Self-alignment time: 3-5 min
- Beam pointing drift: <10 μm across the time window



Imaging Monochromator

The monochromator's design (300 mm, F#6) matches the optics in the rest of the setup and maximizes the overall spectrometer performance.

The monochromator features a 4-grating turret with kinematic mounts for optimal wavelength coverage, optical throughput, and spectral resolution. The UV-enhanced Al coatings on the monochromator mirrors ensure high efficiency of fluorescence collection.



HALCYONE Femto as part of a complete setup with an OPA and a laser

