

HELIOS IR *MID-IR Femtosecond Transient Absorption Spectrometer*

Probe Spectral Range
2-13 μm

Automated

Extended Time Window



HELIOS IR is a broadband mid-infrared femtosecond Transient Absorption Spectrometer. A complete turn-key system, HELIOS IR can measure photoinduced absorbance changes across a broad (2-13 μm) spectral range with femtosecond time resolution over an 8 ns time window. At any time, the HELIOS IR time window can be extended to sub-milliseconds with an EOS IR add-on.

HELIOS IR is designed to work with various femtosecond lasers, including high energy Ti:Sapphire amplifiers and high repetition rate Yb amplifiers. Together with our patented optical delay line, HELIOS IR delivers an unmatched level of performance and user-friendliness.

8 ns time window. Extendable to sub-ms.

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. The standard 8 ns time window is extendable to sub-ms with the EOS IR add-on.

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



OPAs designed to work with the Delay Line

The APOLLO Optical Parametric Amplifiers are optimized to work with our Optical Delay Line to provide consistent user-friendly operation in the Mid-IR. The experiment remains hands-off even as you change the probe and excitation wavelengths.



Optical Parametric Amplifiers



Single-pixel detector



Multi-pixel detector

Detectors

Helios IR can be configured with various MCT detector options, including dual multi-pixel arrays.

Variable spectral resolution and spectral range

In Helios IR we use a proprietary design imaging monochromator, which is optimized to match the rest of the spectrometer optics. With its four-grating turret and variable slits, you can easily control the detection bandwidth and spectral resolution. Which is perfect for working with multipixel MCT arrays.



Typically Used Gratings			
Spectral Range	6-16 μm	3-10 μm	2-7 μm
Groove Density, g/mm	50	75	150
Blaze Wavelength	9 μm	4.7 μm	3 μm
Linear Dispersion, nm/mm	63.6	42.4	21.3
Mechanical Resolution, nm	3.8	2.5	1.3
Minimum Step Size, nm	1.7	1.2	0.57

Additional gratings are available on request.