HELIOS IR

Mid-IR Femtosecond Transient Absorption Spectrometer

Ultrafast SYSTEMS

Spectrometers for Cutting Edge Photoscience

Probe Spectral Range: 2-13 µm

Fully Automated Hands Free Design

Extended Time Window NOW AVAILABLE

HELIOS IR is a broadband mid-infrared pump-probe femtosecond Transient Absorption Spectrometer. A complete turnkey system, HELIOS IR Fire measures transients with femtosecond time resolution and an 8 nanosecond time window. At any time HELIOS IR Fire's time window can be extended to milliseconds and beyond by integrating it with EOS our broadband pump-probe nanosecond transient absorption spectrometer.

FEATURES

- 2-unit design with the optical bench isolated from the electronics and detectors
- Advanced user-friendly LabVIEW based software for instrument control and data acquisition
- 8 ns built-in time window (extendible to milliseconds with the Eos add-on)
- Support for large pump beam diameters. Up to 9 mm without sacrificing the contrast
- Automated pump beam alignment
- Large sample area - 225 x 250 mm
- Parabolic reflectors for probe management ensure uniform focusing of all wavelengths
- Optional computer controlled filter wheel for varying pump energy, etc.
- Can be configured with a dual array detector to utilize a two-channel probe or "probe-reference" method to achieve high signal-to-noise ratio with a low number of averaged laser pulses

SPECIFICATIONS

Time window

8 ns — Time window can be extended beyond 8 ns with the Eos add-on

Temporal resolution

Depends on the pulse duration of the laser, typically ~150 fs

Supported pump laser repetition rate

1 kHz - 1 MHz

Customizable

Customizations include but are not limited to integration of cryostats, additional choppers, and magnets.

Probe spectral range

2 - 13 µm

Detectors

HELIOS IR Fire can be configured with several MCT array detector options with larger arrays for broader detection bandwidth or higher spectral resolution and dual array detectors for reference detection.

Dimensions

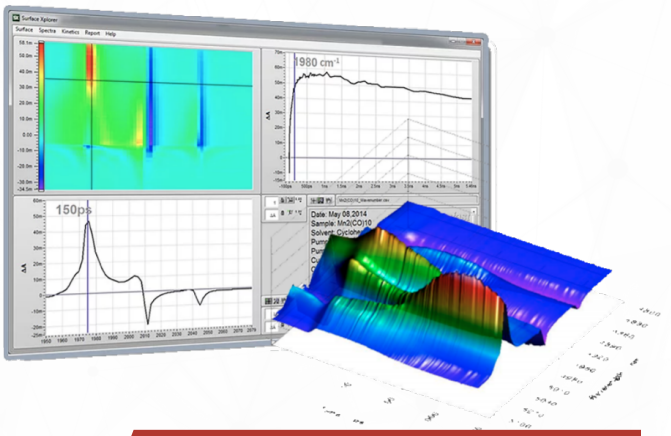
Optical bench	W34" x L56" x H14" - W864 x L1425 x H356 mm
Electronics rack	W21" x L24" x H27" - W534 x L610 x H686 mm

SOFTWARE

Unprecedented Degree of Experiment Automation

HELIOS IR features versatile and user-friendly LabVIEW based software for instrument control and data acquisition. The software allows for full experiment automation, so no input from the user is required for the whole experiment duration. The software is also very user-friendly and versatile:

- Automated alignment of the optical delay line.
- Supports computer controlled translating sample holder.
- Supports pump beam shutter.
- Supports motorized filter wheel for automated pump intensity control.
- Saves every individual kinetic scan, so if experiment is aborted (due to laser fluctuations, power outages, etc.) all previous scans are not lost.
- Threshold adjusted automatic probe intensity spike rejection - advanced setting which collects data points again if the probe is not stable.
- Support for multiple choppers to facilitate customized experiments.
- API (Application Programming Interface) for HELIOS IR Fire is provided for further experiment customization and integration with external applications.



Surface Xplorer - Data Analysis Software

The SURFACE XPLORER software is designed to save you a lot of time analyzing your transient absorption/emission data. These data sets come in a form of a 3D surface and are usually quite large. When processed with third-party software they require a great deal of manual copying and pasting in order to display particular spectra/kinetics, perform non-linear fitting or simply remove bad data points. This can be very time consuming!

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