HELIOS Fire

Femtosecond Transient Absorption Spectrometer

Ultrafast SYSTEMS

Spectrometers for Cutting Edge Photoscience

Probe Spectral Range:
320-2400 nm

Fully Automated Hands Free Design

Microscope extension
NOW AVAILABLE

HELIOS Fire is the next generation, automated femtosecond Transient Absorption Spectrometer in the HELIOS family. Among its numerous advantages, HELIOS Fire features a 100-fold boost in sensitivity, allowing the study of more delicate samples. This, together with our patent-pending automated beam alignment system, delivers a new level of performance and user-friendliness. In addition to being virtually hands-off, HELIOS Fire allows for user customization with its easily removable side panels and improved optical layout.

FEATURES

- Enhanced sensitivity - compatible with nJ pump energy levels
- Enhanced beam pointing - drift of <10 μm over the whole delay range
- Unprecedented degree of automation:
  - Automated optical delay line alignment (Smart Delay Line™)
  - Fully Automated pump beam alignment
  - Automated switching between UV, VIS, NIR, and SWIR spectral ranges
- Large sample area - 225 mm x 250 mm
- Parabolic reflectors for continuum management ensure uniform focusing of all wavelengths
- 2-unit design with the optical bench isolated from the electronics and detectors
- 8 ns built-in time window (extendible to milliseconds with Eos add-on)
- Support for large pump beam diameters. Up to 9 mm in diameter without sacrificing the contrast
- Optional computer controlled filter wheel for varying pump energy, etc.
- Magnetically stirred sample holder. Easily interchangeable with optional XY rastering sample holder
- Probe Reference. HELIOS Fire has an option for a second probe (reference) channel

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 laser repetition rate

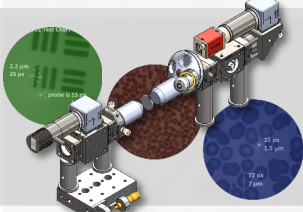10 Hz - 1MHz (Compatible with Ti:Sapphire and Yb lasers)

Customizable

Customization includes integration of cryostats, additional choppers, and magnets.

Dimensions

Optical bench	W18" x L36" x H10" - W457 x L915 x H250 mm
Delay line	W11" x L36" x H10" - W280 x L915 x H250 mm
Electronics rack	W21" x L24" x H27" - W534 x L610 x H686 mm

Probe spectral range

with Ti:Sapphire lasers:	270-390 nm	with Yb lasers:	320-750 nm
	320-650 nm		480-950 nm
	420-780 nm		800-1600 nm
	760-840 nm		1600-2400 nm
	820-1600 nm		
	1600-2400 nm		

Detectors

ADC resolution	16 bit
Spectral acquisition rate	up to 5000 spectra/s

Improved sensitivity for reflection mode and scattering samples

Microscope Extension

| Spatial Resolution	< 3 μm
Spectral range	450-700 nm

SOFTWARE

Unprecedented Degree of Experiment Automation

The HELIOS Fire data acquisition software has built-in support for the automated alignment of all critical optical elements for largely hands-off operation. The software is also very user-friendly and versatile:

- Automated alignment of the optical delay line.
- Automated alignment of the pump beam.
- Computer controlled switching between UV, VIS, NIR and SWIR modes.
- Supports computer controlled translating sample holder.
- Support 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 continuum spike rejection- advanced setting which collects data points again if the continuum is not stable.
- Automatic anisotropy calculation when appropriate optics are used and a reference channel is included.
- Support for multiple choppers to facilitate customized experiments.
- API (Application Programming Interface) for HELIOS Fire is provided for further experiment customization and integration with external applications.
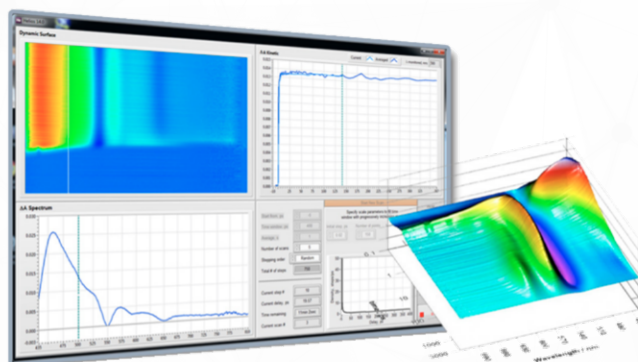
Surface Xplorer - Data Analysis Software

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!

sales@ultrafastsystems.com

+1-941-360-2161

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