EOS Fire

Nanosecond Transient Absorption Spectrometer

Probe Spectral Range:
350-2200 nm

Fully Automated Hands Free Design

MID-IR extension
NOW AVAILABLE

EOS Fire is a unique (Patent No.: US 7,817,270 B2) broadband pump-probe sub-nanosecond Transient Absorption Spectrometer designed to work with a wide variety of pulsed lasers. A complete turn-key system, EOS Fire measures transients with sub-ns time resolution and a large, adjustable time window. At any time EOS Fire's time resolution can be improved to femtosecond by integrating it with **HELIOS Fire**, our broadband pump-probe femtosecond 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
- A virtually unlimited time window
- Automated pump beam alignment
- Large sample area - 225 x 250 mm
- Parabolic reflectors for probe management ensure uniform focusing of all wavelengths
- Fiber coupled high-speed spectrometers
- Optional computer controlled filter wheel for varying pump energy, etc.
- Magnetically stirred sample holder. Easily interchangeable with optional XY rastering sample holder
- EOS Fire utilizes a two-channel probe or "probe-reference" method to achieve high signal-to-noise ratio with a low number of averaged laser pulses

Time window

Typically up to sub-milliseconds. Can be extended to several seconds.

Temporal resolution

< 1 ns

Supported laser repetition rate

up to 2.5 kHz

Detectors

Fiber coupled high-speed spectrometers. Available now are detectors with improved sensitivity for reflection mode and scattering samples.

Customizable

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

Probe spectral range

UV/VIS	350-800 nm
NIR	800-1600 nm
SWIR	1600-2200 nm

The probe spectral range is extendable to 13 μm with the addition of Eos-IR extension.

Dimensions

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Optical bench	W24" x L36" x H10" - W610 x L915 x H250 mm
Electronics rack	W21" x L24" x H27" - W534 x L610 x H686 mm

SOFTWARE

Unprecedented Degree of Experiment Automation

EOS Fire 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 pump beam.
- Computer controlled switching between UV/VIS, NIR, and SWIR modes.
- Supports computer controlled translating sample holder.
- Supports pump beam shutter.
- Supports motorized filter wheel for automated pump intensity control.
- User specified initial step size, time window and the total number of time steps.
- Pseudo-random scanning of the pump-probe delay times averages out low frequency noise.
- Real-time histogram plotting to show the sampling distribution over the time window.
- Built-in algorithms for automatic equalizing of the sampling distribution over the whole time window.
- API (Application Programming Interface) for EOS Fire is provided for further experiment customization and integration with external
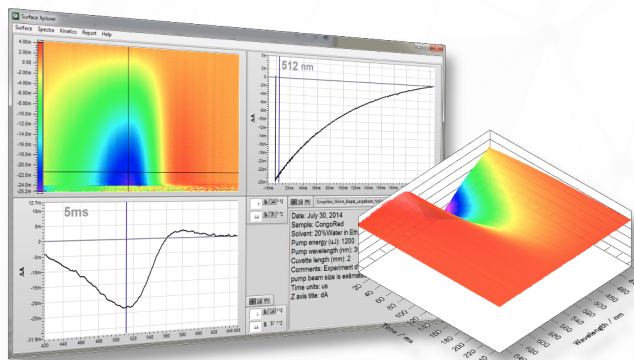
Surface Xplorer - Data Analysis Software

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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