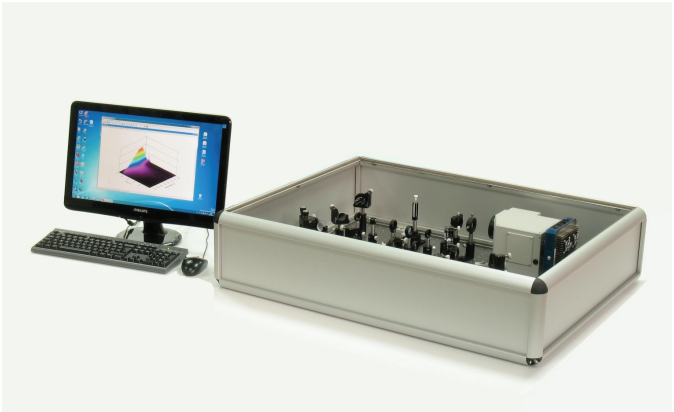
FemtoFrame-INFINITY

Transient Absorption Spectrometer

with **Femtosecond Diffuse-Reflectance (fs-DRS) Mode**



FemtoFrame-INFINITY is a UV-VIS-NIR femtosecond Transient-Absorption and **fs-Diffuse-Reflectance** pump-probe spectrometer. With its unique features a broad spectral coverage from UV to NIR and the time window from **femtosecond to ms-time range**, FemtoFrame-INF produces kinetic and spectral data with excellent quality. In addition, FemtoFrame-INF allows you to study iquid, solid and thin film samples in transmission and reflection scheme, as well as materials with diffusion reflection. It comes with advanced data analysis software **FemtoSuite,** capable of various types of data processing including global analysis.

Main Features

Advanced Feature

Replacement of TWO scientific time-resolved instruments:

Femtosecond Transient Absorption

+

Nanosecond Flash Photolisys

with a single instrument

= **FemtoFrame-INFINITY**

- Time window of **20-ns** (Femtosecond Mode)
- Time window of and **up to 1 ms** (Merge Mode)

Advanced Feature

Femtosecond Diffuse-Reflectance Spectroscopy (fs-DRS)

- Dual-Beam configuration for superb signal-to-noise performance
- Two inter-switchable sections with two independent spectrographs / detectors for transparent- and diffuse-reflective samples

Applications

- **Nanoscience**
- **Materials science**
- **Photochemistry**
- **Photophysics**
- **Photobiology**
- **Molecular transient absorption spectroscopy**

Key Advantages

- Widest **femtosecond-to-millisecond** TA measurement with femtosecond resolution within a single scan,
- Extended spectral ranges of the probing,
- Optimized for both sample types:
  1) Transparent (solid/liquid/film;
  2) Diffuse-reflective (powders),
- Designed by experts in spectroscopy,
- Low cost and great research capabilities.

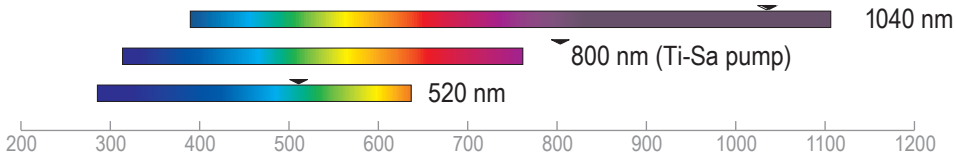
Basics of Operation

The **FemtoFrame-INF** is applied in femtosecond or picosecond pump – probe spectroscopy for sensitive measurements of photo-induced absorbance (optical density) changes. Two CCD linear sensors are placed behind an imaging spectrographs to measure simultaneously the intensities for multiple wave-lengths of the probe pulses, originating from a femtosecond white light (continuum) generator.

For a given time delay between excitation and probe pulses, consecutive exposures with and without excitation are recorded, allowing to calculate the induced absorbance in the whole usable spectral range, obtaining a broad transient spectrum. The exposure conditions are highly variable by the user allowing great flexibility in matching the individual requirements of the sample.

Specifications

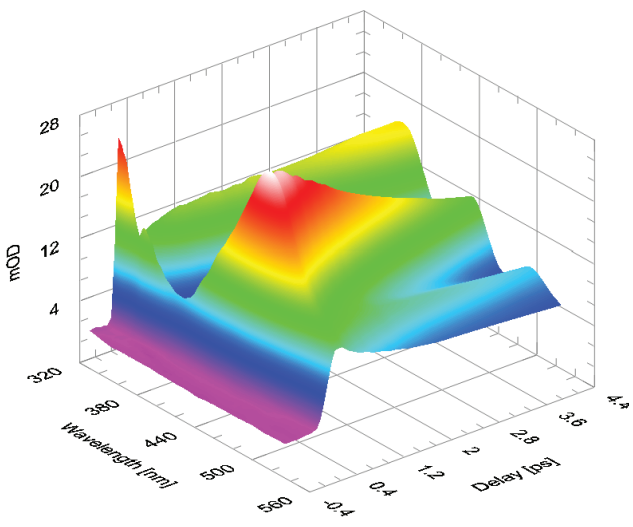
Probe Spectral Ranges



Spectral Resolution	Spectral resolution s with 150-mm monochromator are: • VIS – 0.2 . . . 5 nm • NIR – 0.3 . . . 7 nm
Time Window and Step:	Optical Delay – 0 . . . 2 0 ns, Step Size (Resolution) 13.3 fs Merge Mode (fs+ms) : 0 . . . 1 m s
Temporal Resolution:	The instrument response function is determined by the customer's laser system and has a typical FWHM of 1.5 times longer than the excitation pulse duration. The intrinsic temporal resolution is 7 fs.
Transient Absorption Anisotropy:	Yes
Probe pulse chirp	Typical temporal chirp of the probe pulse : 500 – 800 nm: 250 fs 320 – 750 nm: 750 fs (Values measured for chirp optimized alignment, not applicable to all probe alignment variations).
Dimensions	W 960 x L710 x H260 mm
Weight	76 kg (approx.)

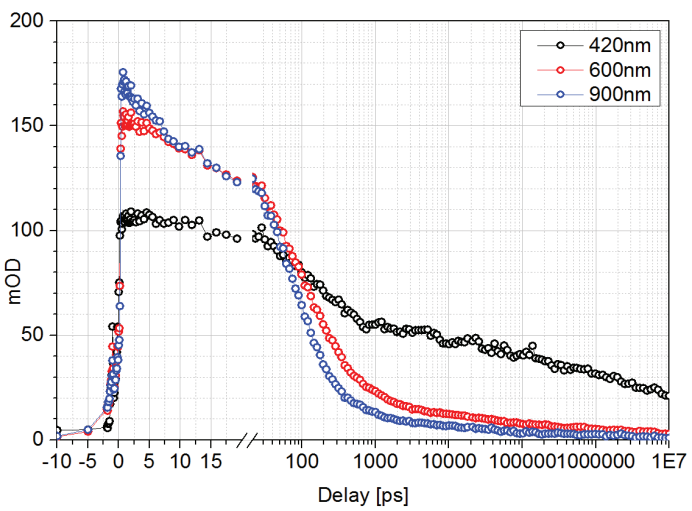
Data Examples

Basic Organic Chemistry:
Ultrafast Dynamics in DDBBE



Transient spectra (left) of DDBBE organic dye and representative kinetic traces of P-25 TiO2 powder sample (right) taken with FemtoFrame-INF. Excitation with 1kHz, 347-nm pulses from the frequency-tripled IBPhotonics' FemtoFLAME-100Duo Laser.

Nanomaterials:
Carrier Dynamics in TiO2 powder catalyst



IB Photonics
IB Photonics Ltd. | 19A Plovdivsko Pole St, Suite 2, Sofia 1756, Bulgaria | Phone: +359 887 03 33 22 | e-mail: sales@ibphotonics.com | Web: www.ibphotonics.com