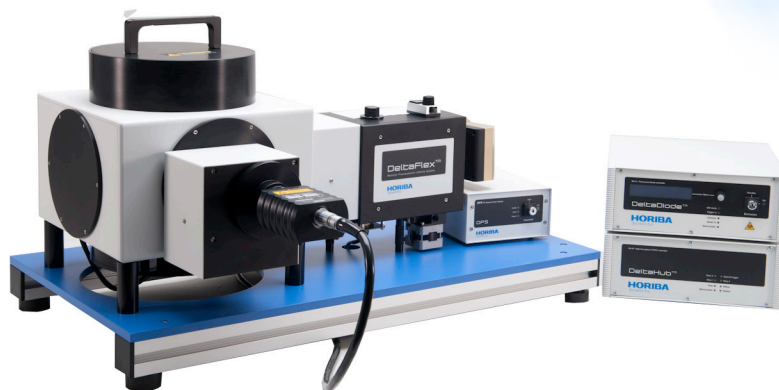


Time-Correlated Single Photon Counting (TCSPC) Fluorescence Lifetime System

DeltaFlex™ Lifetime System

- Fast... short lifetimes in just one millisecond**
- Sensitive... single-photon counting detection*
- Accurate... no recalibration of timing circuits*
- Flexible... lifetimes from 25 ps to 1 second**
- Modular... easily reconfigured*
- Convenient... single USB connection to PC*



The DeltaFlex is a research-grade, modular system in our next generation of time-correlated single-photon counting (TCSPC) lifetime instrumentation. The heart of the system is the new DeltaHub timing electronics, with nearly lossless photon counting and ultra-short deadtime of 10 ns. This enables both fast and efficient acquisition of lifetime data when coupled with our high-repetition-rate laser-diode sources and high-speed detectors†.

DeltaFlex has motorized optics and an emission monochromator as standard. This system uses our interchangeable range of DeltaDiode excitation sources and detection via our Picosecond Photon Detection (PPD) module (PPD-650). The PPD can be upgraded to red-extended versions. NIR-upgrade packages are also available extending beyond 900 nm.

†See our publication in *Meas. Sci. Tech.* **22**(2011), 067001.

Feature	Spectroscopy Benefits
Fast acquisition of lifetimes	Collect lifetimes in as little as 1 millisecond
Wide temporal range	Measure fluorescence and phosphorescence with one instrument
F-link spectrometer interface	Easy plug-and-play reconfiguration according to experimental need
Modular	Spectral range up to 1700 nm, TRES, simultaneous anisotropy
Photon-counting sensitivity	Finally, the unrivalled sensitivity of TCSPC with fast acquisition via other techniques



Specifications*

Minimum lifetime	25 ps with laser-diode source*		
Shortest acquisition time	1 millisecond*		
Diode controller	DeltaDiode-C1, SpectraLED		
Repetition rates	10 kHz–100 MHz with DeltaDiode*; 0.1 Hz–10 kHz with SpectraLED		
Prompt FWHM	<200 ps FWHM with laser diode (405 nm)		
Dead time	10 ns		
Time ranges	10 ns–11 s		
Wavelength selection	Emission monochromator 200–800 nm standard; 300–1200 nm and 400–1600 nm optional Excitation and second emission monochromators also available		
Detector options	<i>PPD modules</i> PPD-650: 250–650 nm (standard) PPD-850: 250–850 nm optional PPD-900: 300–900 nm optional	<i>Near-IR options</i> H10330 series 950–1200/1400/1700 nm R5509 series 300–1400/1700 nm NIR detectors may be mounted to emission monochromator simultaneously as PPD	<i>MCP-PMT options</i> See FluoroCube UltraFast series
Automation	<i>Standard:</i> Lenses, sample stirrer, monochromator (wavelength and slits), diode controllers. <i>Optional:</i> Polarizers, sample turret, sample temperature.		
PC interface	USB 2.0. PC not included. Requires Windows® XP or Windows® 7, 32/64-bit English language ver.		
System footprint	75 cm × 55 cm nominal excluding PC (DeltaFlex-01)		

*Dependent on sample and system configuration

Applications

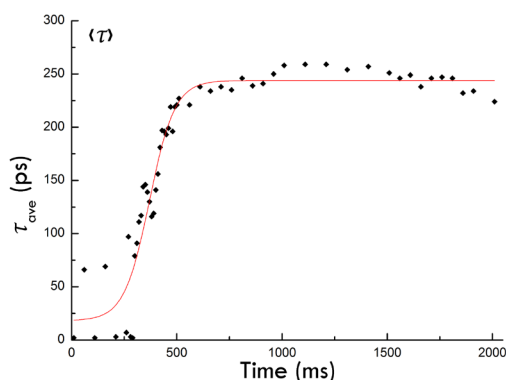
- FRET (Förster Resonance Energy Transfer)
- Stern-Volmer quenching
- Lanthanide luminescence
- Time-resolved fluorescence and phosphorescence anisotropy
- Protein fluorescence
- Solar-cell analysis
- Singlet-oxygen measurements
- Materials research
- Photophysical research
- Binding studies

Options and accessories

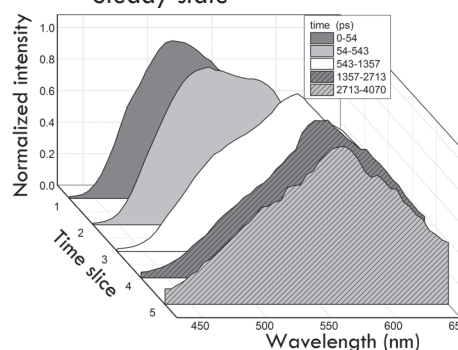
- Sample holders for solid samples
- Microsense for small volumes
- Diode heads: see www.picocomponents.com

Measurement modes

- Lifetime: Measure 25 ps to 1 second
- Kinetic TCSPC: 1 to 10 000 decays measured sequentially in 1 ms to 1 min per decay
- Anisotropy: Reconvolution analysis to resolve shorter rotational correlation times
- Time-Resolved Emission Spectra (TRES): Collect up to 100 wavelength-dependent decays
- Steady-state



Kinetic analysis (10 ms/decay) of a curcuminoid binding to serum albumin, monitored by change in curcuminoid lifetime



TRES analysis of curcumin emission in serum albumin

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