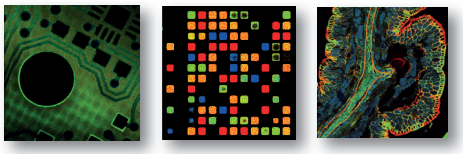
MicroTime 100

Upright Time-Resolved Confocal Fluorescence Microscope

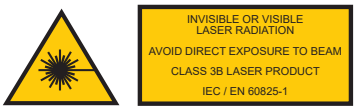
- Complete microscope with laser coupling module
- Laser wavelengths from 375 nm to 1000 nm
- Multiple detector options
- Upright microscope base
- XY(Z)-scanning Piezo stage for 2D or 3D-lifetime imaging
- Wide range scanner with a scan range up to several cm (on special request)



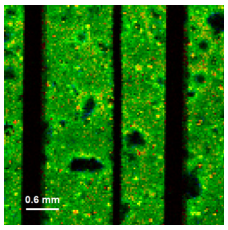
Applications

- Time-Resolved Fluorescence
- Fluorescence Lifetime Imaging (FLIM)
- Phosphorescence Lifetime Imaging (PLIM)
- Fluorescence Correlation Spectroscopy (FCS)
- Fluorescence Lifetime Correlation Spectroscopy (FLCS)
- Foerster Resonance Energy Transfer (FRET)
- Pulsed Interleaved Excitation (PIE)
- Pattern Matching Analysis
- Time-Resolved Photoluminescence (TRPL)
- Time-Resolved Photoluminescence Imaging
- Antibunching
- Single Molecule Detection / Spectroscopy

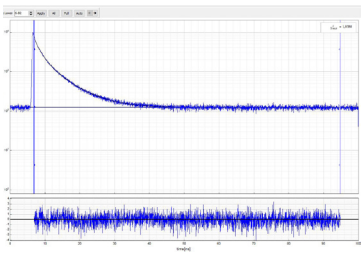
The time-resolved microscope MicroTime 100 contains the complete optics and electronics for recording fluorescence decays in small volumes by means of Time-Correlated Single Photon Counting (TCSPC). The system is based on a conventional upright microscope body. With the MicroTime 100, decay times down to some picoseconds can be resolved. The system allows operation at laser repetition rates as high as 84 MHz and count rates up to several million counts/sec. A laser coupling module with sophisticated beam shaping and focusing optics allows the use of external pulsed diode lasers. The system is designed to be used with the picosecond diode lasers of the LDH Series. Standard dichroic filter blocks are utilized to guide the light onto the sample and to filter out the fluorescence light. Standard PMT modules or SPAD detectors can be provided in a single or dual channel detector configuration. All data acquisition as well as analysis functions of the MicroTime 100 are controlled by the SymPhoTime software.
Further available is an inverse microscope, the MicroTime 200, with up to 4 detection channels for simultaneous detection of either polarization anisotropy or multicolor experiments.



Measurement Example



Fluorescence lifetime image of a CIGS based solar cell, 4x4 mm, 128x128 pixel, 1.1ms/pixel, excitation at 560 nm with LDH picosecond diode laser, detected emission at 1250 nm, nm, 40x air objective.



Time-resolved luminescence analysis of CIGS based solar cell. Measured with 20x air objective, excitation at 560 nm and emission detection at 1250 nm. The result of this analysis are three different decay lifetimes with 0.42 ns, 1.90 ns and 6.24 ns. This resulted lifetimes are strongly power depent, which is known in literature for this type of material.

Options

Different types of sample illumination, e.g. Epi-Fluorescence illumintation or gooseneck side-on illumination in combination with a camera for intensity images

Specifications

Excitation Sources				
Picosecond diode laser wavelengths	375 - 1000 nm			
Repetition rate	up to 40 MHz, (optional 80 MHz)			
Detectors				
Type	PMA Series	PMA Hybrid Series	SPAD (PDM Series)	SPAD (Excelitas Series)
Spectral range[1)]	185 – 820 nm	300 – 900 nm	400 – 1000 nm	500 - 1150 nm
Dark counts (at 20 °C, typ. value)	< 200 cps	< 1000 cps	< 250 cps	< 100 cps
Instrument Response Function[2)]	typ. < 180 ps	typ. < 150 ps	typ. < 50 ps	typ. < 250 ps
Data Acquisition				
Type	TimeHarp 260		MultiHarp 150	
Version	PICO	NANO	4P	4N
Time resolution (bin width)	25 ps	250 ps	10 ps	80 ps
Dead time	< 25 ns	< 2 ns	650 ps	
Time channels per curve	32768		65536	
Scanning (optional)				
Type	Piezo wide-range scanner		XY / (Z) Piezo objective scanner	
Range	75 × 75 mm		80 × 80 (× 100) µm	
Positioning accuracy	< 400 µm		< 10 nm	
Operation & Electrical				
PC requirements	Quad-core CPU > 3 GHz, RAM >= 4 GB, Windows™ 7/8			
Power requirements	220/240 or 110/120 VAC, 50/60 Hz			
Dimensions				
Microscope unit	320 × 600 × 600 mm (w × d × h)			

1) other detectors and cooling available upon request,
2) IRF @ l = 650 nm

PicoQuant GmbH
Rudower Chaussee 29 (IGZ)
12489 Berlin
Germany

Phone +49-(0)30-1208820-0
Telefax +49-(0)30-1208820-90
Email info@picoquant.com
Web www.picoquant.com