

## ***Product Release Note***

# **New FLIM Upgrade Kit for Laser Scanning Microscopes**

PicoQuant has developed a Fluorescence Lifetime Imaging (FLIM) upgrade kit for most commercial laser scanning microscopes. It consists of the state-of-the-art picosecond diode laser sources in combination with high-end data acquisition electronics. This offers users of laser scanning microscopes an easy upgrade path towards time-resolved measurements. Our setup uses picosecond diode lasers from 375 to 470 nm and from 635 nm upwards for fluorescence excitation. The lasers are coupled in a single mode fiber for perfect Gaussian beam shape and easy handling. The detected signal is guided to a photon counting detector, such as Photomultiplier Tubes (PMT) or Single Photon Avalanche Diodes (SPAD). This combines the outstanding sensitivity of photon counting detectors with the ease of use of diode laser sources, to allow time-resolved measurements of fluorescence decays with resolutions down to picoseconds. The synchronization signals from the laser scanning microscope are fed into the data stream recorded by the TimeHarp 200 TC-SPC system, via the unique Time-Tagged Time-Resolved (TTTR) data acquisition mode. In this TTTR data acquisition mode each photon is recorded individually with its specific parameters as detector channel, picosecond timing, global arrival time and, in this special application, up to three additional markers. These markers, in

combination with the global arrival time, allow the system software to reconstruct the complete image and subsequently fit the full fluorescence lifetime image. The multi-parameter data acquisition scheme of the TimeHarp 200 electronics not only records each parameter individually, but offers in addition the opportunity to analyse the parameter dependencies in a multitude of different ways. This method allows not only to calculate the fluorescence fluctuation correlation function (FCS) on any single spot of interest but also to reconstruct the fluorescence decay of each image pixel and detector channel for the purpose of Fluorescence Lifetime Imaging (FLIM) or advanced Fluorescence Resonance Energy Transfer (FRET) analysis.

The kit can be configured to customers laser scanning microscope, detector schema, special demands in excitation and emission wavelength as well as installation or special training on FLIM and time-resolved techniques.

Contact:  
PicoQuant GmbH  
Rudower Chaussee 29  
12489 Berlin, Germany  
Tel./Fax: +49-(0)30-6392-6560/6561  
WWW: [www.picoquant.com](http://www.picoquant.com)