

## LIVE CELL OBSERVATION WITH FV1000 CONFOCAL, TIRFM, AND DSU SYSTEMS

Yiwei (Kevin) Jia, Ph.D.,  
Olympus America Inc.  
Two Corporate Center Drive, Melville, NY 11747-3157, USA  
E-mail: [yiwei.jia@olympus.com](mailto:yiwei.jia@olympus.com)

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Olympus has introduced a new laser scanning confocal microscope, the FV1000 featuring filter or spectral detection. This new detection system allows high resolution spectral imaging with high sensitivity and speed. The FV1000 has an optional second scanner called the simultaneous (SIM) scanner. The main scanner and the SIM scanner are independently controlled and both support ROI or point scanning. The two scanners can be synchronized in both time and space. The SIM scanner adds new equipment capabilities to confocal research for quantitative live cell studies. Along with the SIM scanner, a new efficient stimulation/bleaching scanning mode (called Tornado Mode) has been developed. Typical applications for the SIM scanner include, but are not limit to, photo-stimulation, un-caging, FRAP, and photo-conversion. The dual scanner system allows two operations to be performed simultaneously with zero time delay. FV1000 features a new active laser power stabilization mode and a new dual-mode detection system for improved reproducibility during quantitative live cell imaging. Besides the newly developed low noise, high dynamic range analog detection system, a hybrid photon counting method has been integrated into FV1000.

Olympus Total Internal Reflection Fluorescence Microscope (TIRFM) system innovation continues. Three TIRFM objectives are currently available. In the past year, Olympus introduced a TIRFM laser combiner, a turn key TIRFM imaging system, and a lamp based TIRFM illumination system. We also recently added a condenser based TIRFM system offering low magnification, wide field TIRF illumination from up to four lasers simultaneously.

Olympus DSU system is based on a spinning disk with a unique disk pattern. This system provides high-throughput with reduced photo bleaching and high-speed confocal imaging with a CCD detector. The Hg/Xenon light source provides convenient excitation wavelength selection and UV confocal imaging is feasible. We provide a set of disks to match objectives with different numerical apertures and magnifications. Researcher can optimize confocality or enhance signal collection by selecting a disk best suited for their specimen. For low magnification and high numerical aperture objectives, the DSU provides a significant advantage both in throughput and confocality.