



WORKSHOP

**COMBINING SUPER RESOLUTION MICROSCOPY FOR FAST, DEEP, HIGH-QUALITY
3D IMAGING IN FIXED AND LIVING SAMPLES WITH MULTIPOINT SCANNING
CONFOCAL OPEN NEW RESEARCH HORIZONS**

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The in-depth investigation of protein interactions that are at the basis of the biological processes is a critical step to shed light on the physiology and pathology of the cell. In this context, super-resolution microscopy represents a tool of primary importance that allows researchers to observe in detail structures and complexes otherwise indistinguishable by with conventional diffraction-limited methodologies. The main limitation of this technique is constituted by the very long acquisition time needed to obtain a single image.

Vutara, the Single Molecule Localization (SML) microscope presented by Bruker, utilizes Quad-field technology to image simultaneously two-focal planes within the sample, offering superior localization over other principles (i.e. astigmatism). Furthermore, extraordinary imaging speed by is achieved by providing simultaneous data acquisition and localization analysis, making the Vutara SR-350 the fastest super-resolution instrument on the market today. For these reasons, Vutara is compatible with deep (5 μm) 3D live-cell imaging of dynamic biological systems, with Z-stacking capability, with lower drift and more accurate data resulting from fast data acquisition. ResEnhanced technology offers detection via the latest generation sCMOS detectors, allowing for a better signal-to-noise ratio, with consequent sharper image quality, along with dramatically faster acquisition speeds, compared to conventional EMCCD cameras. The system is provided with high power lasers that allow for both high-speed and multicolor imaging.

The combination with the Opterra multipoint confocal scanner allows multiple imaging modalities in a single experiment for correlative imaging, contextual information and visual interpretation of the sample. This feature, associated with the powerful quantitative analysis tools offered by the software (spatial distribution, cluster analysis, co-localization etc.), provides an optimal solution for the widest range of application requirements.