



Room 103C: Sunday, February 11

9:30 AM – 11:00 AM

Bruker

The Bruker Vutara VXL: Superresolution Microscopy Multiplexed and in 3D

The Bruker Vutara VXL is a dedicated single-molecule localization (SMLM) super-resolution microscope. Historically, the optical resolution limit of fluorescence microscopy constrained the study of structures smaller than 300 nm. The Vutara VXL transcends this barrier, offering an optical resolution of 20 nm and beyond, and allows the unraveling of biological enigmas that necessitate specific labeling akin to fluorescence microscopy but demand a resolution surpassing that of diffraction-limited microscopy.

One of the distinguishing features of the Vutara VXL is its proprietary bi-plane technology. This extends the traditional 2D fitting into the third dimension, enabling the imaging of thick cell cultures and tissue slices. The Vutara VXL does not require TIRF illumination.

The Vutara VXL employs a variety of techniques to achieve super-resolution. These include STORM, PALM, dSTORM, and DNA-PAINT. These techniques involve the modulation of dye molecule emissions and the transient binding of oligonucleotides. The result is a system capable of imaging, resolving, and quantifying cellular structures, molecular machines, proteins, RNA, and chromosomal structures with unprecedented detail.

In addition to its super-resolution and 3D imaging capabilities, the Vutara VXL stands out for its multiplexing capabilities. It is equipped with two cameras for simultaneous multi-color imaging, allowing for the concurrent observation of multiple sub-cellular components. Furthermore, it integrates with the PlexFlo fluidics platform, enabling multiplexed experiments. This integration facilitates the simultaneous investigation of multiple biological phenomena, enhancing the efficiency and scope of research.

In this presentation, we will discuss how the Bruker Vutara VXL compact bench-top system brings the power of SMLM into your lab.

Speaker

Winfried Wiegand, Product Manager Superresolution Microscopy, Bruker