

## Bruker Nano

Thursday, March 27, 2025  
13:30 - 14:30, Lecture Hall 101

### Multi-Scale Imaging: from Molecules to Organisms using Bruker Super-Resolution and Light Sheet Microscopy

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This workshop consists of two parts: The first half will focus on Lightsheet systems, the second half on the Vutara VXL superresolution system.

*LCS SPIM – Light Sheet Microscopy for Large Cleared Samples*  
Light sheet microscopy has become the state of the art methodology to address a wide variety of biological questions. Key features of this technique are the extremely minimized photo bleaching, the high-speed image acquisition, and the large imaging depth. Tissue clearing renders biological samples transparent, a prerequisite for optical imaging in large (e.g. mesoscopic) samples. The combination of cleared tissues with light sheet microscopy is an ideal synergy.

In this workshop, participants will learn about tissue clearing of large samples. Different imaging strategies will be discussed, ways to achieve the best image quality will be explored, and the whole pipeline from acquiring a tiled stack, processing (i.e. stitch) and visualizing the data will be exercised.

#### *Vutara VXL - Superresolution Microscopy*

Modern fluorescence microscopy applications need to be performed in natural environments of the structures of interest. This requires using large samples, like tissue slices or even whole model organisms. One of the main limitations of most superresolution microscopes is their weak ability to image structures in great depth of the sample.

The Bruker Vutara VXL system is different, as it allows to resolve structures in 3D at 20 nm resolution (or better) in up to 50  $\mu\text{m}$  depth inside a biological sample. This is ideal for studying the distribution of pre- and postsynaptic proteins or the cytoskeleton architecture of cells in their native environment.

This part of the workshop will provide application examples from neurobiology and demonstrate the workflow from data acquisition to processing and analysis.



Clemens Schneider - Sales product Specialist  
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