

Speaker Karlsruhe Days of Optics & Photonics 2023



Abstract: Looking deeper with microscopy: New methods for imaging the processes of life

Dr. Robert Prevedel

Our group innovates new optical tools and methods ('microscopes') that allow to observe cellular processes and dynamics in living organisms in non-invasive ways. In particular, we develop optical imaging techniques that aim to push the frontiers of microscopy to record from deep and highly scattering, living tissues, such as the mouse. In my talk, I will present recent results from our research and highlight some applications in imaging

structural and functional processes in-vivo. This includes our work on multi-photon microscopy, but will also feature other imaging modalities such as light-field microscopy, photoacoustics or optical coherence tomography. Finally, I will present our work on Brillouin microscopy which can probe mechanical properties of biological samples with diffraction-limited resolution in 3D.

Biography:

Robert Prevedel received his PhD at the University of Vienna in Quantum Optics and then his Post Doc first in Quantum Imaging at the Institute for Quantum Computing at University of Waterloo, Canada and his second Post Doc in Biological Imaging at the Institute of Molecular Pathology & Max F. Perutz Laboratories in Vienna, Austria.

Since 2016, Prevedel is a Group Leader at EMBL Heidelberg, Germany, and since 2019, he is a Group Leader for the Molecular Medicine Partnership Unit in Heidelberg, Germany. Prevedel is an Investigator for the German Center for Lung Research (DZL), Germany, since 2021, and is also an Investigator for the Interdisciplinary Center for Neurosciences in Heidelberg, Germany.