



Superresolution Microscopy

ZEISS Elyra Seminar

by specialist Dr. Christian Hellriegel

Monday 13th May, 12:00
Panum Institute, room 29.01.31



Dr. Christian Hellriegel is an application specialist with Carl Zeiss Microscopy GmbH since 2011. Scientific Background: Physical Chemistry (LMU Munich) with Prof. C. Bräuchle, focussing on single-molecule spectroscopy (detection and tracking). Biophysics at the University of California in Irvine with Prof. Enrico Gratton on the topic of 3D single-particle tracking using lock-in, closed loop feedback algorithms and 2-photon excitation microscopy. Research Specialist and facility management (microscopy, bioimaging) at the CNIC in Madrid, Spain with focus on quantitative imaging techniques such as scanning FCS, RICS, single-particle tracking and Number & Brightness analysis.

Abstract

Superresolution microscopy today describes a sub-set of methodologies within the field of fluorescence microscopy which overcome the resolution limit stipulated by Ernst Abbe for conventional optical microscopes in the 1870s. In simple words "superresolution" means "resolution better than confocal". There is a broad variety of techniques that can be included into the superresolution family, for example structured illumination microscopy (SIM) and photoactivation localization microscopy (PALM). While substantial improvement of spatial resolution (from around 100 nm down to about 10 nm) can be achieved with the aforementioned techniques, one has to consider also application oriented aspects. The challenge is therefore to provide both improved resolution and the capability to examine conventional specimens - for example in 3D and without the necessity to radically rethink sample preparation and staining. ELYRA is Carl Zeiss' take on the topic. It is a superresolution platform based on structured illumination microscopy (SIM) and/or localization microscopy (PALM and dSTORM). In this presentation we review of the underlying technology and showcase the instrument from the view of its applicability in science and research.

During the seminar Zeiss will serve sandwiches and soft drinks.
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