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Guest Lecture

Title: "Metal-Dielectric Coatings for Biological Imaging on the Nanoscale"

Speaker: Dr. Katrin Heinze

Address: Research Center for Experimental Biomedicine; University of Würzburg, Germany

Date: Friday, 24th of January 2014
Time: 14:30
Place: Seminar Room CBEG02 (387, Photonics); Gußhausstraße 27

Abstract:

Fluorescence nanosectioning within a submicron region above an interface is desirable for many disciplines in the life sciences. A drawback, however, to most current approaches is the a priori need to physically scan a sculptured point spread function in the axial dimension, which can be undesirable for optically sensitive or highly dynamic samples.

In my presentation I will show how to overcome the need for scanning and introduce a high-resolution light microscopy technique that translates spatial information of fluorescent markers into spectral information for improved biological imaging. By designing a thin biocompatible nanostructure on a microscope slide, we show how the distance-dependent spectral "fingerprint" of fluorophores can be used to monitor their relative distance from the nanostructure with an accuracy of 5-10 nm far beyond the resolution power of a conventional light microscope. We demonstrate the technique by studying the positions and dynamics of key proteins that play a role in cell motility.