MPIDS Colloquium

MAX-PLANCK-GESELLSCHAFT

Image Scanning Microscopy and Metal Induced Energy Transfer: Enhancing Microscopy Resolution in All Directions

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Classical fluorescence microscopy is limited in resolution by the wavelength of light (diffraction limit) restricting lateral resolution to ca. 200 nm, and axial resolution to ca. 500 nm (at typical excitation and emission wavelengths around 500 nm). However, recent years have seen a tremendous development in high- and super-resolution techniques of fluorescence microscopy, pushing spatial resolution to its diffraction-dictated limits and much beyond.
One of these techniques is Image Scanning Microscopy (ISM). In ISM, the focus of a conventional laser-scanning confocal microscope (LCSM) is scanned over the sample, but instead of recording only the total fluorescence intensity for each scan position, as done in conventional operation of an LCSM, one records a small image of the illuminated region.
A second method which I will present is concerned with achieving nanometer resolution *along* the optical axis. It is called Metal Induced Energy Transfer or MIET and is based on the fact that, when placing a fluorescent molecule close to a metal, its fluorescence properties change dramatically.
In this talk I will discuss both methods in detail and show applications as well as achieved results.

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MPIDS, Prandtl lecture hall, AI building, Am Faßberg 11, Göttingen

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