



L4H Seminar VOLKER DECKERT 'Molecular Spectroscopy on a Molecular Length Scale - Structure Investigation of Biomolecule Surfaces'

VOLKER DECKERT

January 15, 2014

Wednesday, January 15, 2014, 10:30. Seminar Room

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Raman microscopy is a well established analytical tool. Minimum requirements on sample preparation and the ability to measure in aqueous conditions renders it specifically useful for the exploration of bio samples. The insufficient sensitivity of Raman spectroscopy, can be tackled by the use of field enhancing methods (surface enhanced Raman scattering - SERS) that permit sensitivities down to the single molecule range. The confinement of the enhancement to just a single particle or edge feature is realized in the so-called tip-enhanced

Raman scattering (TERS) technique. In TERS a single field enhancing particle is raster scanned over an area of interest. As the field is confined to an area that is related to the size of the particle, a lateral resolution well below the diffraction limit can be achieved.

The unique mix of high lateral resolution, sensitivity and specificity makes TERS a useful tool for the exploration of bio related specimen. The focus will be set on the spatial resolution capabilities and the intrinsically linked distinction of single building blocks when a high lateral resolution, comparable to molecular dimensions, is available.

Examples will be the investigation of bio-polymers like DNA where direct sequencing is in reach as well as protein structures where a mapping of amino acids and secondary structural units can be elucidated.

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Hosted by Prof. Dmitri Petrov

