

# UniCat Colloquium

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Lecturer: **Prof. Svetlana Santer**, Experimental Physics,  
University of Potsdam, Germany

Title: **Polymer films with optically controlled form and actuation on a nanometer scale**

Abstract: We have recently suggested that it should be possible to move or reposition strongly adsorbed nano-objects with relative ease, in large number and simultaneously. The essential idea is not to put more effort in fighting against the prevailing surface forces but rather to utilize them - in clear contrast to current techniques of nano-manipulation with atomic force microscopy (AFM) [S. Santer et. al, Advanced Materials 18, (2006) 2359-2362].

Here we present photosensitive polymer thin films with integrated optically active elements which are supposed to support and steer the response of polymer films to external UV-illumination by acting as nano-scale antennas. For this, we are going to exploit the properties of surface plasmons excited within metal gratings during UV irradiation at a certain wavelength. The resulting intensity distribution leads to a corresponding change in topography that can be changed back to its initial state by irradiating with a different wavelength.

In contrast to direct illumination with UV-interference patterns, the use of plasmon interference from metal gratings will allow to generate intensity variation and thus topographical structures below the diffraction limit. This opens up several new possibilities in the field of nano-manipulation discussed in this work.

Date: **Wednesday, 13 April 2011**

Time: **5:15 pm - around 6:45 pm**

Location: **TU Berlin,  
Institute of Chemistry,  
Straße des 17. Juni 115,  
10623 Berlin  
Building C, Lecture Hall C 243**

Organiser: **Prof. Regine von Klitzing (TUB)**

Coffee and tea will be served thirty minutes prior to the lecture start.  
**Guests are cordially invited to attend!**

Prof. Dr. Matthias Driess, Chair of the Cluster of Excellence UniCat