

Special UniCat Colloquium

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Lecturer: **Prof. Roie Yerushalmi**, Institute of Chemistry and the Center for Nanoscience and Nanotechnology, The Hebrew University of Jerusalem, Jerusalem, Israel:

Title: ***Photocatalytic Films by Molecular Layer Deposition***

Abstract: A significant challenge to-date is the formation of highly controlled photocatalytic films on high aspect ratio nanometric scaffolds and templates. Such materials and architectures are desirable for the formation high surface area structures with controlled surface properties and functionality at the nanometric scale leading to highly favorable catalytic activity. Recently we introduced the application of Molecular Layer Deposition (MLD) as a route for preparation of highly photoactive thin films with controllable properties on surfaces as well as on nanometric scaffolds.

In my talk I will present recent results for solvent-free MLD approach for the formation of hybrid organic-inorganic films. As a proof-of-concept we focused on titinaucone, a titanium oxide-organic hybrid film. Thermal anneal of the hybrid film result in decomposition of the organic components and gradual formation of crystalline TiO₂ anatase phase with increasing temperature. The thermally annealed films exhibit crystalline as well as amorphous regions for a wide temperature range, which is valuable feature for designing highly active photocatalytic films by combining high affinity towards molecules and crystalline regions. The amorphous and crystalline regions are in close interaction embedded within the same thin film. Our results demonstrate the feasibility and high potential of using MLD process to form nanometric hybrid structures for photocatalysis.

I will present results for the degradation of benzoic acids in aqueous solutions as well as the formation of H₂O₂ without the need for sacrificial compounds or externally applied potential.

Find out more on Prof. Yerushalmi on: <http://chem.ch.huji.ac.il/~roie/index.html>

Date: **Thursday, September 5th, 2013**

Time: **3:00 pm until about 4:30 pm**

Location: **TU Berlin, Gerhard Ertl Center
Marchstr. 6, 10587 Berlin
Building BEL, Meeting Room BEL 301**

Organizer: **Prof. Matthias Driess (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