

# Unicat Colloquium

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## Unicat admittance talk of research group leaders:

Lecturer: **Prof. Dr. Timm Graening**, Institute of Chemistry, TU Berlin

Title: Presentation of Project Proposal:  
**Dimeric Rhodium(II)-catalysts**

Abstract: The research project in the field of homogenous catalysis aims at the informed design of new catalysts for CH bond functionalization. While seeking for transformations in the context of the synthesis of complex organic molecules, knowledge of the catalysts' properties and of mechanistic details is vital for our studies. Novel preparative methods for dimeric Rh(II) complexes are presented and an overview of their applications is given. Beyond that, our initial efforts to gain information on the catalysts redox behavior, and experiments in the gas phase aimed at investigating CH activation of small molecules are shown, for which collaboration with other research groups is necessary. A group of ligands which would allow for immobilization of the catalysts is introduced, which would alleviate one of the major problems associated with rhodium catalysts, i. e. making the catalyst reusable, thus cutting down the processes' cost. Furthermore, combinations of our catalysts with catalysts under investigation in the cluster (A4) for consecutive catalysis are being considered.

Lecturer: **Prof. Dr. Carl Christoph Tzschucke**, Institute of Organic Chemistry, FU Berlin

Title: Presentation of Project Proposal:  
**Artificial Photosystems: Towards Applications in Transition Metal-Catalyzed Stereoselective Redox Reactions**

Abstract: The proposed research is aimed at utilizing light as the driving force for transition metal-catalyzed redox processes in organic synthesis, obviating the need for stoichiometric strong oxidizing or reducing agents. This goal will be approached by the modular assembly of a photosystem for light induced charge separation. The central part of this photosystem is based on known Ru(bipy)<sub>3</sub> complexes to which electron donor and acceptor units acting as electron relays are linked. To the central unit catalysts for oxidation and reduction are linked, which turn over an organic substrate such as alcohols or carbonyl compounds. The main challenges are creation of long lived charge separated states and productive electron transfer to the catalysts. The key feature to overcome these is the modular design, which allows for optimization and easy assembly of the individual components. The project connects the research on photosystems with electrocatalysis and homogeneous catalysis, and will improve our fundamental understanding of electron transfer processes in photosystems as well as lead to new concepts in homogeneous redox catalysis.

Date: **Wednesday, 18 November 2009**

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

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

Organiser: **Prof. Dr. Siegfried Blechert (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