

UniCat Colloquium

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Lecturer: **Dr. rer. nat. Lasse Greiner**, Acting Professor at the Chair of Biotechnology, Institute for Technical and Macromolecular Chemistry (ITMC), RWTH, Aachen

Title: **Technical Realisation of Integrated Catalytic Cascade Reactions**

Abstract: The combination of successive catalytic molecular transformations is an appealing concept. However, the realisation is often hampered by compatibility of conditions meeting the need of all catalysts. This is most notable for the combination of biocatalytic and chemical reactions. Thus, thorough understanding of reactions and catalysts are needed as well as new reactor concepts.

A number of approaches can be followed to overcome this. Non-conventional media can open up new process windows or may be able to compartmentalise reactions. This could be demonstrated by the selective oxidation with in situ generated hydrogen peroxide in a biphasic system of supercritical carbon dioxide and water. As oxidation catalysts Chloroperoxidase from *Caldaromyces fumago* was applied as catalyst for the enantioselective oxidation of thioanisole and nanoparticles allowed the selective oxidation of sulfides to sulfones or sulfoxides.

Furthermore, technical means can be applied to allow the combination under different sets of physical boundary conditions. This is important if temperature or other physico-chemical conditions are mutually incompatible between catalytic systems. For the dynamic kinetic resolution a loop reactor for supercritical carbon dioxide was realised. Using the supercritical fluid as vector between the catalyst modules enzyme catalysed kinetic resolution and catalytic racemisation were combined and separated simultaneously.

Date: **Wednesday, 20 January 2010**

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. Marion Ansorge-Schumacher (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