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Unifying Concepts in Catalysis

UniCat Colloquium

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Lecturer: **Prof. Thomas Happe**, AG Photobiotechnology, Faculty of Biology and Biotechnology, Ruhr-Universität Bochum, Germany:

Title: ***Chemical Mimics in Hydrogenase - Old Tools in a New Light***

Abstract: [FeFe]-hydrogenases are an interesting class of enzymes that catalyze both, H_2 oxidation and the reduction of protons to molecular hydrogen with high efficiency. The active site of these proteins consists of a prosthetic group (H-cluster) with six iron, six sulfur atoms and unusual CO- and CN-ligands. In order to skip the tedious and inefficient process of hydrogenase production, chemists have recreated the enzyme component that is catalytically active. Even though the reproduction was successful, these chemical imitations only generate small volumes of hydrogen (H_2). Recently we have established a new method showing that the chemical mimic of the [2Fe] subcluster can reconstitute apo-hydrogenase to full activity. This activation is independent of maturases or any other helper protein and results in a chemically assembled H-cluster which is spectroscopically indistinguishable from the native co-factor. These results give new insights into the self-assembly of complex metal clusters and indicate that the protein backbone alone catalyzes the chemical modifications required for the completion of the H-cluster. This simple procedure is a powerful tool for developing novel artificial H_2 producing catalysts. It can be used to test modifications of the inorganic cofactor, but also to develop protein-like environments that can accommodate H-cluster mimics and bring out their full catalytic activity.

Find out more on Prof. Happe on:
http://www.ruhr-uni-bochum.de/pbt/index_EN.html

Date: **Wednesday, October 9th, 2013 at 5:15 pm**

Location: **TU Berlin, Institute of Chemistry**
Straße des 17. Juni 115, 10623 Berlin
Building C, Lecture Hall C 264

Organizer: **Prof. Peter Hildebrandt (TUB), Dr. Oliver Lenz (TUB) and Dr. Ingo Zebger (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