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Unifying Concepts in Catalysis

# UniCat Colloquium

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| Date: | **Wednesday, 14 July 2010** |
| Time: | **4:00 pm – around 6:45 pm** |
| 4:00-5:00 | **Dr. Elisabeth Lojou**, CNRS, Marseille |
| Title: | **Hydrogenases as catalysts for fuel cells: strategies for efficient immobilization at electrode interfaces** |
| Abstract: | Recently, innovatory technology based on the use of renewable biocatalysts in fuel cells emerges as a valuable alternative to platinum. Hydrogenase, the enzyme that catalyzes the cleavage of hydrogen into protons and electrons, is a good candidate for such devices given that sensitivity to $O_2$ can be overcome, and that stability and efficiency upon immobilization can be reached. Resistance to $O_2$ can be obtained in some rare cases via genetic manipulation. We report in this lecture another very attractive way based on the use of intrinsically resistant hydrogenases from the extremophilic bacterium *Aquifex aeolicus.* We will emphasize various immobilization processes of *Aa* membrane-bound hydrogenase at gold and graphite electrodes, and discuss their influence on the efficiency towards $H_2$ oxidation. |
| 5:00-5:15 | **Coffee break** |
| 5:15-6:45 | **Prof. Dr. Thomas Carell**, Munich Center for Integrated Protein Science CIPSM, LMU Munich |
| Title: | **The Chemistry of DNA-Repair** |
| Abstract: | Our genome is constantly damaged by various exogenous and endogenous events. 20'000 to 40'000 lesions are in this way generated each day per cell. These lesions interfere with the normal transcription and replication events. In the lecture I will describe the chemical synthesis of oxidative DNA lesions, DNA lesions, which are formed due to UV-irradiation, and of cisplatin lesions generated during a typical anticancer therapy. I will discuss how these lesions are synthesized and incorporated into oligonucleotides using solid phase chemistry or direct chemistry on DNA. DNA double strands containing a defined (6-4) lesions at defined sites were used to create a co-crystal structures with the (6-4) DNA photolyase from *Drosophila melanogaster*. From this structure and correlated biochemistry we could develop a new repair mechanism used by the protein to achieve a light induced repair reaction. Furthermore, co-crystal structures of cisplatin lesion containing DNA in complex with polymerase-eta allowed us to decipher step-by-step the mechanism of translesion synthesis. |
| Location: | **TU Berlin, Institute of Chemistry, Straße des 17. Juni 115, 10623 Berlin Building C, Room C 243** |
| Organiser: | Prof. Dr. Roderich Süßmuth (TUB), Prof. Carola Rück-Braun (TUB), Prof. Dr. Peter Hildebrandt (TUB) |

Coffee and tea will be served in the break between the two lectures.
Guests are cordially invited to attend!

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