

UniCat Special Seminar

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Lecturer: **Dr. Lars Jeuken, University of Leeds, Institute of Membrane and Systems Biology, Leeds, UK**

Title: **Lipid-membrane modified Electrodes and fluorescent Electrochemistry to study Redox Enzymes**

Abstract: In this presentation, the versatility of membrane-modified electrodes and fluorescence electrochemistry will be introduced. An overwhelming number of chemical reactions in nature, both in the living cell and in the inanimate world, are redox reactions. In biology, many of these reactions are catalysed by redox enzymes, many of which reside in the lipid membrane, where they play a major role in almost all metabolic processes, including photosynthesis and biochemical processes such as the nitrogen cycle. By electrically connecting membrane redox enzymes to membrane-modified electrodes, a powerful sensing platform is constructed that is able to characterise details of the catalytic mechanism using electrochemical techniques. A second method we have been exploring is to combine fluorescence spectroscopy with electrochemistry, where the fluorescence is used to monitor conditions such as pH or the redox state of a metal site in a multi-centre redox enzyme.

References

- 1) Krzeminski, L., Ndamba, L., Canters, G.W., Aartsma, T.J., Evans, S.D., Jeuken, L.J.C. (2011) Spectroelectrochemical Investigation of Intramolecular and Interfacial Electron-Transfer Rates Reveals Differences Between Nitrite Reductase at Rest and During Turnover, *J. Am. Chem. Soc.*, 133, 15085-15093.
- 2) Daskalakis, N.N., Muller, A. Evans, S.D., Jeuken, L.J.C. (2011) Driving Bioenergetic Processes with Electrodes, *Soft Matter*, 7, 49 - 52.
- 3) Jeuken, L. J. C. (2009) Electrodes for integral membrane enzymes, *Nat. Prod. Rep.* 26, 1234-1240.
- 4) Weiss, S. A., Bushby, R. J., Evans, S. D., Henderson, P. J. F., Jeuken, L. J. C. (2009) Characterisation of Cytochrome bo₃ Activity in a native-like surface-tethered Membrane, *Biochem. J.*, 417, 555-560.

Please find more information about Dr. Lars Keuken on his webpage:

http://www.fbs.leeds.ac.uk/staff/profile.php?tag=Jeuken_LJC

Date: **Friday, March 2nd, 2012**

Time: **10:15 am - 11:15 am**

Location: **TU Berlin, Institute of Chemistry,
Straße des 17. Juni 135, 10623 Berlin
Building PC (MVL), Lecture Hall PC 203**

Organizer: **Prof. Peter Hildebrandt 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