nanosystems initiative munich

SEMINARANKÜNDIGUNG

Mittwoch, 08. Dezember 2010

14:00 Uhr

WSI, Seminarraum S 101

„Electrochemical bioanalysis using DNA and protein assemblies as recognition layer”

The presentation is focused on two selected research areas using DNA and protein electrodes for analytical purpose. DNA can be immobilised on gold via thiol chemistry. These electrodes can be characterized by voltammetric and impedimetric methods. This allows the detection of specific hybridisation events in nanomolar concentrations. The label-free impedimetric approach is particularly straightforward, but here the capture probe density is drastically influencing the signal change. Furthermore the system can be used to analyse specific binding to DNA and DNA sequences.
Protein electrodes, which are based on direct electron transfer, are often called third generation biosensors. In our work we are focussing on multiple layers of proteins on electrodes in order to enhance the analytical signal. The electron transfer mechanism has been studied intensively. Multilayer electrodes of the redox protein cytochrome c can be combined with enzymes allowing the construction of analytical signal chains starting from the substrate in solution via the multiple layers towards the electrode. Different strategies for the protein assembly construction will be illustrated.

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