



# Vortragsankündigung

## - im Rahmen des UniCat-Kolloquiums -

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Es spricht: **Dr. Gilbert Nöll**, Universität Siegen Organische Chemie I

Zeit: **Mittwoch, 12. November 2008 17:15 Uhr**

Ort: **TU Berlin  
Institut für Chemie, Altes Chemiegebäude  
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10623 Berlin  
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Thema: **Bioorganic Hybrid Materials for Applications in  
Bioelectrochemistry and Nanotechnology**

**Abstract:** The combination of redox-active proteins and functional molecules results in novel materials with interesting bioelectronic properties. Different systems, which are of potential interest for applications in biosensors, biofuel cells, or nanotechnology, will be presented.

The riboflavin binding protein dodecin binds not only native but also artificial flavins with high affinity in their oxidized state, while reduction of the flavin ligands induces the dissociation of the holocomplex into apododecin and free flavins. An electrochemically active flavin-modified electrode surface (electrode - molecular wire - flavin), which is able to bind or release dodecin apoprotein triggered by the redox potential, has been developed.<sup>1</sup> In first experiments DNA was employed as potential molecular wire-like system. Whether electron transfer through the DNA monolayer could be observed or not, was depending on the applied surface modification procedure.<sup>1</sup> An important conclusion is that different surface modification procedures should be compared when ET through DNA monolayers is investigated.

Additionally, a dodecin based molecular transport system has been developed. Various molecules of interest can be captured by dodecin, when they are linked to a flavin. Irradiation with blue-light in the presence of EDTA results in photochemical reduction of the flavins followed by the release of the ligands.

When redox enzymes are wired to electrodes, the resulting electrodes can be used in amperometric biosensors or biofuel cells.<sup>2-4</sup> For the sugar oxidizing enzyme cellobiose dehydrogenase, direct and mediated electron transfer have been compared, and biofuel cell applications are presented.<sup>3, 4</sup> Possible strategies to increase the stability and efficiency of enzymatic biofuel cells will be discussed.

Organisator: **Prof. Dr. Peter Hegemann (HUB)**

Gäste sind herzlich willkommen!

**Prof. Dr. Matthias Drieß**  
Sprecher des Exzellenz-Clusters UniCat