



Seminarankündigung

Dienstag, 3. Juli 2018
14:00 Uhr

WSI, Seminarraum S 101

“Molecular surface coatings for applications in electrocatalytic and photoelectrosynthetic fuel production”

Electrocatalysis and photoelectrosynthesis provide indirect and direct approaches to capturing, converting, and storing solar energy as chemical fuels, respectively. However, the ability to effectively interface the requisite components for activating multi-electron / multi-proton chemical transformations remains an outstanding challenge for science and the imagination. Using a nature-inspired approach, our research group has developed synthetic methodologies to chemically graft thin-film polymer coatings onto conducting and semiconducting surfaces. Taking the role of protein environments in biological architectures as inspiration, the polymer coatings provide a strategy to direct, template, and assemble molecular catalysts for activating fuel-forming reactions at appropriate functional groups along the surface-grafted polymer chains. In addition, the three-dimensional soft-material matrix provides chemically stabilizing environments for catalysts imbedded within the polymer. Electrochemical and photoelectrochemical measurements confirm the hybrid assemblies power reductive fuel-forming transformations in aqueous solutions without the use of sacrificial chemical reductants. (Supported by the National Science Foundation under Early Career Award 1653982.)

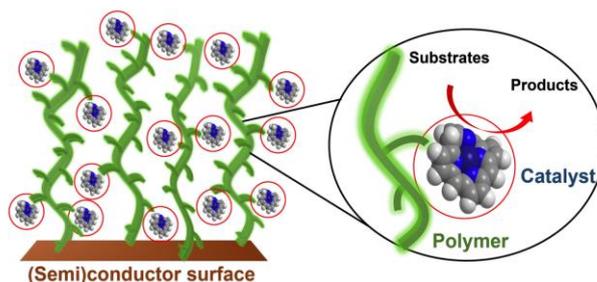


Fig. 1: Schematic of a polymer-coated (semi)conductor for photoelectrosynthetic applications

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