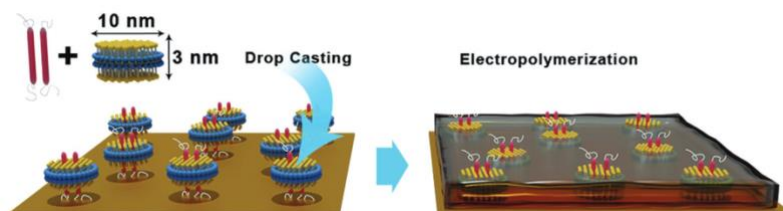


**Master thesis in the Department “Synthesis of Macromolecules”, Prof. Tanja Weil
Max Planck Institute for Polymer Research, Mainz**

Topic: Integration of biological functionalities into ultrathin, biobased polymer films via the immobilization of peptides and enzymes



Exemplary visualization of the integration of biomolecules in ultrathin polydopamine films from a previous publication of our group [1]

Potential applications of the bioinspired films include enzymatic environmental remediation, enzymatic fuel cells, biosensing and wound treatment. The characterization and functionalization will be done in-house as well as together with external collaborations.

Your tasks and techniques you will learn

- Electrochemical synthesis of ultrathin polydopamine films
- Immobilization of redox-enzymes and antimicrobial peptides on the films via adsorption, in-situ polymerization and post-functionalization
- Comprehensive characterization of the films with cyclic voltammetry, enzyme assays, UV/Vis, AFM, SEM, XPS and ToF-SIMS in cooperation with technicians and the supervising PhD student
- Working in an international group, giving oral presentations in group meetings and writing reports
- Opportunity to develop the research topic together with the supervisors and to contribute your own ideas

Who we are looking for:

- Highly motivated, independent students with a background in chemistry, biochemistry, materials science or a related subject
- Engaged team member
- Good command of written and spoken English
- Ideally, experience in working with enzymes, peptides, polymers or in electrochemistry

Applications will be processed upon receipt and until position is filled.

Please contact either Dr. Christopher Synatschke (synatschke@mpip-mainz.mpg.de) or Tilmann Herberger (herbergert@mpip-mainz.mpg.de)

[1] T. Marchesi D’Alvise, S. Harvey, L. Hueske, J. Szelwicka, L. Veith, T. P. J. Knowles, D. Kubiczek, C. Flaig, F. Port, K. E. Gottschalk, F. Rosenau, B. Graczykowski, G. Fytas, F. S. Ruggeri, K. Wunderlich, T. Weil, *Advanced Functional Materials* **2020**, 2000378.