

## “Physical Modeling of Biological Interfaces”

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Mittwoch, 1. Februar 2012, 17 Uhr s.t.

INM, Leibniz-Saal, im NMO-Gebäude hinter dem INM-Hauptgebäude, D2 5

Gastgeberin: PD Dr. Ingrid Weiss

Functional modification of solid surfaces with soft matters (models of plasma membranes and extracellular matrix) draws an increasing attention as a straightforward strategy to bridge soft biological materials and hard inorganic materials. Both artificial and native membranes can be deposited on ultrathin polymer supports that mimic the generic role of extracellular matrix and glycocalyx.

The main part of my talk provides with a brief overview about how the functions and mechanics of such soft interfaces can be fine-adjusted quantitatively. I will present some of our studies where we combined physical techniques in real and reciprocal space to probe the fine-structures of biological matters over wider length scales. In the second part, I will introduce some of our new interdisciplinary challenges towards the application of such tailored soft surfaces as a quantitative cue to understand the fundamental principle of disease and development.

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J. Oelke, A. Pasc, A. Wixforth, O. Konovalov, M. Tanaka, Highly Uniform, Strongly Correlated Fluorinated Lipid Nanodomains Embedded in Biological Membrane Models *Appl. Phys. Lett.*, 93, 213901 (2008).

R.G. Oliveira, E. Schneck, B.E. Quinn, O. Konovalov, K. Brandenburg, T. Gutschmann, T. Gill, C.B. Hanna, D.A. Pink, M. Tanaka

Crucial roles of charged saccharide moieties in survival of gram negative bacteria against protamine revealed by combination of grazing incidence x-ray structural characterizations and Monte Carlo simulations *Phys. Rev. E* 81, 041901 (2010)

E. Schneck, T. Schubert, O. Konovalov, B. Quinn, T. Gutschmann, K. Brandenburg, R. Oliveira, D. Pink, M. Tanaka, Quantitative Determination of Ion Distributions in Bacterial Lipopolysaccharide Membranes by Grazing-Incidence X-ray Fluorescence *PNAS*, 107, 9147 (2010).

H.Y. Yoshikawa, F.F. Rossetti, S. Kaufmann, T. Kaindle, J. Madsen, U. Engel, A.L. Lewis, S.P. Armes, M. Tanaka, Quantitative Evaluation of Mechanosensing of Cells on Dynamically Tunable Hydrogels, *J. Am. Chem. Soc.* 133, 1367 (2011)

**Alle Interessierten sind herzlich zum Vortrag  
und einem vorangehenden Kaffee (ab 16:30 Uhr) eingeladen.**

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