Fakultät für Chemie und Pharmazie
PHYSIKALISCHE UND THEORETISCHE CHEMIE

GDCh
GESELLSCHAFT DEUTSCHER CHEMIKER

Ortsverband Unterfranken

IPTC/GDCh-Vortrag

Donnerstag, 22. Juni 2017, 17:15 Uhr **Hörsaal C, Chemiezentralgebäude**

anschließend Diskussion bei “Bier und Brezel“

Prof. Dr. Franz M. Geiger

Northwestern University, Evanston, IL, USA

" Direct Views of the Nano-Bio Interface from Experiments and Computations"

Abstract:

While mixing nanoparticles with certain biological molecules can result in coronas that afford some control over how engineered nanomaterials interact with living systems, corona formation mechanisms remain enigmatic. Here, we report spontaneous lipid corona formation, i.e. without active mixing, at stationary lipid bilayer model membranes and bacterial cell envelopes, and present ribosome-specific outcomes for multi-cellular organisms. Experiments show that polycation-wrapped particles disrupt the tails of zwitterionic lipids, increase bilayer fluidity, and leave the membrane with reduced ζ-potentials.

Computer simulations show contact ion pairing between the lipid headgroups and the polycations’ ammonium groups leads to the formation of stable, albeit fragmented, lipid bilayer coronas, while microscopy shows fragmented bilayers around nanoparticles interacting Shewanella oneidensis. Our mechanistic insight can be used to improve control over nano-bio interactions and to help understand why some nanomaterial/ligand combinations are detrimental to organisms, like Daphnia magna, while others are not.

IPTC-Organisation
Prof. Dr. Tobias Hertel

und

GDCh Ortsvorsitzender Unterfranken
Prof. Dr. Bernd Engels

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