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Gegründet im Jahre 1869 von H. Hlasiwetz, J. Loschmidt, J. Petzval und J. Stefan

EINLADUNG

zum Vortrag von

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Core-shell nanoparticles and their assembly

am Dienstag, 29. April 2014, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 1. Stock

Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:
Nanoparticles with ultrastable and carefully controlled core-shell structures can be used in biomedical applications, e.g., as biomedical imaging contrast agents and for hyperthermia [1], but they are also attractive building blocks for actuated nanomaterials such as membranes for drug delivery vehicles [2]. In analogy with microparticle stabilized pickering emulsions, engineered nanoparticles can be assembled and organized at liquid interfaces. I will discuss our recent work on assembly of superparamagnetic core-shell nanoparticles at liquid interfaces including into lipid membranes [3, 4], as well as the demonstration of magnetically actuated vesicles for drug delivery. Additionally, we have developed new methods to characterize nanoparticles at liquid interfaces, such as measurements of nanoparticle membrane assembly using X-ray reflectivity at buried interfaces [5] and freeze-fracture shadow casting (FreSCa) to measure single nanoparticle surface energies [6]

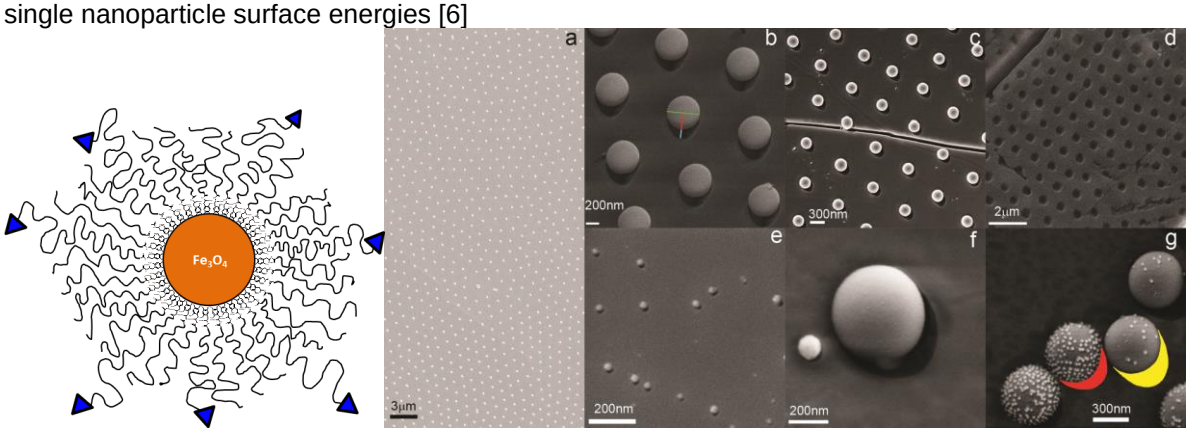

Figure left: Iron oxide core-shell nanoparticle used as self-assembly building blocks.
Figure right: freeze-fracture shadow casting images of nanoparticles distributed at liquid interfaces.

References:

[1] Amstad, E., M. Textor, et al. (2011). *Nanoscale* **3**: 2819-2843
[2] Amstad, E. and E. Reimhult (2012). *Nanomedicine* **7**: 145-164
[3] Amstad, E., J. Kohlbrecher, et al. (2011). *Nano Letters* **11**: 1664-1670
[4] Isa, L., E. Amstad, et al. (2011). *Soft Matter* **7**: 7663-7675
[5] Isa, L., D. C. E. Calzolari, et al. (2013). *Soft Matter*
[6] Isa, L., F. Lucas, et al. (2011). *Nature Communications* **2**: 438