

Masterthesis: Interaction between soft and solid nanoparticles at the water-air-interface



TECHNISCHE
UNIVERSITÄT
DARMSTADT

WG Soft Matter at Interfaces

Inbetween physics, chemistry and material science:

The interactions between diverse nano particles at interfaces is essential to understand the properties of systems structured by particle stabilized inter/surfaces (e. g. emulsions or foams). Especially, the influence of the deformability of soft nano particles in interaction with solid nano particles is not fully understood nor modelled properly.

The intention of this work is the investigation of a model layer consisting of soft and thermo-responsive pNIPAM-microgel particles with solid nano particles using a Langmuir-Blodgett trough. This instrument enables the measurement of the surface pressure during its compression (called Langmuir isotherm, Figure **A**). Atomic force microscopy (AFM) provides insights into the structure formation of the binary particle mixture (Figure **B**).

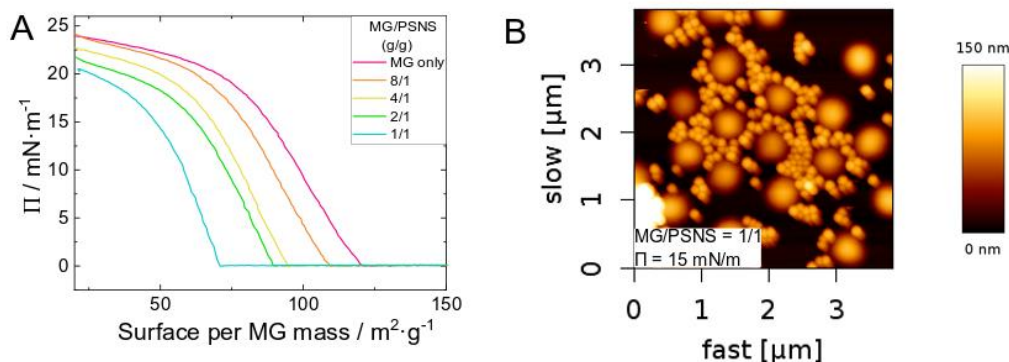


Figure: **A** Compression Langmuir isotherms of selected microgel (MG) to polystyrene particle-(PSNS) ratios

B Atomic force microscopy (AFM) of the particle layer on a silicon wafer.

Requirements: Bachelor degree in physics, chemistry or material science, teamwork and communication affinity, interest in experimental basic research

We offer: Interesting and state of the art experience in a work group that combines interdisciplinary expertise in physics, chemistry, material science and engineering, nice working atmosphere

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