

Inner structure of adsorbed ionic microgel particles

Microgel particles of cross-linked poly(NIPAM-co-acrylic acid) with different acrylic acid contents are investigated in solution and in the adsorbed state. As a substrate, silicon with a poly(allylamine hydrochloride) (PAH) coating is used. The temperature dependence of the deswelling of the microgel particles was probed with atomic force microscopy (AFM). The inner structure of the adsorbed microgel particles was detected with grazing incidence small angle neutron scattering (GISANS). Small angle neutron scattering (SANS) on corresponding microgel suspensions was performed for comparison. Whereas the correlation length of the polymer network shows a divergence in the bulk samples, in the adsorbed microgel particles it remains unchanged over the entire temperature range.

In addition, GISANS indicates changes in the particles along the surface normal. This suggests that the presence of a solid surface suppresses the divergence of internal fluctuations in the adsorbed microgels close to the volume phase transition.

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S. Wellert, Y. Hertle, M. Richter, M. Medebach, D. Magerl, W. Wang, B. Demé, A. Radulescu, P. Müller-Buschbaum, T. Hellweg, and R. von Klitzing

Langmuir 30 (2014) 7168

DOI: [10.1021/la500390j](https://doi.org/10.1021/la500390j)

