

Bachelorthesis:

Influence of comb-shaped polymers' architecture on interparticular forces

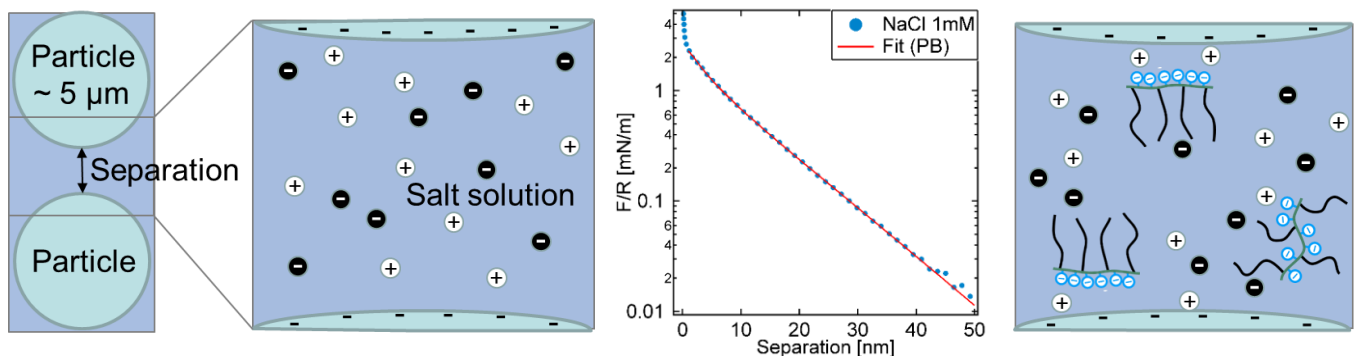


TECHNISCHE
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Interface: physics – physical chemistry – materials science :

Polycarboxylate ethers (PCE) are comb shaped polymer used in the cement industry to enhance workability of fresh cement even at low water to cement ratios. Depending on the architecture the dispersing effect of PCEs can vary. The aim of this thesis is to investigate the influence of the architecture of these PCEs on the interparticle forces between alumina particles.

The interparticle forces are investigated using colloidal probe atomic force microscopy (CP-AFM), where a micrometre sized bead (the probe) is attached to a cantilever and a second bead is immobilized on a substrate. The typical force vs. distance curve for the standard system - silica in a 1-1-electrolyte (1mM NaCl) - is depicted in the figure.



Left: scheme of surfaces and solution composition; middle: example force vs. distance curve for standard CP-AFM system (silica vs silica in 1mM NaCl) right: scheme of surfaces and solution composition containing salt and PCE

Requirements: Interest 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

Contact: Simon Becker (simon.becker@pkm.tu-darmstadt.de, S204|103)

Prof. Regine von Klitzing, klitzing@smi.tu-darmstadt.de