

## PHYSICAL CHEMISTRY & FORMULATION

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### **Sub-micron sized Pickering emulsions stabilized by silica nanoparticles with adsorbed oleic acid**

In Pickering emulsions oil droplets are stabilized by adsorption of solid particles at the oil-water interface [1]. These particles are required to be small, easily available and of course to have suitable surface properties like contact angle and stability. Silica nano-colloids which have a wide range of applications in science and industry are easily available and are therefore a good candidate. However, their surface is too hydrophilic. It had been shown that surface hydrophobicity can be increased by adsorption of cationic surfactant (CTAB) on these negatively charged colloids [2] but this has the disadvantage of charge compensation which decreases their stability. Recently, we could show that it is also possible to adsorb anionic surfactant (SDS) or non-ionic surfactant (C12E10) on the negatively charged silica particles.[3-4] This adsorption does not only lead to a more hydrophobized surface but also increases the surface charge and so maintains the stability. In this contribution we show that such modified silica particles can be successfully applied for the production of Pickering emulsions. In our most recent developments we could create a surfactant free modification by adsorption of oleic acid.[5] We will report on stability and applicability of such modified silica nano-colloids for the creation of Pickering emulsions.

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