

# **SURFACE MODIFICATION OF CLAY AND USE AS STABILIZER IN (MINI)EMULSION POLYMERIZATION**

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## **ABSTRACT**

Synthetic Laponite clay was partly modified via a cationic exchange process with various ammonium salts. Both pH dependent cationic ammonium salts (such as methyl ditallowamine, M2HT) and pH independent cationic ammonium salts (such as cetyltrimethylammonium bromide, CTAB) were used in this study. The three-phase contact angle (oil-solid-water) of the partly modified clay (0-70% modified, based on the cation exchange capacity (CEC) of the clay) was determined and ranged from about 60-140°.

The properties of the partially modified clay were determined, such as the clay/oil/water contact angle at the triphasic point and its ability to decrease the surface energy between oil and water.

The modified clay was used as the sole stabilizer (Pickering stabilization) for oil-in-water and water-in-oil (mini)emulsion (co)polymerizations, without the requirement for an additional low molecular weight, organic surfactant. Dependent on the contact angle of the modified clay, oil-in-water or water-in-oil (mini)emulsions were stabilized. The morphology of the latex particles was determined with TEM and SEM analysis, and the particle size was assessed via TEM and DLS.