

## PC 50

### REACTION KINETICS OF ACRYLIC EMULSION POLYMERIZATION IN THE PRESENCE OF NANOSIZED SILICA

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The reaction kinetics of acrylic monomers in emulsion polymerization reactions in the presence of nanosized silica were monitored using a calorimetric reactor. The effects of surfactant concentrations of two different surfactants were analyzed and how varying amounts of organically modified and non-modified nanosilica affected the polymerization kinetics were also studied. From the polymerization rate data, parameters such as the average number of radicals per particle ( $\bar{n}$ ) and the monomer concentration in the polymer particles ( $[M]_p$ ) could be calculated over the course of the reactions. TEM results showed differences in how effective the incorporation of silica was in the latex particles depending on the type of surface modification used for the silica, which also was reflected in the reaction kinetics data.