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SYNTHESIS AND CHARACTERIZATION OF AMINO-FUNCTIONALIZED NANOPARTICLES IN MINIEMULSIONS

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Functionalized nanoparticles are of great interest for many different applications. Because of their functionality they can build up a covalent bond to other materials. By varying the base polymer of the particles and the functional group it is possible to adjust the resulting properties of the material.

Amino-functionalized particles are often synthesized for biomedical applications.^[1] For many reactions a primary amino group is needed, thus 2-aminoethylmethacrylate hydrochloride (AEMH) was used because it is one of the few primary amino-group containing monomers which are commercially available. The main object for most applications is to get controlled particle sizes with narrow size distributions. Therefore miniemulsions are widely used to synthesise nanoparticles with a monomodal size distribution.^[2-4]

The current studies focuses the effect of the amount of functional monomer on the particle size, the copolymer composition and the functional group density on the surface for the copolymerization with styrene, butyl acrylate and butyl methacrylate in a miniemulsion process. The copolymerization behaviour for the three different copolymerizations can be derived from these results. To increase the stability of the produced latices two different monomer/water ratios were determined.

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