

Synthesis and Characterization of Amino-Functionalized Polystyrene Nanoparticles as Reactive Filler

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Abstract : A convenient method of preparing ultrafine polystyrene latex nano-particles with amino groups on the surface is developed. Polystyrene latexes in the size range 50–400 nm were prepared via emulsion polymerization, using sodium dodecyl sulfate (SDS) as surfactant. Polystyrene with amino groups on the surface will be fine to use as organic filler to modify rubber. Transmission electron microscopy (TEM) was used to observe the morphology of silicon dioxide and functionalized polystyrene nano-particles. The nature of bonding between the polymer and the reactive groups on the filler surfaces was analyzed using Fourier transform infrared spectroscopy (FTIR). Scanning electron microscopy (SEM) was employed to examine the filler surface.

Keywords : reactive filler, emulsion polymerization, particle size, polystyrene nanoparticles

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