

The Use of Block Copolymers as Stabilisers in the Dispersion Polymerisation of Styrene in Alcoholic Media.

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A range of water-soluble diblock copolymers containing 2-(dimethylamino)ethyl methacrylate and alkyl methacrylate have been synthesised by group-transfer polymerisation. These copolymers were characterised with respect to their chemical composition and molecular weight by NMR spectroscopy, elemental analysis and gel permeation chromatography.

Near-monodisperse micron-sized polystyrene particles have been produced by dispersion polymerisation in alcoholic media using poly(2-(dimethylamino)ethyl methacrylate-*b*-alkyl methacrylate) copolymers as stabilisers. The effect of varying copolymer concentration and composition, solvency and reaction temperature on latex particle size was investigated. Particles of 1.1 μm diameter were obtained in methanol, 2.8 μm in *n*-butanol and 0.7 μm in *n*-octanol. As expected, particle size decreased slightly with increasing stabiliser concentration, however varying copolymer composition had little or no effect on particle size. As the polymerisation temperature was increased the size and polydispersity of the latexes increased.