

Dispersion polymerization of methylmethacrylate(MMA) in the presence of AB block copolymers of poly(styrene)-b-poly(4-vinylpyridine)

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Dispersion polymerization of methyl methacrylate (MMA) has been carried out using poly (styrene)-b-poly(4-vinylpyridine) block copolymer as a steric stabilizer in alcohol media. The block copolymer was synthesized by a reversible addition-fragmentation chain transfer (RAFT) method. The stable polymer particles were obtained when the block copolymer concentrations increased from 0.5 to 10 wt% relative to monomer. The average particle size varied depending on the concentration of the block copolymer and conversion. As the block copolymer concentration increased, the size of PMMA microspheres decreased. The effect of solvent was investigated by the polymerization of methyl methacrylate in 2 wt% relative to monomer. As the increasing carbon chain increases in medium, the weight-average diameter of the microspheres increased from 4.32 μm in methanol up to a maximum of 10.69 μm in isopropanol, but decreased to 0.24 μm in heptanol. Also, we observed that block lengths of PS and P4VP affect weight average diameter of microspheres in dispersion polymerization.