Comparative Study of Various Polymerization Techniques for the Preparation of Micron Size Crosslinked Copolymer Particles

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Various heterogeneous polymerization methods used for the preparation of micron-size crosslinked copolymer particles were presented such as homogenized suspension polymerization, suspension polymerization using membrane, seeded polymerization, dispersion polymerization, etc.. The copolymer particle size and size distribution, the refractive index of polymer particles, and the network structure of polymer particles were precisely controlled especially for the use of those polymer particles to the optical film application. Monomers including styrene, methyl methacrylate, divinylbenzene, ethylene glycol dimethacrylate were used and the poly(styrene-co-divinylbenzene) and poly(methyl methacrylate-co-ethylene glycol dimethacrylate) particles from 1 to 30 μm in diameter with controlled refractive index and particle size distribution were obtained using various polymerization techniques.