Permanent Locking of Colloidal Crystals Composed of Core-Shell Polymeric Nanoparticles

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we prepared narrow dispersed core particles(CCP; see Scheme in the support information) of cross-linked tert-butyl methacrylate(BMA), which were synthesized by surfactant-free emulsion polymerization in the first step. And then cross-linked BMA seed particles possessing photo-functional N,N-diethyldithio-carbamate (DC) groups on the surface (CSP) were synthesized by living radical polymerization of a mixture of methyl methacrylate (MMA), ethylene glycol dimethacrylate (EGDMA), and VBDC with a radical initiator under UV irradiation. Subsequently, core-poly(methyl methacrylate) (PMMA) brush particles (CBP) were prepared by grafting from photo-induced ATRP approach of MMA initiated from DC groups of CSP surface as a macroinitiator.