

## Precise Size Control of Monodispersed Polystyrene Colloidal Nanoparticles

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The precise size control of monodispersed polystyrene colloidal nanoparticles, which can be used as a building block for colloidal photonic crystals, is very important to finely control the reflection wavelength because the position of photonic bandgap could be directly adjusted by the size of building block. Therefore, we tried to synthesize the monodispersed polystyrene nanoparticles with finely controlled size through surfactant-free emulsion polymerization by adjusting the concentration of initiator because apparently the size of polystyrene nanoparticles with the concentration of initiator reveals abnormal tendency on contrast to conventional emulsion polymerization and consequently enables the fine size tuning of polystyrene nanoparticles. Accordingly we could fabricate three-dimensional colloidal crystals with the precisely controlled photonic bandgap in full-visible region.