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Abstract
In recent years, polymer materials were widespread in the light and heat studies and photo-electricity industry. In this research, I used mainly emulsier-free emulsion polymerization and the batch reactor to synthesis monodispersed polystyrene(PS) nanospheres latex. Next, using these monodispersed microspheres to fabricate photonic crystals. In addition, I used the Methyl Methacrylate (MMA) as the styrene's modified monomer. The goal was to introduce the suitable functional group base to the particle's surface. The results characterized by FTIR、TEM and Size Analyzer, can indicate that the PS microspheres, modified by MMA, were monodispersed and highly charged. It had increased its stability. Since the photonic crystals were made up of monodispersed polymer microspheres, the Polystyrene particles could apply to the photonic crystals. Under the gravity and centrifuge field, the PS microspheres were self-organized into an ordered structure- photonic crystals film. Therefore, the stop band gap of the structure is confirmed by UV-Vis transmission spectra and SEM images.
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