

## Synthesis of Functionalized Monodisperse Colloidal Polystyrene Particles

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Monodisperse colloids have received increasing attention in many applications such as diagnostics, drug delivery systems, and photonic crystals. Particularly, emulsifier-free emulsion polymerization has been widely used to synthesize submicrometer-sized monodisperse polymer particles. In this work, monodisperse polystyrene colloidal particles with surface functional groups could be synthesized by adding functional comonomer during the emulsifier-free emulsion polymerization. The size of monodisperse polystyrene particles could be controlled by changing the styrene monomer concentration. The functionalized polystyrene particles were analyzed using IR spectrum and conductometric titration. Since the functionalized particles are highly charged, we could observe the colloidal crystal structures in an aqueous medium due to the electrostatic repulsion force between colloidal particles.