

Synthesis of organic/inorganic hybrid microspheres
by emulsion polymerization in the presence of titania
nanoparticles in water

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Organic/inorganic hybrid microspheres containing functional TiO_2 nanoparticles were synthesized by emulsion polymerization. The TiO_2 nanoparticle was synthesized by the sol-gel method and peptization process. Positively charged polystyrene(PS) μ -particle was synthesized by emulsion polymerization, and negatively charged TiO_2 nanoparticle was subsequently added after polymerization.

Organic/inorganic composite particles were prepared by electrostatic force between PS particle and TiO_2 nanoparticle. The hollow TiO_2 shell could be obtained by calcinations process. The synthesized TiO_2 /PS composite particles were analyzed by scanning electron microscope (SEM) and transmission electron microscopy (TEM). The composite micro particles synthesized in this study are expected to be applicable to various fields such as colloidal photonic crystal template or dye-sensitized solar cell photoelectrode, and so on.