

研究论文

纳米结构TiO₂/PS及TiO₂空心球的自组装与表征

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摘要 以TiCl₄的盐酸溶液配制的TiO₂溶胶为前驱体,以聚苯乙烯微球为载体,在表面活性剂存在下,通过逐层自组装技术制备了纳米结构TiO₂/PS及TiO₂空心球.利用XRD, SEM, TG-DTA等对复合颗粒进行了表征.研究表明:纳米结构TiO₂/PS的组成、结构、形貌和粒度可通过溶胶酸度、组装时水解反应温度、煅烧温度、硫酸根的加入量来控制.

关键词 [纳米结构TiO₂](#) [TiO₂/PS复合颗粒](#) [TiO₂空心球](#) [自组装](#)

分类号

Self-assembly and Characterization of Nanostructural TiO₂/PS and TiO₂ Hollow Spheres

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Abstract Using colloidal TiO₂ from titanium tetrachloride as the precursor, and polystyrene (PS) beads as templates, nanostructure TiO₂ composite and TiO₂ hollow spheres were successfully prepared by the surfactant-assisted route and the technique of layer-by-layer self-assembly. SEM, XRD and TG-DTA were adopted for the study of the synthesized materials. The results indicated that the morphology, structure and the amount of TiO₂ on the surface of TiO₂/PS could be readily controlled by varying the reaction conditions such as temperature of assembly and calcination, pH of system and the doped amount of sulphate.

Key words [nanostructure TiO₂](#) [TiO₂/PS composite sphere](#) [TiO₂ hollow sphere](#) [self-assembly](#)

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