

研究简报

羧基功能化离子液体表面修饰TiO₂纳米微粒的制备及结构表征

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收稿日期 2005-8-24 修回日期 网络版发布日期 2006-9-19 接受日期

摘要 本文用沉淀法制备了羧基功能化离子液体表面修饰半导体TiO₂纳米颗粒, 并用FTIR, TEM, XRD和XPS对其结构进行了表征. 初步探讨了羧基功能化离子液体修饰TiO₂纳米微粒的形成机理.

关键词 [羧基功能化离子液体](#) [TiO₂纳米微粒](#) [螯合作用](#) [表面修饰](#)

分类号 [O614.41+1](#)

Preparation and Structural Characterization of Carboxyl-functional Ionic Liquidsurface-modified TiO₂ Nanoparticles

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Abstract 1-Methyl-3-carboxymethyl imidazolium chloride([C₂OOHmim]Cl) ionic liquid surface-capped TiO₂ nanoparticles were prepared by using tetra-*n*-butyl titanate ethanol solution as a precursor. The structure of nanoparticles was characterized by FTIR, TEM, XRD and XPS. The results confirmed that [C₂OOHmim]·Cl ionic liquid combined with TiO₂ nanoparticles by chelation, the average diameter of TiO₂ nanoparticles was about 8 nm and anatase state was obtained. And only anatase existed even after calcinated at 750 °C. As to the formation mechanism, we think that the inorganic-organic copolymerized surface-capped layer and repulsive force of positive charge played an important role in the formation and stabilization of TiO₂ nanoparticles.

Key words [Carboxyl-functionalized ionic liquid](#) [TiO₂ nanoparticles](#) [Chelation](#) [Surface-modification](#)

DOI:

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