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研究论文

醇热法制备介孔TiO₂及其光催化性能

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摘要: 以十六烷基三甲基溴化铵(CTAB)为模板剂, 钛酸正四丁酯(TBOT)为钛源, 异丙醇为溶剂, 通过醇热法合成介孔TiO₂, 用N₂吸附-脱附、XRD、TEM等技术对合成样品进行了表征。以亚甲基蓝的降解为模型反应, 对介孔TiO₂催化性能进行评价并与商品DegussaP-25比较。实验结果表明, 比表面积为248.8 m² g⁻¹, 孔径为4.92 nm的锐钛矿晶型介孔TiO₂具有很高的催化活性。

关键词: 纳米粉体 介孔TiO₂ 醇热法 光催化

Preparation of the Mesoporous TiO₂ by the Alcohothermal Method and its Photocatalytic Activity

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Abstract: Mesoporous titania was prepared by alcohol-heating method using cetyltrimethyl ammonium bromide(CTAB) as a template, tetra-n-butyl titanate(TBOT) as titanium source and anhydrous ethanol as a solvent. The products were characterized by N₂ adsorption-desorption, XRD and TEM. The catalytic activity of mesoporous titania was investigated by the photocatalytic degradation of methylene blue and compared with Degussa P-25. The results show that the anatase TiO₂ powder with the specific surface area of 248.8 m²/g, and a pore radius of 4.92 nm, has better photocatalytic activity.

Keywords: nanopowder mesoporous TiO₂ alcohothermal method photocatalysis

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