无机材料学报 2006 21 (3): 719-724 ISSN: 1000-324X CN: 31-1363/TQ

基于超声波雾化技术的 TiO_2纳米膜制备及表征

张嘉琪, 郑嗣华, 黄积涛

天津理工大学生物与化学工程学院, 天津 300191

收稿日期 2005-6-16 修回日期 2005-9-19 网络版发布日期 接受日期

摘要 采用超声波雾化技术制备TiO_2纳米膜, 并对其进行了紫外、扫描电镜、X射线衍射及亲水性能的表征, 讨论了超声波雾化频率对TiO_2纳米膜的影响. 分析表明, 此技术可制备均匀致密、粒径为20～80nm、锐钛矿晶相的TiO_2纳米膜, 此膜经加热或紫外线照射后具有超亲水性能.

关键词 纳米膜 超声波 雾化 TiO2

分类号 TB43

Preparation and Characterization of Nano-films of TiO_2 Based on Ultrasonic Atomization Technology

ZHANG Jia-Qi, ZHENG Si-Hua, HUANG Ji-Tao

College of Biotechnology and Chemical Engineering, Tianjin University of Technology, Tianjin 300191, China

Abstract The nano-films of TiO_2 were prepared by using ultrasonic atomization technology. The films were characterized by the absorption of UV spectrum. Their surfaces were viewed by the scanning electronic microscope (SEM) and the X-ray diffraction. The hydrophilic effect of the films was determined. The influence of the frequency of ultrasonic atomization on the nano-films of TiO_2 was discussed. The analytic results show that the resulting products are a nano-film of TiO_2 as uniformed crystal of anatase with the particle diameter of 20～80nm. After heated or irradiated by UV radiation, the two films become super-hydrophilic materials.

Key words nano film ultrasonic atomization TiO2

DOI:

通讯作者 张嘉琪 zhangjqa@yahoo.com.cn