

层状 K-Fe-Ti金属氧化物制备及光催化性能研究

李群伟¹, 桑丽霞¹, 胥利先¹, 马重芳¹, 孙继红²

1. 北京工业大学 传热强化与过程节能教育部重点实验室及传热与能源利用北京市重点实验室, 北京 100022; 2. 北京工业大学 环境与能源工程学院化工化学系, 北京 100022

收稿日期 2005-9-19 修回日期 2005-12-26 网络版发布日期 接受日期

摘要 以KNO₃、Fe(NO₃)₃·9H₂O、TiO₂为原料, 通过固相反应, 制备出一种新型的光催化材料K-Fe-Ti层状金属氧化物, 通过XRD、SEM以及TEM等分析表征, 考察了不同配比, 不同反应温度对产物结构和晶型的影响, 发现配比为K:Fe:Ti=0.4:0.5:1.3(摩尔比)在1000℃反应温度下合成的催化剂结晶度和纯度都是最高的。并初探了这种新型层状金属氧化物在紫外光照射下的光催化制氢反应性能, 产氢速率达到338.4μmol/h, 表明具有较高的光催化活性, 同时表现出显著的可见光吸收特性, 是一种具有潜在应用前景的新型光催化材料。

关键词 [层状金属氧化物](#) [固相反应](#) [光催化](#)

分类号 [0614](#)

Preparation and Photocatalytic Properties of Layered K-Fe-Ti Metal Oxide

LI Qun-Wei¹, SANG Li-Xia¹, XU Li-Xian¹, MA Chong-Fang¹, SUN Ji-Hong²

1. Key Laboratory of Enhanced Heat Transfer and Energy Conservation, Ministry of Education and Key Laboratory of Heat Transfer and Energy Conversion, Beijing Education Commission, Beijing 100022, China; 2. Department of Chemistry and Chemical Engineering, Beijing University of Technology, College of Energy and Environmental Engineering, Beijing 100022, China

Abstract Layered K-Fe-Ti metal oxide, a new kind of photocatalyst was obtained via a solid-state reaction route with the mixture of KNO₃, Fe(NO₃)₃·9H₂O, TiO₂. The effects of preparing parameters such as material ratio and reaction temperature etc, on the structure characteristics and crystal morphology were investigated by using XRD, SEM and TEM technology. Meanwhile, under UV light irradiation, the native photocatalyst was found to evolve H₂ from pure water. The result indicates that not only the photocatalyst prepared has high photocatalytic activity, but also its visible light absorption is notable with comparison of that by using market TiO₂.

Key words [layered metal oxide](#) [solid-state reaction](#) [photocatalytic](#)

DOI:

通讯作者 李群伟 jhsun@bjut.edu.cn

扩展功能

本文信息

▶ [Supporting info](#)

▶ [PDF\(467KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [加入我的书架](#)

▶ [加入引用管理器](#)

▶ [复制索引](#)

▶ [Email Alert](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“层状金属氧化物” 的相关文章](#)

▶ 本文作者相关文章

- [李群伟](#)
- [桑丽霞](#)
- [胥利先](#)
- [马重芳](#)
- [孙继红](#)