

化学

硼硅酸盐玻璃中硫的形态和结构的XANES方法研究

刘丽君¹, 李金英¹, 赵屹东², 周慧¹, 郟东生¹

1. 中国原子能科学研究院 放射化学研究所, 北京 102413

2. 中国科学院 高能物理研究所, 北京 100049

收稿日期 2008-7-3 修回日期 2008-7-15 网络版发布日期: 2008-9-20

摘要 本工作研究硫结合入硼硅酸盐玻璃的结构, 结构性质可为提高硫的包容量提供理论依据。实验收集了多种晶体标准的硫XANES谱图, 通过比较玻璃中硫的XANES谱图与标准物质中硫的XANES谱图, 得出在硼硅酸盐玻璃中, 硫以硫酸根形式存在, 无明显可观测到的还原性硫存在。硫酸根被网络调节剂阳离子所环绕。

关键词 [XANES](#) [硼硅酸盐玻璃](#) [硫](#) [结构](#)

分类号 [TL942.2](#)

Determination of Sulfur Speciation and Structure in Borosilicate Waste Glasses Using X-ray Absorption Near-Edge Spectroscopy

LIU Li-jun¹, LI Jin-ying¹, ZHAO Yi-dong², ZHOU Hui¹, QIE Dong-sheng¹

1. China Institute of Atomic Energy, P. O. Box 275-93, Beijing 102413, China;

2. Institute of High Energy Physics, Chinese Academy of Sciences, Beijing 100049, China

Abstract The structural aspects of sulfur incorporation in borosilicate glasses were studied in the paper. Understanding of the structural aspects may provide theoretical basis for increasing the sulfur solubility in the glass. Sulfur XANES (X-ray absorption near-edge spectroscopy) spectra of several crystalline standards were collected. By comparing sulfur XANES spectra in the glass and those in crystalline standards, it can be concluded that the sulfur is present as SO_4^{2-} and no reduced sulfur is observed in the borosilicate glass. The results also indicate that SO_4^{2-} is surrounded by network modifying cations.

Key words [X-ray absorption near-edge spectroscopy](#) [borosilicate glasses](#) [sulfur structure](#)

DOI

扩展功能

本文信息

▶ [Supporting info](#)

▶ [\[PDF全文\]\(663KB\)](#)

▶ [\[HTML全文\]\(0KB\)](#)

▶ [参考文献](#)

服务与反馈

▶ [把本文推荐给朋友](#)

▶ [文章反馈](#)

▶ [浏览反馈信息](#)

相关信息

▶ [本刊中 包含“XANES”的 相关文章](#)

▶ 本文作者相关文章

- [刘丽君](#)
- [李金英](#)
- [赵屹东](#)
- [周慧](#)
- [郟东生](#)

通讯作者