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## 研究论文

稀土掺杂荧光材料BaMoO<sub>4</sub>:Eu<sup>3+</sup>的制备和发光性能陈雪冰<sup>1</sup>, 邵忠宝<sup>2</sup>, 田彦文<sup>1</sup>, 李鹏<sup>2</sup>,

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**摘要:** 以钼酸铵、硝酸钡和三氧化二铈为原料, 通过化学沉淀法制备稀土掺杂的发光材料BaMoO<sub>4</sub>:Eu<sup>3+</sup>, 并用X射线衍射和激发发射光谱对粉体的结构和发光性能进行了表征。结果表明, 获得最强发光BaMoO<sub>4</sub>:Eu<sup>3+</sup>粉体的最佳合成条件是: 反应溶液的pH值为6、烧结温度为1000°C以及Eu<sup>3+</sup>掺杂量(mol分数)为8%。BaMoO<sub>4</sub>:Eu<sup>3+</sup>粉可被394 nm的紫外光和465 nm的可见光有效激发, 其发射光谱在616 nm处发光强度最大, 是以电偶极跃迁5D<sub>0</sub>→7F<sub>2</sub>为主导地位的红光发射。

**关键词:** 无机非金属材料 BaMoO<sub>4</sub>: Eu<sup>3+</sup> 化学沉淀法 稀土掺杂 红色荧光粉

Preparation and Luminescence of Luminescent Lanthanide Materials BaMoO<sub>4</sub>: Eu<sup>3+</sup>CHEN Xuebing<sup>1</sup>, SHAO Zhongbao<sup>2</sup>, TIAN Yanwen<sup>1</sup>, LI Peng<sup>2</sup>College of Material and Metallurgy<sup>2</sup>, College of Sciences, Northeastern University, Shenyang 110014

**Abstract:** Luminescent lanthanide materials BaMoO<sub>4</sub>:Eu<sup>3+</sup> powders were prepared by chemical precipitation method using ammonium molybdate, barium nitrate and europium oxide as raw materials. Different BaMoO<sub>4</sub>:Eu<sup>3+</sup> powders were prepared by controlling the pH value of solution, changing the sintering temperature and the doping concentration of Eu<sup>3+</sup>. The BaMoO<sub>4</sub>:Eu<sup>3+</sup> powders were characterized by X-ray diffraction (XRD) and excitation-emission spectra. Experimental results show that a single phase of BaMoO<sub>4</sub>:Eu<sup>3+</sup> can be obtained at solution pH~6, sintering temperature 1000°C and 8% Eu<sup>3+</sup> doped concentration. The BaMoO<sub>4</sub>:Eu<sup>3+</sup> powders have considerable luminescent intensity, and their excitations take on a double peak structure which locates at ultraviolet (394 nm) and visible blue light (465 nm). The emission is a line spectrum and the main peak located at visible red light (616 nm).

**Keywords:** inorganic non-metallic materials BaMoO<sub>4</sub>: Eu<sup>3+</sup> chemical precipitation method luminescent lanthanide materials red phosphors

收稿日期 2010-02-02 修回日期 2010-06-16 网络版发布日期 2010-10-18

DOI:

基金项目:

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