

研究论文

增强掺Tb凝胶玻璃荧光性能的有机螯合体的选择

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摘要 采用原位合成技术,用溶胶凝胶法制备了稀土离子(Tb^{3+}), β -二酮及协同体共掺的二氧化硅玻璃,测量了它们发射光谱和红外光谱,并进行了XRD, SEM和TG-DSC测试.

探讨各不同成分原位合成稀土有机配合物在二氧化硅玻璃中的发光性能及热处理温度对发光性能的影响.结果表明,在凝胶玻璃中掺入能级较匹配的 β -二酮,可以使稀土离子的荧光增强;

合适的协同体的引用也能使稀土离子的荧光增强.这些结果为今后制备荧光较强的含Tb离子的 SiO_2

凝胶玻璃提供了一定的依据.

关键词 [\$\beta\$ -二酮](#) [协同体](#) [溶胶凝胶法](#) [原位合成](#) [荧光光谱](#)

分类号

Selection of Organic Chelates Containing Terbium Ion Doped in Silica Gel Glass to Enhance the Luminescence Intensity

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Abstract Silica glasses co-doped with rare earth ion (Tb^{3+}), *b*-diketone and synergic agents were prepared by *in situ* sol-gel method. The emission and IR spectra, XRD, SEM and TG-DSC measurements were performed. Various *in-situ* complexes and heat-treatment on the photoluminescence properties of rare earth organic complex in silica glass were also investigated. The results indicated that when appropriate kinds of *b*-diketone compounds whose energy levels were matched with those of Tb^{3+} ions were added, the luminescence intensity of the Tb^{3+} ion was improved. Appropriate kinds of synergic agents could also enhance the luminescence intensity to some degree. The results can provide certain basis to manufacture high luminescence silica gel glasses containing terbium ion in the future.

Key words [\$\beta\$ -diketone](#) [synergic agent](#) [sol-gel method](#) [in situ synthesis](#) [luminescence spectrum](#)

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