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激光技术与器件

Er³⁺:LaLuO₃纳米多晶的制备、结构和光谱性能

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摘要: 采用共沉淀法制备了LaLu_{0.7}Er_{0.3}O₃的纳米多晶粉体。对它进行了X射线粉末衍射测试, 根据衍射峰宽估算了粉体颗粒的尺寸, 同时利用Rietveld全谱拟合方法确定了它的结构。在室温下, 测试研究了它的吸收和光致发光谱。并利用380nm光激发, 测试了1.5μm红外(4I_{13/2}→4I_{15/2})光的荧光衰减情况, 通过拟合得出了相应的荧光寿命。结果表明, LaLu_{1-x}Er_xO₃是一种值得深入研究并具有潜在应用价值的红外激光材料。

关键词: 材料 LaLu_{1-x}Er_xO₃ 纳米晶 共沉淀法 结构 光谱

Structural and spectral properties of LaLu_{0.7}Er_{0.3}O₃ polycrystalline

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Abstract: LaLu_{0.7}Er_{0.3}O₃ polycrystalline was synthesized by the co-precipitation method. Its structure were determined by Rietveld refinement to X-ray powder diffraction, and the scale of powder particles was also estimated. The optical spectroscopy of the LaLu_{0.7}Er_{0.3}O₃ polycrystalline was studied by absorption and emission measurements at room temperature. Under the excitation of 380 nm light, The 1.5 μm decay curve of Er³⁺ (4I_{13/2}→4I_{15/2}) was also studied. The experimental results present that, LaLu_{1-x}Er_xO₃ is a potential infrared laser material, which has further research value.

Keywords: materials LaLu_{1-x}Er_xO₃ nano-crystal co-precipitation method structure photoluminescence

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