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三元稀土配合物$RE(NTA)_2AA$的合成、共聚反应性及荧光性能研究

Synthesis, Copolymerization and Fluorescent Property of Ternary Rare Earth Complexes $RE(NTA)_2AA$

中文关键词：三元稀土配合物；高分子稀土配合物；合成与表征；荧光性质

英文关键词：ternary rare earth complex; polymerized rare earth complex; synthesis and characterization; fluorescence property

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中文摘要：

英文摘要：

Four new ternary rare earth complexes $RE(NTA)_2AA$ ($RE=Sm^{3+}$, Eu^{3+}, Tb^{3+}, Dy^{3+}) have been synthesized by the reaction of rare earth chloride($RECl_3\cdot 6H_2O$) with Acrylic Acid (HAA) and 4, 4, 4-trifluoro-1-(3-pyridyl)-1, 3-butanedione (NTA) in alcohol. The copolymerization of the complexes $RE(NTA)_2AA$ ($RE=Sm^{3+}$, Eu^{3+}) with methyl methacrylate (MMA) has been studied by 2, 2-azobis-isobutyronitrile as an initiator. Influence of adding Eu(Ⅲ) and 2, 2′-bipyridine(bipy) into copolymer $Eu(NTA)_2AA$-co-MMA on fluorescence property of the Eu copolymer was investigated. The compositions of the complexes and copolymer were characterized by means of elemental analysis and FTIR. The heat decomposing behaviors of the complexes were determined by TG-DTA. The glass transition temperature and molecular weight were obtained by DSC and GPC. The results of fluorescence properties show that the Eu, Sm complexes and Eu copolymer can efficiently emit fluorescence, but the Tb and Dy complexes only emit the fluorescence of β-diketone ligand.

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