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研究论文

Zn-Ln(Ⅲ)(Ln=Eu, Tb)杂核配合物的合成、 结构及光物理性质

王兆龙[1], 牛淑云[1], 金晶[1], 吕春欣[1], 迟玉贤[1], 杨光弟[2], 叶玲[2]

1. 辽宁师范大学化学化工学院, 大连 116029;
2. 吉林大学超分子结构与材料教育部重点实验室, 长春 130012

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摘要 采用溶剂热方法合成了两种具有良好发光性能的*d-f*异核金属配合物EuZn($C_8H_7O_3$)$_5$(phen)(H_2O)(1)和TbZn($C_8H_7O_3$)$_5$(phen)(H_2O)(2). 采用单晶X射线衍射表征了晶体结构. 结果表明, 两种配合物是同构的, 在配合物中, Zn为五配位, Ln(Ⅲ)[Ln(Ⅲ)=Eu, Tb]为八配位. 金属间通过对甲氧基苯甲酸根的羧基(—COO)基团成桥联结. 测定了配合物的紫外-可见吸收光谱、 红外光谱和荧光光谱. 讨论了配位环境对荧光性质的影响以及配合物分子内能量传递问题.

关键词 Zn-Ln配合物 合成 晶体结构 光物理

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Synthesis, Structure and Photophysical Properties of Zn-Ln(Ⅲ)(Ln=Eu, Tb) Heterometallic Coordination Complexes

WANG Zhao-Long[1], NIU Shu-Yun[1]*, JIN Jing[1], LÜ, Chun-Xin[1], CHI Yu-Xian[1], YANG Guang-Di[2], YE Ling[2]

1. School of Chemistry and Chemical Engineering, Liaoning Normal University, Dalian 116029, China;
2. Key Lab of Supramolecular Structure and Materials of Ministry of Education, Jilin University, Changchun 130012, China

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Abstract Two *d-f* heterometallic coordination complexes EuZn($C_8H_7O_3$)$_5$(phen)(H_2O)(1) and TbZn($C_8H_7O_3$)$_5$(phen)(H_2O)(2) were synthesized with hydrothermal reaction. These two complexes exhibit strong luminesecent emission. The crystal structures of the two complexes were determined *via* X-ray diffraction. The two complexes are isomorphic. Zn(Ⅱ) ion is five-coordinated and Ln(Ⅲ) ion is eight-coordinated. Zn(Ⅱ) and Ln(Ⅲ) ions are bridged by 4-methoxybenzoic acid ligands. The UV-Vis-NIR, IR and fluorescence spectra of the complexes were measured. The influence of coordination environment on the luminescence property and intramolecular energy transfer of complexes were discussed.

Key words Zn-Ln complex; Synthesis; Crystal structure; Photophysics

通讯作者:
牛淑云 syniu@sohu.com
作者个人主页: 王兆龙[1]; 牛淑云[1]; 金晶[1]; 吕春欣[1]; 迟玉贤[1]; 杨光弟[2]; 叶玲[2]