



### 材料合成及性能

#### 不同有机碱对乙酰水杨酸铽配合物荧光性能的影响

陶栋梁<sup>1</sup>, 张宏<sup>2</sup>, 崔玉民<sup>1,2</sup>, 王永忠<sup>1</sup>, 陈继堂<sup>1</sup>, 张坤<sup>1</sup>, 孙文中<sup>1</sup>

1. 阜阳师范学院化学化工学院 应用化学系, 安徽 阜阳 236041;
2. 安徽省环境污染物降解与监测省级重点实验室 阜阳师范学院, 安徽 阜阳 236041

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**摘要：** 有机碱对参与合成的铽配合物荧光性质具有非常大的影响。利用三乙胺(TEL)、三丙胺(TPL)和三丁胺(TBL)分别作为有机碱、乙酰水杨酸(aspirin)作为配体在无水乙醇溶液中制备了3种铽配合物溶液。通过紫外光谱、荧光光谱、绝对量子产率和荧光寿命的表征发现3种铽配合物的确具有不同的荧光性能。相同浓度条件下,随着有机胺碳链长度的增加,3种铽配合物的荧光发射强度依次增大。由3种有机碱所得到的铽配合物Tb(aspirin)<sub>3</sub>TEL、Tb(aspirin)<sub>3</sub>TPL和Tb(aspirin)<sub>3</sub>TBL的绝对量子效率分别为11.41%,12.85%和18.63%,在无水乙醇溶液中的荧光寿命分别为6.316 956×10<sup>-4</sup>,7.018 974×10<sup>-4</sup>,7.346 807×10<sup>-4</sup> s。实验结果表明,有机碱参与了铽配合物的分子组成。

**关键词：** 铽配合物 有机胺 乙酰水杨酸 荧光寿命 绝对量子产率

#### Effect of Different Types of Organic Alkali on Fluorescence Properties of Terbium Complexes Using Acetyl Salicylic Acid as Ligand

TAO Dong-liang<sup>1</sup>, ZHANG Hong<sup>2</sup>, CUI Yu-min<sup>1,2</sup>, WANG Yong-zhong<sup>1</sup>, CHEN Ji-tang<sup>1</sup>, ZHANG Kun<sup>1</sup>, SUN Wen-zhong<sup>1</sup>

1. College of Chemistry and Chemical Engineering, Fuyang Normal College, Fuyang 236041, China;
2. Anhui Provincial Key Laboratory for Degradation and Monitoring of Pollution of The Environment, Fuyang Normal College, Fuyang 236041, China

**Abstract:** Three kinds of terbium complexes solution were prepared in anhydrous ethanol solution using triethylamine (TEL), tripropylamine (TPL) and tributylamine (TBL), respectively. By characterization of UV spectra, fluorescence spectra, absolute quantum yield and fluorescence lifetime, the three types of terbium complexes have different fluorescent properties. Under the condition of same concentration, the fluorescent intensity of the three kinds of terbium complexes increases with the carbon chain length of organic amine increasing. The absolute quantum yields of Tb(aspirin)<sub>3</sub>TEL, Tb(aspirin)<sub>3</sub>TPL and Tb(aspirin)<sub>3</sub>TBL using the three types of organic bases are 11.41%, 12.85% and 18.63%, respectively. The fluorescence lifetimes in anhydrous ethanol solution are 6.316 956×10<sup>-4</sup>, 7.018 974×10<sup>-4</sup>, and 7.346 807×10<sup>-4</sup> s, respectively. The results show that organic base involved in the molecular composition of terbium complexes.

**Keywords:** terbium complexes organic amine acetylsalicylic acid fluorescence lifetime absolute quantum yield

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通讯作者: 陶栋梁, E-mail: tdlpku@foxmail.com

作者简介: 陶栋梁(1972-), 男, 河南长垣县人, 博士, 教授, 主要从事稀土配合物发光材料的研究。E-mail: tdlpk@foxmail.com

作者Email: tdlpku@foxmail.com


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