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Homo- and heterometallic Cu(II)–M(II) (M = Ca, Sr and Ba) bis(salamo)-based complexes: Syntheses, structures and fluorescent properties

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ABSTRACT

Four homo/heterometallic complexes $[\text{Cu}_3(\text{L})(\mu_2\text{-OAc})_2(\text{CH}_3\text{OH})_2]\cdot 3\text{CHCl}_3$ (**1**), $[\text{Cu}_2(\text{L})\text{Ca}(\mu_2\text{-NO}_3)_2]$ (**2**), $[\{\text{Cu}_2(\text{L})\text{Sr}(\mu_2\text{-NO}_3)_2\}_2]\cdot \text{CH}_3\text{CH}_2\text{OH}$ (**3**) and $[\text{Cu}_2(\text{L})\text{Ba}(\mu_2\text{-OAc})_2(\text{OAc})]$ (**4**), containing an acyclic naphthalenediol-based ligand H_4L , were synthesized and characterized by elemental analyses, IR, UV-Vis, fluorescence spectra, TG-DTA and X-ray crystallography. The complex **1** was obtained by the reaction of H_4L with 3 equivalents of $\text{Cu}(\text{OAc})_2\cdot 2\text{H}_2\text{O}$. The heterometallic complexes **2–4** were acquired by the reaction of H_4L with 2 equivalents of $\text{Cu}(\text{OAc})_2\cdot 2\text{H}_2\text{O}$ or $\text{Cu}(\text{NO}_3)_2\cdot 2\text{H}_2\text{O}$ and 1 equivalent of $\text{M}(\text{OAc})_2$ (M = Ca, Sr and Ba). Owing to the different coordination cavities of the N_2O_2 and O_6 of the completely deprotonated $(\text{L})^{4-}$ unit, the crystal structures showed the N_2O_2 sites were occupied by Cu(II) atoms, alkaline earth metal(II) atoms occupied the O_6 site of the ligand $(\text{L})^{4-}$ unit, respectively. Furthermore, the fluorescence properties and TG-DTA analyses were discussed.

Keywords: Naphthalenediol-based ligand; 3d-2s Heterometallic; Cu(II) complex; Crystal structure; Fluorescence property

1. Introduction

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