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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 $[Cu_3(L)(\mu_2\text{-}OAc)_2(CH_3OH)_2]\cdot 3CHCl_3$ **(1)**, $[Cu_2(L)Ca(\mu_2\text{-}NO_3)_2]$ **(2)**, $[\{Cu_2(L)Sr(\mu_2\text{-}NO_3)_2\}_2]\cdot CH_3CH_2OH$ **(3)** and $[Cu_2(L)Ba(\mu_2\text{-}OAc)_2(OAc)]$ **(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 $Cu(OAc)_2\cdot 2H_2O$. The heterometallic complexes **2**–**4** were acquired by the reaction of H_4L with 2 equivalents of $Cu(OAc)_2\cdot 2H_2O$ or $Cu(NO_3)_2\cdot 2H_2O$ and 1 equivalent of $M(OAc)_2$ (M = Ca, Sr and Ba). Owing to the different coordination cavities of the N_2O_2 and O_6 of the completely deprotonated $(L)^{4-}$ 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 $(L)^{4-}$ 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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