Synthesis and characterization of Cu^{II}–Ln^{III} (Ln=Ho, Tm, Yb, or Lu) complexes with N_2O_4–donor Schiff base ligand.

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Streszczenie

The heterodinuclear complexes $[CuLnL(NO_3)_2(H_2O)_3MeOH]NO_3{\cdot}MeOH$ (Ln = Ho (**1**), Tm (**2**), Yb (**3**), and Lu (**4**); L = *N,N′*-bis(5-bromo-3-methoxysalicylidene)propylene-1,3-diamine) have been synthesized and characterized by elemental analysis, FTIR, thermogravimetric (TG)/differential scanning calorimetry (DSC), TG-FTIR, single crystal X-ray diffraction studies, and magnetic measurements. The isostructural compounds crystallized in the monoclinic space group $P2_1/n$. The rare earth(III) cation is nine coordinate, whereas the coordination number for copper(II) is six. The complexes were stable at room temperature. The thermal decomposition products were mainly CH_3OH, H_2O, CH_3Br, NO_x ($x = 1$ or 2), CO_2, and CO. The magnetic properties of **1–3** were dominated by the crystal field effect on the Ln^{III} site, masking the magnetic interaction between the paramagnetic centers. The Cu^{II}–Lu^{III} pair in **4** showed no significant interaction, which is in accord with the diamagnetic nature of the ground state for lutetium(III).

The heterodinuclear compounds $[CuLn(L)(NO_3)_2(H_2O)_3MeOH]NO_3{\cdot}MeOH$ (where Ln = Ho (**1**), Tm (**2**), Yb (**3**), and Lu (**4**)) have been synthesized and characterized by elemental analysis, FTIR, TG/DSC, TG-FTIR, single crystal X-ray diffraction studies, and magnetic measurements. The complexes are isostructural and crystallize in the monoclinic space group $P2_1/n$. The magnetic properties of **1**, **2**, and **3** are dominated by the crystal field effect on the Ln^{III} site, masking the magnetic interaction between the paramagnetic centers.

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