

Heterometallic trinuclear 3d–4f–3d compounds based on a hexadentate Schiff base ligand.

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The new heterometallic trinuclear complexes $[\text{Ni}_2\text{Ln}(\text{L})_2(\text{CH}_3\text{COO})_2(\text{MeOH})_2]\text{NO}_3 \cdot 4\text{H}_2\text{O}$ (where $\text{Ln} = \text{Ce(III)}$ **1**, Pr(III) **2** and H_2L = the Schiff base resulting from the condensation of 5-bromo-3-methoxysalicylaldehyde and 1,3-diaminopropane) were synthesized and characterized by elemental analysis, FTIR, TG/DSC, TG-FTIR, single crystal X-ray diffraction, magnetic, UV–Vis and luminescence studies. In the isostructural crystals of **1** and **2** the nickel(II) and lanthanide(III) ions are bridged by two Schiff base's phenolato oxygens and additionally by the acetate ions. The clathrate type of crystal architecture in reported complexes, results in their quite high stability in air and nitrogen atmospheres at room temperature despite the relatively large amount of non-coordinated water. The temperature dependence (1.8–300 K) of the magnetic susceptibility investigations and the field-dependent magnetization indicate crystal field effect, as well as, the presence of an antiferromagnetic interaction between spin carriers of Ni^{II} and Ln^{III} pairs in the $\text{Ni}^{\text{II}}\text{–Ce}^{\text{III}}\text{–Ni}^{\text{II}}$ (**1**) and $\text{Ni}^{\text{II}}\text{–Pr}^{\text{III}}\text{–Ni}^{\text{II}}$ (**2**) compounds operating via oxygen atoms ($J_{\text{NiCe}} = -1.1(4) \text{ cm}^{-1}$ (**1**) and $J_{\text{NiPr}} = -1.3(8) \text{ cm}^{-1}$ (**2**)).

Słowa kluczowe

3d–4f Compound, Schiff-base, Magnetism, Lanthanides, luminescence

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