Synthesis and structure of [2 x 2] molecular grid copper(II) and nickel(II) complexes with a new polydentate oxime-containing Schiff base ligand.

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Streszczenie

A new polynucleating oxime-containing Schiff base ligand, 2-hydroxyimino-*N*′-[1-(2-pyridyl)ethylidene]propanohydrazone (H**pop**), has been synthesized and fully characterized. pH potentiometric, electrospray ionization mass spectrometric, and spectrophotometric studies of complex formation in H_2O/DMSO solution confirmed the preference for polynuclear complexes with 3d metal ions. Single-crystal X-ray diffraction analyses of $[Ni_4(\mathbf{pop})_4(HCOO)_4]\cdot 7H_2O$ (**1**), $[Cu_4(\mathbf{pop}\text{-}H)_4(HCOOH)_4]\cdot H_2O$ (**2**), and $[Cu_4(\mathbf{pop}\text{-}H)_4(H_2O)_4]\cdot 9H_2O$ (**3**) indicated the presence of a [2 × 2] molecular grid structure in all three compounds but distinct configurations of the cores: a head-to-tail ligand arrangement with overall S_4 symmetry of the grid in the Cu^{2+} complexes as opposed to a head-to-head ligand arrangement with (noncrystallographic) C_2 grid symmetry for the Ni^{2+} complex. A cryomagnetic study of **3** revealed intramolecular ferromagnetic exchange between copper ions in the grid, while i n **1**, antiferromagnetic interactions between the metal ions were observed.

Słowa kluczowe

Amides, Ions, Ligands, Metal, Molecules

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