Structure and characterization of copper(II) perchlorate with diethyl(pyridin-2-ylmethyl) phosphonate (2-pmpe)ligand: $[Cu(2\text{-}pmpe)_2(ClO_4)_2]$.

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Streszczenie

Copper(II) mononuclear compound [Cu(2-pmpe)2(ClO4)2] (2-pmpe = diethyl(pyridin-2-ylmethyl) phosphonate was synthesized and studied. Examination of the crystal structure by the X-ray diffraction method revealed two crystallographically unrelated molecules, [Cu(1)(2-pmpe)2(ClO4)2] (1) and [Cu(2)(2-pmpe)2(ClO4)2] (2) in an asymmetric part of the unit cell. The geometry about the Cu(1) and Cu(2) chromophores shows elongated octahedra, resulting from the didentate N,O-bonded two chelate 2-pmpe ligands and two coordinated perchlorate ions around the Cu(II) cations (CuN2O4 chromophore). Similarly to 1, molecules 2 are linked to each other by weak C–H···O hydrogen bonds and π···π stacking interactions. Additionally, both 1 and 2 molecules are linked to each other through weak C–H···O hydro-gen bonds and C–H···π contacts, resulting in a 3Dpolymeric network arrangement. Magnetic data indi-cate a very weak intermolecular exchange interaction between copper(II) ions (zJ′ = –0.20 cm–1) transmit-ted through non-covalent interactions in the crystal lattice. The spectral properties are in accordance with the structural and magnetic data.

Słowa kluczowe

copper(II), phosphonic acid ester, crystal structure, spectroscopy, magnetism

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