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Structure and magnetic properties of polynuclear copper(II) compounds with *syn-anti* carboxylato- and bromo-bridges.

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Streszczenie

Synthesis, spectroscopic and magnetic properties, and X-ray crystal structures of two copper(II) polymers Cu(2-qic)Br (2-qic = quinoline-2-carboxylate) (**1**) and Cu(2-pic)Br (2-pic = pyridine-2-carboxylate) (**2**) are described. These compounds are isostructural with Cu(2-qic)Cl and Cu(2-pic)Cl, respectively, the X-ray crystal structures of which were reported recently. Both complexes are polynuclear copper(II) compounds (1D and 2D, respectively) based on *syn–anti* carboxylate bridges and additionally on linear monobromo- (in **1)** and dibromo-bridging (in **2**) motifs. The magnetic properties were investigated in the temperature range 1.8–300 K. They reveal the occurrence of strong antiferromagnetic coupling (J_1 = −102.5 cm^{-1}) through the single bromo-bridge in **1**, which is much stronger than that transmitted by the single chloro-bridge (J = −57.0 cm^{-1}). Very weak ferromagnetic interaction through the *syn–anti* carboxylate bridge J_2 is expected as it was observed in isomorphous Cu(2-qic)Cl (J = 0.37 cm^{-1}). For **2** a weak ferromagnetic couplings through the *syn–anti* carboxylate (zJ' = 1.35 cm^{-1}) and dibromo-bridges (J = 8.31 cm^{-1}) were found. The experimental results indicate that the observed ferromagnetic exchange through dibromo-bridge is weaker than that in the chloride analog (J = 15.0 cm^{-1}). The magnitude of magnetic interactions is discussed on the basis of structural data of compounds **1** and **2** and their halide analogues.

Słowa kluczowe

Copper, Carboxylate bridge, Bromide bridge, Crystal structure, Magnetism

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