

One-dimensional copper-pyridinedicarboxylate polymer containing square-planar Cu(II) centers exhibiting antiferromagnetic coupling

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The hydrothermal reaction of $\text{Cu}(\text{NO}_3)_2 \cdot 2.5\text{H}_2\text{O}$ with 2,5-pyridinedicarboxylic acid (2,5-PDCH₂) led to the formation of a 1-dimensional coordination polymer with the empirical formula of $\text{Cu}(\text{2,5-PDC})(\text{H}_2\text{O})$ (1). On the other hand, the hydrothermal reaction of $\text{Cu}(\text{NO}_3)_2 \cdot 2.5\text{H}_2\text{O}$ with 2,4-pyridinedicarboxylic acid (2,4-PDCH₂) gave a mononuclear Cu(II) compound $\text{Cu}(\text{2,4-PDC})_2$ (2). The structures of both compounds have been determined by X-ray diffraction. In both compounds, the coordination sphere of the Cu metal is square-planar. The polymer 1 exhibits strong antiferromagnetic coupling between the paramagnetic Cu(II) metals in the adjacent layers even in the absence of intervening groups.

