Synthesis, structure and magnetic properties of a 1D coordination polymer of Cu(II) containing phenoxido and dicyanamido bridging groups.

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Streszczenie

A new Cu^{II} 1D coordination polymer, $\{[Cu_2(L)(\mu_{1,5}\text{-dca})]_2 \cdot 2(CH_3OH)\}_n$ (**1**), containing the carbohydrazide based ligand (H_3L = bis-[(*E*)-*N*′-(2-hydroxybenzylidene)]carbohydrazide) and the dicyanamide (dca) bridging group has been synthesized and characterized by magnetic measurements, single crystal X-ray diffraction and other spectroscopic methods. X-ray analysis reveals that the ligand coordinates to the Cu^{II} ion as a hexadentate trinegative N_3O_3-donor ligand. Tetranuclear copper(II) units with double phenoxido bridges are formed, connected and extended by two $\mu_{1,5}$-dca anions, forming a 1D polymeric structure. The magnetic measurements showed global antiferromagnetic interactions with two coupling constants between “outer” ($J = -87 \pm 2$ cm^{-1}) and “inner” ($J' = -129 \pm 2$ cm^{-1}) copper pairs in tetranuclear units. The dicyanamide, adopting the end-to-end bridging mode (metal–metal separation of *ca*. 8.062(5) Å), has presented poor efficiency in mediating magnetic interactions.

Słowa kluczowe

hydrazone Schiff base, Cu(II) coordination polymer, Magnetic properties, crystal structure, phenoxido and dicyanamido bridges

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