Magnetic and spectroscopic properties of a 2D Mn(II) coordination polymer with carbohydrazone ligand.

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A new 2D coordination polymer of Mn(II), {[Mn_2(L)(μ-dca)$_3$]·CH_3OH}$_n$ (**1**), has been synthesized and characterized by elemental, TGA and single-crystal X-ray diffraction analyses and spectroscopic methods where HL is bis-[(*E*)-*N*′-(phenyl(pyridin-2-yl)methylene)]carbohydrazide. Single crystals X-ray analysis reveals that **1** has dinuclear enolate bridged Mn(II) cores which are connected together by three $\mu_{1,5}$-dicyanamide (μ-dca) bridging ligands and a 2D coordination polymer is formed by these connections. FT-IR spectroscopy and X-ray analysis indicate that the carbohydrazone ligand is coordinated to the metal cores as a mononegative ligand in the enol form. The FT-IR spectrum of **1** depicts three characteristic bands of dicyanamide anion at 2179, 2239 and 2304 cm^{-1}. The magnetic susceptibility measurement of **1** between 2 and 295 K indicates the antiferromagnetic coupling mediated *via* enolate oxygen within the dinuclear cores, whereas the dicyanamide ligand connecting these dinuclear units does not provide any appreciably contribution to magnetic properties.

Słowa kluczowe

Mn(II) coordination polymer, magnetic studies, crystal structure, Dicyanamide, TGA analysis

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