Synthesis, structure and magnetic properties of a tetranuclear Mn(II) complex with carbohydrazone based ligand.

Autorzy

Rahman Bikas

Hassan Hosseini-Monfared

Miłosz Siczek

Serhiy Demeshko

Behzad Soltani

Tadeusz Lis

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A new tetranuclear complex of Mn(II), $[Mn_4(L)_2(CH_3OH)_2(\mu\text{-}N_3)_4(N_3)_2] \cdot 2(CH_3OH)$ (**1**), was synthesized and characterized by spectroscopic methods, single-crystal X-ray diffraction analysis and TGA analysis where HL is bis-[(*E*)-*N*′-(phenyl(pyridin-2-yl)methylene)]carbohydrazide. Single crystal X-ray analysis reveals that **1** has a Mn_4 core in which Mn(II) ions are connected by azide and enolate oxygen atoms. IR spectroscopy and X-ray analysis indicate that the carbohydrazone is coordinated to the metal cores as a mononegative ligand in the enol form. The magnetic behavior of **1** was investigated between 2 and 295 K and indicated that the magnetic coupling mediated via azide bridge is ferromagnetic whereas the enolate oxygen mediates antiferromagnetic coupling that leads to overall antiferromagnetic behavior.

Słowa kluczowe

Mn(II) complex, Magnetic studies, crystal structure, spectroscopic studies, TGA analysis

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