

TRINUCLEAR MIXED-VALENT MANGANESE COMPLEX WITH NON-SCHIFF-BASE TETRADENTATE LIGAND SHOWING A FERROMAGNETIC COUPLING

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Abstract. Mixed-valent trinuclear manganese complex with *N,N'*-bis(2-hydroxy-3,5-dimethylbenzyl-*N,N'*-dimethyl-1,2-ethanediamine) (H_2hdde), $[Mn_3(hdde)_2(CH_3CO_2)_2(CH_3O)_2]$, was synthesized. The X-ray crystal structure analysis revealed that compound is a trinuclear manganese complex with linearly arrangement of $Mn^{III}-Mn^{II}-Mn^{III}$, where two manganese ions of each $Mn^{II}-Mn^{III}$ pair are bridged by μ -phenolato-oxygen of $hdde^{2-}$ ligand, μ -methanolato-oxygen, and μ -acetato ion. Temperature dependence of magnetic susceptibilities showed an increase of magnetic moment as the temperature lowers in the range of 300—6 K and a decrease below 6 K. The magnetic analysis based on Heisenberg model yielded ferromagnetic coupling ($J = 2.62 \text{ cm}^{-1}$) between Mn^{III} and Mn^{II} ions.

Keywords: manganese complex, mixed-valent complex, magnetic property, ferromagnetic interaction.

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