MIXED-VALENT TETRANUCLEAR $Mn^{II}Mn^{III}_3$ COMPLEX WITH 1,3-DIAMINO-2-HYDROXYPROPANE-*N,N',N'',N'''*-TETRAACETIC ACID

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Abstract. Mixed-valent tetranuclear $Mn^{II}Mn^{III}_3$ complex with 1,3-diamino-2-hydroxypropane-*N,N',N'',N'''*-tetraacetic acid (H_5dhpta), $Ca_2[Mn_4\{\mu\text{-OHO}\}(dhpta)_2(CH_3COO)_2]$, was synthesized and characterized by elemental analysis, IR and UV-vis-NIR spectroscopy, and temperature dependence of magnetic susceptibilities (4.5—300 K). Single-crystal X-ray crystallography revealed a trapezoid tetranuclear core with μ-(OHO), μ-alkoxido, μ-acetato bridges. Magnetic data analysis showed considerable antiferromagnetic interactions among these four manganese atoms with $J(Mn^{III}\text{-}Mn^{III})$ of –35.02 cm^{-1}, $J'(Mn^{III}(Mn^{II})\text{-}Mn^{III})$ of –4.82 cm^{-1} , and $J''(Mn^{II}\text{-}Mn^{III})$ of –4.61 cm^{-1}.

Keywords: manganese complex, tetranuclear complex, magnetic property, mixed-valent complex.