# New Dinuclear Mn(II) Phenanthroline Adipato Complex: Synthesis and Structural and Thermal Characterization of $Mn_2(phen)_2(H_2O)_2(C_6H_8O_4)_2$

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Reaction of freshly precipitated $Mn(OH)_{2-2x}(CO_3)_x \cdot yH_2O$, adipic acid and phenanthroline in $CH_3OH/H_2O$ afforded a new dinuclear Mn(II) complex, $Mn_2(phen)_2(H_2O)_2(C_6H_8O_4)_2$ **1**, aside the known $[Mn(phen)_2(H_2O)(C_6H_8O_4)]\cdot 7H_2O$ **2**. Single crystal X-ray analyses showed that complex **1** consists of the centrosymmetric dinuclear molecules resulting from two $[Mn(phen)(H_2O)]^{2+}$ moities bridged by two twisted tridentate adipato ligands. The Mn atoms are each in severely distorted octahedral geometry defined by two N atoms of one phen ligand, three carboxyl O atoms of two adipato ligands and one $H_2O$ molecule with d(Mn–N) = 2.246 and 2.296 Å and d(Mn–O) = 2.066 – 2.339 Å. The complex molecules are assembled *via* $\pi$–$\pi$ stacking interactions into 2D layers, which are held together by both strong O–H···O and weak C– H···O hydrogen bonds. The thermal behavior of **1** and **2** upon heating in argon stream is discussed.

*Key words:* Manganese, Phenanthroline Complex, $\pi$–$\pi$ Stacking Interactions, Thermal Behavior