

MS30-P33 Structural diversities of manganese(II) complexes based on benzenedicarboxylate ions and 2,2'-dipyridylamine

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In crystal engineering, the anions of benzenedicarboxylic acids (BDC) are commonly used building blocks as they offer a broad array of possible coordination modes to a metal centers. The coordination capacity of BDCs is ranging from mono- to octadentate, resulting in the formation of fascinating metal-organic structures of various dimensionality and potential applications in many fields [1].

In our continual synthetic strategy of ternary transition metal complexes with BDCs [2], a new ongoing challenge is design of Mn(II) complexes. Two novel compounds, $[\text{Mn}(\text{dipya})(\text{pht})(\text{H}_2\text{O})_2]$, **1**, and $[\text{Mn}(\text{dipya})(\text{H}_2\text{O})_4](\text{tpht})$, **2**, with dianion of phthalic (pht) and terephthalic (tpht) acid and 2,2'-dipyridylamine (dipya) were hydrothermally prepared and characterized by single crystal X-ray diffraction, TG/DSC analysis and FT-IR spectroscopy.

1 crystallize in triclinic system, $P\bar{1}$ ($a=8.361(2)$, $b=9.126(2)$, $c=11.855(2)$ Å, $\alpha=69.31(3)$, $\beta=77.47(3)$, $\gamma=79.89(3)$ °, $R_1[I>2\sigma(I)]=0.0458$). **2** crystallize in monoclinic system, $P2_1/c$ ($a=7.617(2)$, $b=23.827(5)$, $c=11.087(2)$ Å, $\beta=102.31(3)$ °, $R_1[I>2\sigma(I)]=0.028$).

The coordination numbers of Mn(II) in **1** and **2** are 7 and 6, respectively. The major difference between **1** and **2** is in BDC coordination: the pht in **1** is coordinated as a bridging ligand with bis-chelate COO groups, while the tpht is only a counter ion in **2**. In both structures there are strong non-covalent interactions. In the packing arrangement of **1**, binuclear units are connected by intermolecular hydrogen bonds, forming layers parallel to the ac -plane and strengthened by face-to-face π - π interactions (at 3.689 Å). The discrete complex units of **2** are assembled in hydrophobic and hydrophilic pseudo-layers. The hydrogen bonds exist within the pseudo-layers and between them. Finally, 3D architecture is achieved through the π - π stacking interactions (at 3.896 Å) between dipya ligands from the adjacent layers.

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