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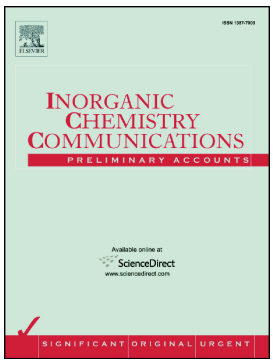

2D double-layered dibenzoyl-tartrate chiral coordination polymer containing [Mn4L2(bpp)4] tetrahedral cage

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2D double-layered dibenzoyl-tartrate chiral coordination polymer containing $[Mn_4L_2(bpp)_4]$ tetrahedral cage

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Abstract: The solution reactions of metal salts with (+)-dibenzoyl-tartaric acid (H_2L) and 1,3-bis(4-pyridyl)propane (bpp) or 4,4'-bipyridine (4,4'-bipy) afford three two-dimensional (2D) coordination polymers, $[Mn_2L_2(bpp)_2(H_2O)_4]_n \cdot nH_2O$ (**1**), $[CuL(bpp)]_n \cdot nH_2O$ (**2**) and $[CoL(4,4'\text{-bipy})(CH_3OH)(H_2O)]_n$ (**3**). Dibenzoyl-tartrate ligand displays *cis*- or *trans*-conformation, and acts as a 1,4-dicarboxylate linker. Complex **1** features a beautiful 2D double-layered (4,4) network containing $[Mn_4L_2(bpp)_4]$ tetrahedral cage. The flexible bpp ligand links Mn(II) to form an interesting 64-membered saddle-shaped macrocycle $[Mn_4(bpp)_4]$. Complex **2** displays a 2D wave-like network assembled by 1D $[CuL]_n$ linear chain and 1D $[Cu(bpp)]_n$ zigzag chain. Complex **3** is a 2D layered network constructing from $[CoL(CH_3OH)(H_2O)]_n$ chain and $[Co(4,4'\text{-bipy})]_n$ chain.

Keywords: Coordination polymer; dibenzoyl-tartaric acid; chirality; crystal structure; tetrahedral cage.

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Beginning from the early 1990s, coordination polymers (CPs) gradually attract a wide attention [1,2]. 4,4'-Bipyridine-based coordination polymers play an important role in the development process [3–5]. Now, the crystal engineering of CPs is a quite active research field, owing to their intriguing structures and multifunctional properties [6–9]. The design and assembly of CPs greatly depend on the coordination geometry of metal ions and linking behavior of multidentate ligands. One successful strategy for assembling CPs is to combine metal ions with polycarboxylates and N-heterocyclic ligands, which has afforded vast CPs [10–13]. Chirality is an important category in chemical and biological systems. Chiral complexes play important roles in the fields of asymmetric catalysis, chiral separation,