New multi-dimensional oxamate-based architectures and their magnetic properties

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Design and synthesis of multifunctional magnetic coordination polymers (MMCPs) lies in the interdisciplinary crossing point between chemistry, physics and material science and attracts a large number of research teams due to their potential applications in nanoscience1. The family of N-substituted aromatic oxamate ligands are considered as ideal candidates for obtaining structure with predictable dimensionality and magnetic properties2, and classical oxamate-based multidimensional compounds are mainly synthesized following a bis-bidentate ‘complex as ligand’ synthetic strategy. In order to change this type of coordination modes and obtain novel MMCPs, we have introduced additional coordination groups (hydroxyl and carboxylic acid) as *para-*substitutedpolytopic oxamate ligands. The 2D hetero-metallic compound {(TMA)3[Cu(paba)2Mn(CH3COO)(H2O)(DMF)]}n, 3D homo-metallic compounds [Mn(Hpaba)H2O]and (TMA)[Cu(paba)], and 3D hetero-metallic compound (TMA)2[Cu(paba)2Mn2(ox)](DMF)2 (H3paba= 4-oxamatobenzoic acid) were successfully synthesized using solvothermal methods, which were seldom explored in oxamate chemistry. Interestingly magnetic ordering is observed for the hetero-metallic 2D and 3D compounds, supporting the potential of our approach for preparation of MMCPs.



c

b

a

Figure 1 Perspective view of oxamate-based 3D Cu based compounds (a) and Cu-Mn based compounds (b) together with its remanence curve (c)

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