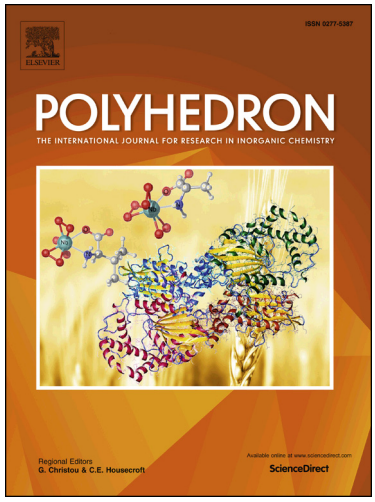

Three Co(II)-Coordination Polymers Based on 5-*Tert*-Butyl Isophthalic Acid and Isomeric Bis(imidazole) ligands: Synthesis, optical and magnetic properties

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Three Co(II)-Coordination Polymers Based on 5-*Tert*-Butyl Isophthalic Acid and Isomeric Bis(imidazole) ligands: Synthesis, optical and magnetic properties

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Abstract

Three new Co(II)-coordination polymers, namely $\{[Co_3(\mu_3\text{-tbip})(\mu_4\text{-tbip})(\mu_4\text{-tbip})(\mu\text{-}H_2O)(\mu\text{-obix})]\cdot 3H_2O\}_n$ **(1)**, $[Co_3(Htbip)(\mu\text{-}Htbip)(\mu_4\text{-tbip})(\mu_4\text{-tbip})(H_2O)(\mu\text{-mbix})]_n$ **(2)** and $[Co_2(\mu_3\text{-tbip})_2(\mu\text{-pbix})]_n$ **(3)** (tbip: 5-tert-butyl isophthalate, o, m, pbix: 1,X-bis(imidazol-1ylmethyl)benzene, X= 2, 3, 4) were systematically synthesized with H_2tbip and isomeric bis(imidazole) linkers under hydrothermal conditions to investigate the influence of isomeric ligands on the structural diversity. They were characterized by elemental analysis, IR spectroscopy, single and powder X-ray diffractions. X-ray results showed that complexes **1** and **3** possessed 3D framework while complex **2** was 2D layer. In **1** and **2**, trinuclear $[Co_3(COO)_6(OH_2)]$ and $[Co_3(COO)_6]$ units were connected by tbip ligands to form 2D and 1D structures which were extended to form 3D and 2D structures by neutral ligands, respectively. Complex **3** was mutually interpenetrated each other to form 3D+3D→3D interpenetrated framework with crs/dia-e topology. In **2**, tbip ligand displayed new coordination modes. Moreover, thermal, optical and magnetic properties of the complexes were also studied.

Keywords: 5-tert-butyl isophthalate; Co(II)-coordination polymer; semi-flexible bis(imidazole) linkers; magnetism.