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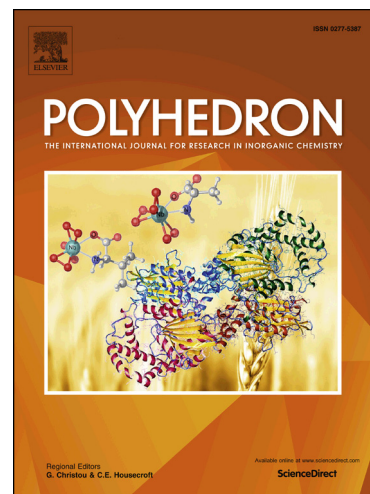
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# Three Co(II)-Coordination Polymers Based on 5-Tert-Butyl Isophthalic Acid and Isomeric Bis(imidazole) ligands: Synthesis, optical and magnetic properties

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## Abstract

Three new Co(II)-coordination polymers, namely  $\{[\text{Co}_3(\mu_3\text{-tbip})(\mu_4\text{-tbip})(\mu_4\text{-tbip})(\mu\text{-H}_2\text{O})(\mu\text{-obix})]\cdot 3\text{H}_2\text{O}\}_n$  (**1**),  $[\text{Co}_3(\text{Htbip})(\mu\text{-Htbip})(\mu_4\text{-tbip})(\mu_4\text{-tbip})(\text{H}_2\text{O})(\mu\text{-mbix})]_n$  (**2**) and  $[\text{Co}_2(\mu_3\text{-tbip})_2(\mu\text{-pbix})]_n$  (**3**) (tbip: 5-tert-butyl isophthalate, o, m, pbix: 1,X-bis(imidazol-1-ylmethyl)benzene, X= 2, 3, 4) were systematically synthesized with  $\text{H}_2\text{tbip}$  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  $[\text{Co}_3(\text{COO})_6(\text{OH}_2)]$  and  $[\text{Co}_3(\text{COO})_6]$  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.

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