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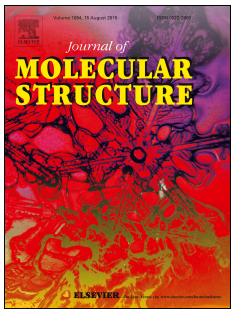

Synthesis, crystal structure, and luminescent properties of two coordination polymers based on 1,4-phenylenediacetic acid

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Synthesis, crystal structure, and luminescent properties of two coordination polymers based on 1,4-phenylenediacetic acid

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ABSTRACT

Two coordination polymers, $[Zn(pda)(bib)]_n$ (**1**) and $[Cd(pda)_{0.5}(bib)Cl]_n$ (**2**)]. (H_2pda = 1,4-phenylenediacetic acid, bib = 1,2-bis(imidazol-1-ylmethyl)benzene), have been synthesized by using Zn(II)/Cd(II) salts with two flexible ligands pda and bib under hydrothermal conditions. Their structures have been characterized by elemental analysis, IR spectroscopy, single-crystal X-ray crystallography and powder X-ray diffraction (PXRD) analysis. Due to the coordination geometry around the metal ions and the diverse coordination modes of the flexible ligands, the obtained complex show diverse structures. In the structure of **1**, a pair of bib ligands connect two Zn(II) atoms give rise a 22-membered ring, which is further extended by pda ligands in bidentate coordination mode leading a ring-containing 2D layer. In **2**, bib ligands join $[Cd_2Cl_2]^{2+}$ dimmers generate 1D polymeric ribbon, the pda ligands further extend such ribbon forming a 2D layer network containing rectangular windows, which discovers the effect of the central metal ions on the formation of metal–organic frameworks. In additional, luminescent properties of two complexes have also been studied, they could be potential fluorescence materials.

Keywords: Hydrothermal conditions; Flexible ligand; Polythreading architecture; Luminescent properties

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