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Zinc(II) and cadmium(II) complexes of long flexible bis(imidazole) and phenylenediacetate ligands, synthesis, structure, and luminescent property

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Abstract. Four new Zn(II) and Cd(II) coordination complexes, $[\text{Zn}(p\text{-pda})(m\text{-bib})]\cdot\text{H}_2\text{O}$ (**1**), $[\text{Zn}(m\text{-pda})(o\text{-bib})]\cdot\text{H}_2\text{O}$ (**2**), $[\text{Cd}(o\text{-pda})(o\text{-bib})]$ (**3**), $[\text{Cd}(m\text{-pda})(o\text{-bib})]\cdot\text{H}_2\text{O}$ (**4**), (H_2pda = phenylenediacetic acid, bib = 1,4-bis(imidazol-1-ylmethyl)benzene), have been synthesized, and structurally characterized by elemental analysis, IR spectroscopy, single-crystal X-ray crystallography. Complex **1** exhibits a 3D porous network based on 2D loop-containing layer. Complex **2–4** possesses a 3D network extended by 2D net. Differently, in complex **3**, the 2D network stack in an ABAB mode, while equivalent wave-like 2D networks mutually interpenetrated with each other to generate a 2D→3D entangled system in **2** and **4**. Furthermore, the relationship between molecular conformation, packing modes and fluorescence properties have also been investigated.

Keywords: Coordination complexes; Porous network; Fluorescence properties

1. Introduction

Benefiting from their intrinsic tunability and modularity, coordination polymers, which are composed of metal ions and bridging organic ligands, have been recognized as an excellent

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