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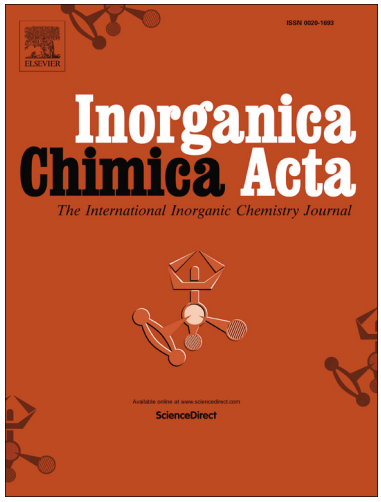

Research paper

Three metal–organic frameworks constructed from 3,3′,5,5′-azobenzene-tetracarboxylic acid: synthesis, structure and luminescent sensing

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ACCEPTED MANUSCRIPT

Three metal−organic frameworks constructed from 3,3′,5,5′-azobenzene-tetracarboxylic acid: synthesis, structure and luminescent sensing

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Abstract

Three new metal-organic frameworks (MOFs), namely, $\{[Zn_2(abtc)(bpa)(H_2O)]\cdot 5H_2O\}_n$ **(1)**, $\{[Cd_3(abtc)_2]\cdot 2H_3O\}_n$ **(2)** and $[Cd_3(H_2abtc)_3(bpp)(\mu_2\text{-}OH_2)_2(H_2O)_3]_n$ **(3)** [bpa=bis(4-pyridyl)amine, bpp=1,3-bis(4-pyridyl)propane] have been constructed mainly from the ligand of 3,3′,5,5′-azobenzene-tetracarboxylic acid (H_4abtc) and metal centers of Zn^{2+} or Cd^{2+}.

Single crystal X-ray diffraction analysis reveals that compounds **1** and **2** display 3D frameworks, while compound **3** displays a 2D layered structure consisting of intriguing 1D rhombic chains and bpp ligands. The solid-state luminescent properties of three products are investigated at room temperature. Furthermore, fluorescence measurements indicated that the complex **1** could sensitively sense Fe^{3+} ions and nitrobenzene molecules.

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