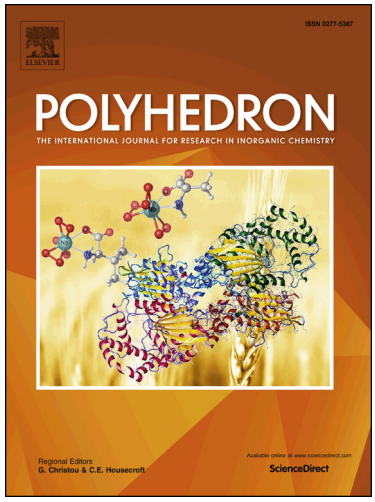

Two metal-organic frameworks based on carboxyphenyl-terpyridine ligands: synthesis, structure and highly luminescent sensing of nitrobenzene

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Two metal-organic frameworks based on carboxyphenyl-terpyridine ligands: synthesis, structure and highly luminescent sensing of nitrobenzene

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ABSTRACT

Two metal-organic frameworks, $[Cu(cptpy)(NO_3)]\cdot DMF\cdot 2H_2O$ (**1**) and $[Zn_3(cptpy)_3(NO_3)_2(H_2O)_4]\cdot NO_3\cdot 5DMF\cdot 2H_2O$ (**2**), were solvothermally obtained with carboxyphenyl-terpyridine ligand (4-(4-carboxyphenyl)-2,2':4',4"-terpyridine) (Hcptpy). Complex **1** reveals a 3D 4-fold interpenetrating network with **ths** topology, and complex **2** exhibits a 2D layer structure with **hcb** topology. Notably, the luminescent properties of complex **2** dispersed in different solvents have been investigated systematically, demonstrating high sensitivity for the detection of nitrobenzene via a fluorescence quenching mechanism. Furthermore, related to its cationic framework, **2** displays efficient removal of anion pollutants $Cr_2O_7^{2-}$ from aqueous solutions.

Keywords: metal–organic frameworks; sensing; luminescence quenching; nitro explosives; anion exchange

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