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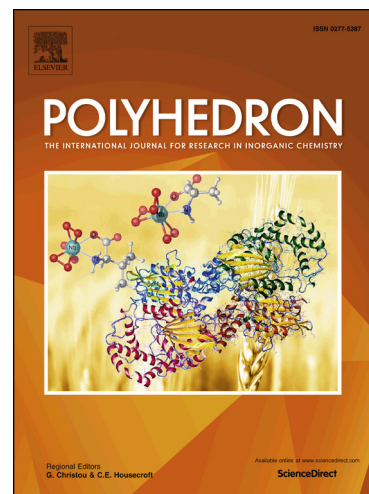
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Two metal-organic frameworks based on carboxyphenyl-terpyridine ligands: synthesis, structure and highly luminescent sensing of nitrobenzene

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ABSTRACT

Two metal-organic frameworks, $[\text{Cu}(\text{cptpy})(\text{NO}_3)] \cdot \text{DMF} \cdot 2\text{H}_2\text{O}$ (**1**) and $[\text{Zn}_3(\text{cptpy})_3(\text{NO}_3)_2(\text{H}_2\text{O})_4] \cdot \text{NO}_3 \cdot 5\text{DMF} \cdot 2\text{H}_2\text{O}$ (**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 $\text{Cr}_2\text{O}_7^{2-}$ from aqueous solutions.

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

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