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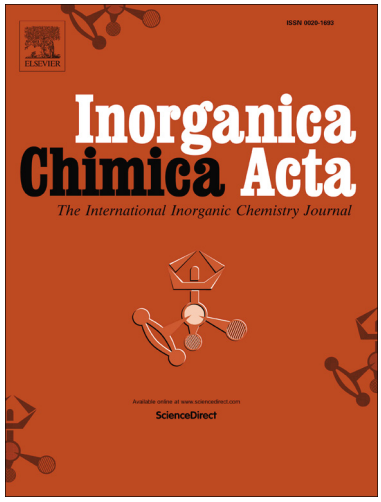

Syntheses, structures, luminescent and catalytic properties of two 3D metal-organic frameworks

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Syntheses, structures, luminescent and catalytic properties of two 3D metal-organic frameworks

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Abstract

Two new 3D Zn(II)/Pb(II)-based MOFs, $\{[Zn_9(mbpdc)_7(3,3'\text{-dmbpy})_2(\mu_3\text{-OH})_4]\cdot(H_2O)_5\}_n$ (**1**), and $\{[Pb_{11}(mbpdc)_7(\mu_4\text{-O})_3(\mu_3\text{-OH})_2]\cdot(H_2O)\}_n$ (**2**) (H_2mbpdc = 2-methyl-4,4′-biphenyldicarboxylic acid, 3,3'-dmbpy = 3,3′-dimethyl-4,4′-bipyridine) have been synthesized and were structurally characterized. Complex **1** exhibits 3D network with 10-connected **ile** topology and is comprised of pentanuclear ($Zn_5N_2O_18$) units bridged by mbpdc ligands and further pillared by 3,3'-dmbpy struts. Complex **2** is a new 3D lead(II) MOF constructed by dodecanuclear $\{Pb_{12}(COO)_{16}(\mu_3\text{-OH})_2(\mu_4\text{-O})_4\}$ units and mbpdc ligands. Furthermore, the luminescence and the catalytic activities of **1**-**2** for the degradation of methyl orange in a Fenton-like process have also investigated.

Keyword: Metal-organic Frameworks, 2-methyl-4,4′-biphenyldicarboxylate, Luminescent property, Catalytic activity