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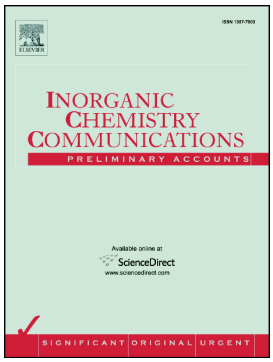

Two metal-organic frameworks constructed from 2,5-thiophenedicarboxylate and methyl-functionalized N-donor ligands with magnetic, luminescent and catalytic studies

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Two metal-organic frameworks constructed from 2,5-thiophenedicarboxylate and methyl-functionalized N-donor ligands with magnetic, luminescent and catalytic studies

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Abstract

Two transition metal-organic frameworks, $[Ni_2(3,3'\text{-dmbpy})(TDC)_2(\mu_2\text{-OH})]_n$ (**1**), and $[Cd(2,2'\text{-dmbpy})(TDC)]_n$ (**2**) ((H_2TDC = 2,5-thiophenedicarboxylic acid, 2,2'-dmbpy = 2,2′-dimethyl-4,4′-bipyridine, 3,3'-dmbpy = 3,3′-dimethyl-4,4′-bipyridine) have been synthesized and were structurally characterized. MOF **1** exhibits 3D network with 8-connected **8T36** topology and is comprised of dimeric nickel units $\{Ni_2(COO)_4(\mu_2\text{-OH})\}$ bridged by TDC ligands in the *a* and *b* directions and further pillared by 3,3'-dmbpy struts approximately in the *c* direction. MOF **2** performs a five-fold interpenetrated 3D framework with 4-connected **dia** topology and is comprised of an infinite cadmium-carboxylate chain $\{Cd(\mu_2\text{-}OOC_{chelating})_2\}_n$ bridged by TDC ligands in the *c* direction and further pillared by 2,2'-dmbpy struts approximately in the *a* and *b* directions. Furthermore, the magnetism of **1**, the luminescence of **2**, and the catalytic activities of **1**-**2** for the degradation of methyl