

## Accepted Manuscript

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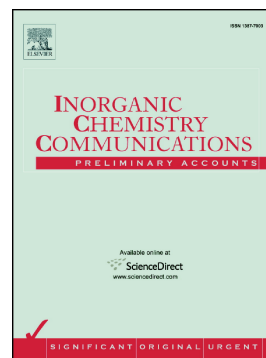
PII: S1387-7003(18)30113-8  
DOI: doi:[10.1016/j.inoche.2018.03.004](https://doi.org/10.1016/j.inoche.2018.03.004)  
Reference: INOCHE 6908

To appear in: *Inorganic Chemistry Communications*

Received date: 3 February 2018  
Revised date: 2 March 2018  
Accepted date: 9 March 2018

Please cite this article as: Kuan Lu, De-Yun Ma, Hiroshi Sakiyama , Two metal-organic frameworks constructed from 2,5-thiophenedicarboxylate and methyl-functionalized N-donor ligands with magnetic, luminescent and catalytic studies. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Inoche(2017), doi:[10.1016/j.inoche.2018.03.004](https://doi.org/10.1016/j.inoche.2018.03.004)

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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,  $[\text{Ni}_2(3,3'\text{-dmbpy})(\text{TDC})_2(\mu_2\text{-OH})]_n$  (**1**), and  $[\text{Cd}(2,2'\text{-dmbpy})(\text{TDC})]_n$  (**2**) ( $\text{H}_2\text{TDC}$  = 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  $\{\text{Ni}_2(\text{COO})_4(\mu_2\text{-OH})\}$  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  $\{\text{Cd}(\mu_2\text{-OOC}_{\text{chelating}})_2\}_n$  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

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