

Accepted Manuscript

Syntheses, structures, luminescent and gas adsorption properties of five new interpenetrated, 2D and 3D metal-organic frameworks based on a semi-rigid bis(imidazole)-carbazole ligand

Shu-Fang Zhang, Fang Xiong, Zhan He, Yue Liang, Jun-Ru Xue, Lin-Hai Jing, Da-Bin Qin

PII: S0277-5387(15)00486-6
DOI: <http://dx.doi.org/10.1016/j.poly.2015.08.040>
Reference: POLY 11508

To appear in: *Polyhedron*

Received Date: 16 May 2015
Accepted Date: 17 August 2015

Please cite this article as: S-F. Zhang, F. Xiong, Z. He, Y. Liang, J-R. Xue, L-H. Jing, D-B. Qin, Syntheses, structures, luminescent and gas adsorption properties of five new interpenetrated, 2D and 3D metal-organic frameworks based on a semi-rigid bis(imidazole)-carbazole ligand, *Polyhedron* (2015), doi: <http://dx.doi.org/10.1016/j.poly.2015.08.040>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



**Syntheses, structures, luminescent and gas adsorption properties of
five new interpenetrated, 2D and 3D metal-organic frameworks based
on a semi-rigid bis(imidazole)-carbazole ligand**

Shu-Fang Zhang, Fang Xiong, Zhan He, Yue Liang, Jun-Ru Xue, Lin-Hai Jing and
Da-Bin Qin*

*Key Laboratory of Chemical Synthesis and Pollution Control of Sichuan Province, College of
Chemistry and Chemical Engineering, China West Normal University, Nanchong 637002, China.*

Abstract: we have succeeded in constructing five metal-organic frameworks, $[\text{Zn}(\text{L})\text{SO}_4]$ (**1**), $[\text{Zn}(\text{L})(\text{bdc})]\cdot\text{H}_2\text{O}$ (**2**), $[\text{Zn}(\text{L})(\text{abdc})]\cdot 0.5\text{H}_2\text{O}$ (**3**), $[\text{Zn}(\text{L})(\text{oba})]\cdot 2\text{H}_2\text{O}$ (**4**) and $[\text{Zn}(\text{L})_2(\text{suc})_2]$ (**5**), based on a semi-rigid bis(imidazole)-cardazole ligand [9-ethyl-3,6-di(1H-imidazol-1-yl)-9H-carbazole (L)] and five rigid/flexible dicarboxylic acids (DPac = 2,6-pyridine dicarboxylic acid, H_2bdc = p-phthalic acid, H_2abdc = azobenzen-4, 4'-dicarboxylate, H_2oba = 4, 4'-oxybisbenzoic acid and H_2suc = succinic acid). Complexes **1-5** were characterized by single crystal X-ray diffraction, elemental analysis, power X-ray diffraction (PXRD), IR spectroscopy and thermogravimetry. Complex **1** possesses a two-dimensional (2D) network which is constructed not by the co-ligand acid but by a sulfate anion. Both complexes **2** and **3** are two-dimensional (2D) sheet structures with 2D→3D polycatenation frameworks. Coordination polymer **2** contains interconnected 70-membered macrocycles and **3** forms a double helix-like 4-fold interpenetrated network. Complex **5** exhibits a three-dimensional (3D) sra network. The luminescent properties of **1-5** in the solid state and gas adsorption properties of **3** and **5** were also investigated.

Keywords: Interpenetrated/2D/3D metal-organic frameworks; Semi-rigid diimidazole ligand; Rigid/flexible dicarboxylates

*Corresponding author Tel.: +86-817-2568081.
E-mail address: qdbkyl@cwnu.edu.cn (D.-B. Qin)

Download English Version:

<https://daneshyari.com/en/article/7764926>

Download Persian Version:

<https://daneshyari.com/article/7764926>

[Daneshyari.com](https://daneshyari.com)