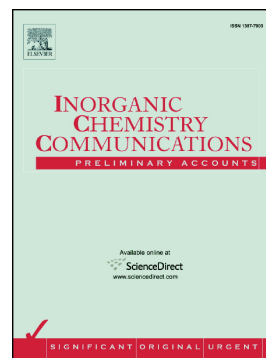


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Drug delivery and selective CO₂ adsorption of a bio-based porous zinc-organic framework from 2,5-furandicarboxylate ligand

De-Yun Ma^{a,*}, Jiamin Xie^a, Zhiwei Zhu^a, Hailan Huang^a, Yutao Chen^a, Rongxing Su^a,
Huimin Zhu^{b,*}

^a School of Food and Pharmaceutical Engineering, Zhaoqing University, Zhaoqing 526061, P. R. China

^b School of Life Science, Zhaoqing University, Zhaoqing 526061, P. R. China

* Corresponding author. Tel.: +86 758 2716357; fax: +86 758 2716447. E-mail address: mady82@126.com (D.Y. Ma) and ginnyzhuzhu@163.com (H. M. Zhu).

Abstract

A hydrostable and biofriendly porous Zn-based MOF with chemical formulae $\{[\text{Zn}(\text{FDC})]\cdot\text{H}_2\text{O}\}_n$ (**1**) (FDC = 2,5-furandicarboxylate) was synthesized and structurally characterized. TGA, PXRD, and water vapor sorption results show high thermal and water stability for the framework. **1** exhibits a 3D framework and shows a (4,8)-connected structure of a rare **scu** topolgy with the channels of 7.0×7.8 and $6.3 \times 8.5 \text{ \AA}^2$ along the *a* and *b* axis, respectively. Desolvated **1** shows not only high 5-Fluorouracil payloads (adsorbs around 22.5 wt%) but also very high CO₂ selective capture compare with other small gases (*i.e.* CH₄, N₂, O₂, CO and H₂) at 298 K. The *in vivo* Zebrafish toxicity tests and *in vitro* MTT assays of **1** at different concentrations results reveal that **1** is nontoxic.

Keywords: Biofriendly Zinc-organic Framework, Drug Delivery, Selective CO₂ Adsorption, Toxicity tests

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