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PII: S0022-2860(17)31435-7

DOI: [10.1016/j.molstruc.2017.10.089](https://doi.org/10.1016/j.molstruc.2017.10.089)

Reference: MOLSTR 24460

To appear in: *Journal of Molecular Structure*

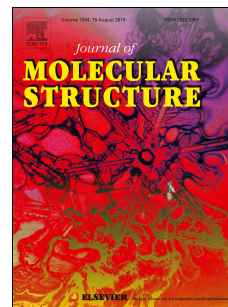
Received Date: 21 September 2017

Revised Date: 24 October 2017

Accepted Date: 24 October 2017

Please cite this article as: Y. Zhang, X. Fu, C. Zhang, H. Pang, H. Ma, X. Zhao, C. Wang, A new 3D POMOF based on Cu<sup>I</sup>/Cu<sup>II</sup>-bis(triazole) complexes and BW<sub>12</sub> Keggin polyoxoanions: Synthesis, characterization and electrochemical properties, *Journal of Molecular Structure* (2017), doi: 10.1016/j.molstruc.2017.10.089.

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# A New 3D POMOF based on Cu<sup>I</sup>/Cu<sup>II</sup>-bis(triazole) Complexes and BW<sub>12</sub> Keggin Polyoxoanions: Synthesis, Characterization and Electrochemical Properties

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## Abstract

A novel organic-inorganic hybrid compound,  $\{[\text{Cu}^{\text{I}}(\text{btpe})_2][\text{Cu}^{\text{II}}_2(\text{H}_2\text{O})_2(\text{btpe})_2][\text{BW}_{12}\text{O}_{40}]\} \cdot 2\text{H}_2\text{O}$ , (btpe = 1,5-bis(1,2,4-triazol-1-yl)pentane) (**1**) has been synthesized by hydrothermal reaction, and characterized by elemental analyses, IR spectroscopy, TG and single X-ray diffraction. Compound **1** is composed of  $\alpha$ -Keggin type  $[\text{BW}_{12}\text{O}_{40}]^{5-}$  ( $\text{BW}_{12}$ ) polyoxoanions and copper-btpe complexes. The copper-btpe complexes are stagger-packed to form an open framework containing the two kinds of channels with parallelogram-like apertures, in which the  $\text{BW}_{12}$  guests are encapsulated into the bigger channels. The electrochemical studies show that **1** has a good electrocatalytic activity towards reduction of hydrogen peroxide ( $\text{H}_2\text{O}_2$ ), thanks to its special porous POMOF structure. The molecular design of **1** not only generates a new POMOF, but also opens a new avenue to the electrocatalytic materials.

**Keywords:** Keggin; polyoxometalate; porous; electrocatalysis

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