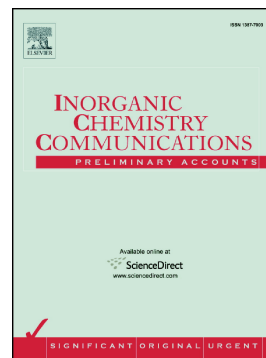


Accepted Manuscript

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PII: S1387-7003(18)30354-X
DOI: doi:[10.1016/j.inoche.2018.06.003](https://doi.org/10.1016/j.inoche.2018.06.003)
Reference: INOCHE 6997
To appear in: *Inorganic Chemistry Communications*
Received date: 17 April 2018
Revised date: 26 May 2018
Accepted date: 1 June 2018

Please cite this article as: Chun-Jing Zhang, Fan-Xia Meng, Ya-Guang Chen, Hui-Yuan Ma, Hai-Jun Pang , A novel cluster-organic framework built by the threefold interpenetrating networks and the polyoxometalate cluster units: Synthesis, structure and properties. Inoche (2017), doi:[10.1016/j.inoche.2018.06.003](https://doi.org/10.1016/j.inoche.2018.06.003)

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A novel cluster-organic framework built by the threefold interpenetrating networks and the polyoxometalate cluster units: synthesis, structure and properties

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Abstract

A new polyoxometalate (POM)-based compound, $\{\text{Cu}_5\text{L}_4[\text{H}_3\text{W}_{12}\text{O}_{40}]\}$ [L = 1,6-bis(1,2,4-triazol-1-yl)hexane], has been hydrothermally synthesized and characterized by elemental analysis, IR spectroscopy, UV spectroscopy, X-ray powder diffraction and single crystal X-ray diffraction. In **1**, there is a threefold interpenetrating metal-organic network. Furthermore, *via* sharing Cu cations, the metal-organic networks are fused together by $[\text{H}_3\text{W}_{12}\text{O}_{40}]^{5-}$ (W_{12}) polyoxoanions to yield a novel 3D POM cluster-organic framework. Additionally, in contrast to free L ligand, compound **1** exhibits an enhanced luminescent property, attributed to an internal heavy metal effect.

Keywords: Polyoxometalate; Interpenetrating network; Luminescent properties

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