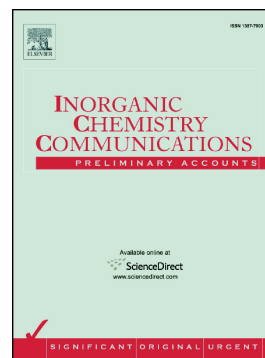


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## Two Anderson-type polyoxometalate-induced various Co-complexes based on a rigid pyrazine-bis(triazole) ligand

Xue Bai, Hongyan Lin\*, Junjun Sun, Guocheng Liu, Xiang Wang and Xiuli Wang\*

*Department of Chemistry, Bohai University, Liaoning Province Silicon Materials Engineering*

*Technology Research Centre, Jinzhou 121000, P. R. China*

### Abstract

Two new Anderson-type polyoxometalate (POM)-based metal-organic complexes  $\{\text{Co}_2(\text{H}_2\text{pytty})_2[\text{CrMo}_6(\text{OH})_5\text{O}_{19}](\text{H}_2\text{O})_8\} \cdot 10\text{H}_2\text{O}$  (1),  $\{\text{Co}_5(\text{pytty})_2[\text{TeMo}_6\text{O}_{24}](\text{H}_2\text{O})_{16}\} \cdot 6\text{H}_2\text{O}$  (2) ( $\text{H}_2\text{pytty} = 3\text{-(pyrazin-2-yl)-5-(1H-1,2,4-triazol-3-yl)-1,2,4-triazolyl}$ ) have been synthesized under hydrothermal condition and characterized by IR spectra, elemental analyses, single crystal X-ray diffraction, powder X-ray diffraction (PXRD) and thermogravimetric analysis (TGA). Complex 1 is a 0D structure containing a cation  $[\text{Co}_2(\text{H}_2\text{pytty})_2]^{4+}$  and an isolated B-type  $[\text{CrMo}_6(\text{OH})_5\text{O}_{19}]^{4-}$  anion. When A-type  $[\text{TeMo}_6\text{O}_{24}]^{6-}$  was used, complex 2 shows a 2D layer with two kinds of 1D chains. No report on the combination of pyrazine-bis(triazole) and Anderson-type POM was found up to now. The electrochemical behaviour and electrocatalytic activities of two title complexes have been systemically studied and discussed. In addition, the redox potentials of complexes 1 and 2 are highly sensitive of pH and may be used as a kind of potential pH sensor.

**Keywords:** Anderson-type; polyoxometalate; Pyrazine-bis(triazole); Bifunctional

\* Corresponding author. Tel.: +86-416-3400302

*E-mail address:* [linhongyan\\_2005@126.com](mailto:linhongyan_2005@126.com) (H.-Y. Lin).

\* Corresponding author. Tel.: +86-416-3400158

*E-mail address:* [wangxiuli@bhu.edu.cn](mailto:wangxiuli@bhu.edu.cn) (X.-L. Wang).

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