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Title:

Metalloporphyrin-based MOFs: First Cobalt Based TPPS-bipy Coordination Network

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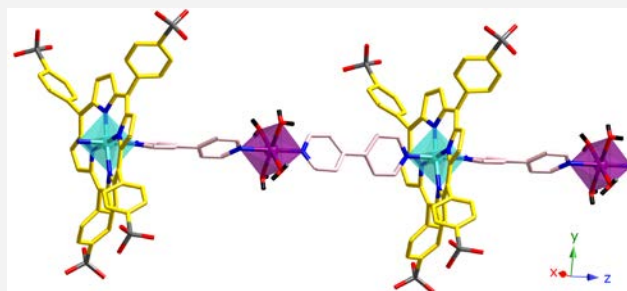
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Supramolecular entities based on self-assembly of metalloporphyrins are paradigmatic examples of the great efficiency of the nanodevices used by natural systems in photosynthesis, oxygen transport, electron transfer and catalysis.¹ Thus, porphyrin catalysts are well-known to be highly efficient in many catalytic reactions and, during the last years, a great effort has been devoted to the immobilization of distinct types of catalysts on solids.²

In this sense, recent strategy consists of the immobilization of catalysts in MOFs (metal-organic frameworks).^{3,4} In our group we have started exploring the possibility of using metalloporphyrins both as structural units in MOFs and catalyst,⁵ in the same compound.

The results herein presented correspond to the compound $[\text{Co}_2\text{TPPS}(\text{bipy})(\text{H}_2\text{O})_4] \cdot 3\text{H}_2\text{O}$ (TPPS= *meso*-tetra(4-sulfonatophenyl)-porphyrin and bipy= 4, 4'-bipyridine) obtained by solvothermal synthesis. Its crystal structure consists of 1D polymers where CoTPPS units are axially bonded to bipy ligands, alternating Co metal centres along the [001] direction according to the bipy-CoTPPS-bipy-Co(H_2O)₄ fashion (see figure). The infrared, thermal and topological characterization are also presented in this work.

As far as we know, this is the first compound with TPPS and bipy, and from a crystallographic point of view, this is an unprecedented bimetallic chain for this type of systems.



[1] I. Beletskaya, V.S. Tyurin, A.Y. Tsivadze, R. Guilard, C. Stern, *Chem. Rev.*, **2009**,

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109, 1659-1713.

[2] J. Mola, E. Mas-Marza, X. Sala, I. Romero, M. Rodríguez, C. Viñas, T. Parella, A. Llobet, *Angew. Chem. Int. Ed.*, **2008**, *47*, 5830-5832.

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[4] X-L. Yang, M-H Xie, C. Zou, Y. He, B. Chen, M. O’Keeffe, C-D. Wu, *J. Am. Chem. Soc.*, **2012**, *134*, 10638-10645.

[5] A. Fidalgo-Marijuan, G. Barandika, B. Bazán, M.K. Urriaga, M.I. Arriortua, *Polyhedron*, **2011**, *30*, 2711-2716.

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