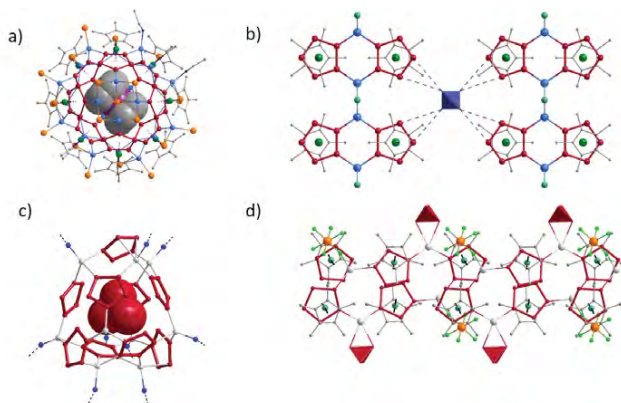


Fig. 1. *a*) encapsulation of Cp_2Co^+ in the supramolecule; inclusion of E_4 ($\text{E}=\text{As}, \text{P}$) molecule into *b*) coordination polymer and *c*) into $[\text{Ag}_9(\text{Cp}^*\text{FeP}_5)_9]^{9+}$ cage. *d*) $[(\text{Cp}^*\text{FeP}_5)_2\text{Ag}_2(\mu,\eta^2\text{-P}_4)(\text{SbF}_6)]\text{SbF}_6$.



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Keywords: coordination polymer, host-guest compounds, pentaphosphaferrocene

MS35-O5

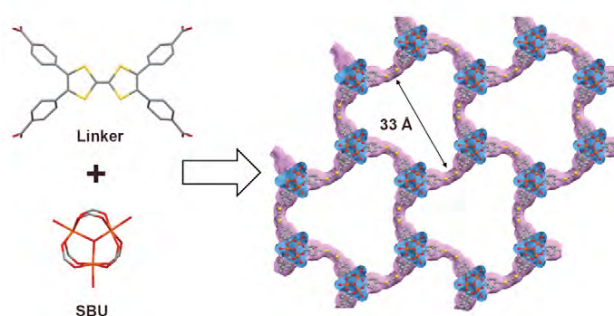
A hierarchical metal-organic framework with breathing-dependent redox activity

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Metal-Organic Frameworks (MOFs) combining both large pores and high stability have received a lot of attention during the past years due to their high interest towards practical applications such as MIL-100 or MIL-101. Moreover, the preparation of hierarchical MOFs, presenting both micro- and mesopores, has also become a subject of great interest since micropores contribute to the bulk of the surface area whereas mesopores provide a better accesability to larger molecules to quickly diffuse, becoming very attractive for catalytic applications.[1] Herein we report the synthesis, structure determination and physical properties of **MUV-2** (MUV: Materials of University of Valencia), a highly stable tetrathiafulvalene (TTF)-based MOF with a non-interpenetrated hierarchical crystal structure with mesoporous channels (~33 Å) disposed orthogonal to microporous channels (~10 Å). The advantages of **MUV-2** respect to widely used MOFs catalyst (MIL-100 and MIL-101) will be clearly demonstrated for a reaction of large applied interest (aerobic oxidation of benzothiophenes), illustrating the advantages of having a hierarchical MOF with large mesopores and high stability.[2] In addition, **MUV-2** presents a continuous breathing behaviour upon solvent or gas adsorption, cause by the flexibility of the TTF-based ligands that show conformational changes, as unequivocally demonstrated by single crystal X-ray diffraction. The reversible swelling not only modifies the accessible space, but also the oxidation potential of the MOF.[3]



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Keywords: Highly-stable MOFs, breathing MOFs, hierarchical MOFs

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