

On the new low-dimensional organic-inorganic hybrid solids Cu

$4(\text{bipy})_4[\text{V}_4\text{P}_2\text{O}_{19}] \cdot n\text{H}_2\text{O}$ ($n = 5$) and $\text{Cu}_2(\text{bipy})_2[\text{V}_2\text{P}_2\text{O}_{12}]$ with linear $[\text{V}_4\text{P}_2\text{O}_{19}]^{8-}$ and cyclic $[\text{V}_2\text{P}_2\text{O}_{12}]^{4-}$ oligomers

Ushak, S.

Spodine, E.

Venegas-Yazigi, D.

Le Fur, E.

Pivan, J. Y.

Peña, O.

Cardoso-Gil, R.

Kniep, R.

The new hybrid organic-inorganic copper oxovanadium phosphates of composition

$\text{Cu}_4(\text{bipy})_4\text{V}_4\text{O}_{11}(\text{PO}_4)_2 \cdot n\text{H}_2\text{O}$ ($n = 5$) (1) and $\text{Cu}_2(\text{bipy})_2\text{V}_2\text{P}_2\text{O}_{12}$ (2) (bipy = 2, 2'-bipyridine)

adopting the triclinic symmetry were obtained by soft hydrothermal routes. Both structures present different oxovanadium phosphate anionic units, resulting from the vertex-sharing of PO_4 and VO_4

tetrahedra, which are coordinated to copper diimine cationic groups to form a 1D framework. The

VPO structures are reminiscent of the known connectivity and geometry of polyphosphate anions.

For the two compounds, the magnetic copper(II) centres are square pyramidally coordinated with

two nitrogen atoms of the neutral diimine ligand and three oxygen atoms of the oxovanadium

phosphate subunit. The CuN_2O_3 pyramids are linked together by oxo-bridges involving PO_4

tetrahedra in $\text{Cu}_2(\text{bipy})_2\text{V}_2\text{P}_2\text{O}_{12}$ with the closest Cu-Cu distances corresponding to 4.98 Å.

Edge-sharing of the copper pyramids in $\text{Cu}_4(\text{bipy})_4\text{V}_4\text{O}_{11}(\text{PO}_4)_2 \cdot n\text{H}_2\text{O}$ results in