Self-assembly of metalloporphyrins: first TPP-bipy coordination polymer with Co^{II} (TPP=meso-tetraphenylporphyrin and bipy=4,4´-bipyridine)

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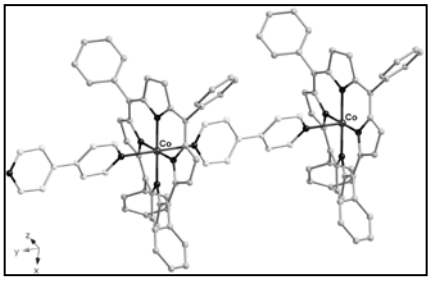
Supramolecular entities based on self-assembly of metalloporphyrins are paradigmatic examples of the great efficiency of the nanodevices used by natural systems in photosynthesis, oxygen transport, electron transfer and catalysis [1].

Obtaining supramolecular entities may be approached by different strategies of synthetic design. One of them consists on the use of external dipyridyl ligands to assemble the metallated porphyrin units, so the range of compounds that can be used is endless. In this context, our research group is working with different combinations of organic ligands and metalloporphyrins [2], and the work herein presented corresponds to the compound $[CoTPP(bipy)]\cdot[CoTPP]_{0.22}\cdot TPP_{0.78}$ (TPP = meso-tetraphenylporphyrin and bipy = 4,4´-bipyridine), obtained by solvothermal synthesis.



Its crystal structure consist of chains of alternating [CoTPP(bipy)]·octahedra where bipy molecules are on the axial positions. Within the voids between the parallel chains, isolated [CoTPP]·monomers and TPP units are located.

So far, very few compounds with TPP and bipy have been described, just one of them [3] being a real 1D coordination polymer. It is also remarkable that, as far as we know, this is the first structure with these ligands based on Co.

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