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BOOK OF ABSTRACTS



Synthesis, Structural and Optical Characterization of Coordination Polymers Based on Copper(I) Thiolates

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Coordination polymers (CPs) are polymeric structures containing metal centers linked, in an infinite one-, two-, or three-dimensional network, by suitable organic ligands. They are particularly attractive for their diverse structural motifs and physico-chemical properties.[1] Copper(I) based coordination polymers, in particular, offer a rich coordination ability combined with excellent photophysical and electronic properties.[2]

The selection of the ligands is of crucial importance for tuning the final architecture of the materials, and their optical and electrical behaviour. We are interested in the application of coordination polymers as chemical sensors, where the signal transduction is based on the interaction of the analyte with the CP network. Both optical and electrical changes are foreseen to be used as effective recognition signals.

In this work, we have selected nitrogen-sulphur heterocyclic units as chelating ligands. These multifunctional ligands contain a carboxylic group, a thiol group and a pyridinic nitrogen. Thus, they can exhibit different coordination sites for copper(I) and different final structural motifs. Three new coordination polymers have been obtained by the assembly of these ligands with Cu(I) ions. Two of them are two-dimensional CPs while one is a one-dimensional CP and their crystal structures differ in the coordination geometry. The optical properties of the complexes, evaluated in the solid state at room temperature and at 77K, will be presented and discussed.

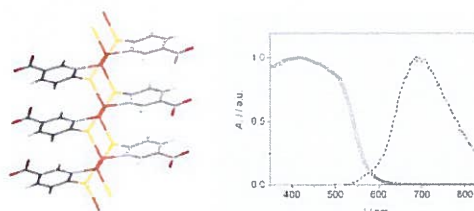


Figure 1: Fragment of the polymeric chain (left) and absorption and 77K emission (right) of one of the studied CPs.

References

1. K. C. Bentz, S. M. Cohen, *Angew. Chem. Int. Ed.* **2018**, *57*, 14992-5001.
2. J. Conesa-Egea, F. Zamora, P. Amo-Ochoa, *Coord. Chem. Rev.* **2019**, *381*, 65-78.

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