Porous spin crossover networks for multifunctional materials

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A main objective of nowadays spin crossover (SCO) research is the development of materials suitable for technological applications. Multifunctional materials, combining the SCO effect with an additional property (*e.g.* luminescence, NLO, etc.) would notably broaden the scope of applicability.[1]

Currently we focus on the development of spin-switchable metal organic frameworks with extended pore-size. Such porous spin-switchable hosts could act as combinatorial materials by the mere incorporation of a functional guest. We investigated different ligand systems, based on N-ligands (1-substituted tetrazoles, pyrazoles). Although, these approaches led to the desired porous switchable materials, due to the ligands' design no regular pore structure could be obtained. Therefore, an extension of the $[M^{II}(CN)_4]^{2-}$ (M=Ni, Pd, Pt) fragment of the well-known Hofmann-type networks[2] was performed. This led to second generation Hofmann-type networks with extended pore size (fig.1) and SCO behavior beyond room-temperature.

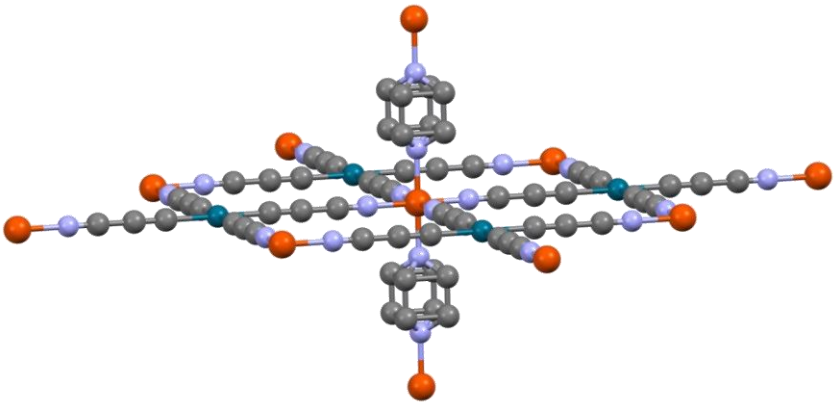

Figure 1 Second generation Hofmann-type network, view along a-axis

1 A. B. Gaspar, V. Ksenofontov, M. Seredyuk, P. Gütlich, *Coord. Chem. Rev*., **2005**, *249*, 2661.
2 V. Niel, J. Mari, M.-Agudo, M. C. Munoz, A. B. Gaspar, J. A. Real, *Inorg. Chem.*, **2001**, *40,* 3838.