

Crystal packing in Pyromellitate (bta)⁴⁻ containing Cobalt(II) Complexes. Tuning the water aggregation.

Óscar Fabelo^a, Laura Cañadillas-Delgado^a, Fernando S. Delgado^a, María M. Laz^a, María Hernández-Molina^a, Catalina Ruiz-Pérez^a, Francesc Lloret^b y Miguel Julve,^b ^a*Laboratorio de Rayos X y Materiales Moleculares, Universidad de La Laguna, Spain.* ^b*ICMOL/Departament de Química Inorgànica. Universitat de València. Spain.* E-mail: caruiz@ull.es ; orfabelo@ull.es

Three different polymeric complexes were designed and synthesized from Co(II) and 1,2,4,5-benzenetetracarboxylic acid (H₄-bta). These complexes exhibit a zeolite-like structure; which cavities are suitable to host water molecules. The dimensionality and crystal packing depend on the syntheses methods. Closer packed structures are obtained from gels to hydrothermal method synthesis.

The clusters of water play an important role in the stabilization of supramolecular systems [1], their structural study is important for understanding the behavior of biological systems. A great number of metal-organic frameworks (MOF) have been reported to accommodate clusters and chains of water [2]. We present herein three cobalt(II) MOF's where the crystal packing controls and templates the formation of different kinds of water aggregation (discrete clusters or nanowires).

Stabilization of guest molecules is due to weak directional intermolecular forces such as hydrogen bonds. Special attention has been paid to these interactions for understanding the anchoring between host-guest molecules.

[1] Ludwig, R. *Angew. Chem. Int.* 2001, **40**, 1808-1827.

[2] Yaghi, O. M.; O'keeffe, M.; Ockwig, N.W.; Chae, H. D.; Eddaoudi, M.; Kim, J. *Nature* 2003, **432**, 705-714

Keywords: Hydrothermal method, gels, water structure