

their geometry and solid state packing motifs as means to predict functional properties of the resulting solids. These predictions should further stimulate the use of curved carbon-rich molecules in materials chemistry. We also employ several buckybowls as non-planar polyaromatic templates toward coordination of a planar trinuclear mercury complex, $C_{18}F_{12}Hg_3$. The effects of matching/mismatching the planar and non-planar surfaces of interacting partners result in imposing and storing strain energy in the solid state. The photoluminescent properties of such hybrid systems will be discussed.

[1] M. A. Petrukhina, K. W. Andreini, J. Mack, L. T. Scott, *Angew. Chem. Int. Ed.* **2003**, 42, 3375. [2] M. A. Petrukhina, K. W. Andreini, L. Peng, L. T. Scott, *Angew. Chem. Int. Ed.* **2004**, 43, 5477. [3] M. A. Petrukhina, Y. Sevryugina, A. Yu. Rogachev, E. A. Jackson, L. T. Scott, *Angew. Chem. Int. Ed.* **2006**, 45, 7208. [4] M. A. Petrukhina, *Coord. Chem. Rev.* **2007**, 251, 1690. [5] M. A. Petrukhina, *Angew. Chem. Int. Ed.* **2008**, 47, 1150.

Keywords: non-planar polyarenes; molecular geometry; solid state packing

FA4-MS02-O4

Synthesis Procedure vs. Temperature in Cobalt Molecular Magnetic Materials. Catalina Ruiz-Pérez^a, Oscar Fabelo^a, Jorge Pasán^a, Laura Cañadillas-Delgado^a, Mariadel Déniz^a, Ana Belén Lago^a, Pau Díaz-Gallifà^a, Carla Martínez^a, Francesc Lloret^b, Miguel Julve^b. ^aLaboratorio de Rayos X y Materiales Moleculares, Universidad de La Laguna, Spain. ^bICMol, Universitat de València, Spain.

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Recent studies indicate that, in few cases, the thermodynamic considerations outweigh the kinetic ones. The study on the formation of cobalt succinate phases provided the first insight towards this aspect [1], which showed that denser higher dimensional structures are formed on increasing the reaction temperature through entropy driven dehydration pathway. As this respect the existence of eight well-characterized phases of cobalt pyromellitate containing water offers a rare opportunity to examine the role of various reaction variables in determining which structure forms. However, since these cobalt-bta phases have been prepared by different research groups and by different procedures, a retrospective examination of the effect of the reaction conditions on the product formation is difficult, i.e. the synthesis temperature. With this idea in mind we have undertaken a study of the Co(II)-bta system as a function of kinetic (crystal growth/synthesis technique) and thermodynamic parameters (temperature/pressure). In this study, **fifteen phases** have been structural and magnetically characterized, showing a wide variance of structural (from 0D to 3D) and magnetic (from isolated Co(II) ions toward long range order) behaviours and also his structural-magnetic relationship has been done.

[1] Foster, P. M.; Burbank, A. R.; Livage, C.; Ferey, G.; Cheetham, A. K. *Chem. Comm.* **2004** 368

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FA4-MS02-O5

Size and Shape Design in Functional Metallorganic Wheel - and - Axle Systems. Alessia Bacchi^a, Mauro Carcelli^a, Paolo Pelagatti^a, Tiziana Chiodo^a. ^aDipartimento di Chimica GIAF, Università di Parma, Italy.

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We are particularly interested in the realization of organic-inorganic systems with flexible dynamic frameworks that can create pores *on demand* to accommodate small guests [1]. Recently we have reported that size and shape of the organic ligands are crucial in determining the inclusion propensity of these materials[2]. In particular, wheel-and-axle *trans*-Pd(II) complexes of carbinol ligands (*waad*) have shown suitable structural requisites to give reversible host-guest properties [3]. Here we investigate the influence on inclusion properties of shape modifications by changing the metal stereochemistry and the wheel hindrance, showing that both axle linearity and wheel bulkiness are needed to realise inclusion. We then present new metal-organic wheel-and-axle (*waamo*) systems based on ruthenium half-sandwich units, designed in order to favour the creation of bistable flexible networks.

[1] Bacchi, A.; Carcelli, M.; Chiodo, T.; Mezzadri, F. *CrystEng Comm.* **2008**, 10, 1916. [2] Bacchi, A. in *Boyens, J.C.A.; Ogilvie, J.F. Eds. Models, Mysteries, and Magic of Molecules.* **2008**, 87-108, Springer. [3] Bacchi, A.; Bosetti, E.; Carcelli, M.; Pelagatti, P.; Rogolino, D.; Pelizzi, G. *Inorg. Chem.*, **2005**, 44, 431.

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