#### m41.p09

## Synthesis, structure and properties of Ni and Co arylsulfonates

<u>Felipe Gándara</u>, Carlos Fortes-Revilla, Enrique Gutiérrez-Puebla, Marta Iglesias, Angeles Monge, Natalia Snejko

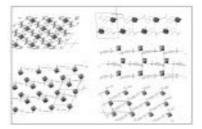
Instituto de Ciencia de Materiales de Madrid, CSIC, Madrid, Spain. E-mail: felipegandara@icmm.csic.es

## **Keywords:** transition metal complexes, hydrothermal synthesis, crystal structures

Most of the transition metal sulfonates previously obtained from aqueous media are aqua-metal sulfonate salts [1]. The Rare Earth sulfonate materials [2] had been proved to be 3D polymers; they are chemically and thermally stable and appropriate for using in heterogeneous catalysis.

We report here the synthesis, crystal structure and catalytic properties of five new compounds of Nickel and Cobalt with 1,5- and 2,6-Napthalenedisulfonate, four of them exhibiting a direct coordination of the metal atom with the sulfonate group. The materials have been hydrothermally synthesized in presence of o-phenantroline from aqueous media.

Geometrical features on the hydrogen-bond network topologies will be done.



<sup>[1]</sup> Chen C-H, Cai J, Feng X-L, Chen X-M, J. Chem. Crystallogr. 2001, 31 (5), 271.

#### m41.p10

# Supramolecular interactions in the 2-D coordination polymers: $[M(btre)_2(NCS)_2]$ (M' = Fe, Co)

<u>Yann Garcia</u><sup>a</sup>, Christine Gieck<sup>b</sup>, Georges Bravic<sup>c</sup>, Daniel Chasseau<sup>c</sup>

<sup>a</sup>Unité de Chimie des Matériaux Inorganiques et Organiques, Département de Chimie, Université catholique de Louvain, Place L. Pasteur 1, 1348 Louvain-la-Neuve, Belgium. <sup>b</sup>Dip. Di Scienze e Tecnologie Avanzate - Università del Piemonte Orientale "A. Avogadro", Via Bellini 25/G, 15100 Alessandria, Italy. <sup>c</sup>Institut de Chimie de la Matière Condensée de Bordeaux, Groupe des Sciences Moléculaires, UPR CNRS No. 9048, 33608 Pessac, France. E-mail: garcia@chim.ucl.ac.be.

### **Keywords: spin crossover, coordination polymers, supramolecular chemistry**

Bis-polydentate 1,2,4-triazoles are promising ligands for the synthesis of coordination polymers since molecular distortions associated to the spin state change of isolated Fe<sup>II</sup> ions may be propagated through these bridging units. Self assembly of the new btre (1,2-bis(1,2,4-triazol-4-yl)ethane) ligand afforded  $[Cu_3(btre)_5(H_2O)_2](ClO_4)_6 \cdot H_2O$ , a coordination 3D polymer made of interconnected trinuclear Cu<sup>II</sup> units.<sup>[1]</sup> In the present work, the structural investigation of  $[M(btre)_2(NCS)_2](M^{II} =$ Fe, Co) is reported and discussed in the light of the magnetic <sup>57</sup>Fe properties Mössbauer investigation  $[Fe(btre)_2(NCS)_2]$  (1). At 293 K, the crystal structure consists of a 2D sheet in which the  $M^{II}$  ions are linked by 1,2,4-triazole ligands in a N1,N1' bidentate coordination mode. The Fe-N bond lengths are ~ 2.22(3) Å indicating a HS state. The structure is stabilised by  $\Pi$  bond interactions between two adjacent sheets and S ... S interactions. The magnetic properties of (1) investigated over the temperature range (2 - 300 K) have revealed high-spin Fe<sup>II</sup> ions, a situation confirmed by Mössbauer spectroscopy. Such a coordination network bearing supramolecular interactions with a MN<sub>6</sub> core was however designed to cooperative spin crossover behaviour. [Fe(btre)<sub>2</sub>(NCS)<sub>2</sub>] could not be switched by any kind of trigger (temperature, pressure and light irradiation). Lattice effects must be considered.

<sup>[2]</sup> N. Śnejko, C. Cascales, B. Gomez-Lor, E. Gutiérrez-Puebla, M. Iglesias, C. Ruiz-Valero, M. A. Monge, *Chem. Commun.*, 2002, 1366.

<sup>[1]</sup> Y. Garcia, P. J. van Koningsbruggen, H. Kooijman, A. L. Spek, J. G. Haasnoot, O. Kahn, Eur. J. Inorg. Chem. (2000) 307 and 575.

<sup>[2]</sup> Y. Garcia, G. Bravic, C. Gieck, D. Chasseau, W. Tremel, P. Gütlich, Inorg. Chem. 44 (2005) 9723.