Anion-dependent switch between sheets and diamondoid assembly for $Zn(LOH)_2X_2$

Elsa Bosetti, Alessia Bacchi, Mauro Carcelli, Department of Chemistry GIAF, University of Parma, Italy. E-mail: elsabosetti@libero.it

We are currently studying the modes of solid state association of $M(LOH)_2X_2$ molecular building blocks built by complexation of transition metals with LOH (α -(4-pyridyl)benzhydrol), with the scope of designing organic-inorganic hybrid materials capable of uptaking/releasing small guests by solid-gas processes [1].

Here we show the abrupt change in crystal organization of $Zn(LOH)_2X_2$ on passing form X= Cl, Br to X=I. The smaller and more electronegative halides partecipate to -OH...X hydrogen bonds giving an overall arrangement of the structures in bidimensional sheets. Zinc behaves as a distorted square nodes in the network topology. The



iodine atom switches the basic supramolecolar synthon from -OH...X to tethrahedral $-(OH)_4$ nests assembled by -OH...H hydrogen bonds, which give a non-covalent

diamondoid network where the metal acts as a spacer between tethraedral nodes.

[1] Bacchi A., Bosetti E., Carcelli M., Pelagatti P., Rogolino D., Pelizzi G., Inorg. Chem. , 2005, 44 (2), 431 - 442.

Keywords: crystal engineering, nonbonded interactions, diamondoid