

Poster Presentation

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Comparative study between two new phthalate/imidazole Cobalt complexes

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The main strategy for preparing novel multifunctional materials is based on self-assembly method which employs polydentate organic ligands containing N- or O-donor as building blocks. In this context, those ligands like imidazole or carboxylate groups are of special interest due to their good coordination ability and diverse coordination modes [1]. As a part of our investigations of extended structures with mixed ligands, new complexes [Co(Hipht)2(Im)2(H2O)2] and [Co(Tpht)(Im)3(H2O)2].H2O were obtained by direct method, then characterized by IR spectroscopy, TG/ATD and X-ray crystallography. In the compound [Co(Hipht)2(Im)2(H2O)2], Co is located on a symmetry center, surrounded by two aqua ligands, two hydrogeno-isophthalate ligands and two imidazole molecules, where all ligands adopt monodentate mode. The complex's geometry consist of two intermolecular N-H...O bonds (2,157 Å and 2,630 Å) formed by one H atom of imidazole ligand and oxygen atoms of acid molecules evolving along two directions, giving rise to R24 (16) synthons. The interplanar distance of 3,718 Å between two parallel imidazole rings reveals the existence of π - π interactions. In the [Co(Tpht)(Im)3(H2O)2].H2O [2], the Co cation exhibits an octahedral coordination sphere, with two aqua, three N-coordinated imidazole ligands and one terephthalato dianion. The three independent imidazole groups and the single terephthalate dianion, all unidentate participate respectively as donor and acceptor in strong to moderate hydrogen bonds, and allow the recognition of supramolecular dimensionality. The backbone of the architecture is the helical hydrogen-bonded ladder running along b axis, composed of alternating R44(10) and R33(8) heterosynthons, which are developed in bicyclic sheets. Non covalent interactions play a significant role in this class of materials [3], in fact, extended hydrogen bonds networks associated to π - π interactions lead to 3D supramolecular architecture for the two complexes.

[1] M. Eddaoudi, D.B. Moler, H. Li, B. Chen, T.M. Reineke, M. O'Keeffe, O. Yaghi, *Acc. Chem. Res.*, 2001, 34, 319–330, [2] A. Benkanoun, F. Balegroune, A. Guehria-Laidoudi, S. Dahaoui, C. Lecomte, *Acta Cryst.*, 2012, E68, m480–m481, [3] C. B. Aakeroy, N. R. Champness, C. Janiak, *CrystEngComm*, 2010, 12, 22–43

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