STRUCTURAL AND MAGNETIC PROPERTIES OF THREE 1D COPPER(II) COORDINATION POLYMERS

Ildiko Buta[1*], Peter Lönnecke[2], Evamarie Hey-Hawkins[2], Marius Andruh[3], Otilia Costisor[1]

[1]Romanian Academy ''Coriolan Dragulescu" Institute of Chemistry, 24 Mihai Viteazu Bvd., 300223-Timisoara, Romania
[2]Leipzig University, Faculty of Chemistry and Mineralogy, Institute of Inorganic Chemistry, Johannisallee 29, 04103 Leipzig, Germany
[3]University of Bucharest, Faculty of Chemistry, Inorganic Chemistry Laboratory, 23 Dumbrava Rosie Str, 020464-Bucharest, Romania
e-mail: ildiko_buta@acad-icht.tm.edu.ro

Abstract

The design of coordination polymers is controlled by the nature of the ligands and metal ions involved [1]. The electronic structure, size and stereochemical preference of the metal ion, along with the number and the relative position of the coordinating groups of the ligand, determine the dimensionality and topology of the resulting compounds [2].

Here, we report three coordination polymers, $^{1}_{\infty}[Cu_3L_2(NO_3)]NO_3 \cdot 2MeOH \cdot 2H_2O$ (**1**), $^{1}_{\infty}[Cu_3L_2(N_3)]CH_3COO$ (**2**) and $^{1}_{\infty}[Cu_3L_2(H_2O)](ClO_4)_2$ (**3**), based on the Schiff base H_2L (H_2L = N,N'-bis[(2-hydroxybenzilideneamino)propyl]piperazine). X-ray single-crystal analysis shows that compounds **1** and **2** are isostructural and crystallize in orthorombic system, space group, $P2_12_12_1$, while complex **3** crystallizes in a monoclinic system, space group $P2_1/c$. Compounds **1**-**3** consist of trinuclear complex entities, $[Cu_3L_2]^{2+}$, connected via different bridges, nitrato (**1**), azido (**2**) and phenoxido (**3**), depending on the nature of the counterion. The cryomagnetic measurements showed weak ferro- (**1**) and antiferromagnetic (**2** and **3**) interactions between the copper(II) ions (Figure 1).

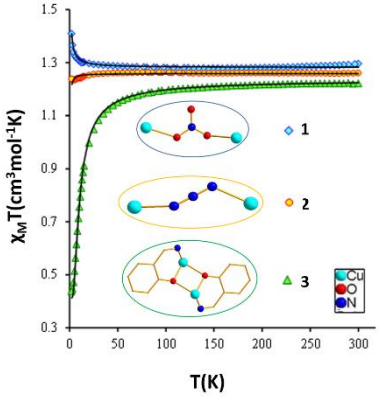

Figure 1. $\chi_M T$ vs T curves for compounds **1**-**3**

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References

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