

Structural Characterization of 3d Metal Complexes Containing an Unconventional Schiff Base Ligand

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Abstract

The design of appropriated organic ligands capable of binding metal ions provides a targeted entry to new materials with distinct structural and physicochemical properties. A representative family of such ligands includes Schiff bases. Here, we report new mono, di- and polynuclear materials $[\text{Co}(\text{L})]_3(\text{ClO}_4)_3 \cdot 4\text{H}_2\text{O}$ (**1**), $[\text{Zn}_2(\text{L})(\text{CH}_3\text{COO})_2]$ (**2**) and $[\text{Cu}_3(\text{L})_2(\mu^3\text{-ClO}_4)_{0.66}](\text{ClO}_4)_{1.33} \cdot 1.33\text{CHCl}_3$ (**3**) containing N,N'-bis[(2-hydroxybenzylideneamino)-propyl]-piperazine (**H₂L**) Schiff base as hexadentate ligand (Figure 1). The X-ray crystallography of the complexes reveal a retaining of the original chair piperazine conformation from the free ligand in the complex **2** and a changing into a boat conformation in the complexes **1** and **3**. Moreover, in the respective complexes a different coordination number as 6 (**1**), 5 (**2**) and 4 and 5 (**3**) was observed upon coordination of the free ligand to Co(III), Zn(II) and Cu(II) ions. The modulatory property of **H₂L** is reflected upon the molecular assembly and coordination mode of the isolable species.

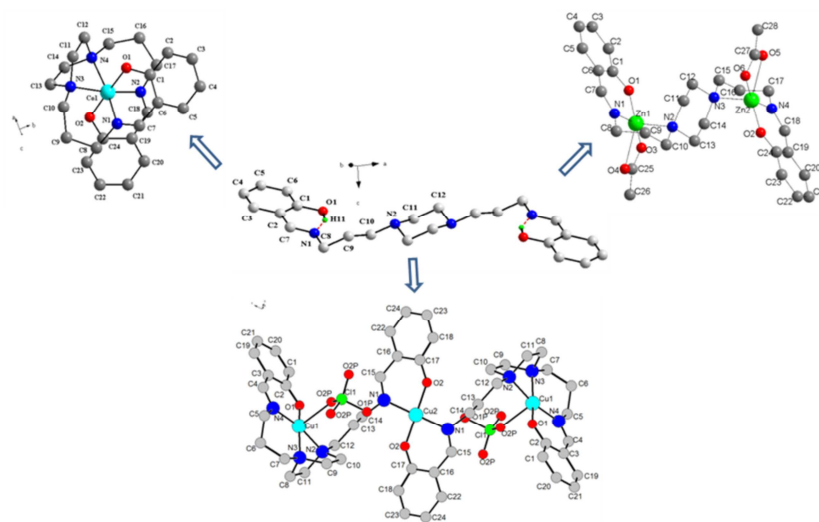


Figure 1. Molecular structure of Schiff base ligand and its metal-complexes

Acknowledgment

We are thankful to the Romanian Academy (Project 4.1.) for the financial support.