

Synthesis and Characterization of cobalt(III) Schiff base complexes

Ali Hossien Kianfar ^{a*}, Marziae Karamizadeh^b

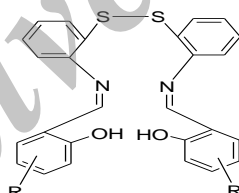
^aDepartment of Chemistry, Isfahan University of Technology, Isfahan, Iran, 84156-83111.

^bDepartment of Chemistry, Yasouj University, Yasouj, Iran.

Schiff bases have often been used as chelating ligands in the field of coordination chemistry and their metal complexes are of great interest for many years [1]. Schiff base metal complexes have been widely studied because they have industrial, antifungal, antibacterial, anticancer and herbicidal applications [2]. Chelating ligands containing N, S and O donor atoms show broad biological activity and are of special interest because of the variety of ways in which they are bonded to metal ions [3].

In this work some complexes with general formula of $[\text{Co}(\text{R}_2\text{N}_2\text{S}_2\text{O}_2)(\text{OH})(\text{OH}_2)]$ (where R = H, NO₂, OMe and Br) were synthesized and characterized.

The diamine was synthesized by coupling of 2-aminobenzenethiol in presence of sodium hydroxide and H₂O₂ in ethanol. The Schiff base ligands were synthesized by condensation of 2-hydroxybenzaldehyde derivatives and diamine. The structure of synthesized Schiff bases is shown in schem1. The $[\text{Co}(\text{R}_2\text{N}_2\text{S}_2\text{O}_2)(\text{OH})(\text{OH}_2)]$ complexes were prepared by reaction of Schiff base ligands and $\text{Co}(\text{OAc})_2 \cdot 4\text{H}_2\text{O}$ in methanol as solvent.



Schem 1

The synthesized complexes were identified via elemental analysis, IR, UV-Vis and ¹H-NMR spectroscopy. The vibration of azomethine group of synthesized complexes was shifted to the lower frequencies in contrast ligands indicating that the nitrogen atom of the azomethine group is coordinated to Co(III) metal ion. The stretching vibration of ligands NO₂, Br and OMe were appeared at 1479, 1170 and 1250 cm⁻¹ respectively. The HNMR spectra of complexes were corresponding to the proposed structures.

References

1. K. Singh, M.S. Barwa, P.Tyagi, Eur. J. Med. Chem. 42 (2007) 394
2. P.G. Cozzi, Chem. Soc. Rev. 33 (2004) 410.
3. E. Canpolat and M.Kaya, J. Coord. Chem. 57(2004) 1217.

P276T2