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SYNTHESIS AND CHARACTERIZATION OF MONONUCLEAR COBALT(II) AND BINUCLEAR COPPER(II) COMPLEXES WITH TETRADENTATE LIGAND (L)

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This research describes the synthesis and charactrization of new mononuclear cobalt(II) and binuclear copper(II) complexes with the tetradentate ligand: N,N'-bis(ortho-carbonyl, benzoic acid) 1,3-diaminopropane dihydrochloride (L), which is divided into the following two parts:

In the first part, the ligand (L) is synthesized from the reaction of trimethylene diamine compound (tn) with phthalic anhydride and then partial hydrolysis of its product using alkaline sodium hydroxide solution, under completely controlled conditions, which is similar to the synthesis of Schiff base ligands.

In the second part, by the McCarthy method, two complexes $[Co(L)(H_2O)_2]$ and $[Cu_2(L)(MeO)_2(MeOH)_2]$ are synthesized using this ligand and salts of cobalt(II) nitrate hexahydrate and copper(II) nitrate trihydrate in methanol solvent and pH adjustment by sodium methoxide.

The structure of the synthesized products has been characterized through the analysis of spectra obtained from IR, FT-IR, 1H NMR, ESR spectrometers, as well as the results of elemental analysis, and the study of their electron absorption spectrum has been done by UV-Vis device.

Keywords: complex, ligand, spectroscopy, elemental analysis, mononuclear

References

[1] D. F. Shriver, P. W. Atkins, C. H. Langford, Inorganic Chemistry , **2010** 2nd ed, Oxford University Press.
[2] H. Keypour, P. H. D. Thesis, University of ESSEX. U. K., **1978**.
[3] M. Mohan, N. S. Gupta, A. Kumar, and M. Kumar, Inorg. Chim. Acta, **1987**,135, 167
[4] K. Nakamoto, Y. Morimoto, and A. E. Martell, J. Am. Chem. Soc, **1961,**83, 4528
[5] J. Kineaid, and K. Nakamoto, Spectrochim. Acta, **1976**,32A, 277