

Template synthesis and characterization of 16-membered octaazamacrocyclic complexes: a photoelectron spectroscopic study

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A novel series of complexes of the type $[MLX_2]$ where $M = \text{Mn(II)}, \text{Co(II)}, \text{Ni(II)}, \text{Cu(II)}$ and Zn(II) ; $X = \text{C}^-$ or NO_3^- were synthesized by template condensation of hydrazine hydrate, acetaldehyde, 2,4-pentanedione, and thiocarbohydrazide in the presence of divalent metal salt in methanolic solution. The complexes were characterized with the help of elemental analysis, conductance measurements, magnetic measurements, electronic, NMR, XPS, and infrared and far infrared spectral studies. Electronic spectra along with magnetic moments suggest 6-coordinated octahedral geometry for these complexes. The low value of molar conductance indicates them to be non-electrolytes.

Key Words: Macrocyclic ligands, transition metal, template condensation.

Introduction

Synthetic macrocyclic complexes of transition metals have attracted much attention as promising objects in coordination and supramolecular chemistry.¹ The chemistry of transition metal macrocycles is extensive because of their close relationship to molecules of biological significance.²⁻⁵ The importance of these complexes is due to the role they play as models for protein metal binding sites in biological systems, as synthetic

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