Synthesis and Spectral Studies of Novel Co(II), Ni(II), Cu(II), Zn(II), Cd(II) and Fe(II) Metal Complexes with N-[5'-amino-2,2'-bis(1,3,4-thiadiazole)-5-yl]-2-hydroxybenzaldehyde Imine

Nevin TURAN, Memet ŞEKERCİ
Firat University, Graduate School of Natural and Applied Sciences, Department of Chemistry, Elazığ, TURKEY
nevintrn@hotmail.com.tr

ABSTRACT

During the last two decades many kinds of compounds of substituted 1,3,4-thiadiazole, which have special structures and properties, have been widely reported in the fields of synthesis and spectroscopic analysis.

In the present study, N-[5'-amino-2,2'-bis(1,3,4-thiadiazole)-5-yl]-2-hydroxybenzaldehyde imine (LH) has been synthesized by the reaction 2-amino-5-(2-amino-1,3,4-thiadiazoleyl)-1,3,4-thiadiazole and salicylaldehyde. The metal complexes of the ligand were prepared with metal chlorides in DMF as solvent. The ligand and its metal complexes have been characterized by IR, $^1$H-NMR spectra, elemental analyses, UV-Vis. and magnetic susceptibility. Thermal properties of the ligand and its complexes have been studied by thermogravimetric analysis (TGA) and differential thermal analysis (DTA).

The analytical data show 1:2 metal to ligand stoichiometry of the complexes. Magnetic moments, along with electronic spectral data, suggest octahedral geometry for the Fe(II), Co(II), Zn(II) and Cd(II) complexes [1], for the tetrahedral structure Ni(II) complex [2], whereas, square-planar structure has been proposed for the Cu(II) complex [1]. The presence of water molecules and ethanol in the Co(II), Ni(II), Cu(II), Zn(II), Cd(II) and Fe(II) complexes is also indicated by the thermal studies.

References