



Synthesis and Spectroscopic Investigations of Cu (II) doped Ni L-Histidine Hydrochloride Monohydrate Crystals

P.N.V.V.L. Prameela Rani¹, J. Sai Chandra¹, V.Parvathi¹, Y.Sunandamma^{2*}

1. Department of Chemistry, Acharya Nagarjuna University, Nagarjuna Nagar- 522510.

2. Department of Chemistry, Vikrama Simhapuri University, Nellore-524003, A.P, India

Email: sunandamma@rediffmail.com

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ABSTRACT

Copper doped Ni L-Histidine Hydrochloride monohydrate crystals Cu(II)-Ni LHICL are grown at room temperature using slow evaporation techniques. The Cu(II) doped crystals are characterized by spectroscopic techniques such as X-Ray diffraction studies, Electron Paramagnetic Resonance (EPR), Optical Absorption and FT-IR studies. The powder diffraction patterns of prepared crystals have been recorded and lattice cell parameters are evaluated as $a = 1.5300$, $b = 0.8834$, $c = 0.7036$ nm. From EPR studies, g and hyperfine splitting parameters for Cu(II) ion in the host are determined as $g_{\parallel} = 2.2918$, $A_{\parallel} = 123 \times 10^{-4}$ and $g_{\perp} = 1.9644$, $A_{\perp} = 78 \times 10^{-4}$ indicates that octahedral symmetry. The Optical absorption studies also confirm the octahedral symmetry transition metal ions in the host crystal. Crystal field and inter electronic parameters are evaluated. The FT-IR spectrum exhibit characteristic vibrations of the crystal indicating bond formation between the metal ion and the amino acid.

Keywords: Crystal field, Spin Hamiltonian parameters, Optical Absorption Spectrum, L-Histidine hydrochloride monohydrate, FT-IR, XRD.
