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# Synthesis and Characterization of Cu(II), Co(II), Ni(II) and Zn(II) complexes of Schiff base Ligand Derived from 4-Nitrobenzohydrazide and 2-hydroxy Naphthaldehyde

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## ABSTRACT

*The synthesized semicarbazone Schiff base (HNNH) has been characterized and used for the preparation of Cu(II), Ni(II), Co(II) and Zn(II) binary complexes. These have been characterized using elemental analysis, molar conductivity, FT-IR, UV-Vis, TG-DTA, Mass and ESR spectral data. The melting points of the synthesized compounds were in the range of 280 $^0$C to 360 $^0$C while the conductivities measured in DMSO were in the range of 12.6 -32 µs indicates the compounds are non-ionic [1]. The SEM images of the ligand and Metal complexes imply the formation of metal complexes. The IR data of the ligand and its metal complexes showed that the ligand is mono negative tridentate which coordinated to the metal ions through the azomethine nitrogen atom, oxygen atom from hydroxyl group of naphthaldehyde ring and another oxygen atom from carbonyl group of the Schiff base. From the UV-Vis, magnetic susceptibility measurements and ESR data, the geometry has been assigned as square planar (for 1:1 complex) and Octahedral (for 1:2 complex). The ligand and its metal complexes have been screened for antibacterial and antifungal activity against the bacterial and fungal species. The Schiff base and its metal complexes showed the significant activity and further observed that the metal complexes showed more activity than Schiff base.*

**Keywords:** SEM, metal complexes, tautomeric, 2-hydroxy naphthaldehyde.