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Title: Synthesis, specteral characterization, structure, and application of tridentate ONO hydrazone Schiff base metal complexes

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An imine or Schiff base is a chemical compound in which the C=O has been changed to a C=N [1]. Schiff base works like a ligand and may coordinate with the metals by its iminic nitrogen and another donating moiety, generally OH [2]. Numerous Schiff bases prepared from diverse amines have been studied utilizing various techniques, and it has been demonstrated that these compounds have promising uses in materials chemistry, agriculture, and industry [3]. Schiff bases can also serve as catalysts in a variety of organic procedures as well as in the invention of biologically active substances, plant growth regulators, and organic dyes [4].

Hydrazones, a particular group of species in the family of Schiff bases, are recognized by the existence of $R_1C=N-NR_2$ group. The existence of two interconnected N atoms sets them apart from the rest of the members of this family (oximes and imines). The nitrogen atoms are nucleophilic, whereas the carbon atoms have electrophilic property. When hydrazones are combined with a variety of functional groups, new compounds with distinctive biological characteristics are created.

We hope to offer a fresh perspective on this class of compounds by highlighting the significance of various types of tridentate ONO Schiff base ligands and their complexes, whose single crystals were reported in the recently years through the reactions of salicylaldehyde and its derivatives with various acylhydrazides such as nicotinohydrazide and isoniazid. This kind of Schiff bases exhibit amide-iminol tautomerism, in which the carbon-nitrogen double bond is a component of the iminol tautomer. The molecular structure, spectral characterization, and applications of ONO Schiff base complexes are covered in this paper.

Keywords: Tridentate, ONO Hydrazone, Schiff base, Metal complex

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