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ORIGINAL ARTICLE

SYNTHESIS AND CHARACTERIZATION OF VANILLIN SCHIFF BASE WITH CU(II) COMPLEX

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ABSTRACT

Another complex of vanillin schiff base of were utilized to mononuclear Cu(II) coordination mixes. The buildings were portrayed by the ghastly and physical investigations are examined beneath. The virtue and arrangement of the Schiff bases and the metal(II) edifices were built up by essential examination which recommends a metal: ligand proportion of 1:2. The IR spectra uncovered that the buildings composed through azomethine nitrogen and methoxy oxygen of the ligands. Facilitate indisputable proof of the coordination of the Schiff bases with the metal particles was appeared by the presence of new groups because of v(M-N) and v(MO) in the metal buildings. In light of the electronic ghostly changes, an octahedral structure has been doled out .

KEYWORDS: Cu(II) Schiff base, Metal complex .

INTRODUCTION

Schiff bases have a chelating structure and are sought after in light of the fact that they are direct to get ready and are direct electron benefactors with effortlessly tunable electronic and steric impacts. The amalgamation and utilization of Schiff bases and their coordination mixes have been exceptionally considered in inorganic and bioinorganic fields, since their auxiliary properties like a portion of the natural frameworks [1-4]. Numerous Schiff bases and their buildings have been generally considered as a result of their modern and organic applications.5-7 Schiff base mixes (– RC=N–) are normally framed by the buildup of an essential amine with a dynamic carbonyl.

The crosslinking specialists can likewise be gotten from metal edifices with O, N or S ligands. Test

Every one of the chemicals and solvents utilized were of AR review and were utilized without facilitate cleaning.

Readiness of Schiff base ligand (L)

The Schiff base ligand (L) was set up as depicted by Raman et al. [8].

Planning of the Schiff base metal (II) edifices

An ethanolic (10 ml) arrangement of schiff base ligand (20mmol, 0.055g) was added drop insightful to 10ml of the metal(II) salts [10mmol, 0.02g of Cu(CH3COO)2.H2O in bubbling ethanol (78.30C). The responses occurred in 1:2 mole proportion of metal(II):L. The response blend was refluxed for 3h on a water shower and the volume of the arrangement was diminished to half of the underlying volume.

RESULTS AND DISCUSSION

The scientific information alongside some physical properties are compressed in Table 1. The Schiff base ligand (L) on association with Cu(II) shaped buildings with direct yields(28-49%). All the edifices are air stable and have sharp liquefying focuses (130-190oC) with the exception of the ligand (L) which softened over 3500C. The sharp dissolving point shows that the buildings are most likely unadulterated.

Table 1: Physical characteristics and analytical data for the Schiff base ligand and the metal(II) complexes

Compound	Molecular formula	Molar mass	Colour	Melting point (0C)	Yield (%)
Cu(L- L)X2	Cu(C14H13NO3)2	550.07	Brown	187	49

Table 2: The microanalysis and metal estimation data of the Schiff base ligands and their metal complexes

Compounds	Molecular formula	Molar mass	Microanalysis, % found (calc.)			
			C	H	N	M
Cu(L- L)X2	Cu(C14H13NO3)2	550.07	42.77 (61.14)	3.75 (4.08)	6.85 (5.09)	09.08 (10.59)

MICROANALYSIS

The microanalysis of the ligands and their metal(II) edifices are exhibited in Table 2. The outcomes uncovered that the % C, H and N are in great concurrence with the proposed structures. From the information got, it gives the idea that the mixes broke down as [M(L-L)X2] showing a 1:2 mole proportion (M:L).

IR spectra of Schiff base ligand (HL)

The chose vibrational frequencies for the Schiff base ligand and its metal edifices are displayed in Table 3. Extremely solid band at 1569cm-1 is attributes of the azomethine nitrogen introduce in the Schiff base ligand (L) [8]. This was moved to 1546-1632 cm-1 in the buildings, which demonstrates the coordination of the metal to the azomethine nitrogen. The metal buildings demonstrated expansive groups at 3212-3386 cm-1 which is normal for v(OH). This shows the phenolic – OH aggregate does not take an interest in bond development with the metals. The infrared range of the Schiff base ligand demonstrated solid groups at 1486, which was allocated to v(C-N) extending. This was moved to 1432-1545 cm-1 area in all the buildings. The otherworldly groups of the edifices at 1286-1291 were alloted to v(C-O) which did not demonstrate significant move from the locale 1290 cm1of the ligand. In this manner it is proposed that the oxygen iotas of terminal methoxy and hydroxyl assemble are not composed to the metal particles. V(M-N) and v(M-O) were seen in the far infrared area. These groups are missing in the spectra of the ligand.

Electronic spectra

UV-VIS spectra of the Cu(II) buildings were recorded at 200 – 600nm utilizing methanol as a dissolvable. The ingestion districts, band task and the proposed geometries of the edifices are given in Table 4. The orgel chart for d5 design for Mn(II) demonstrates the three groups at 22935, 23901 and 2823cm-1 alloted for 6A1g→4T1g, 6A1g→4T2g, and 6A1g→4A2g.

Table 3: Relevant infrared frequencies (cm-1) of the Schiff base ligands and their metal(II) complexes.

Compound	v(OH)phenolic	v(C-O)	v(C-N)	v(C=N)	v(O-CH3)	v(M-N)	v(M-O)
Cu(L-L) X2	3261m	1291vs	1492vs	1553w	3190w	525s	439m

Table 4: Electronic absorption spectral data for the metal complexes

Compounds Band	Absorption (cm-1)	assignment	Geometry
Cu(L- L)X2	23753 3	A2g→ 3T2g	Octahedral

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