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SPECTROPHOTOMETRIC STUDY OF SOME SUBSTITUTED ISOXAZOLINES BY ISOBESTIC POINT METHOD

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Abstract

Spectroscopic methods can be used to measure the dissociation constant provided that there is pronounced difference in the absorption between Molecular and ionic form of the substance. The ligands i.e. substituted isoxazolines (L_1,L_2, L_3, L_4, L_5, L_6) reacts with metal Cu(II) and forms a complex Vercille's method of isobestic points is used to study the complex formation.It was observed that the number of absorption curves are intersecting at a point showing 1:1 complex formation with Cu(II).

Introduction

The basic principal of spectroscopy deals with the study of measurement of interaction between radiation energy and matter particles Spectrophotometric study provides an important information regarding structure determination and confirmation of organic and inorganic molecules and complexes[1-4]. It also gives detail information about metal-ligand stability constant and confirmationof complex formation. Raghuwanshi[5] Khobragade[6], Pawar [7] Burghate[8], Bodkhe[9], Wagh[10], Ikhe[11], Purohit[12], Sawalakhe etal [13] carried out spectroscopic measurement by Job's method of continuous variation carried out spectroscopic measurement by Job's method of continuous variation.

Experimental Method :-

Complexes plays a very important role in numerous chemical and biological systems. Due to some properties of complexes like sharp melting points it was thought that investigate the complex formation of isoxazolines with the ligands 3-[2 hydroxy 5methyl phenyl] 5 phenyl Δ^2 isoxazoline (L_1) and 3-[broro-2 hydroxy 5methyl phenyl]- 5 phenyl Δ^2 isoxazoline (L_2) , 3-[2hydroxy 5methyl-3nitro phenyl]- 5 phenyl Δ^2 isoxazoline (L_3) ,3-[5 chloro-2 hydroxy phenyl]- 5 phenyl Δ^2 isoxazoline

(L_4) and3-[3Bromo-5 chloro-2 hydroxy -phenyl]- 5 phenyl Δ^2 isoxazoline (L_5) 3-[5 chloro-2 hydroxy -3nitrophenyl]- 5 phenyl Δ^2 isoxazoline (L_6) with Cu(II)were studied by spectrohotometric technique at 0.1M ionic strengthWhich is maintained by addition of appropriate amount of 1m sodium perchorate solution.

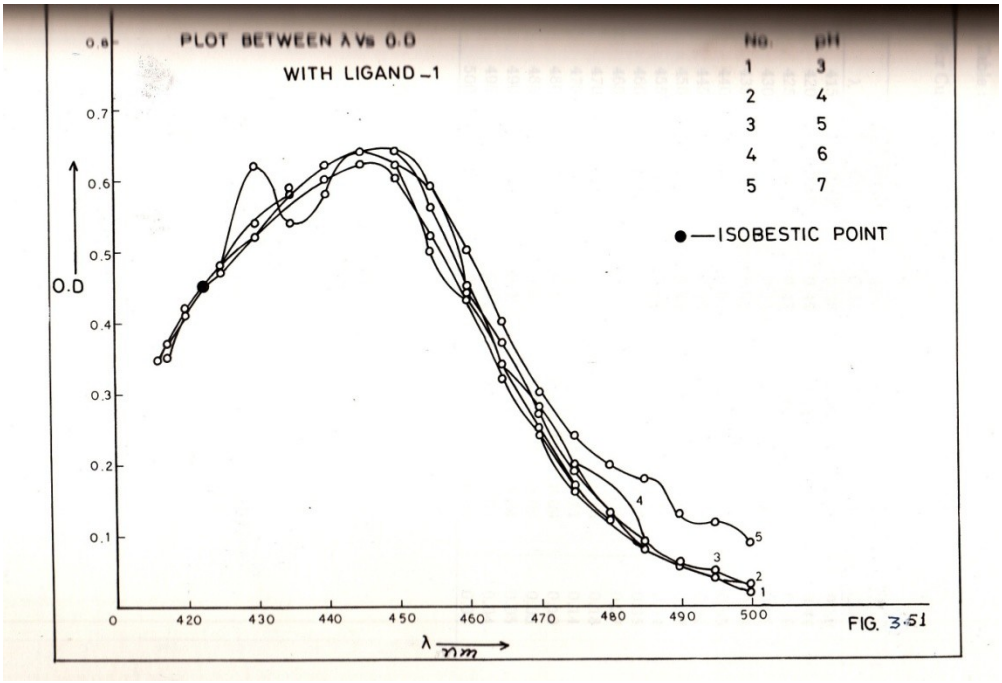
During the spectroscopic analysis the absorption of a solution at fixed pH is recorded with respect to the wavelength region in visible region. The data obtained from spectrophotometric measurements is used for constructing the curves between absorption and wavelength in nm.

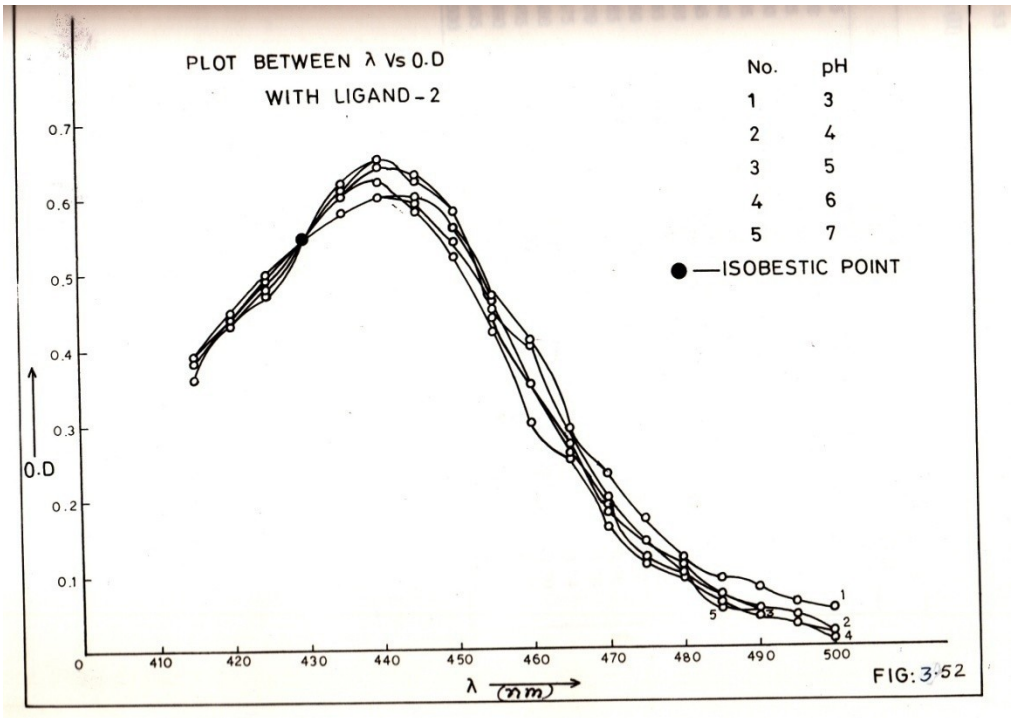
Result and Discussion :-

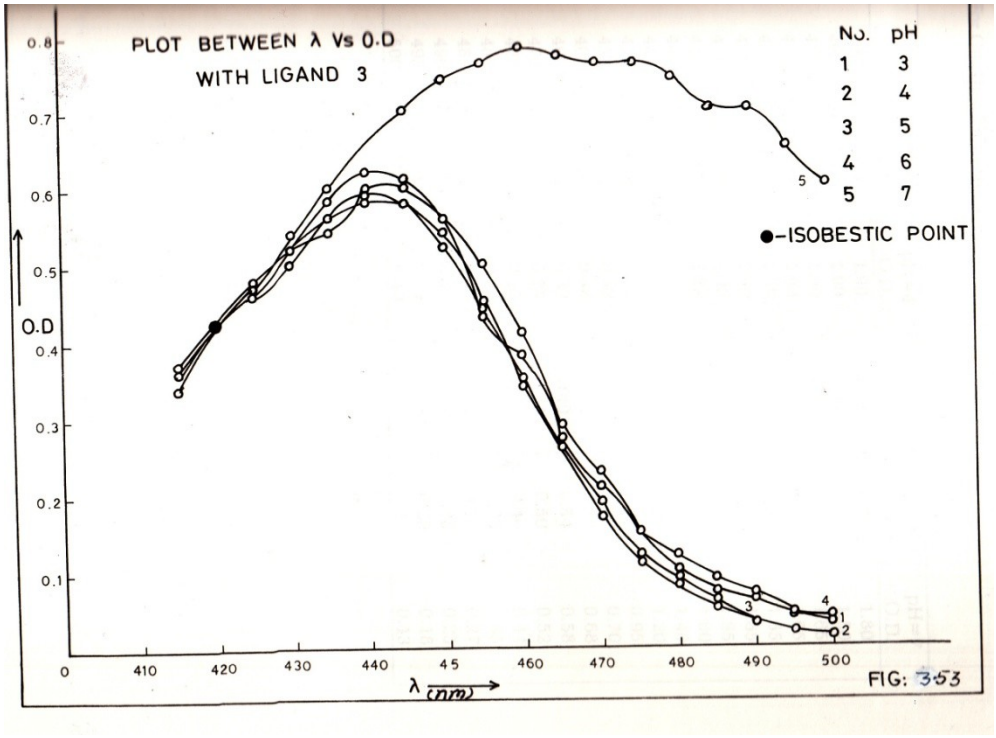
During spectroscopic measurements the colour of the solution was light yellow below pH 3.00,dark brown above 4,5 The change in colour with respect to pH of the solution indicated the commencement of complex formation.The solution employed are very dilute.The curves obtained from spectrophotometric measurements isobestic point at different wavelengths as under

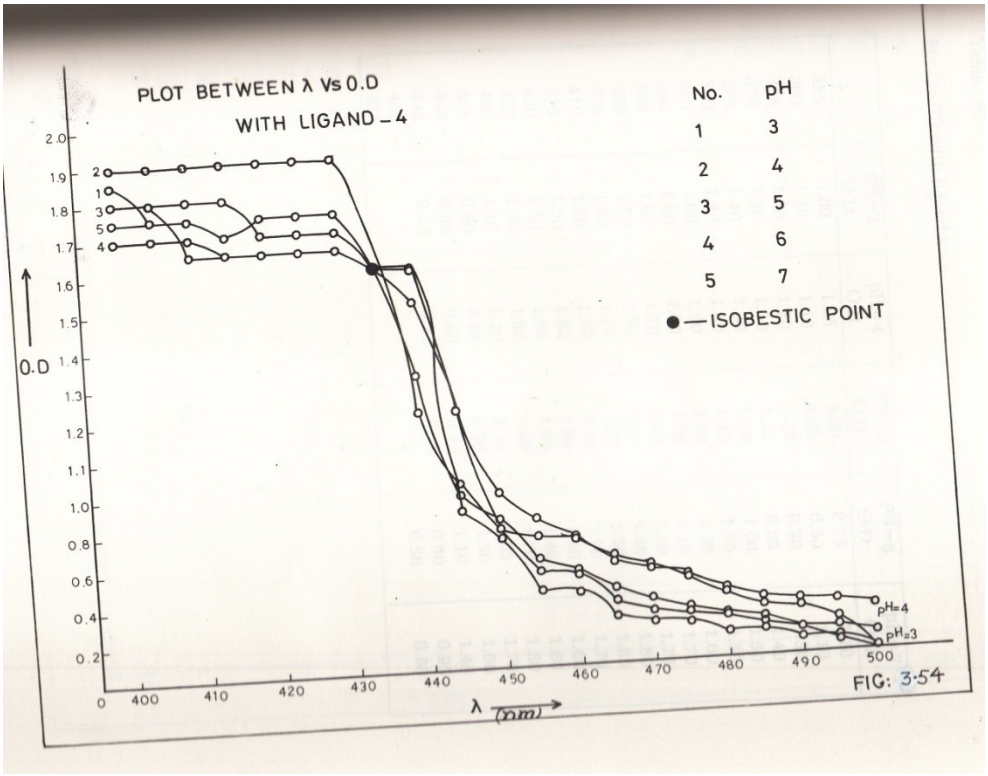
System	Isobestic point(wavelength in nm)
1] Cu(II) with L_1	424
2] Cu(II) with L_2	430
3] Cu(II) with L_3	422
4] Cu(II) with L_4	438
5] Cu(II) with L_5	385
6] Cu(II) *with* L_6	388

All the figure shows that Cu(II) forms 1:1 complex with all ligands L_1, L_2, L_3, L_4, L_5, and L_6..


PLOT BETWEEN λ Vs O.D
WITH LIGAND –1
No. pH
1 3
2 4
3 5
4 6
5 7
●—ISOBESTIC POINT
O.D
λ nm
FIG. 3.51


PLOT BETWEEN λ Vs O.D
WITH LIGAND – 2
No. pH
1 3
2 4
3 5
4 6
5 7
●—ISOBESTIC POINT
O.D
λ (nm)
FIG: 3.52


PLOT BETWEEN λ Vs O.D
WITH LIGAND 3
No. pH
1 3
2 4
3 5
4 6
5 7
●-ISOBESTIC POINT
O.D
λ (nm)
FIG: 3·53


PLOT BETWEEN λ Vs O.D
WITH LIGAND – 4
No. pH
1 3
2 4
3 5
4 6
5 7
●—ISOBESTIC POINT
O.D
λ (nm)
pH=4
pH=3
FIG: 3·54

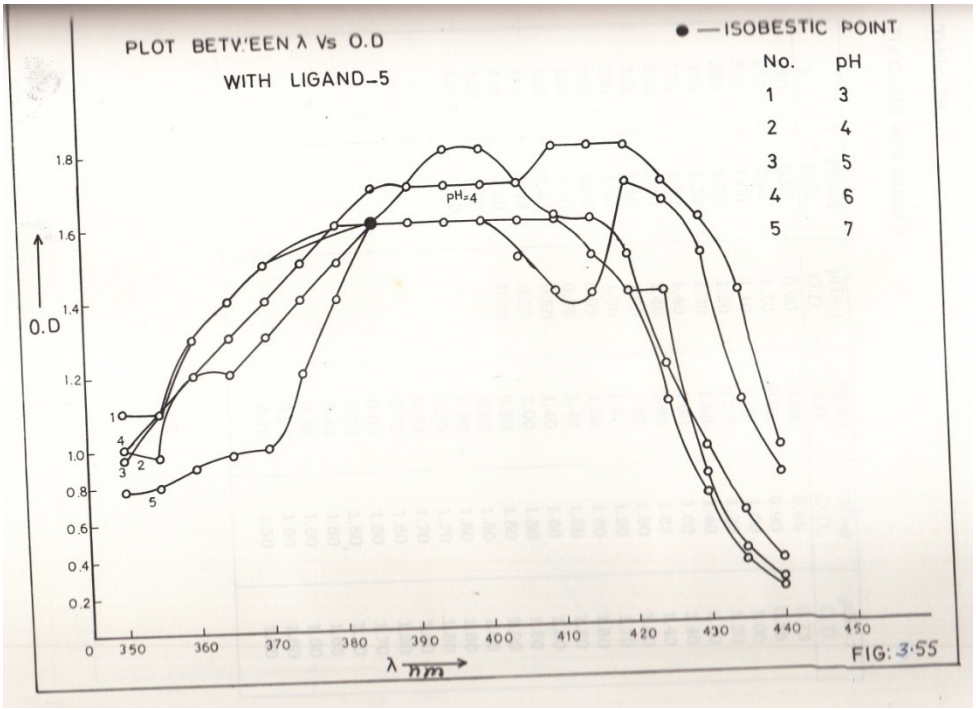


FIG: 3·55

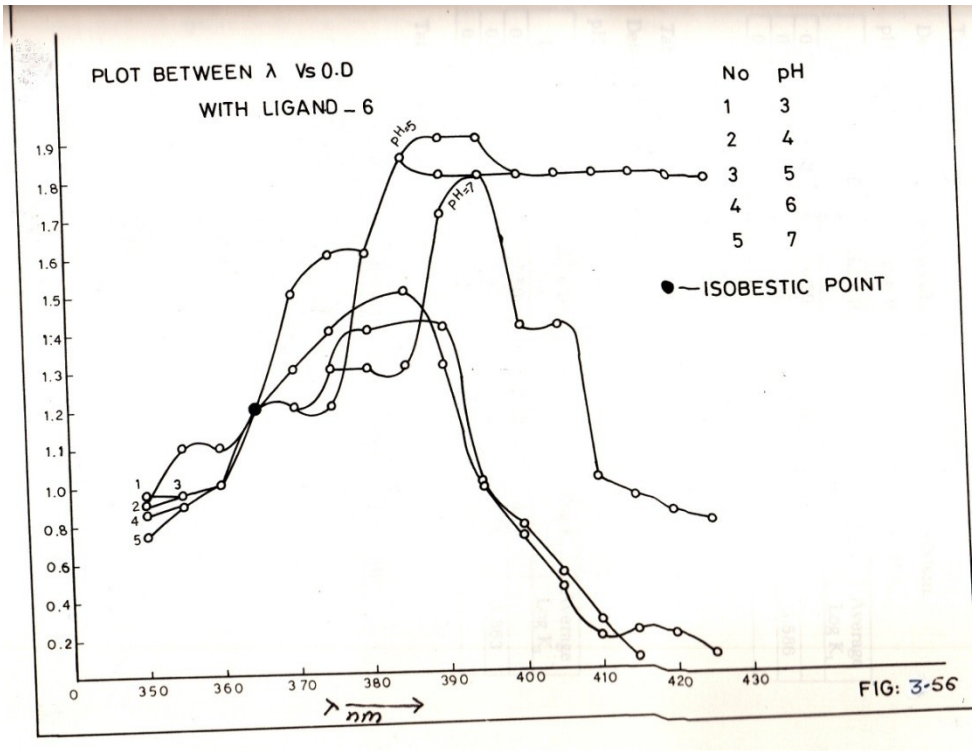


FIG: 3-56

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