Studies of some substituted imine's by Refractometrically in different solvents

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ABSTRACT

Refractive index and Molar polarisibility of an imines's such as 3,4,5-trihydroxy-benzoamido-nitro imine have been studies in Acetone and THF at different concentration at room temperature.The value of molar refraction and polarisibility constant are decreasing with decrease in concentration of solute in solvents.

Keywords – solvents,Schiff bases,refractometer,density

INTRODUCTION

The refractive index is an most important addetive properties of liauid.The major use of refractometry is an pharmaceutical,oil industries, and beverage,and agriculture also.Actulay refractometry mainly involves the measurement of concentrations of one substance is dissolved in another.It gives an idea about the aromatic content in it.

When a beam of light passes from one medium to another.It suffer's refraction that is,the beam of light bending ,it travels in different direction.If the light is passes from less dencer medium to higher dencer medium then it is refracted towards medium then it is refracted towards normal.So that angle of refraction(r) is less angle than the angle of incident(i).The ratio of the velocity of light in vaccum to that in medium is the refractive index(n) of medium.Refractive indices measured easily with accuracy.The value is depend on the concentration as well as wavelength of light used.Generally,the D-light sodium is used for standerd measurements.

The extent of refraction depend's on –

i)The relative concentration of atom and molecule.

ii)The structure of atom or molecule.

So refractive index gives an idea about structure and geomentry of molecule.some times this can be used to determine the structure of unknown molecule.

It the present work, Refractive index of liquid's, Mixture's were measured with the help of Abbe's refractometer from literature .It was found that much work have been done over many of the substituted heterocyclic drugs,chalcone's ,pyrozoline's is oxazpine and various ketone's.

REFRACTOMETRICALLY

Physico-chemical properties of solution gives complementary information about interaction between's their component's. Surface tension dielectric permeability and use of refractive index to calculate the molecule composition of hydrogen bonded complex.

Thomus Young was presumably the person who first used and invented ,the name "index of refraction" in 1807.

The refractometric study of substituted aminopyrimidine in polar sovents were performed[1] imines's are fexible ligand's also known as Schiff base having spacious application in various fields of human interests.They are widely used for the industrial purposes and also exibit a broad range of biological

activities[2].A.N Sonar[3] and N.S.Powar have studied the molar refraction and polarisibility constant of substituted Heterocyclic compounds(Schiff bases) J.D.Pandey etal[4] have studied the refractometric and dielectric studies of binary liquid mixture at different temperature.R.A.Synowiki etal[5] implemented two different fluid measurement technique to determined the refractive index of fluid on a commertial spectroscopic ellipsometer system even though many Schiff bases using salicyladehyde and amines had been studied[6-9]. The property of liquid such viscosity , refractive index, ultrasonic velocity of binary mixtures are studied by many mixtures[10-16]

EXPERIMENTAL WORK -

The solution of Schiff base prepared in different solvent like Ethanol and THF. bydissolving the appropriate amount by weight.The compound is synthesized by reflux method and purity is checked by M.P. , T.L.C. , I.R. , N.M.R. All the weight were made on mechaniki zaktady precyzying Gdansk Balance made in Poland (+ 0.001 gm)

The densities of solution were determined by a bi-capillary pynometer (+0.2 %) having a blub volume of about 10cm^3 and capillary having an internal diameter of 1mm.The refractive indices

Table- 1 Refractometry data,

system- 3,4,5, trihydroxy benzoamido 4-Nitroimine L_1

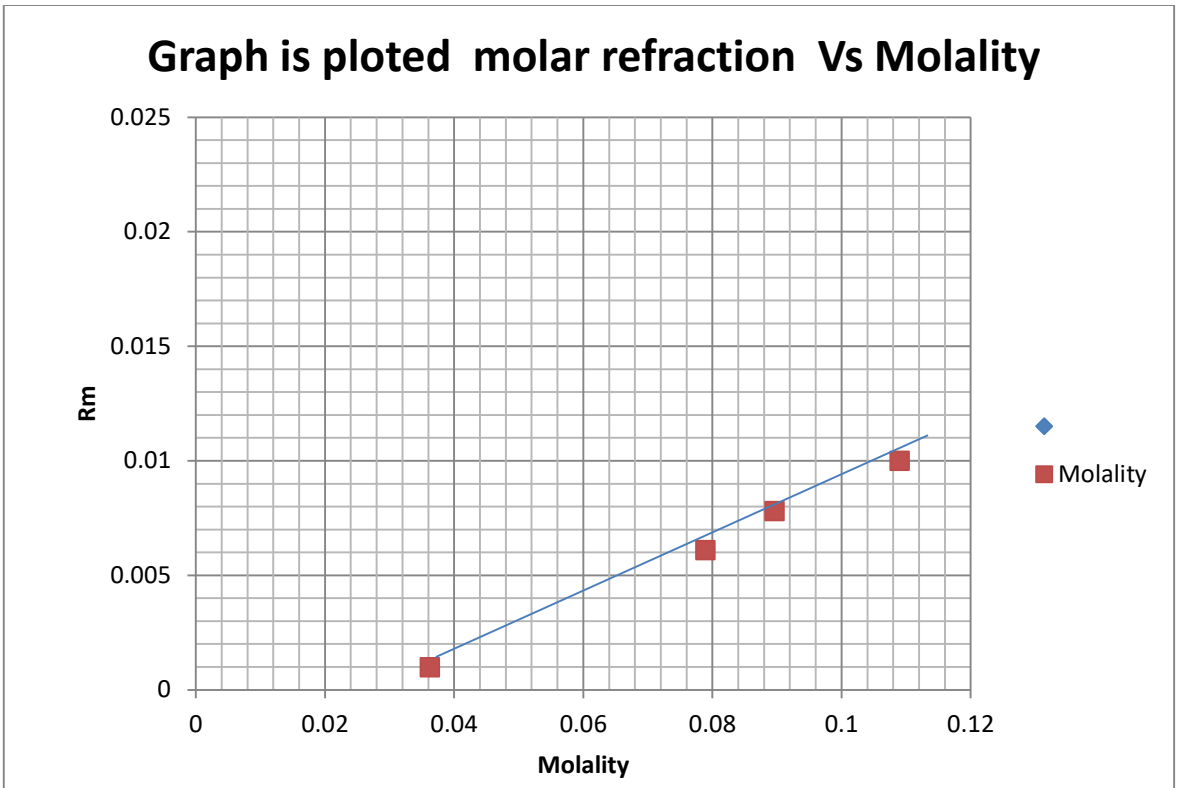
Solvent- THF

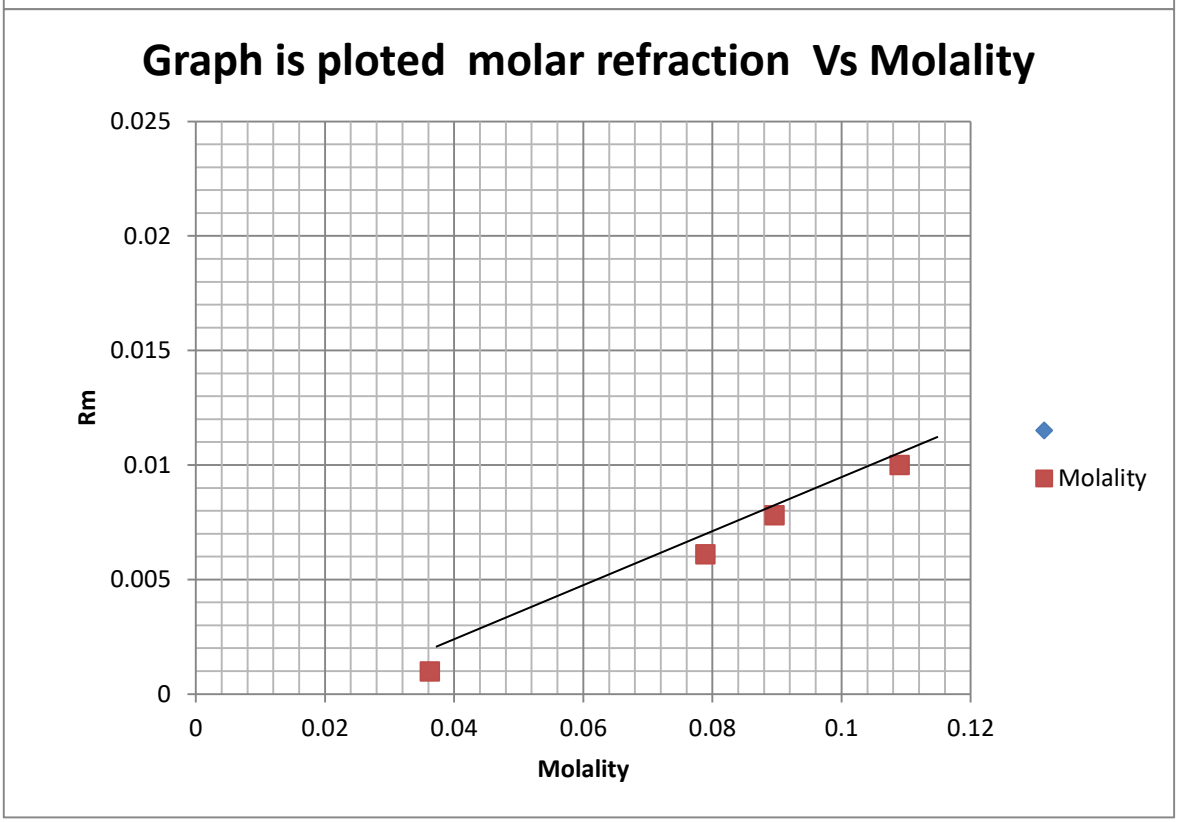
Sr.No	Molality	Refractive Index (n)	Density (d)	Molar Refraction (Rm)	Polarisibility (α)
1	0.01	1.4410	1.7791	10.8524×10^{-3}	1.2197×10^{20}
2	0.05	1.4400	1.7789	5.4043×10^{-3}	0.6729×10^{20}
3	0.0025	1.4390	1.7777	2.6823×10^{-3}	0.3340×10^{20}
4	0.00125	1.4360	1.7769	1.3387×10^{-3}	0.1666×10^{20}
5	0.00063	1.4330	1.7766	0.6579×10^{-3}	0.0819×10^{20}

Table – 4 Refractometry data 3,4,5,Trihydroxy Benzoamide 4-Bromoimine L_1

Solvant – ACETONE

Sr. No	Molality	Refractive Index (n)	Density (d)	Molar Refraction Rm	Polarisibility (α)
1	0.01	1.3900	1.4752	11.7291×10^{-3}	1.4605×10^{20}
2	0.05	1.3870	1.4736	5.8301×10^{-3}	0.7268×10^{20}
3	0.0025	1.3820	1.4714	2.8783×10^{-3}	0.3584×10^{20}
4	0.00125	1.3700	1.4679	1.4016×10^{-3}	0.1745×1020
5	0.00063	1.3620	1.4649	0.6810×10^{-3}	0.0847×10^{20}





Result and Discussion.

The value of molar refraction(Rm) and molar polarisibility constant(α) of polar solvents,like ACETONE is found to be greater than non polar solvents like THF . because polar solvents contains H-bonding may form complex with solute,but may form complex with solute ,but non polar sovents does not contains H-bonding and does not form complex with solute.

The dipole in compouted lies perpendicular to the longer axis of the molecule shows intermolecular attraction takes place.Which will be companied by decrease the value of molar refraction and polarisibility constant with decreasing concentration of solution because of mutual compensation of dipoles.

The value of molar refraction and polarisibility constant of imines are presented in Table-I &Table II .The graph between the molar refraction verses concentration are ploted . It could be seen that there is linear relationship between molar refraction and concentration of unknown solution of imines calaculated.

It is also observed that refractive index is linearly related to percentage of dissolved imine's in a solution in different solvents.It is observed that substances containing more polarisibility (soft) group will normaly have higher refractive index than normaly have higher refractive index that substance containg (hard)groups.

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pH metric study of substituted derivative with La(III) Ce(III) and Eu(III) metal ions at 0.1 molar ionic strength.

Key words-: pH meter, Ethanol.

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Abstract-: the interaction of La(III), Ce(III) and Eu(III) with substituted quinoxaline derivative have been studied at 0.1 molar ionic