

STUDY OF NONLINEAR POLEMETRIC MIXTURE BY S.R. METHOD

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Abstract:-

Liquid crystals are states of condensed matter whose symmetries lie between crystals and isotropic liquids. Thermotropic liquid crystalline phases are exhibited by a large number of organic compounds. Shows molecules have anisotropy of shape. A typical intermolecular energy responsible for the stability of the relevant order in the medium is intermolecular energy and thus liquid crystals are soft materials. Relatively weak interactions like those between molecular dipoles or chiral centers of appropriate molecules can give rise to new types of liquid crystals. The soft nature of the medium, coupled with anisotropic optical and properties gives rise to many electro-optic effects. This is first time we prepared grown crystal from the solution of mixtures by the S.R. Method. We studied the properties like viscosity, surface tension and crystal structure of a chloretryl chloride and chlorestryl nanoate mixtures which shows the effective changes. An analysis of the molecular arrangement in samples is performed by the spectroscopic techniques. Liquid crystals exhibit interesting viscoelastic properties. The study of viscoelastic modes in them is important not only on understanding the structural dynamics but also in selecting suitable materials for

display devices. In liquid crystals, thermal fluctuations in the average direction of orientation of the molecules result in strong fluctuations in the dielectric tensor causing intense scattering of light.

Keywords:- Crystals Growth XRD, S.R. Method.

Introduction:-

Today crystal is a pillar of modern technology, without crystal there is no photonic industries, no fiber optics communication and no electronics industries. Crystal growth is a vital and fundamental part of materials science. The formation of crystal in nature like snow flask and mineral as well as to preparation of crystal. The bulk growth from the vapor at the room temperature with 100% solute crystal conversion efficiency achieved. In the present investigation of chlorestryl chloride and chlorestryl pelargonate single crystal was grown by S.R. Method. The growth size of crystal depends on the condition fits formation. Crystal take variety of shape depending on the internal factor.

Experiments Details:-

The growth of polymetric mixture was carried out by S.R. Method by slow evaporation. For the first time in this

method of growth assemble use ampoule made by borosilicate glass with seed mounting pad, which is parallel to that us by S.R. Method. The size of the crystal depends on the amount of material available in the solution, which turn is in decided by the solubility of material of the solvent. The most important requirement for growth of crystal from the vapor is sufficiently high saturation pressure of the source to obtained an acceptable growth rate.

Viscosity:-

The viscosity of a mixing solution depend up on the nature of mix, solvent, concentration, molecular weight, temperature etc.

The viscosity of sample directly measure with the help of Oswald Viscometer apparatus. The viscosity of sample carried one 14.03 d/cm this value is less than previous sample of chlorestryl pelorgonate. In this sample to the specific viscosity depend on the concentration. In concentration mixing solution of polymer molecules do not exit at isolated chain coil, but are interpenetrating and entangled with each other [1].

PH Scale :-

The product of their concentration is always constant weather the solution is acidic or alkaline depends up on which are the two ions is present in a greatest concentration then the other, this mixture sample preparing solution form the growth crystal is an acidic medium & fatty (gel form) [6].

XRD:-

The single crystal XRD result shows that the mixture sample belongs to spherulites structure these structure are every complex polycrystalline bodies. The system group is the cell parameter at 5.185\AA , 4.76965\AA & 4.61897\AA . The obtained cell parameter are in good agreement with reports the rage of the peak 200 – 4200^[2]. It clear that, the intensity of mixture sample is more and theta range of this sample 11 to 25 degree as shown in fig. & satisfy general reflection condition of space group observed form the structure determination of the crystal^[3].

Transparency of crystalline polymer is more or less directly dependent on the size of spherulites. Hence it is also clear that, the transparency of mixture sample decreases as the mixture size of the crystal increases^[4].

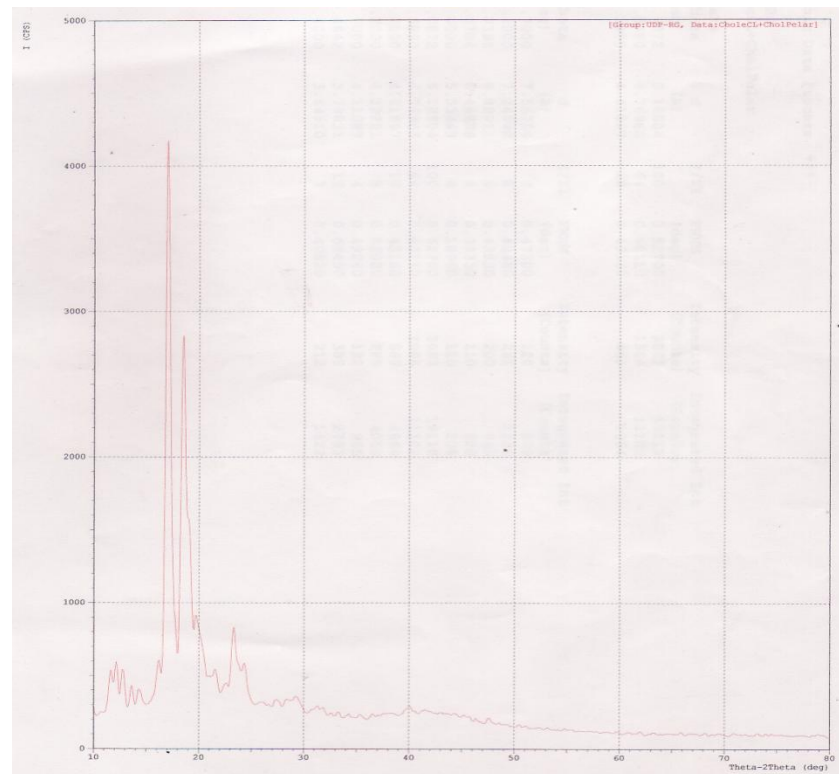


Fig No.1. X-Ray Diffraction

Surface Tension :-

The existence of strong intermolecular force of attraction in liquid gives rise to another important property as surface tension.

In mixture sample the force of attraction tends to decrease the energy of system i.e. molecule tend to move from a state of higher energy to state of lower energy^[12]. In this mixture sample surface tension value is low as compare to chlorestryl pelargonate. This low value is obviously due to weak intermolecular force which exist in water as a result of extensive bonding. In this sample inter molecule force decrease with increase with energy of molecule as well as absolute temperature^[5].

Ultraviolet region :-

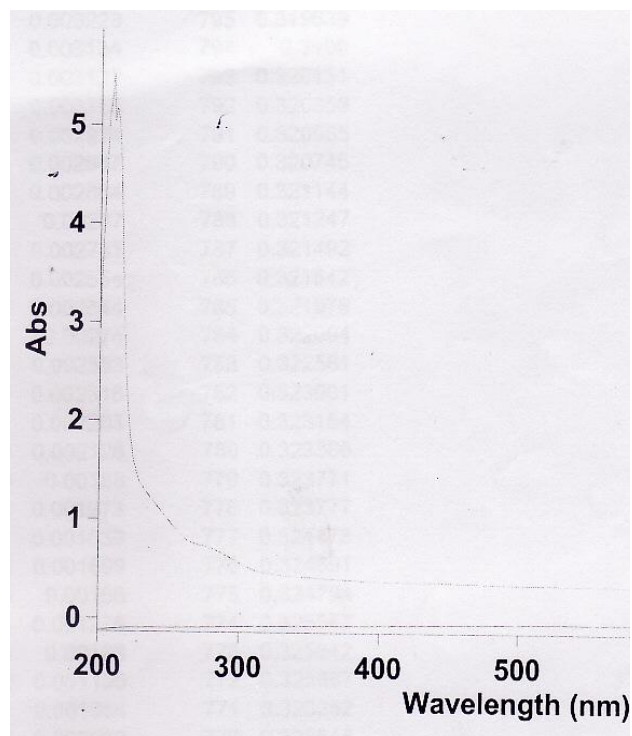


Fig No.2 UV Analysis

Intensity increases in mixture as compare to single compound. Single crystal are

mainly used in optical application. The spectroscopy mainly applied for the defection of functional group. In UV mixture sample the value of absorption maximum. For ultraviolet spectrum, electronic excitation occur in the range 200-800nm. The graph plotted between absorption and wavelength the absorption accrue usually in the inaccessible region^[7].

In this sample as spectroscopy has been mainly applied for the detection of functional groups, the extent of conjugation detection of poly nuclear compound by comparison of chlorestryl chloride and chlorestryl pelargonate sample^[8]. It is not definite conclusion due to the molecule observe below 200 nm. It is weak intensity shown in UV fig.2 and corresponding to shorter wave length It is clear that a weak absorption peak corresponding to the fundamental absorption appear and weak optical quality^[9].

Result and glance:-

Mixture of non-linear optical material single crystal was successfully grown by slow evaporation grown technique by S.R. Method. Study of UV and X-ray diffraction it is confirm that, vibration frequency of mixture sample^[10]. The crystal is extremely good of spherulite structure .It is generally used in optical application and cosmetics purpose. This type of material are used in hair color make up and other cosmetics preparation also used in component of liquid crystal display^[11].

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