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Synthesis and Characterization New Liquid Crystals from Organic Amine Compounds Chlorpheniramine, Clementine, 6-Alkoxy Alanine and P-Amino Bazaamide

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Abstract. 4-Chlorobenzaldehyde was reacted with chlorpheniramine, Clementine, 6-Alkoxy alanine, and p-amino bazaamide to produce four new liquid crystals. It was determined if organic compounds with an amine group might produce Schiff bases with 4-Chlorobenzaldehyde. The infrared spectra of all of the major and final compounds were studied using FT-IR. Varying colors were detected, as well as different temperature. The Euro vectro - 3000A, Al-Bayt University, Jordan, was also used to calculate the carbon, hydrogen, and nitrogen ratios. Because of the applications that have been employed in their pages and to enhance their pages from air messages and migration processes, liquid crystal polymer compounds have been widely explored in the indication of tithing. To be really honest, this description is based on recent vehicle developments..

Keyword: liquid crystal, FT-IR, 4-Chlorobenzaldehyde, amphorous, materials, mesophase,

INTRODUCTION

Liquid crystal (L.C.) molecules have been extensively studied in the last ten years due to their potential applications and to obtain a better understanding of the underlying behavioral dynamics (L.C.) It is a chemical compound having properties that differ in solids and liquids, and these qualities lead to a number of applications in biotechnology and nanotechnology, stress testing, materials, holography, and radio wave vision [1-2]. The investigation of (L.C) Since 1888, when Austrian botanist Friedrich Reinitzer discovered that cholesterol benzoate has two melting temperatures, we've learned that cholesterol benzoate has a new phase that exists between the solid and liquid phases, with new properties that combine the properties of the two states, and this was the start of the discovery of the new phase, known as liquid crystals (L.C.) [3, 4]. When we analyze the transformation of a material from a solid to a liquid state, the particles of the material in the solid state are restricted in their respective positions owing to strong bonding forces that exist between them, which is accompanied by a change in particle shape and arrangement [5], the random structure in crystals, as well as among solid and amphorous materials, retains particles in a regular and periodic pattern. [6, 7].

Intermolecular bonding in liquids moves about at random due to weak-strength interactions. When a solid turn into a liquid, the transition procedure can be simple and straightforward, such as when ice turns into water at 0 degrees Celsius. Substances are more than merely the consequence of a solid-to-liquid state change [8-10]. They demonstrate that there exist transitional phases in which molecules can be more organized than in liquid form. Solid spinning chaos and a three-dimensional crystal lattice create the first kind, which is a random intermediate phase structure. The second

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kind features a three-dimensional crystal lattice and solid spinning chaos, signifying a random intermediate phase structure [11 - 13]. This is known as crystals of plastic in the liquid state because it is characterized by a disorganized crystal mesophase. The second kind is characterized by a spinning arrangement that lacks a three-dimensional crystal lattice [14]. In this intermediate phase, the molecules show cyclic disorganization, yet they have a very highly organized transition arrangement[15]. Liquid crystals are a phase that exists in the transition between liquid and crystal phases [16].

$$o = \frac{3\cos^2\theta - 1}{2} \ldots\ldots\ldots\ldots (1)\ [9].$$

This is characterized as a disorganized crystal mesophase in liquid form, also known as plastic crystals [17,19]. The second kind features a revolving crystal lattice but no three-dimensional crystal lattice. During this period of transition [20-22], despite their cyclic disarray, the molecules exhibit a remarkably well-organized transition configuration [23]. Liquid crystals are a phase that exists between the liquid and the crystal phases [24-27].

MATERIALS AND METHODS

Materials

The chemicals used in the study are given in the table below, along with the firm that provided them, their purity, and molecular formula. Table 1 lists the chemical names, molecular formulae, suppliers, and purity (1)

Table 1. showing chemicals used and purity percentage

Sequence.	***Compound name.***	***Molecule formula***	***Purity.***	***Com. Name.***
1	Chlorphrniramine	$C_{17}H_{12}NO$	99%	Reidel-dehean
2	Clementine	C21H26CINO	90%	Fluka
3	Acetic anhydride	C4H6O3	94%	Fluka
4	Ethanol	C2H6O	98%	BDH
5	Acetic acid glacial	C2H4O2	95%	Merck
6	p-amino bazaamide	C7H8N2O	84%	BDH
7	4-chlorobenzaldehyde	C7H5Clo	90%	Merck

The Devices Used

Microelement element analyzer (C, H, N) device based assessment for some of the produced compounds (Euro vectro - 3000A, Al-Bayt University, Jordon). FT-IR of the prepared compounds were taken using an apparatus (shimadzu (FT- IR 8000 Series, Japan), University of Kufa, Iraq. Temperature-controlled water bath, Shaking Indicator GCA. Precision Scientific Chicago, U. S., sensitive electric balance England**.**

Preparation of Alkoxy- Aniline combination of 0.025ml of 4-Chlorobenzaldehyde and 10mL of ethyl alcohol in a 250 mL pyrex glass beaker was heated by a condenser and constantly swirled with a magnetic stirrer. 4ml of 20 M aqueous potassium hydroxide was heated and a strong base was added. Heating and stirring lasted four hours. To separate the solvent, rotating evaporation was utilized. The flask was filled with 14 mL distilled water. The product was extracted using benzene, then washed and dried with anhydrous magnesium sulfate. Gasoline was evaporated using a rotational evaporation, and the result changed colors as the temperature changed

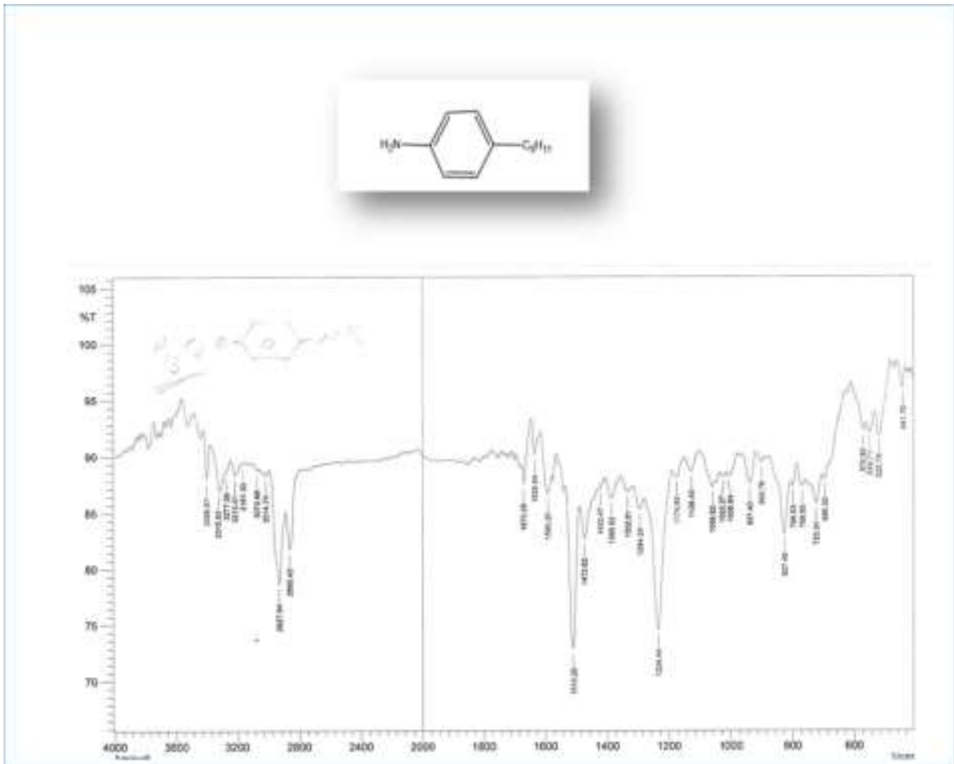

FIGURE 1. FT-IR of ALKYLOXY ANILINE

Schiff Bases Preparation

An identical number of moles of 4-benzaldehyde, likewise dissolved in a little amount of ethanol, was placed on top of 0.0035 ml of alkyloxy aniline molecule dissolved in a very small amount of ethanol. A refining condenser is installed in the condensing chamber, and the mixture is heated for one hour. Before recrystallization, the mixture was refrigerated for four hours and the white crystalline material was washed with ethanol in considerable volumes.

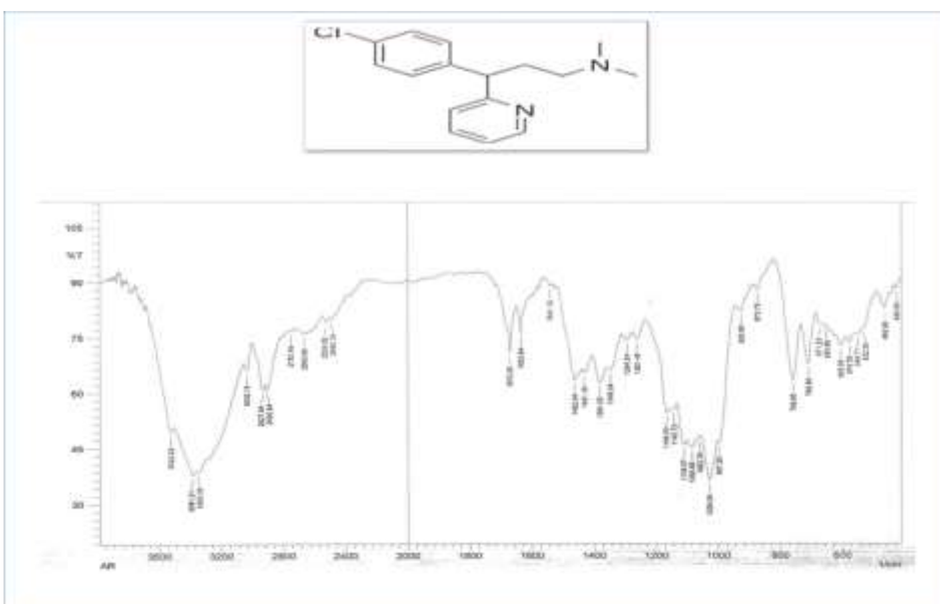

FIGURE 2. FT-IR of chlorpheniramine

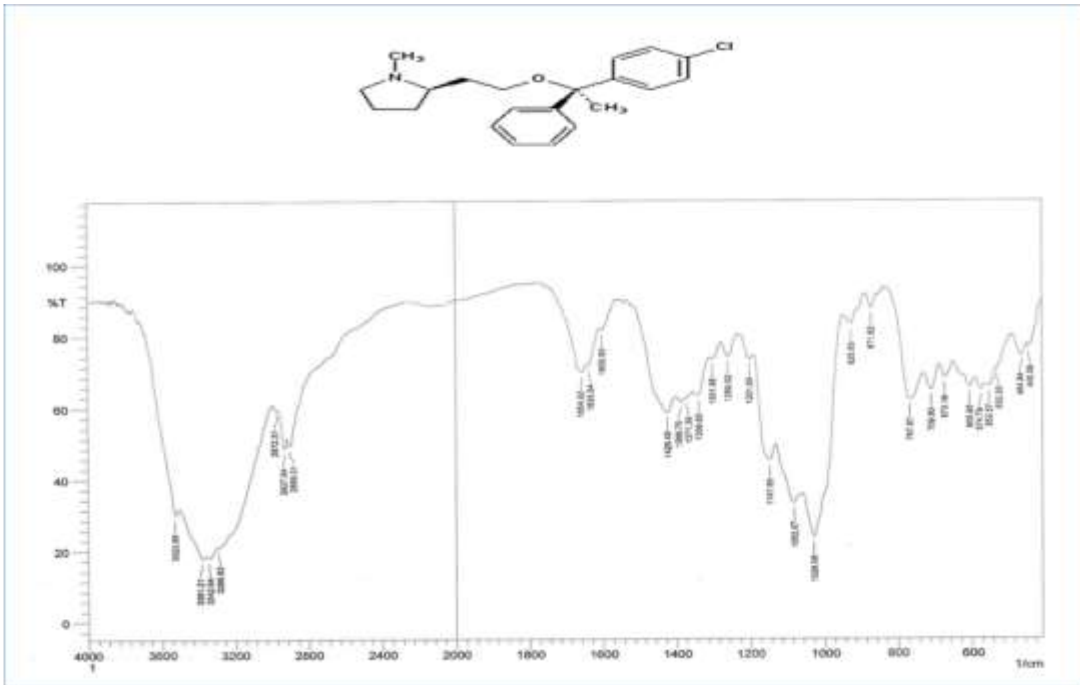

FIGURE 3. FT-IR of Clementine

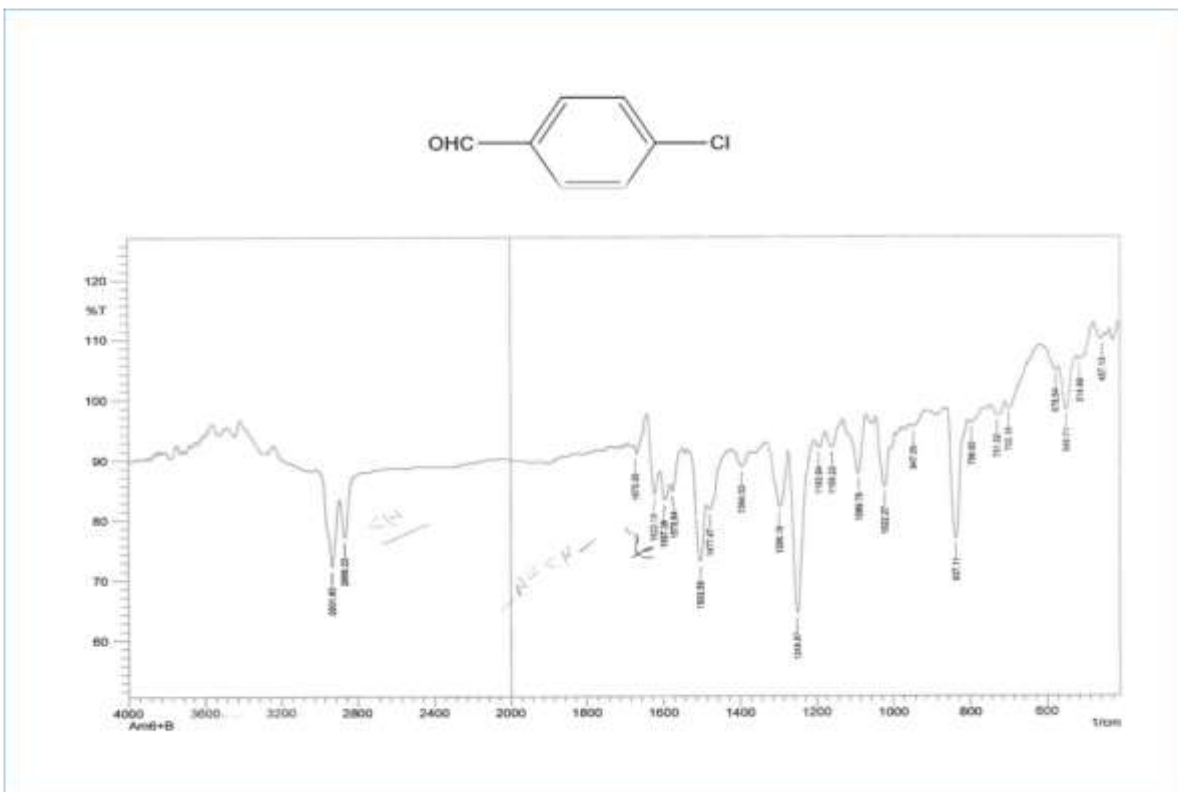

FIGURE 4. FT-IR of Para chloro benzaldehyde(P-CLB)

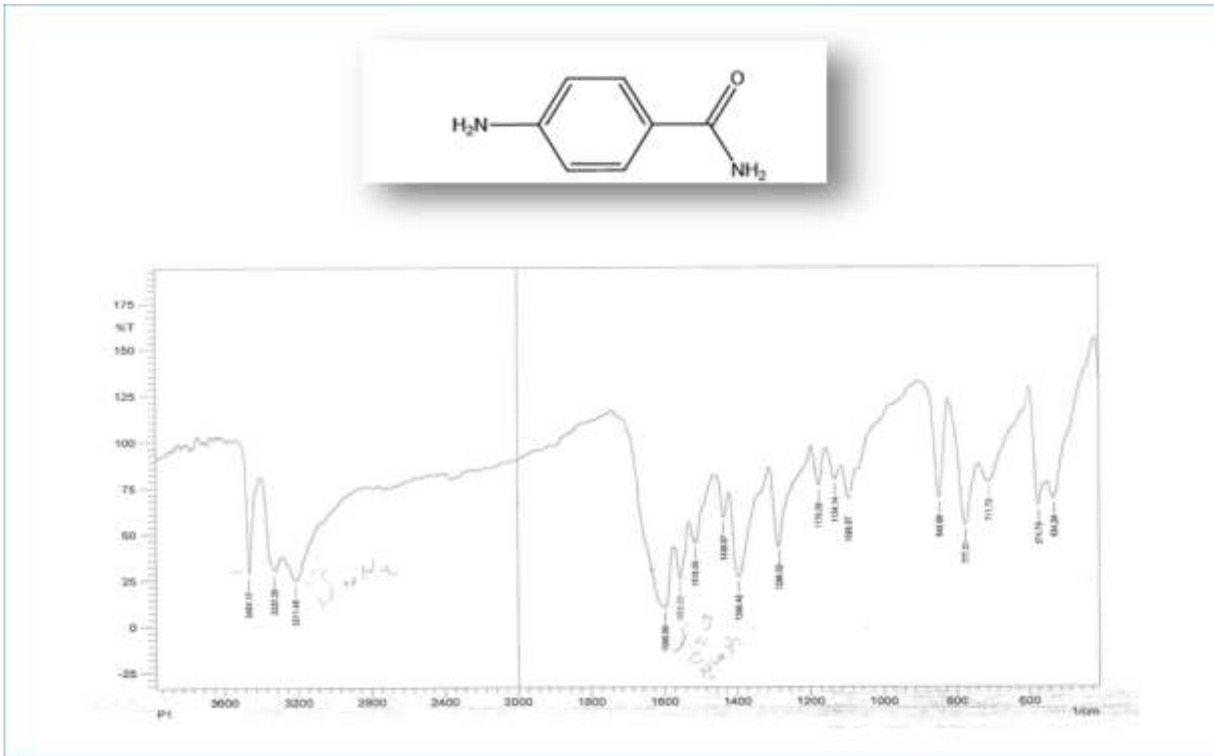

FIGURE 5. FT-IR of paraminobenzyl amide(P-AB)

Liquid Crystal(L.C.) prepare

Diphenylmethoxy,Clemastine(C21H26ClNO),p-minobazaamide(PABA)(C7H7NO2), and 4-Alkoxy-Aniline(C7H9NO) were poured and dissolved in a little amount of ethanol with an equivalent quantity of 4-chlorobenzaldehyde (4-CBA). The condenser was also put over the glass beaker and progressively heated for four hours using a tiny amount of ethanol and a few drops, around four drops, of glacial acetic acid. A modest amount of ethanol was used to crystallize it.

RESULT AND DISCUSSION

All of the compounds' infrared spectra (primary and final) were evaluated; the most relevant absorption bands were identified, and the structurer advised that the compounds be investigated further. The first stretch band is the strongest of the two, including 1600 and 1622 cm-1. The weak stretching vibration beam of C=N of Azomethine bond stretching vibration region in Schiff base compounds ranges from (1500-1650) cm-1. Aromatic ring double bond (C=C) has a weak stretching vibration beam, ranging from 1580 to 1560 cm-1. Aliphatic CH may be identified in the region (2850-2960) cm-1. Stretching vibrations and their scissoring and curving bands emerge in the (1350-1470) cm-1 range, whereas aromatic CH appears in the (1350-1470) cm-1 range. (3000-3100) cm-1, also linked to vibration stretching. We also have a definite and strong bundle in the range (1240-1250) cm-1.

Diagnostics of prepared compounds.

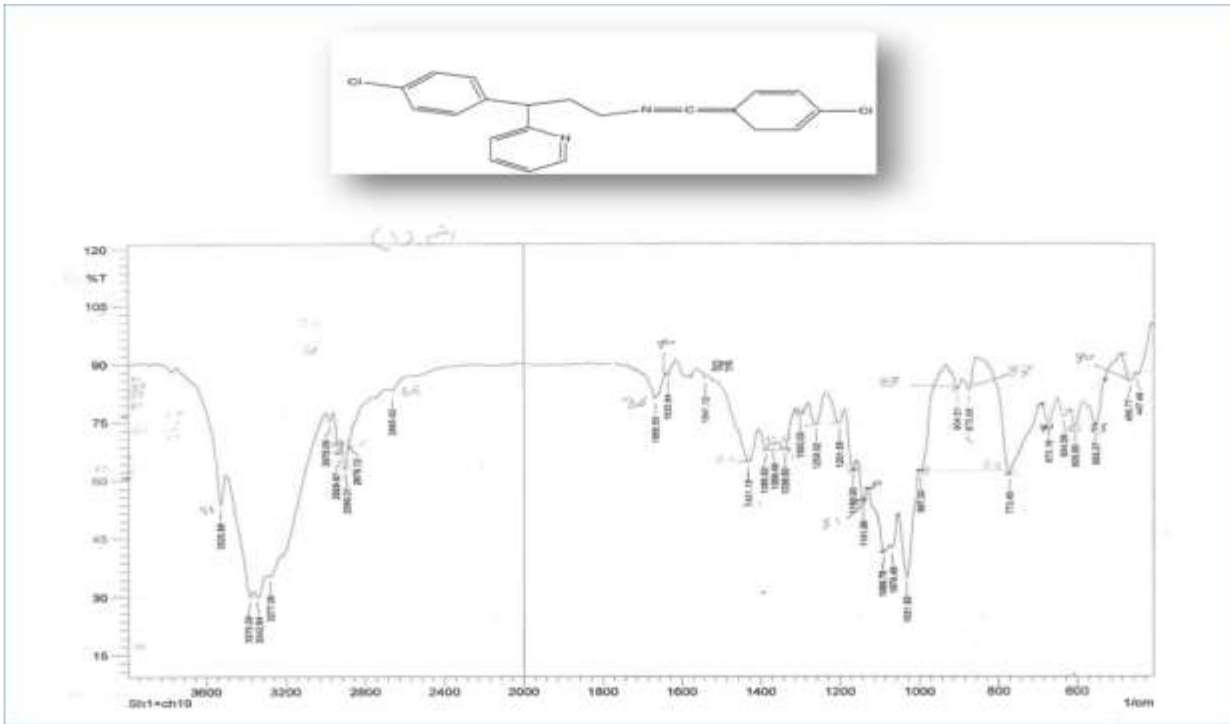

FIGURE 6. FT-IR to chlorpheniramine(CPA) and 4-Chlorobenzaldehyde(CBA)

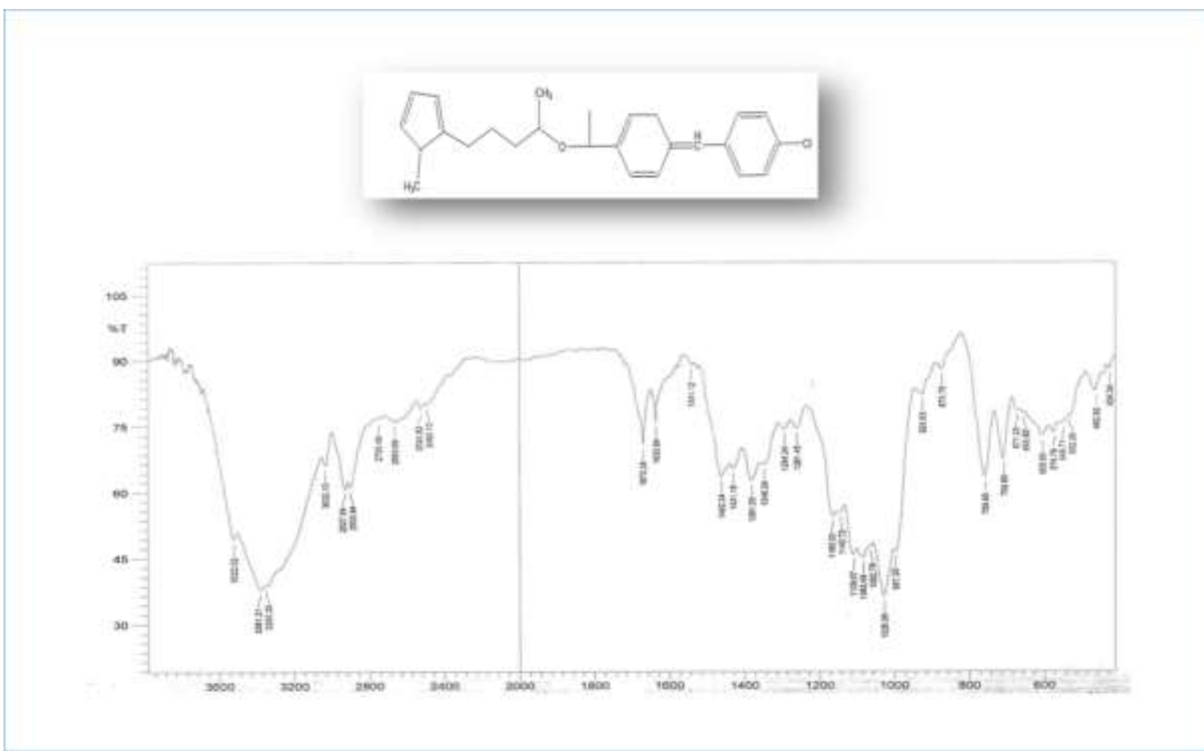

FIGURE 7. FT-IR to Clementine and 4-Chlorobenzaldehyde(CBA)

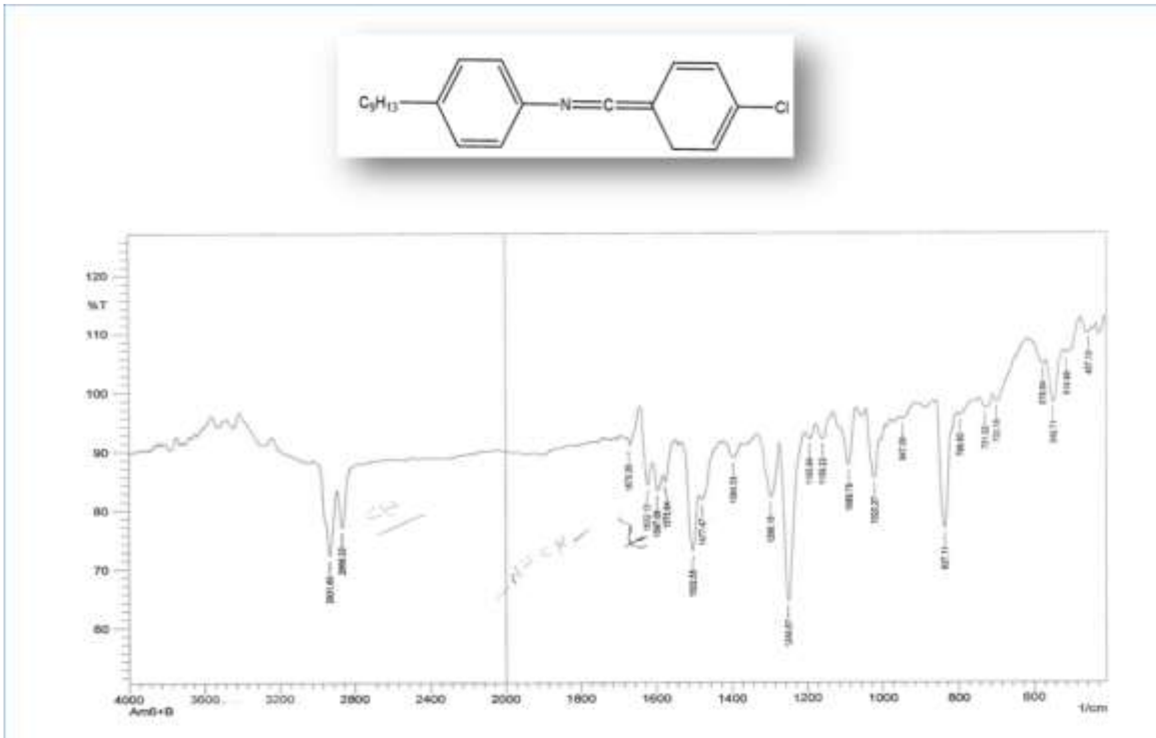

FIGURE 8. FT-IR alkoxyanaline and 4-Chlorobenzaldehyde(CBA)

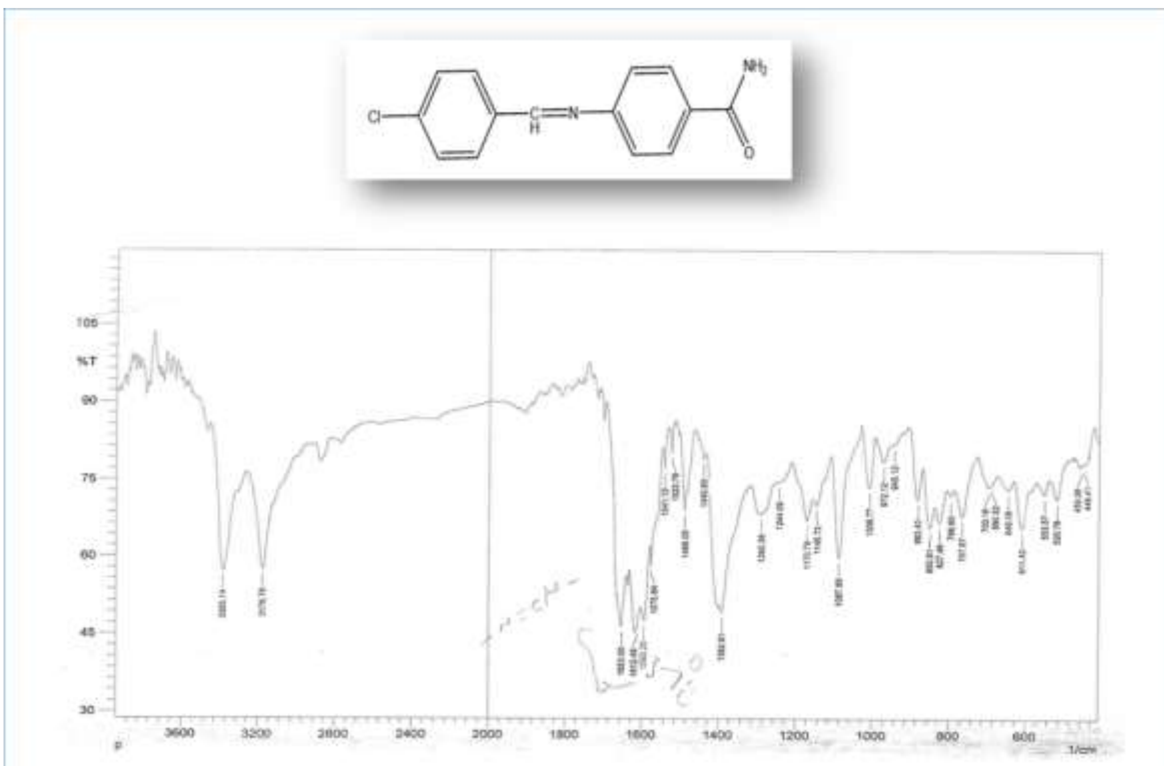

FIGURE 9. FT-IR p-amino banzaamide(PABA) and 4-Chlorobenzaldehyde(CBA)

When comparing the bands presented in Figure 7, the C-H of aldehyde disappearance vibration bands, which occurred in the sites 2818Cm-1 and 2737 m-1 but not in the aforementioned Figure 9, were found in the sites 2818Cm-1 and 2737 m-1. As a consequence, it proves that the reaction is working properly.

CONCLUSION

The research included the synthesis of molecules with liquid crystal properties,The C-H of aldehyde disappearance vibration bands, which occurred in the sites 2818Cm-1 and 2737 m-1 but not in the aforementioned Figure 9, were discovered in the sites 2818Cm-1 and 2737 m-1 when comparing the bands given in Figure 7. As a result, it demonstrates that the reaction is in good functioning order. The possibility of using these produced crystals to develop treatments can be deduced by following the application of Bio in the fields of pharmaceutical industries, as the compounds that were prepared from them are originally compounds or treatments for some diseases, and the extent of their success in this field can be tested by applying them to laboratory animals from It was accepted by pharmacologists and pharmaceutical chemists, and their behavior was traced after exposing them to doses of these prepared molecules.

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