OBJECTIVE

O B J E C T I V E

The study of liquid crystals is always attracting chemists and physicists to explore the wide area of their utility and applicability in various fields. The existing literature and the advancing frontiers are responsible for giving idea of synthesizing newer mesogens and study of their varying characteristics in accordance with the changing molecular geometry. A number of homologous mesogenic series are reported in literature. A careful survey supports the idea that certain specific changes brought about in moities without disturbing their core structure, may modify mesomorphic characteristics in a varying manner. Such study may reveal some unknown aspects of structural geometry and may add a good deal to the existing knowledge was a main objective of this investigation.

A previous investigation from this laboratory predicted that esters with longer alkyl chain at one end should be low melting mesogens. In order to ascertain the prediction, (Series 1, 2, and 4 are prepared) this investigation is carried out. This process of the approach fixes the aim as synthesizing a number of new homologous series with the potential of exhibiting mesomorphism at a lower temperature

range. Further synthesis of some new homologous series with a short terminal group, without any alkyl chain, are also synthesized in order to carry a comparative study of the extent of the modification in mesogenic characteristics.

The homologous series having nitrogroup at one terminal end are of considerable significance, as some of these series are reported to exhibit the reentrant nematic mesophase. One homologous series having nitro group at one end is synthesized to explore any such possibility.

The most important objective of this investigation is to study some binary mixtures including those whose components would be homologues of the new homologous series, synthesized under this investigation and attempt to corelate the changes in the mesomorphic characteristics with the molecular geometry. Besides, binary mixtures of mesogens have been found to be of greater practical value in terms of applications of liquid crystals to industrial uses. Such aim will always be an associated feature of mixed study though its significance would have a direct bearing with the nature of the results.

A comparative discussion in the light of results obtained may lead to either supporting or discarding evidences or helping generalizations of the current view

on the subject matter. An exercise in any of these aspects would be quite interesting and fruitful.

Last, but not the least, it is aimed to explore, at least on a probability basis as the limitation of the working conditions are so heavy as to discourage factual exploration in a direct manner, the directions of utility of the work under investigation. But due to the limited laboratory facilities and academic restrictions, this objective assumes a rather impossible nature to fulfil. Inspite of these limitations, the objectives turn out quite interesting and fruitful when attempted for their realization into concrete results and create more fascinating facets pointing towards the future realities.

In conclusion it should be noted, against all probabilities and improbabilities, that object as set forth automatically turns out to be some what difficult if it were to be stretched to its full logical length. Obviously, thus a balanced approach will be adopted in the attempt for its fulfilment without losing sight of the rationale emerging out of an exercise of this kind.

On the whole, the prime and foremost objective of

this investigation is to carry out in a manner that would result into addition to the existing knowledge in the field.