

Phase Transition and Molecular Polarizability Studies in Liquid Crystalline Mixtures

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Abstract : In this work, two mixtures with equal concentrations of 1) 4'-(6-(4-(pentylamino) methyl)-3-hydroxyphenoxy) hexyloxy) biphenyl-4-carbonitrile+4-((4-(hexyloxy) benzylidene) amino) phenyl 4-butoxy benzoate and 2) 4'-(6-(4-(hexylamino) methyl)-3-hydroxyphenoxy) hexyloxy) biphenyl-4-carbonitrile+4-((4-(octyloxy) benzylidene) amino) phenyl 4-butoxy benzoate, have been prepared. The transition temperature and optical texture are observed by using thermal microscopy. Density and birefringence studies are carried out on the above liquid crystalline mixtures. Using density and refractive indices data, the molecular polarizabilities are evaluated by using well-known Vuks and Neugebauer models. The molecular polarizability is also evaluated theoretically by Lippincott & function model. The results reveal that the polarizability values are same in both experimental and theoretical methods.

Keywords : liquid crystals, optical textures, transition temperature, birefringence, polarizability

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