

Experimental Evidence of an Ambient Ferroelectric Phase and a Low Frequency-Induced Transition in an Achiral Mesogen

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A series of achiral liquid crystals with an azo base have been successfully isolated. Thermal and electrical characteristics of these compounds are studied. One of the mesogens exhibits liquid crystallinity at ambient temperature which is observed to be ferroelectric and can be switched. For the first time in the class of achiral liquid crystals, one of the compounds of the isolated series exhibits a low frequency-induced transition (LFiT) from ferroelectric to antiferroelectric ordering. Furthermore this transition can be controlled by proper attenuation of an applied frequency to the mesogen. The threshold frequency and its implication on the LFiT along with the thermal and electrical characterizations of the mesogens are discussed.

Key words: Organic Compound; Ferroelectricity; Optical Properties.