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Fast optical response time and high contrast ratio after dispersion of fluorescent dye into the nematic liquid crystal

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Fluorescent dye Benzo 2,1,3 thiadiazole has been dispersed into the pure nematic liquid crystal (NLC) 1550C which is consisted of 4'-(trans,trans-4-alkylbicyclohexyl)carbonates and 4'-(4-(trans,trans-4-alkyl)-4-cyanobicyclohexane, with in three different concentration in the present investigation. Electro-optical and dielectric parameters have been investigated here. In this work response time has been measured by Optical Switching Method and found to be decreased after the dispersion of fluorescent dye into the pure NLC 1550C. This fast optical response time measurement is the main finding of the present investigation. Rotational viscosity has also been calculated here and found to be decreased for dispersed system as compare to pure NLC. Polarizing Optical Microscope (POM) images have also been taken in the current study which shows that alignment as well as contrast has been improved after the dispersion of fluorescent dye. Contrast Ratio (CR) has also been measured here by applying a square wave and found to be increased for the dispersed system. This is also a promising result of this investigation. The outcome of present investigation may be very useful in the liquid crystal displays (LCDs) and other devices which requires fast response time.

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