Effect of nano particles/nano tubes on liquid crystals and comparative study with respect to chemical composition and physical properties.

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Liquid crystals are substances that exhibit a phase of matter that has properties between those of a conventional liquid, and those of a solid crystal. The various LC phases (called *mesophase*) can be characterized by the type of ordering that is present.Their molecules are often shaped like rods or plates or some other forms that encourage them to align collectively along a certain direction.

This is known as director axis. Phases of liquid crystals are Columnar, Smectic, and Nematic.

In the present work we doped E7 (LCs) (nematic LCs) with Multi walled carbon nano tubes (MWCNT) .This doping led to a change in director axis orientation which enhanced birefringence properties of E7 LCs. The director axis orientation is manifested in the change in phase transition temperature (PTT) investigated by polarization microscope system (PMS),and differential thermal analysis (DTA).We compared FTIR of pure E7 and E7 doped with MWCNT and ZnO nano particles. This illuminated the fact that nano particles do not react with liquid crystals but just affect the physical properties like Phase transition temperature. The result of this study with appropriate conclusions shall be explained in the presentation.

References:

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