

## Thermo-Physical and Morphological Properties of Pdlcs Films Doped with Tio2 Nanoparticles.

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**Abstract :** PDLCs are currently considered as promising materials for specific applications such as creation of window blinds controlled by electric field, fog simulators, UV protective glasses, high data storage device etc. We know that the electrical field inside the liquid crystal is low compare with the external electric field [1,2]. An addition of high magnetic and electrical, properties containing compounds to the polymer dispersed liquid crystal (PDLC) will enhance the electrical, optical, and magnetic properties of the PDLC [3,4]. Low Concentration of inorganic nanoparticles TiO<sub>2</sub> added to nematic liquid crystals (E7) and also combined with monomers (TPGDA) and cured monomer/LC mixture to elaborate polymer-LC-NP dispersion. The presence of liquid crystal and nanoparticles in TPGDA matrix were conformed and the modified properties of PDLC due to doped nanoparticle were studied and explained by the results of FTIR, POM, UV. Incorporation of nanoparticles modifies the structure of PDLC and thus it makes increase the amount of droplets and decrease in droplet size. we found that the presence of TiO<sub>2</sub> nanoparticles leads to a shift the nematic-isotropic transition temperature TNI.

**Keywords :** nanocomposites, PDLC, phases diagram, TiO<sub>2</sub>

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