

Abstract Submitted
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Effects of gold nanoparticles on the electro-optical properties of a polymer dispersed liquid crystal A. HINOJOSA, C. SHIVE, SURESH SHARMA, UT Arlington, Texas 76019 — We have studied the electro-optical properties of a polymer-dispersed liquid crystal (PDLC) as functions of relative concentrations of gold nanoparticles. PDLC samples were synthesized between indium-tin-oxide (ITO) coated glass slides, separated by SiO₂ spacers, by using liquid crystal E44, a monofunctional acrylic oligomer (CN135), and a tetrafunctional crosslinker (SR295). A UV photoinitiator (SR1124) was used to facilitate the curing of the monomer exposed to UV radiation from a Hg spectral lamp. A He-Ne laser was used to measure optical transmission through the PDLC as a function of applied *ac* electric field (1 kHz). The PDLC without gold nanoparticles shows the expected behavior; transmission through the PDLC increases from a minimum (opaque) to a maximum (transparent) with increasing electric field. The electro-optical behavior of the PDLC is altered significantly (e. g., relatively low switching field) upon addition of relatively low concentrations of gold nanoparticles into the starting PDLC syrup. We present electro-optical data as functions of gold nanoparticle concentration and discuss possible mechanism to understand our results.

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