

### Electro-optical characteristics of dye-doped polymer dispersed liquid crystals

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The electro-optical properties of dye-doped Polymer Dispersed Liquid Crystal (PDLC) films were examined as a function of the polymer UV curing temperature, injection temperature and applied voltage. In addition, the effects of the morphology on the electro-optical properties were examined. The contrast ratio and driving voltage of the PDLC films were affected considerably by changes in the UV curing temperature but the injection temperature had a much lesser effect. The color difference and electro-optic characteristics of the dye doped PDLC film were investigated, where the PDLC films were doped with RGB dyes for flexible display applications. The red-dye-doped PDLC film with small-sized particles showed good color differences. In this dye-doped PDLC system, the film driving voltage ( $V_{on}$ ) of the PDLC increased with increasing liquid crystal droplet size, except for the TL205-prepolymer-red dye. In particular, the red-dye doped PDLC composition showed the lowest  $V_{on}$  in the electro-optic characteristics of the dye-doped PDLC film.

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