

EFFECT OF ADDITIVES ON PDLCS BASED ON DIMETHACRYLATE /E7 MIXTURES

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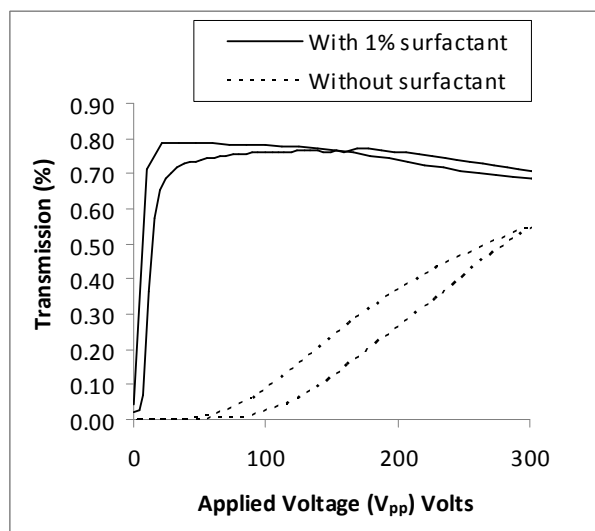
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PDLC films obtained by both thermal- and photo-polymerization were investigated. Dimethacrylates monomers were used to obtain PDLC films containing micron-sized liquid crystal (E7) domains.

The effects on liquid crystal morphology and on the cells transmission characteristics of the incorporation of several additives were studied in order to minimize the switching voltage from a highly light scattering state (Off state) to the transparent state (On state). The liquid crystalline textures were characterized by polarized optical microscopy (POM) and the polymer morphology was studied by scanning electron microscopy (SEM).

The electro-optical characteristics of the PDLC films, altered by the addition of acids, alcohols and surfactants, are dependent on the polymer structure and thus the nature and the rate of polymerization mechanism and the initial aggregation of the liquid crystal. The size and number of the E7 domains in the polymer matrix that determine the visual effect on the material is therefore manipulated. This work reports a decrease on the switching applied voltage of near two orders of magnitude in these systems, resulting in a switching field strength of about 0.5 V/ μm .



Acknowledgment: this work was supported by Fundação para a Ciência e Tecnologia through the project PTDC/CTM/69145/2006.