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Study the effects of epoxy/tri functional mercaptan resins structure based PDLC films

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The present investigation is focused on to find out the effects of the structure of epoxy/trifunctional mercaptan resins based polymer dispersed liquid crystal (PDLC) films on the morphology of polymer matrix via heat curing system. The interaction between epoxy reaction and polythiol group (-SH) resins turn played an essential role in step-growth polymerization reaction for the preparation of PDLC films. In addition to this, the polymer morphologies in this heat curing system have been regulated from polymer beads to porous polymer matrix by changing the liquid crystals (LCs) contents, chemical structures of epoxy trifunctional mercaptan resins, and functionality of thiol hardeners. On the other hand, the thiol group (-SH) fractured the PDLC films continuously with changing driving voltage radically. With the enhancing content of the epoxy resins, the LC domain size decreased, while the thiol had a various effect on the LC domain size. It was of great importance for the optimisation and the possible applications of the PDLC films.

Authors: Dr ELLAHI, Mujtaba (Department of Chemistry, Faculty of Arts & Basic Sciences, Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS). Quetta 87100 Pakistan); Dr ULLAH, Hamid (Department of Chemistry, Faculty of Arts & Basic Sciences, Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS). Quetta 87100 Pakistan); Dr ALI, M.Furqan (Beijing University of Chemical Technology, Beijing 100029, People's Republic of China3); Ms PANEZAI, Noor Nama (Department of Chemistry, Faculty of Arts & Basic Sciences, Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS). Quetta 87100 Pakistan)

Presenter: Dr ELLAHI, Mujtaba (Department of Chemistry, Faculty of Arts & Basic Sciences, Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS). Quetta 87100 Pakistan)

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