

Abstract Submitted
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Phase Behavior and Polymerization-Induced Phase Transition of Liquid Crystal Mixtures¹ NAMIL KIM, THEIN KYU, University of Akron — Thermodynamic phase behavior of binary liquid crystal mixtures of UV-curable LC aromatic diacrylate monomer (RM257) and low molar mass LC mixture (E7) has been investigated experimentally and theoretically. Phase transition temperature was measured using differential scanning calorimetry (DSC) and polarized optical microscopy (POM) techniques and compared to the theoretical phase diagram established from the combined Flory-Huggins and Maier-Saupe theory. The simulated phase diagram composed of isotropic, nematic, and crystal region was in good accordance with the experimental results. The behavior of crystal and liquid crystal growth in the neat aromatic diacrylate was investigated with or without UV irradiation. Photo-polymerization-induced phase transition was carried out in both isotropic and nematic regions of the phase diagram to mimic the development diverse morphologies.

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