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Phase equilibria of a polymer discotic liquid crystal mixture.[1]
TSANG-MIN HUANG, THEIN KYU, University of Akron — Thermodynamic phase diagrams of a polymer dispersed liquid crystal (PDLC) containing a monomeric discotic liquid crystal (DLC) and a polymer have been established theoretically by combing Flory-Huggins theory for the free energy of mixing of isotropic phase and Chandrasekhar-Clark theory for the phase transition of hexagonal crystalline ordering of discotic liquid crystals. By varying interaction parameter of hexagonal columnar phase, columnar-isotropic and columnar-nematic-isotropic phase transitions can be predicted. The spinodal line of the columnar DLC/polymer will be calculated in conjunction with the conventional liquid-liquid spinodal. Effects of various molecular parameters on the columnar LC phase diagram will be discussed.

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