

## **Equilibrium Phase Diagrams of Interpenetrating Polymer Networks and Liquid Crystals**

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### **Abstract :**

Swelling and deswelling of photochemically crosslinked interpenetrating polymer networks in anisotropic solvents were examined. Phase diagrams were established in terms of composition and temperature using two low-molecular-weight nematic liquid crystals, 4-cyano-4-*n*'-pentylbiphenyl and an eutectic mixture of cyanoparaphenylenes. Networks were formed by ultraviolet curing in the presence of a difunctional monomer and a photoinitiator. Immersion in excess of solvent allowed us to measure the solvent uptake by weight and to determine the size increase by optical microscopy in terms of temperature. We calculated weight and diameter ratios considering the swollen-to-dry network states of the samples.

**Keywords** : crosslinking; interpenetrating networks (IPN); phase diagrams; photochemistry; swelling.

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