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Effect of Solvent Concentration on the Liquid Crystal Phase Transitions of Octylcyanobiphenyl-Hexane Mixtures KRISHNA SIGDEL, GERMANO IANNACCHIONE, WPI — The effect of a non-mesogenic, low-molecular weight, solvent on the phases of a liquid crystal can be profound. High-resolution ac-calorimetry has been carried out on the isotropic to nematic (*I-N*) and the nematic to smectic-*A* (*N-SmA*) phase transitions of the liquid crystal octylcyanobiphenyl (8CB) as a function of hexane concentration. Temperature scans were performed above and below these transition temperatures for all samples. Six 8CB+hexane samples were studied having molar concentrations of 0.017 (0.5% by mass), 0.033 (1%), 0.063 (2%), 0.078 (2.5%), 0.092 (3%) and 0.119 (4%) of hexane. Upon increasing dilution of 8CB by the linear form of hexane, the transition temperatures shift lower while the order of both transitions evolves. These effects may be the consequence of the weakening of the liquid crystal molecular interactions due to the presence of the solvent.

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