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Anisotropic conformation of a side group liquid crystalline polymer in an isotropic small molecule LC solvent PAUL PIROGOVSKY, ZULEIKHA KURJI, ROHAN HULE, JULIA KORNFELD, California Institute of Technology — While it is well known that SGLCPs adopt an anisotropic conformation when in a nematic solvent, we were intrigued to observe that anisotropy of the coil conformation can persist above T_{NI} — despite the isotropic state of the solvent and the flexible nature of the backbone. Small angle neutron scattering (SANS) was performed on dilute (1 wt%) solutions of SGLCPs dissolved in deuterated 5CB. The isotropic-nematic transition of the d-5CB was not shifted by this low concentration of polymer. In the absence of a magnetic field, the SANS patterns are isotropic. A magnetic field that is sufficiently weak that it does not perturb the order parameter at $T < T_{NI}$, nor the value of T_{NI} , serves to break symmetry. The anisotropic SANS pattern observed at $T_{NI} + 2^\circ\text{C}$ indicates to us that the polymer exerts a local nematic field upon the solvent causing it to take on a nonzero order parameter within the pervaded volume of the coil. The temperature dependence as well as the role of mesogenic side group geometry and molecular weight will also be presented.

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