

Abstract Submitted
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Formation and Characterization of Lyotropic Liquid Crystal Phase in Poly(3-hexylthiophene) Solutions NABIL KLEINHENZ, KARTHIK NAYANI, Georgia Institute of Technology, SOURAV CHATTERJEE, XUJUN ZHANG, Louisiana State University, JUNG OK PARK, MOHAN SRINIVASARAO, Georgia Institute of Technology, PAUL RUSSO, Louisiana State University, ELSA REICHMANIS, Georgia Institute of Technology — We have studied poly(3-hexylthiophene) (P3HT) as a model π -conjugated polymer for organic semiconductor applications and have investigated the formation of a lyotropic liquid crystalline phase that might be a potential precursory to well-ordered thin film for device applications. Through various processing techniques including the use of mixed solvent systems, slow solution cooling, aging, and capillary flow, we have observed persistent birefringence and alignment of P3HT in solution. Raman spectroscopy of these solutions in capillaries displays anisotropy in their Raman spectra. UV-Vis spectroscopy was employed to understand the intermolecular interactions that give rise to alignment, and dynamic light scattering was used to quantify the dimensions of P3HT aggregates.

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