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**Time evolution study of anisotropy of P3HT film formation using *In-Situ* polarized Raman Spectroscopy** MIN SANG PARK, Georgia Institute of Technology, AVISHEK AIYAR, JUNG OK PARK, Georgia Institute of Technology, ELSA REICHMANIS, Georgia Institute of Technology, MOHAN SRINIVASARAO, Georgia Institute of Technology — The charge transport properties of self-organized conjugated polymer films are strongly dependent on the molecular ordering during the solution casting process. We studied how the chain orientation of poly(3-hexylthiophene) (P3HT) is altered as function of evaporation time using polarized micro-Raman spectroscopy and POM. The time evolution of anisotropy of P3HT films prepared by drop-casting with 1,2,4-trichlorobenzene indicates that directional preference of P3HT chain alignment occurs only during the specific time duration. No anisotropy was detected either before or after this duration. These results were compared with the *in-situ* current measurements of P3HT solution during evaporation, and interpreted in terms of the solvent evaporation induced self organization. Based on these results, the mechanism of film formation by solvent evaporation is proposed and supported with morphologies of polymer film induced by different solvent evaporation forces by means of AFM. The information of chain ordering in this study addresses the question of whether conjugated polymer films by solution casting can have nematic ordering with non-separable anisotropic interactions where mean field theory predicts ordering.

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