

SYSA 8: Nanostructured Block Copolymer Films (further abstracts see DS 35.2-5)

Time: Thursday 17:00–18:30

Location: H 2032

Invited Talk

SYSA 8.1 Thu 17:00 H 2032

Nanostructure and transport in regioregular polythiophenes and their block copolymers — RUI ZHANG¹, BO LI¹, JESSICA R. COOPER¹, MIHAELA IOVU¹, GENEVEVIE SAUVE¹, DAVID N. LAMBETH¹, DETLEF-M. SMILGIES², RICHARD D. McCULLOUGH¹, and •TOMASZ KOWALEWSKI¹ — ¹Department of Chemistry, Carnegie Mellon University, 4400 Fifth Avenue, Pittsburgh, PA 15213 — ²Cornell University, Ithaca, NY, USA

This presentation will describe the results of combined atomic force microscopy (AFM) and grazing incidence small and wide angle x-ray scattering (GISAXS/GIWAXS) studies of narrow polydispersity regioregular poly(alkylthiophenes) (PATs) and their block copolymers. Well-

defined PATs were shown to have a high tendency to form nanofibrillar structures with the nanofibril widths closely related to the contour lengths of polymer molecules. Moreover, carrier mobilities in field effect transistors fabricated from PATs exhibiting nanofibrillar morphologies exhibited exponential dependence on nanofibril width. The significance of this relationship as well as the morphology of block copolymers of PATs with immiscible segments and its impact on transport properties will be also discussed.

Joined session with DS: Further abstracts are listed under DS 35.2-5