

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Structure of Poly(3-(2'-ethyl)hexylthiophene) (P3EHT) Containing Diblock Copolymers Controlled via Thermal Processing EMILY DAVIDSON, UC Berkeley, RACHEL SEGALMAN, UC Santa Barbara — Poly(3-alkylthiophene)s with modified alkyl side chains crystallize confined within block copolymer microphases, serving as a good model system for the confined crystallization of semiflexible polymers. We hypothesize that the diblock structure may impose an equilibrium degree of crystalline conjugated chain folding which here is only accessible for small degrees of undercooling. Crystallization of these P3ATs in soft confinement drives microdomain expansion; here, we show that this expansion is minimized for crystallization at small degrees of undercooling. Upon heating, domains return to their melt structure over three distinct regimes. These regimes directly correspond to thermal features we assign to the relaxation of a rigid-amorphous fraction at the diblock interface, melt-recrystallization which reorganizes the degree of chain folding, and a final complete melting transition.

Emily Davidson
UC Berkeley

Date submitted: 09 Nov 2015

Electronic form version 1.4