Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

**Selective crystallization of conjugated polymer nanowires from graphene-coated surfaces**[1] DANIEL ACEVEDO CARTAGENA, YUE ZHANG, University of Massachusetts, ELVIRA TRABANINO, None, EMILY PENTZER, Case Western Reserve University, TODD EMRICK, ALEJANDRO BRISENO, RYAN HAYWARD, University of Massachusetts — Solution-based crystallization of conjugated polymers is a promising route to develop hierarchical structures for organic electronic devices, especially solar cells. Well-defined nucleation sites in supersaturated solutions can regulate the crystallization behavior to control the morphology of the material. We have developed an approach to tune the hysteresis between melting and crystallization of poly(3-hexylthiophene) in a marginal solvent, using temperature controlled fractionation. This process produces supersaturated solutions in a metastable state at room temperature, suppressing homogenous nucleation of crystals but allowing for heterogeneous crystallization on nucleation sites. We show that in these metastable solutions, crystalline nanowires are selectively grown on graphene-coated surfaces and highly orientated pyrolytic graphite.

[1]This work was supported by the National Science Foundation Graduate Fellowship Program, the Northeast Alliance for Graduate Education and the Professoriate and the Department of Energy

Daniel Acevedo
University of Massachusetts

Date submitted: 14 Nov 2014 Electronic form version 1.4