Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

A New Supramolecular Route for Using Rod-Coil Block Copolymers in Photovoltaic Applications RAFFAELE MEZZENGA, ETH Zurich, NICOLAS SARY, University of Fribourg, FANNY RICHARD, CYRIL BROCHON, NICOLAS LECLERC, PATRICK LEVEQUE, Université de Strasbourg, JEAN NICOLAS AUDINOT, Public Research Centre Gabriel Lippmann, THOMAS HEISER, Université de Strasbourg, GEORGES HADZIIOANNOU, Université de Bordeaux, SOLENN BERSON, Commissariat Energie Atomique — We propose a new supramolecular strategy to blend together rod-coil poly(3-hexylthiophene)-poly(4-vinylpyridine) (P3HTP4VP) block copolymers and [6,6]-phenyl-C61-butyric acid methyl ester (PCBM). The P4VP and PCBM are mixed together by weak supramolecular interactions, and the resulting materials exhibit microphase separated morphologies of electron-donor and electron-acceptor rich domains. The microphase segregated P3HT-rod domains act as electron-donating species and the homogeneous P4VP block:PCBM blend acts as the electron-acceptor domain. We describe the photovoltaic performance of standard and inverted devices whose active layer is composed thereof and show the effect of finely engineering the interfacial properties of the active layer to obtain competitive photovoltaic performance with superior thermal stability. (1) N. Sary, F. Richard, C. Brochon, N. Leclerc, P. Leveque, JN Audinot, S. Berson, T. Heiser, G. Hadziioannou, R. Mezzenga, Adv. Mater. in Press (2010)

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Date submitted: 12 Nov 2009 Electronic form version 1.4