Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Rod-Coil Copolymer as Efficient Compatibilizer for Thermally-Stable Polymer Solar Cell H.J. KIM, K. PAEK, H. YANG, B.J. KIM, KAIST — Improving the thermal stability of polymer solar cells (PSC) is important for the future application of these devices since any heat generated by solar irradiation could be detrimental to the performance as a result of the relatively low Tg of polymers and the strong immiscibility of components in the active layer. Herein we have developed new type of compatibilizers having two different blocks of conjugated polymer and poly(2-vinyl pyridine)(P2VP). The P2VP and fullerene are mixed together by supramolecular interaction resulting conjugated polymer-P2VP copolymers act as a compatibilizer reducing the interfacial tension between the two dissimilar components of the PSC. Our compatibilizer successfully suppresses the macrophase separation of donor and acceptor blended films made of either singly functionalized PCBM or bisadduct fullerene derivatives. P3HT/o-xylene-C60-bissadduct fullerne(OXCBA) blended device containing 10 vol percent of compatibilizer shows an average efficiency higher than 4.3 percent after 60 h annealing at an elevated temperature of 150'C.

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Date submitted: 09 Nov 2012 Electronic form version 1.4