Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Synthesis and characterization of A2B Miktoarm Star Copolymers Composed of Regioregular Poly(3-hexylthiophene) and Poly(methyl methacrylate) containing rigid core JICHEOL PARK, HONG CHUL MOON, JIN KON KIM, Pohang University of Science and Technology — The π-π interaction between P3HT arms in Miktoarm star copolymer composed of P3HT and PMMA ((P3HT)2PMMA) was strong enough to arrange two P3HT backbone chains in $(P3HT)_2PMMA$ to stack one by one along the nanofibril axis on thin film. This is because of very small π-π stacking distance between P3HT backbones compared with the size of the core. Here, we report a facile synthesis of $(P3HT)_2PMMA$ containing rigid core. First, we synthesized coupled P3HT having 1,3-diazidobenzylaldehyde at the center using click reaction between mono-ethynyl P3HT and 1,3-diazidobenzylaldehyde. The aldehyde at center in coupled P3HT was replaced by ethynyl group using Grignard reaction with ethynyl magnesiumbromide (P3HT-core-P3HT). Then, copper(I)-catalyzed Huisgen 1,3-dipolar cycloaddition click reaction between P3HT-core-P3HT and PMMA-N_3 was performed to synthesize $(P3HT)_2PMMA$. The optical property and self-assembly of $(P3HT)_2PMMA$ was investigated.

Jin Kon Kim
Pohang University of Science and Technology

Date submitted: 10 Nov 2013 Electronic form version 1.4