Electronic supplementary information

Efficiency enhancement of P3HT/PCBM bulk heterojunction solar cells by attaching zinc phthalocyanine to chain-end of P3HT

Jea Uk Lee, Young Do Kim, Jea Woong Jo, Jae Pil Kim, and Won Ho Jo*

WCU Hybrid Materials Program, Department of Materials Science and Engineering, Seoul National University, Seoul 151-742, Korea.

Fig. S1 Cyclic voltammetry measurements of P3HT (black line), ZnPc (red line), and PCBM (blue line).
Fig. S2 $^1$H NMR spectrum of P3HT-Py.
**Fig. S3** XRD patterns of P3HT films synthesized in our laboratory (blue line) and purchased from Rieke Metals co. (red line) after thermal annealing at 150 °C for 5 min.
Fig. S4 Average photovoltaic parameters and deviations of P3HT/PCBM, P3HT+ZnPc/PCBM, P3HT-ZnPc/PCBM, and P3HT-ZnPc-C_{60}/PCBM BHJ devices (100 mW/cm^2, AM 1.5G). All the devices were thermally annealed at 150 °C for 5 min.
Fig. S5 TEM image of P3HT+ZnPc/PCBM blend film with large amount of ZnPc after thermal annealing at 150 °C for 5 min.

Fig. S6 GPC trace of P3HT-ZnPc-C₆₀.