Supplementary Information: Photocurrent spectroscopic studies of diketopyrrolopyrrole-based statistical copolymers

Dhanashree Moghe^a, Gitish K. Dutta^b, Satish Patil^b, and Suchi Guha^a

^aDepartment of Physics and Astronomy, University of Missouri-Columbia, Missouri 65211, USA ^bSolid State and Structural Chemistry Unit, Indian Institute of Science, Bangalore 560012, India

¹H NMR spectra of Poly A





¹H NMR spectra of Poly B

Poly A: ¹H NMR (400 MHz, CDCl₃) δ (ppm): 9.10 (br, 1H); 8.41-7.61 (m, 8H); 4.74 (br, 1H); 4.21 (br, 1H); 2.43 (br, 2H); 2.04-1.88 (br, 3H); 1.40- 1.19 (m, 22H); 0.94 (m, 2H); 0.79 (m, 6 H).

Poly B: ¹H NMR (400 MHz, CDCl₃) δ (ppm): 9.09 (br, 1H); 8.40-7.60 (m, 8H); 4.65 (br, 1H); 4.20 (br, 2H); 2.35 (2H); 2.04-1.87 (br, 3H) 1.39- 1.17 (m, 19H); 0.93 (m, 3H); 0.79 (m, 6 H).

The feed ratios have been calculated using the N-CH and the N-CH₂ ratios. For Poly B, the carbazole and DPP are almost 100% within a monomer unit. The ratio (N-CH: N-CH₂) is 1:4, corresponding to the number of proton in the structure i.e., 1:4. For Poly A, ratio of intensity (N-CH: N-CH₂) is 1:3.

Responsivity of pristine and blended samples



Fig. 2 The responsivity of pristine and blend sample (a) Poly A and (b) Poly B.

The absolute responsivity of pristine Poly A and its blend is shown in Fig. 2(a). The responsivity of the pristine sample is multiplied by a factor of 2.5 times to compare the onsets. The onset of PC in the blended sample is lower than that of the pristine sample, indicating the presence of inter-molecular CT states in the blend and not in the pristine devices. A similar figure is shown for Poly B and its blend in Fig. 2(b). The responsivity of the pristine Poly B is considerably lower than its blend and is multiplied by a factor of 22 for clarity. It is clearly seen that the onsets of the responsivity for pristine and blended Poly B are identical. Comparing the responsivity of the pristine samples to its blend, the responsivity is significantly enhanced by the addition of PCBM.