Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information

Side Chain Engineering of Conjugated Polymers toward Highly Efficient Near-Infrared Organic Photo-Detector via Morphology and Dark Current Management

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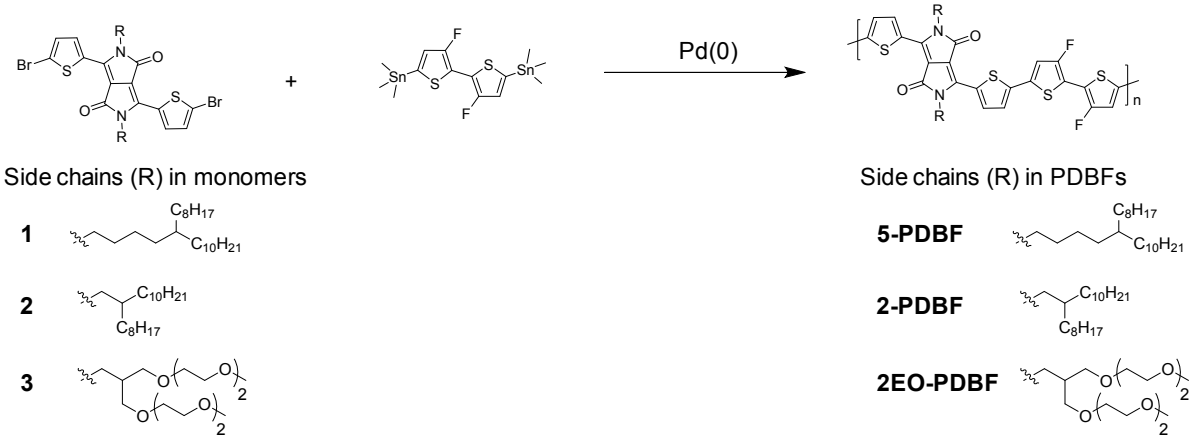

Scheme S1 Detailed chemical structures and synthetic routes of the designed conjugated polymers.

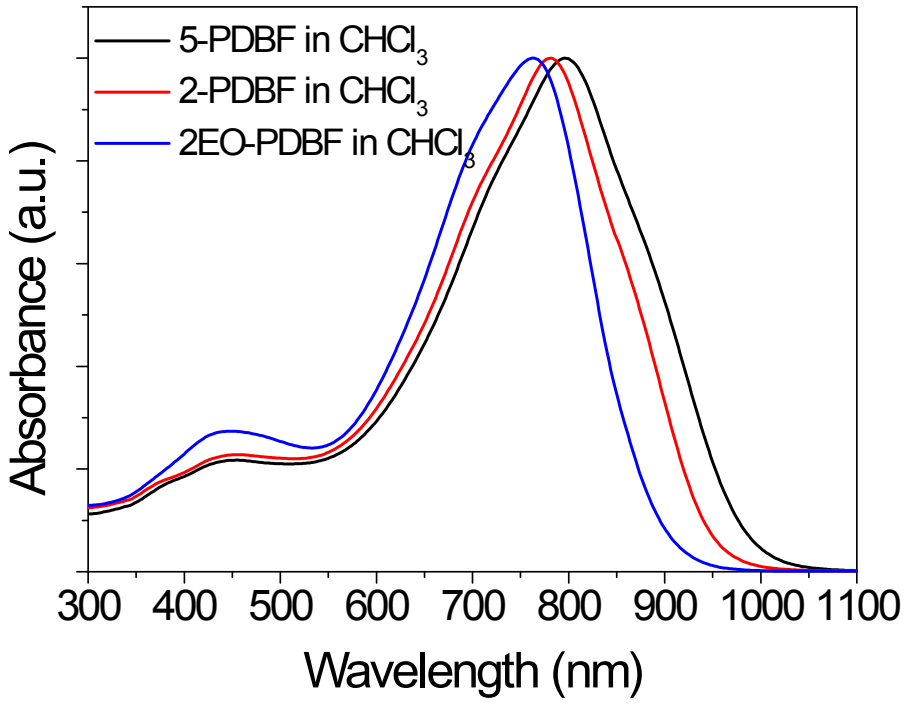

Fig. S1 UV-visible absorption of obtained conjugated polymers in chloroform solution.

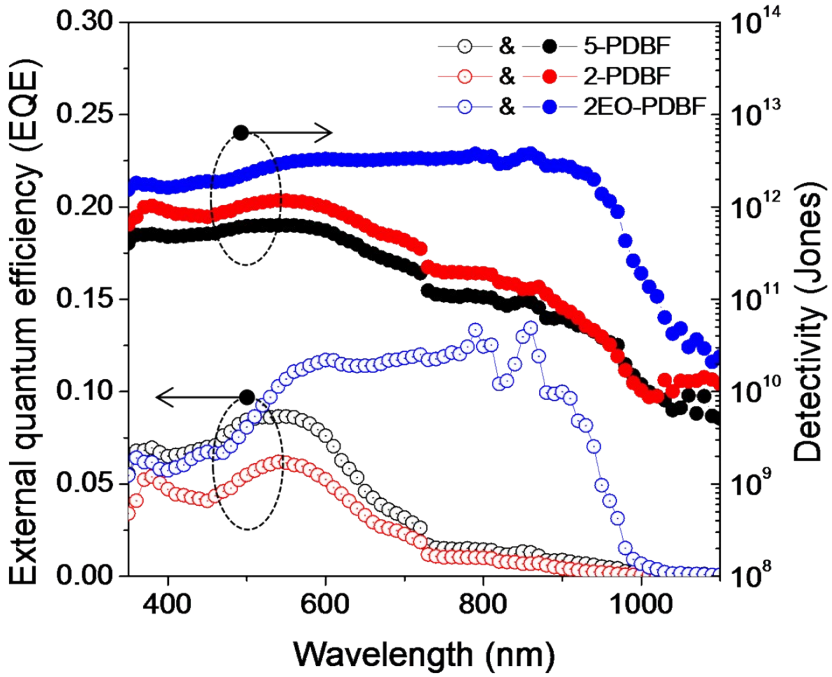

Fig. S2 External quantum efficiency and corresponding detectivity of each CP:$PC_{71}BM$ blend films; (a) **5-PDBF**:$PC_{71}BM$, (b) **2-PDBF**:$PC_{71}BM$, and (c) **2EO-PDBF**:$PC_{71}BM$.

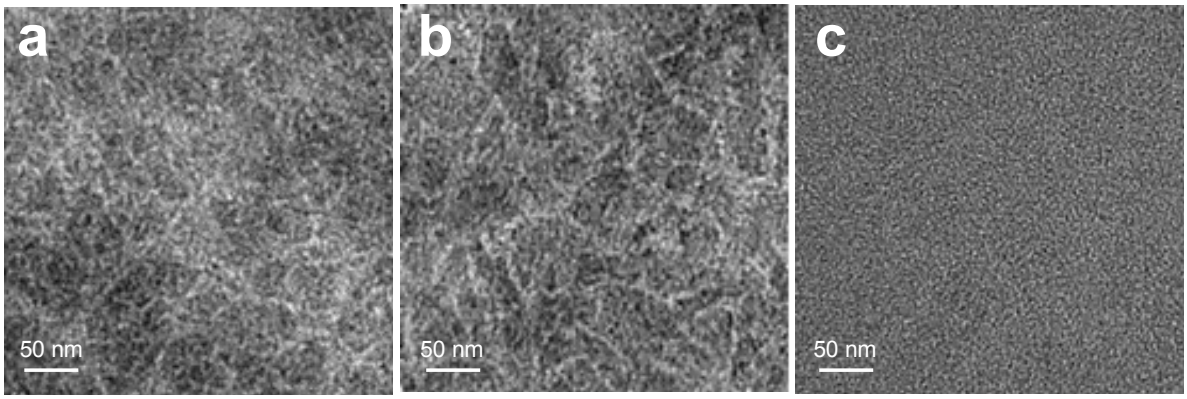

Fig. S3 TEM images of each CP:$PC_{71}BM$ blend films; (a) **5-PDBF**:$PC_{71}BM$, (b) **2-PDBF**:$PC_{71}BM$, and (c) **2EO-PDBF**:$PC_{71}BM$.

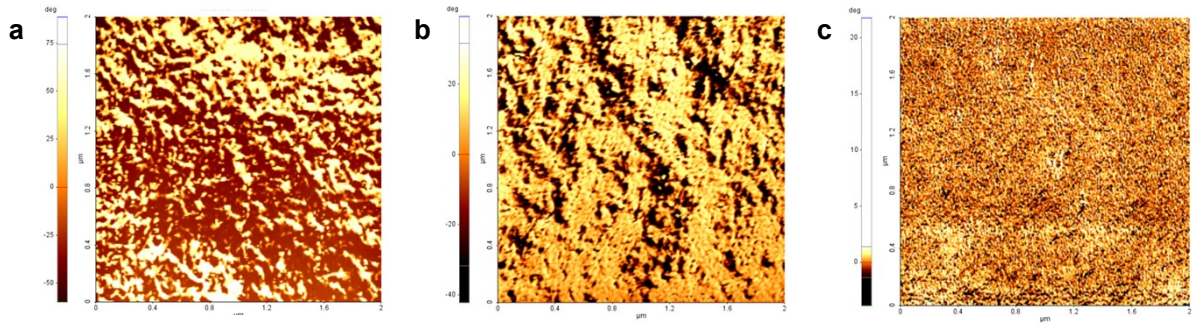

Fig. S4 Phase mode AFM images of each CP:$PC_{71}BM$ blend films; (a) **5-PDBF**:$PC_{71}BM$, (b) **2-PDBF**:$PC_{71}BM$, and (c) **2EO-PDBF**:$PC_{71}BM$.

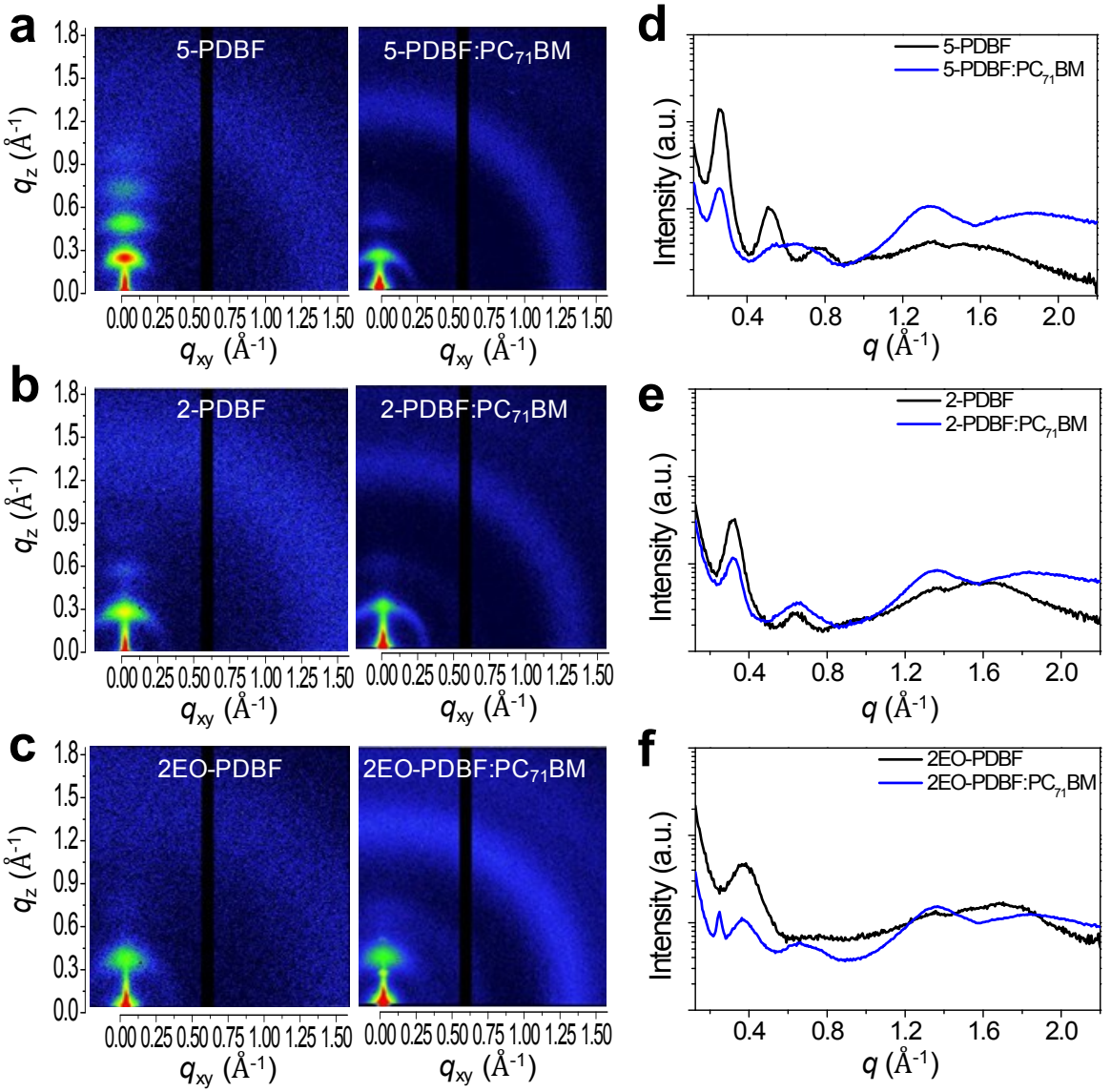

Fig. S5 2D GIXRD of each CP and corresponding $PC_{71}BM$ blend films; (a-c) 2D diffraction images and (d-f) integrated diffraction tendency of **5-PDBF**, **2-PDBF**, and **2EO-PDBF**.

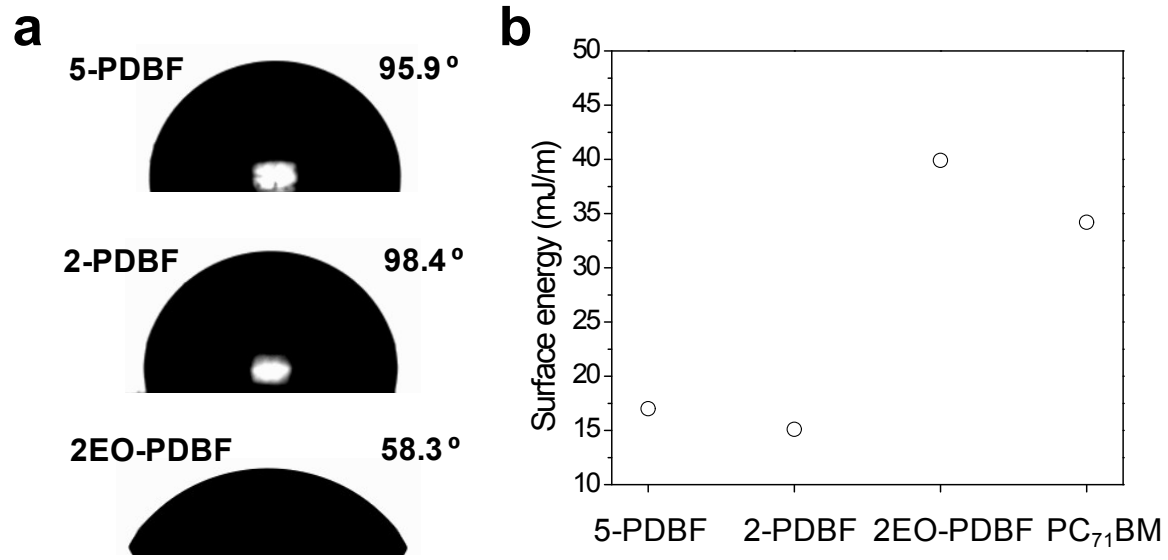

Fig. S6 (a) Contact angle measured with ethylene glycol droplet, and (b) calculated surface energy of obtained conjugated polymers.

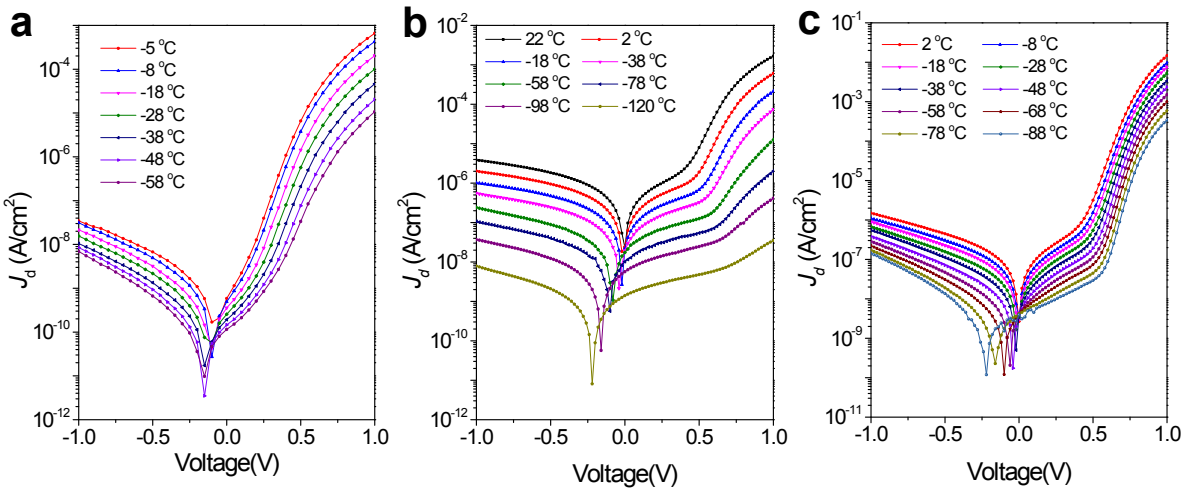

Fig. S7 Temperature-dependent dark current of each OPDs. (a) **5-PDBF**:$PC_{71}BM$, (b) **2-PDBF**:$PC_{71}BM$, and (c) **2EO-PDBF**:$PC_{71}BM$

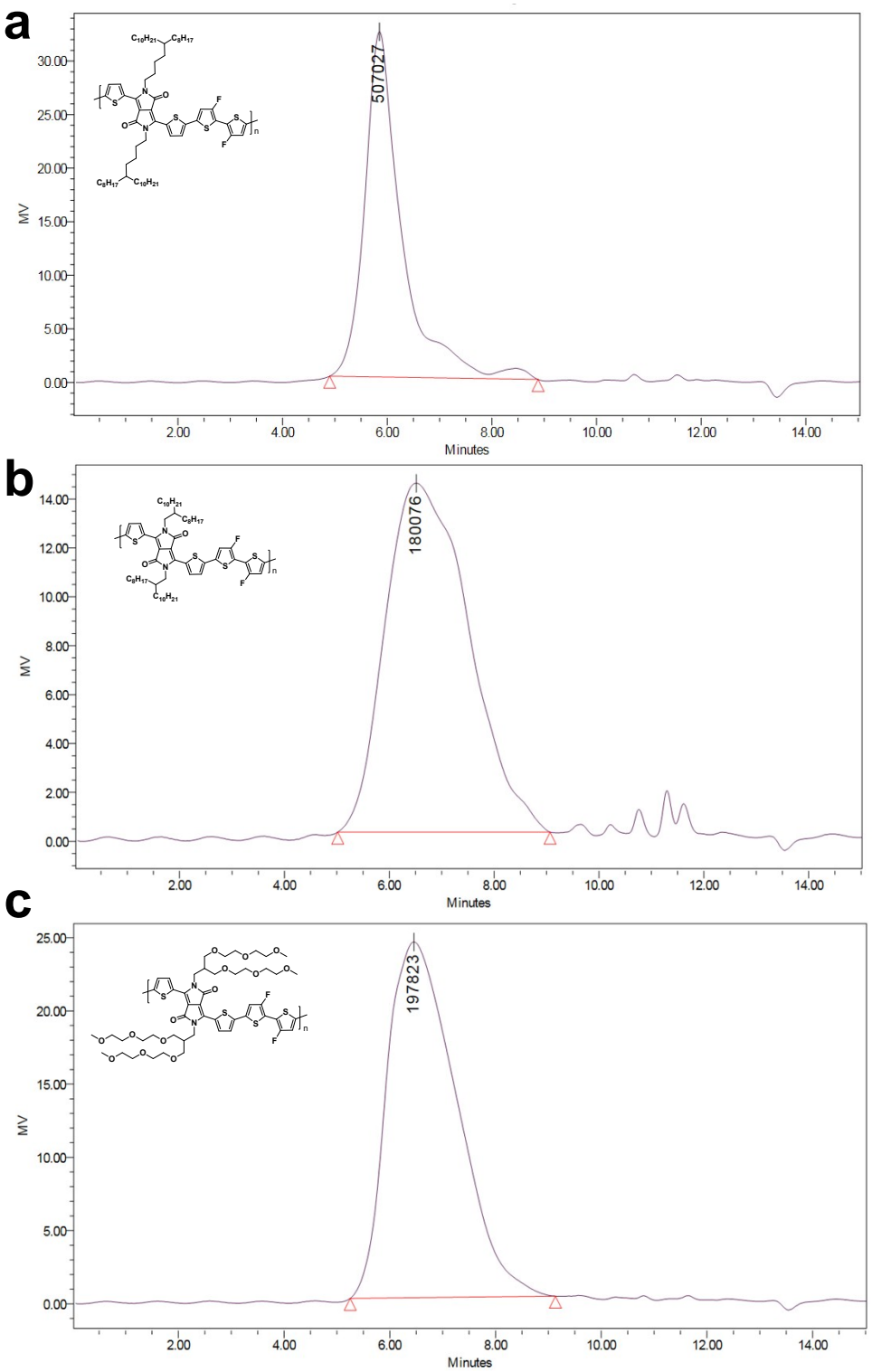

Fig. S8 GPC molecular weight and its distribution of obtained conjugated polymers. (a) **5-PDBF**, (b) **2-PDBF**, and (c) **2EO-PDBF**