Electronic supplementary information (ESI) for

## Synthesis and Characterization of Indeno[1,2-b]fluorene-based Low Bandgap Copolymers for Photovoltaic Cells

Jinseck Kim,<sup>a</sup> Sun Hee Kim,<sup>b</sup> In Hwan Jung,<sup>c</sup> Eunjae Jeong,<sup>a</sup> Yangjun Xia,<sup>a</sup> Shinuk Cho,<sup>d</sup>

In-Wook Hwang,<sup>b</sup> Kwanghee Lee,<sup>b</sup> Hongsuk Suh,<sup>e</sup> Hong-Ku Shim<sup>c</sup> and Han Young Woo<sup>\*,a</sup>

<sup>a</sup>Department of Nanomaterials Engineering (BK21), Department of Cogno-Mechatronics

Engineering (WCU), Pusan National University, Miryang 627-706, Republic of Korea

<sup>b</sup>Department of Materials Science and Engineering, GIST, Gwangju 500-712, Republic of

Korea

<sup>c</sup>Department of Chemistry, KAIST, Daejeon, 305-701, Republic of Korea <sup>d</sup>Center for Polymers and Organic Solids, University of California at Santa Barbara, California 93106, USA

<sup>e</sup>Department of Chemistry and Chemistry Institute for Functional Materials, Pusan National University, Busan 609-735, Republic of Korea.







## Figure S1.<sup>1</sup>H NMR spectra of PIF-DBT35 (a), PIF-DBT50 (b), PIF-DTP35 (c), and PIF-

DTP50 (d).



Figure S2. Normalized PL spectra of polymers in different solvents.



Figure S3. FET Output characteristics of the copolymers.



**Figure S4.** IPCE spectra of the devices with configuration of ITO/PEDOT:PSS/**PIF**-**polymer**:PC<sub>61</sub>BM/A1.



Figure S5. IPCE characteristics of the device, ITO/PEDOT:PSS/PIF-DBT50:PC71BM/A1.