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Supplementary Information

Dipolar donor-acceptor molecules in the cyanine limit for high efficiency green-light-selective organic photodiodes

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Figures

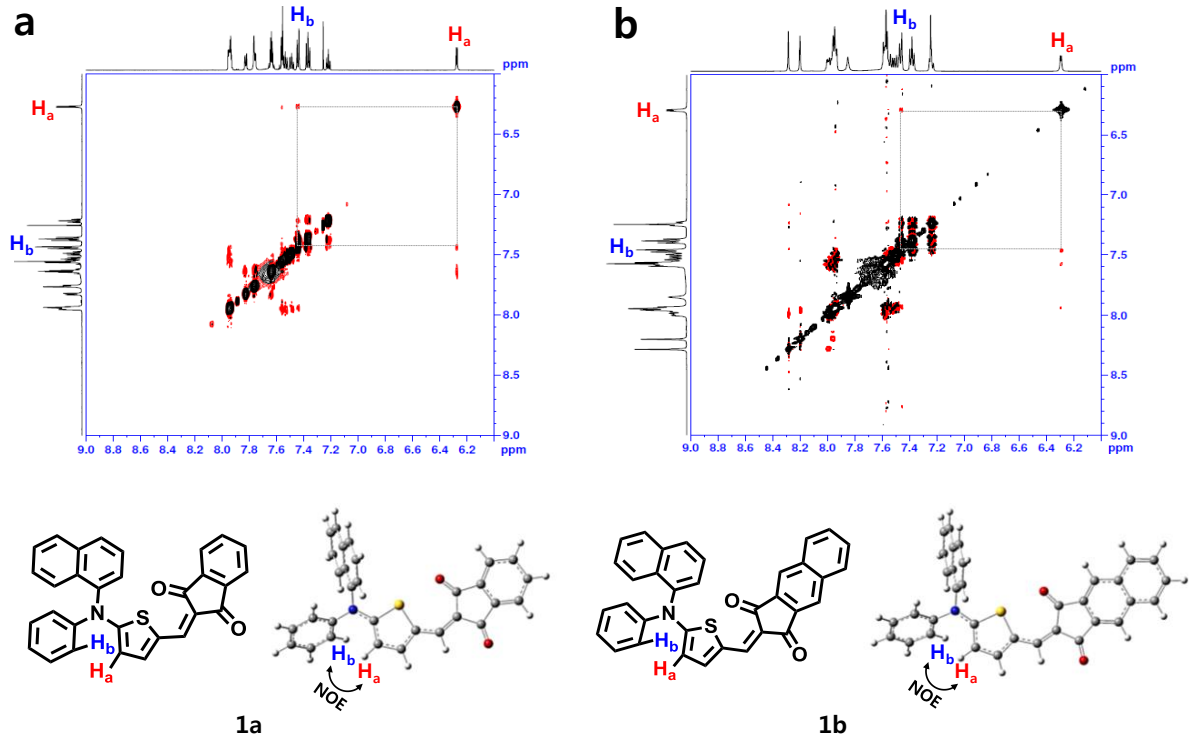

Fig. S1 Nuclear Overhauser effect spectroscopy (NOESY) spectra (600 MHz, $CDCl_3$) of **1a** (a) and **1b** (b). These spectra reveal that a proton of the thiophene moiety (H_a) shows an apparent NOE with one of the protons at the *ortho*-positions of the phenyl group (H_b) through space correlation.

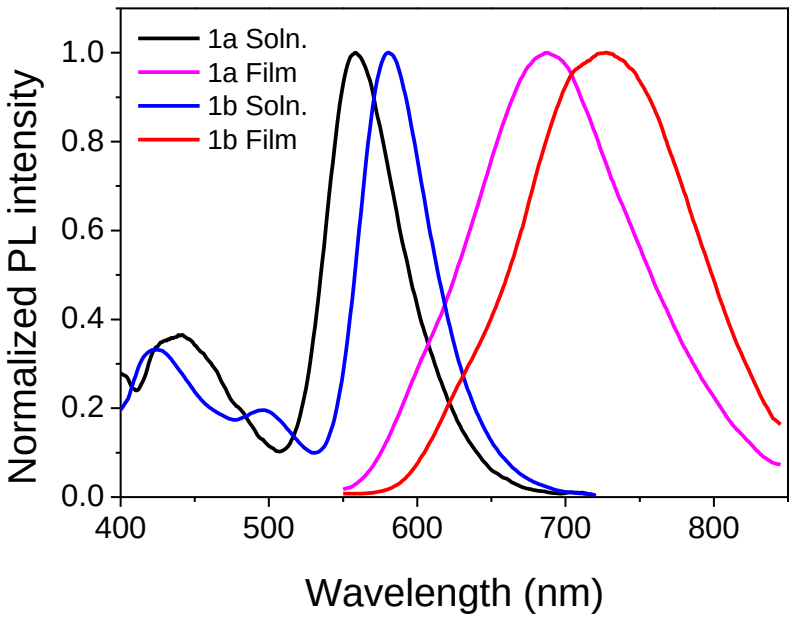

Fig. S2 Normalized photoluminescence (PL) spectra of **1a** (black line) and **1b** (blue line) dissolved in toluene solutions and of **1a** (magenta line) and **1b** (red line) in thermally-evaporated thin films.

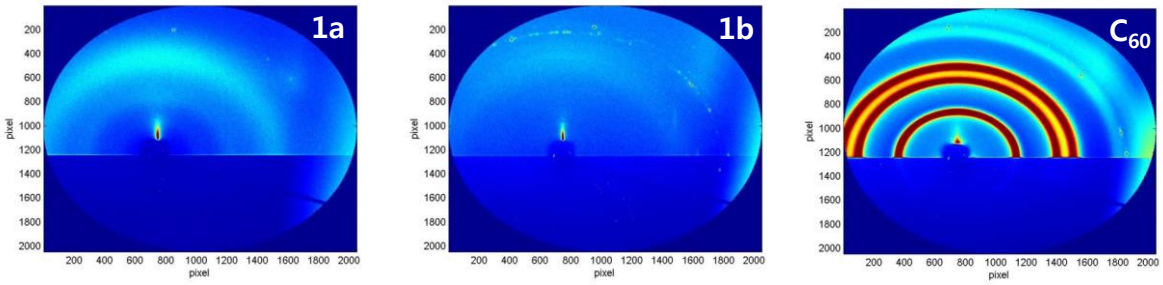

Fig. S3 GIWAXS spectra of **1a**, **1b**, and C_{60} single thin films.

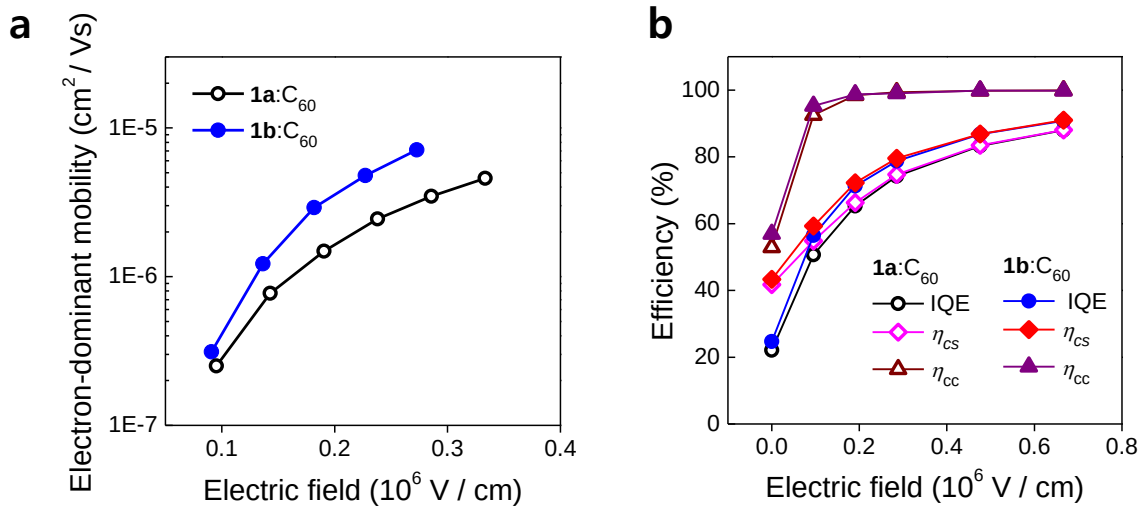

Fig. S4 (a) Electron-dominant mobility changes as a function of electric fields. (b) IQE, charge separation efficiency (η_{cs}), and charge collection efficiency (η_{cc}) changes as a function of electric fields. The η_{cc} was evaluated by using the expression EQE = *absorptance* (η_A) × $IQE = \eta_A \times \eta_{cs} \times \eta_{cc}$.

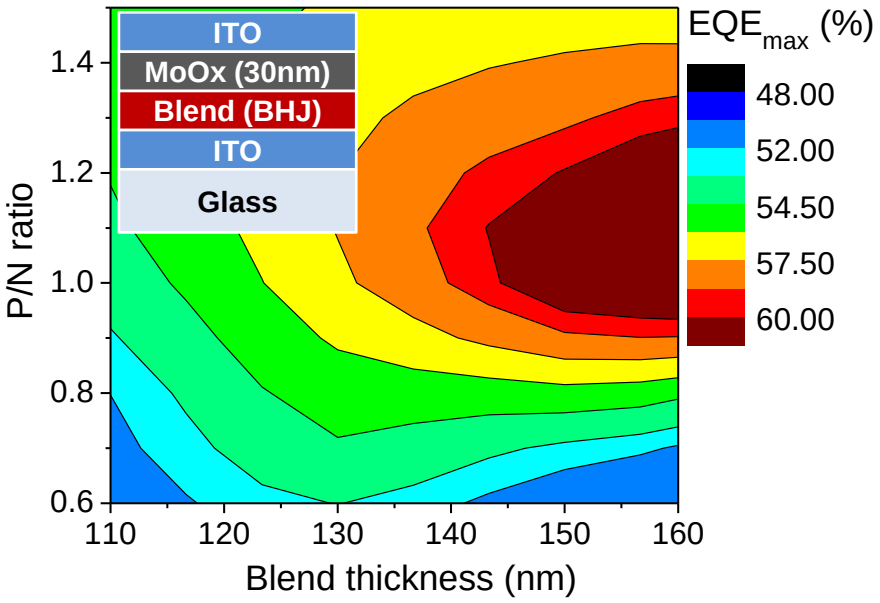

Fig. S5 Maximum EQEs of inverted-structure green-light-selective OPDs with the BHJs (**1b**:C_{60}) of various thicknesses and mixing ratios. Inset shows the device structure.

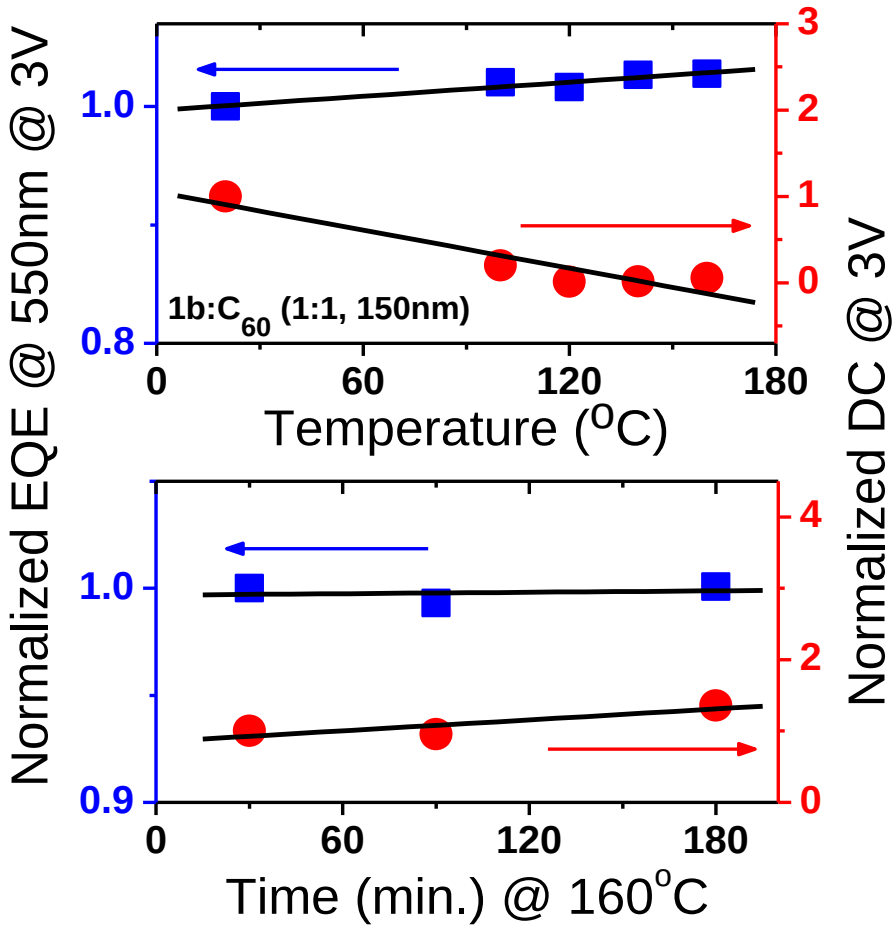

Fig. S6 Thermal stability evaluated by the changes in the EQEs and DCs with elevating temperatures of up to 160 ℃ for 30 min at each temperature (up-hand), in which a 2.8% increase in the EQE_{max} (62.66%) and a 94.3% drop in the DC (6 e/s/μm^2) were finally revealed at the reverse bias of 3 V, and with increasing annealing times of up to 180 min (3 hours) at the 160 ℃ (down-hand), in which the enhanced EQE value remained constant regardless of the thermal stresses only with a 33.3% increase in the DC (8 e/s/μm^2) under the reverse bias of 3 V.