Electronic Supplementary Information for

Mixed interlayers at the interface between PEDOT:PSS and conjugated polymers provide charge transport control



Fig. 1 a) Contact angle vs heat treatment temperature for PEDOT:PSS surfaces that were pre-treated as described in section 2 with various polymers. b) Calculated surface fraction coverage of the interlayer polymer vs. annealing temperature.



Fig. 2 X-ray photoelectron spectroscopy of P3HT and F8BT on PEDOT:PSS with fits to the spectra. All spectra are color coded and marked in the legend.



Fig. 3 X-ray photoelectron spectroscopy of P3HT, APFO-3 and F8BT on ITO (black) and ITO/PEDOT:PSS substrates (red, green, blue, respectively) showing the (top) Carbon K-edge and (bottom) Oxygen K-edge (O spectrum for ITO not shown).



Fig. 4 UV–vis (symbols) and fluorescence (lines) data for solution (red) and film (black) samples of a) P3HT, b) APFO–3, and c) F8BT.

We also measured the fluorescence spectra of each polymer. The fluorescence emission energy edge gives the lowest binding energy for an exciton.¹ Any states of lower energy are therefore induced by chemical traps, defects, or from interaction with a substrate.^{2,3} The fluorescence energy edge ECT (fluorescence) is listed in Table 1 and the spectra are shown in supplemental information Fig. 4.

References

1 K. Vandewal, K. Tvingstedt, A. Gadisa, O. Inganas and J. V. Manca, Nature Materials, 2009, 8, 904-909.

2 F. E. Osterloh, M. A. Holmes, L. Chang, A. J. Moule and J. Zhao, Journal of Physical Chemistry C, 2013, 117, 26905–26913.

3 F. E. Osterloh, M. A. Holmes, J. Zhao, L. Chang, S. Kawula, J. D. Roehling and A. J. Moule, *Journal of Physical Chemistry C*, 2014, **118**, 14723–14731.