Supplementary Information

for

Understanding Marangoni Flow-Driven Solidification of Polymer Semiconducting Films on an Aqueous Substrate

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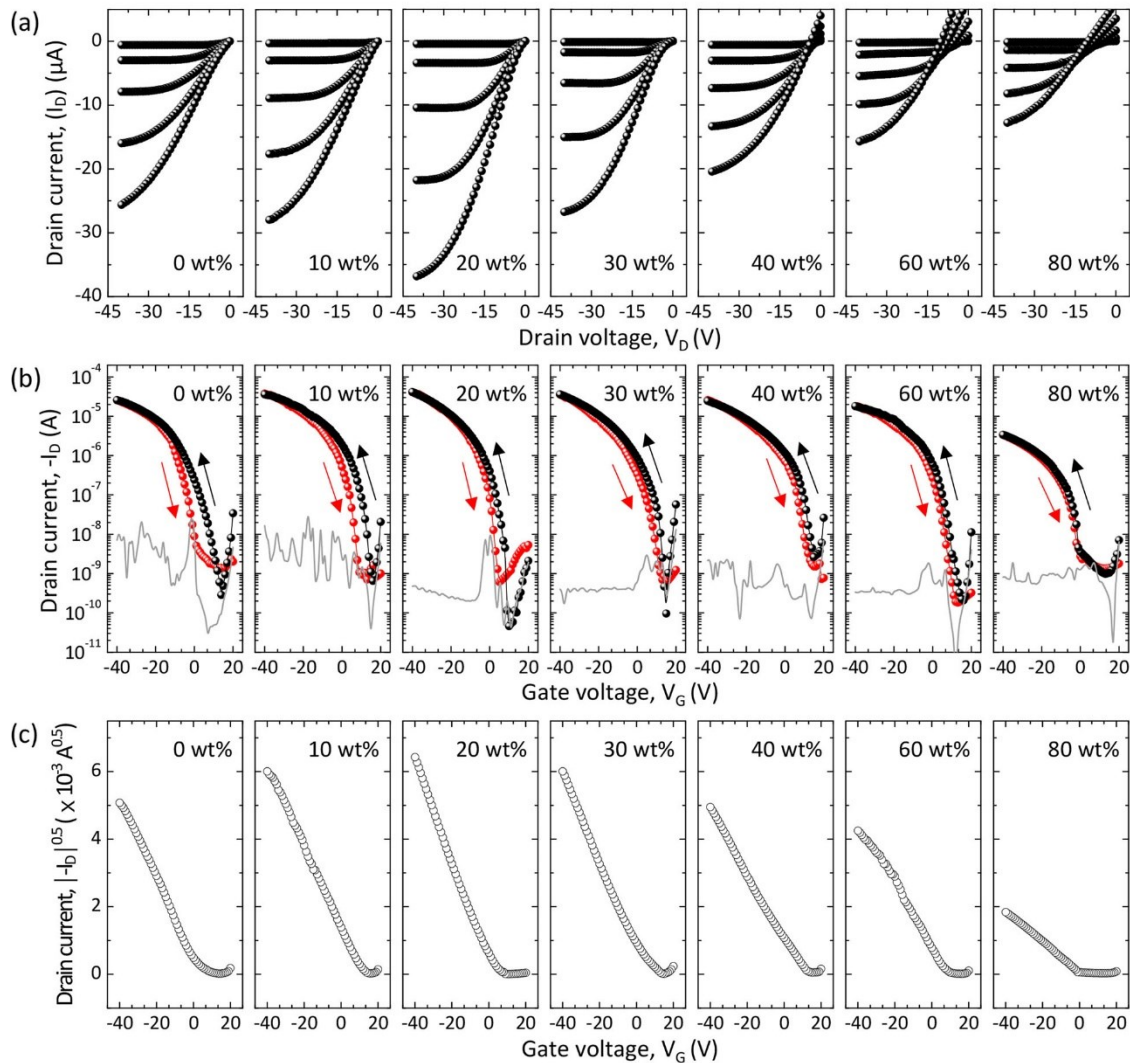
Figure S1. **(a)** Output and **(b)** transfer characteristics of the PTDPP OFET devices fabricated by applying the UST process for various EtOH concentrations in the base media. The output characteristics of each FET were measured using a stepped V_G of –10 V, and transfer characteristics were measured at a fixed V_D of – 40 V. **(c)** $|-I_D|^{0.5}-V_G$ curves were used to extract the μ_{FET} and V_{th} values from the transfer characteristics of the PTDPP OFET devices fabricated using the UST process for various EtOH concentrations.
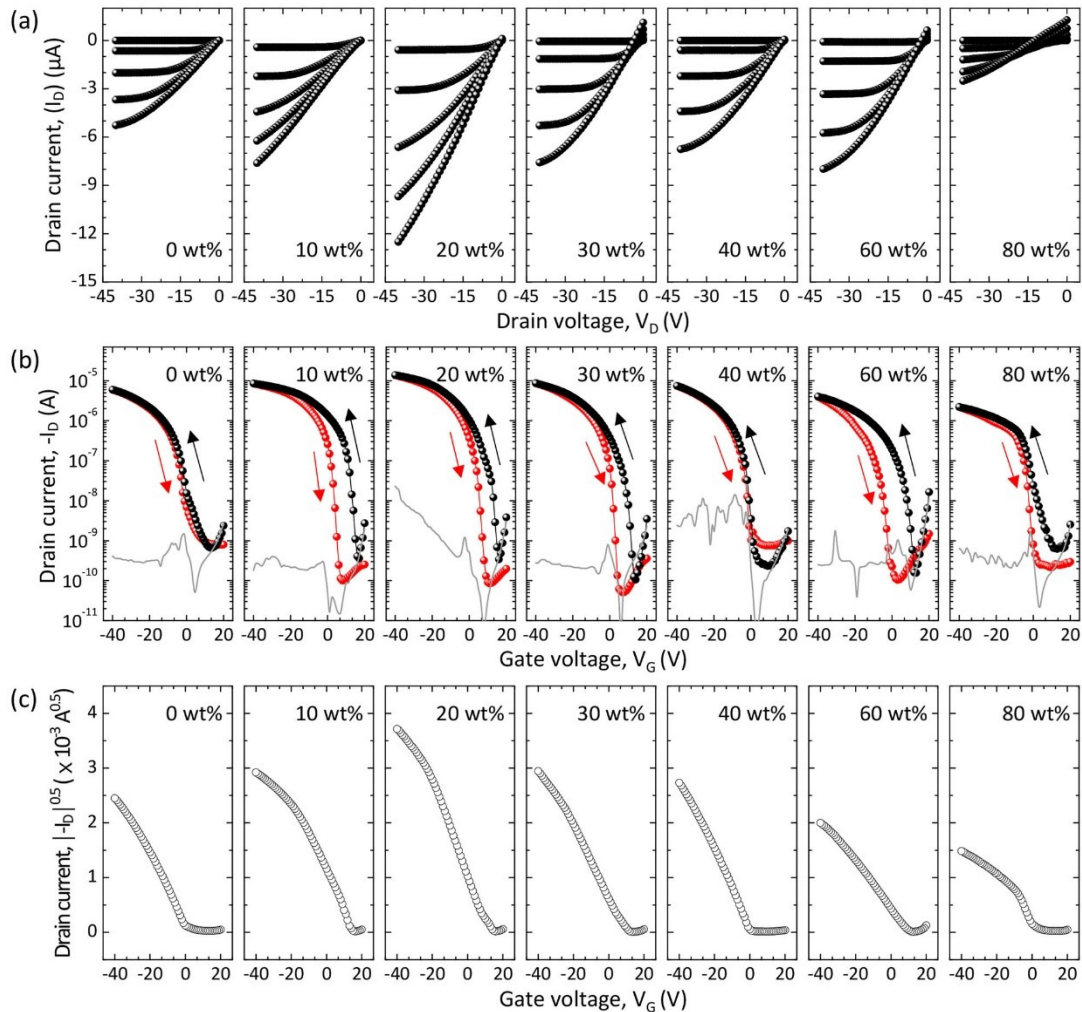
Figure S2. **(a)** Output and **(b)** transfer characteristics of PTDPP OFET devices fabricated by applying the BST process as a function of the EtOH concentration. The output characteristics of each FET were measured using a stepped V_G of –10 V, and the transfer characteristics were measured at a fixed V_D of – 40 V. **(c)** $|\text{-}I_D|^{0.5}$–V_G curves were used to extract the μ_{FET} and V_{th} values from the transfer characteristics of the PTDPP OFET devices fabricated using the BST process as a function of the EtOH concentration.
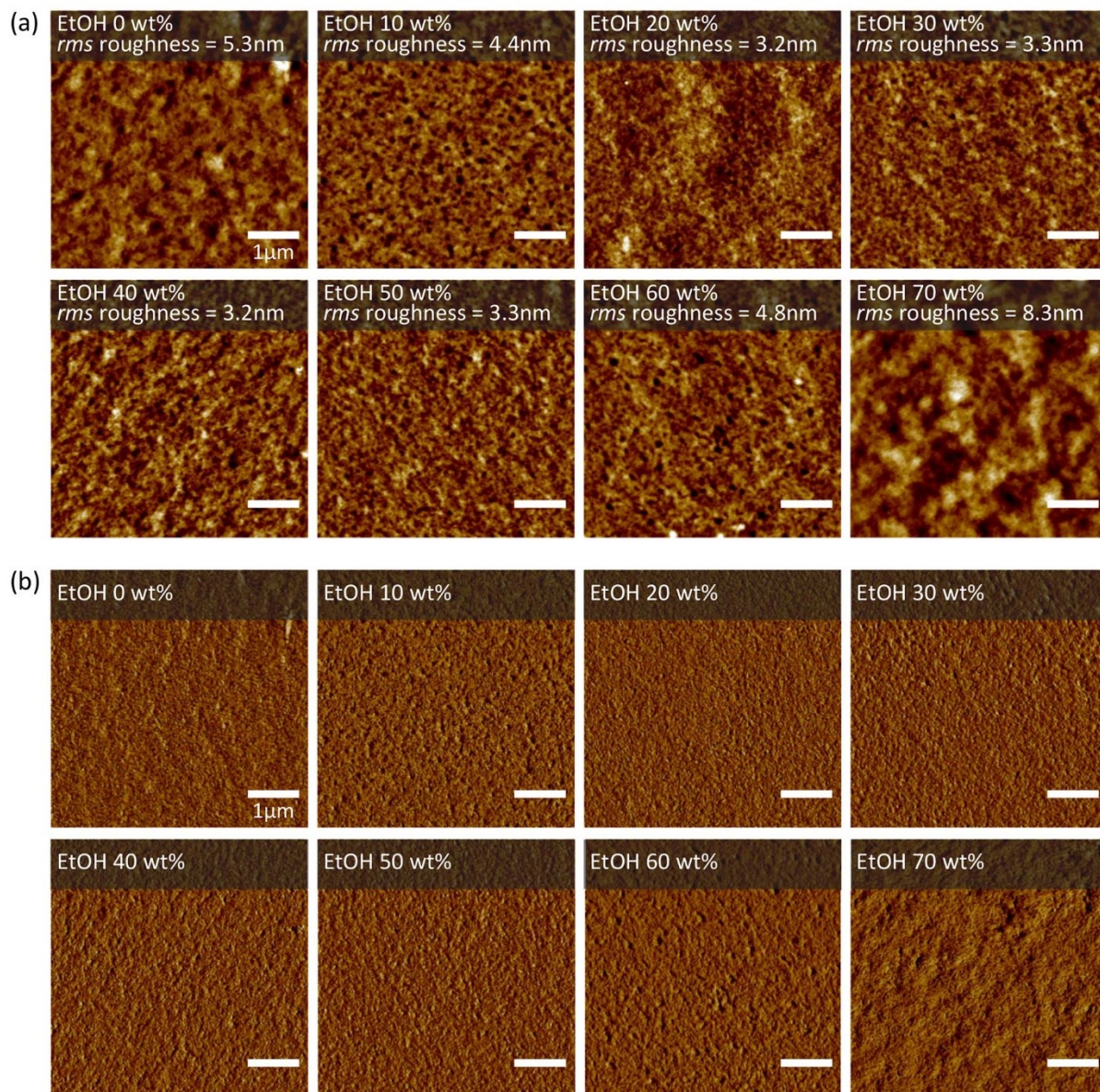
Figure S3. AFM morphologies of the PTDPP films prepared using the BST process as a function of the EtOH concentration: **(a)** height and **(b)** phase mode images of the PTDPP films. All scale bars indicate 1 μm.
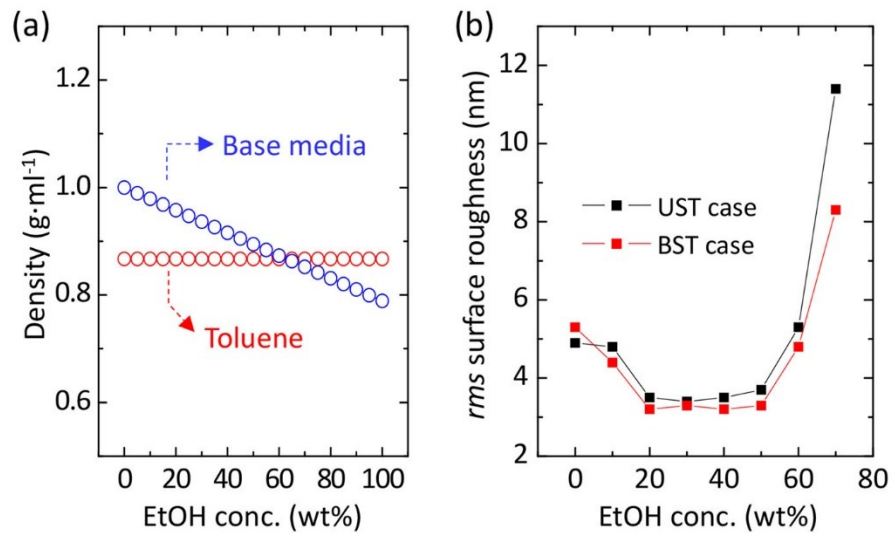
Figure S4. **(a)** Density of toluene and the base media as a function of the EtOH content. **(b)** Variations in the *rms* surface roughness values of the PTDPP films prepared using the UST and BST processes.
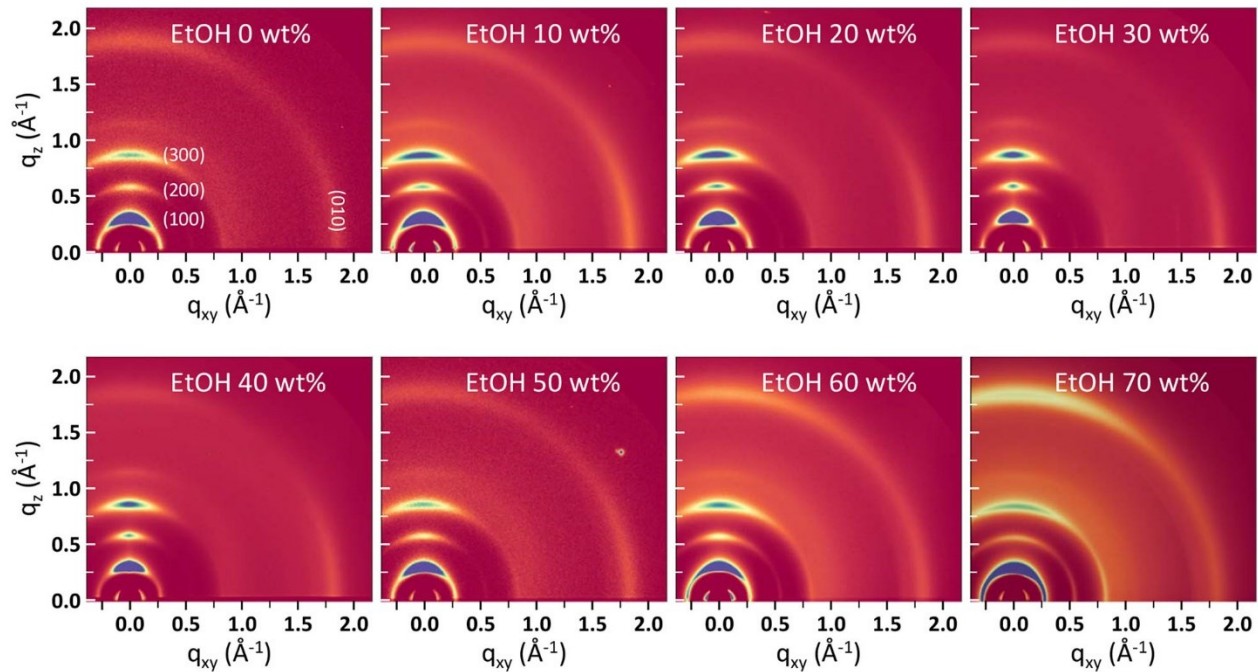
Figure S5. 2D GIXD patterns obtained from PTDPP DI-CN2 films prepared using the BST process at various EtOH concentrations.

Table S1. Summary of the PTDPP OFET performances prepared using the UST and BST processes with various EtOH concentrations.

UST case										
EtOH wt%	0	5	10	20	30	40	50	60	70	80
μ_{FET} (cm^{2}V^{-1}s^{-1})	0.21	0.21	0.29	0.36	0.28	0.17	0.12	0.094	0.075	0.039
Standard deviation of μ_{FET} (cm^{2}V^{-1}s^{-1})	0.038	0.051	0.063	0.087	0.074	0.066	0.059	0.041	0.025	0.030
BST case										
EtOH wt%	0	5	10	20	30	40	50	60	70	80
μ_{FET} (cm^{2}V^{-1}s^{-1})	0.017	0.038	0.026	0.034	0.028	0.021	0.026	0.030	0.040	0.015
Standard deviation of μ_{FET} (cm^{2}V^{-1}s^{-1})	0.011	0.023	0.023	0.033	0.024	0.018	0.030	0.030	0.031	0.025