

Supporting Information

High Performance Nonvolatile Transistor Memories of Pentacene Using the Electrets of Star-branched P-type Polymers and Their Donor/Acceptor Blends

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Table S1. Summary of the capacitance and dielectric constant of various substrates.

	Film thickness (nm)	$C_{\text{poly,ave}}$ (nF/cm ²)	Dielectric constant	$C_{\text{Total,ave}}$ (nF/cm ²)
P(StFl) ₁	49.25	68.04	3.62	22.89
P(StFl) ₃	47.10	64.69	3.44	22.50
P(StFl) ₄	50.10	57.87	3.28	21.61

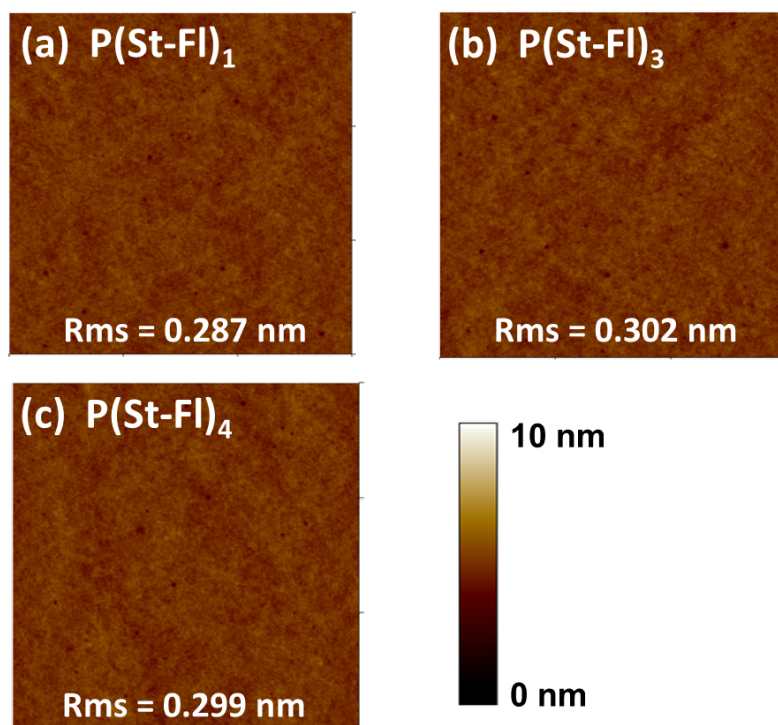


Figure S1. AFM topographies of (a) P(StFl)₁, (b)P(StFl)₃ and (c) P(StFl)₄ spin-coated on bare SiO₂ substrates on 1.5μm x 1.5μm areas.

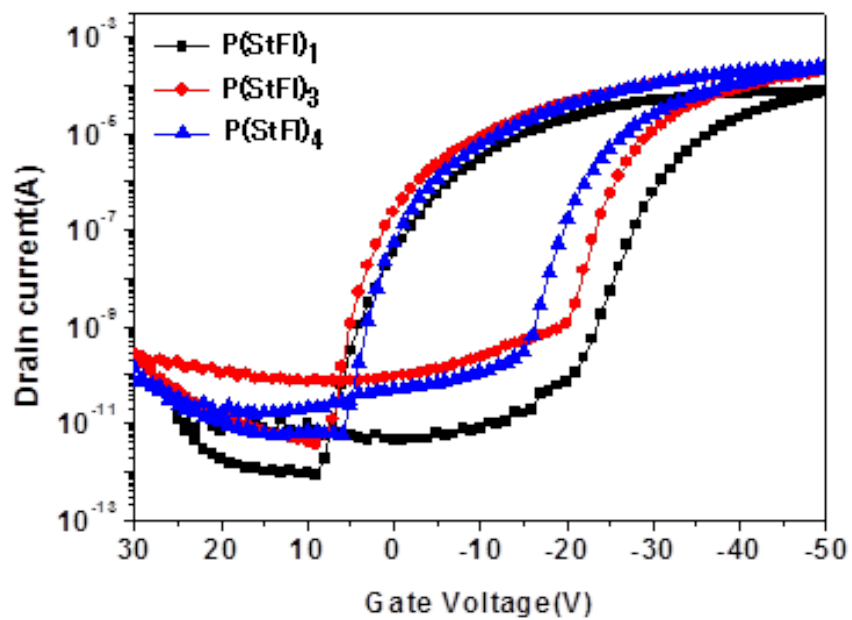


Figure S2. Sequential dual gate voltage sweeps of P(StFI)_n from 30 to -50 V after writing process (50 V, 1s).

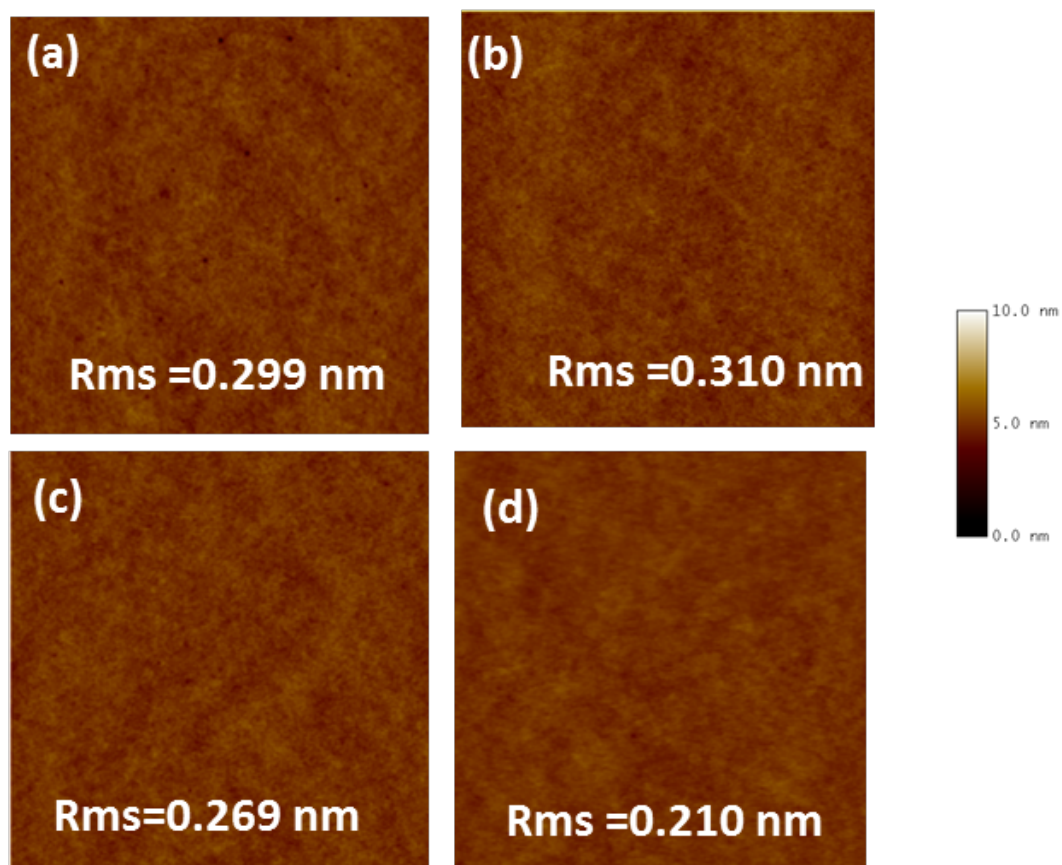


Figure S3. AFM topographies of (a) P(StFl)₄, (b) 1% PC₆₁BM/P(StFl)₄, (c) 3% PC₆₁BM/P(StFl)₄, and (d) 5% PC₆₁BM/P(StFl)₄ spin-coated on bare SiO₂ substrates on 3 μm x 3 μm areas.

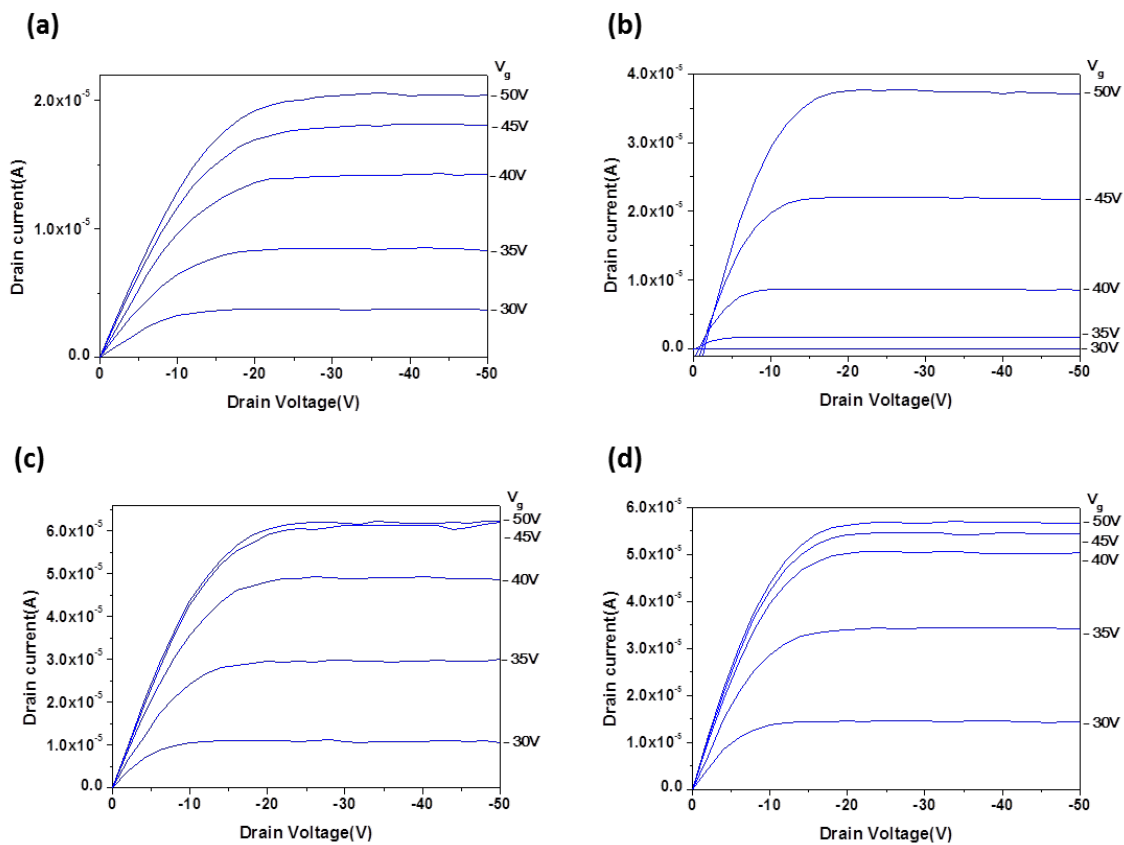


Figure S4. Output characteristics of pentacene OFET memory devices using the electrets of

(a) P(StFl)₄, (b) 1% PC₆₁BM/P(StFl)₄, (c) 3% PC₆₁BM/P(StFl)₄, and (d) 5%

PC₆₁BM/P(StFl)₄.

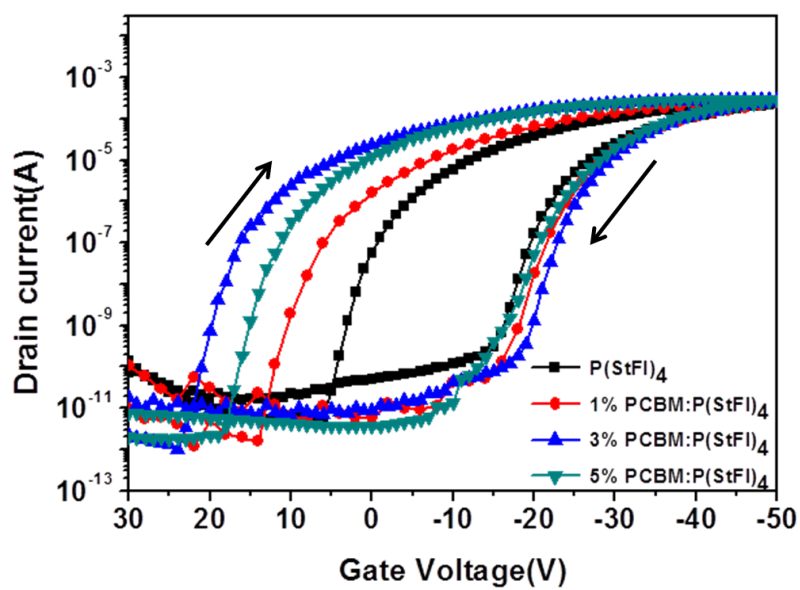


Figure S5. Sequential dual gate voltage sweeps of P(StFl)₄ and their blends from 30 to -35 V after writing process (50 V, 1s).

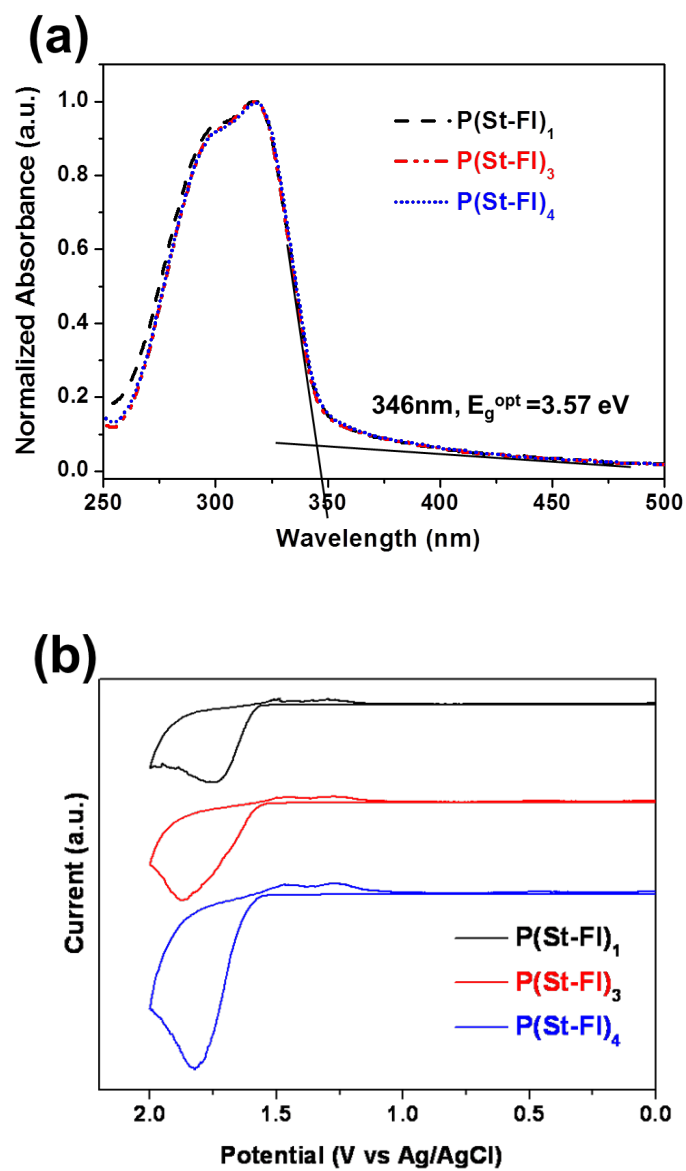


Figure S6. (a) Optical absorption spectra of the P(StFI)_n (n=1,3,4) thin films. (b) Cyclic voltammograms of P(StFI)_n (n=1,3,4) in 0.1 M TBAP/acetonitrile solution.

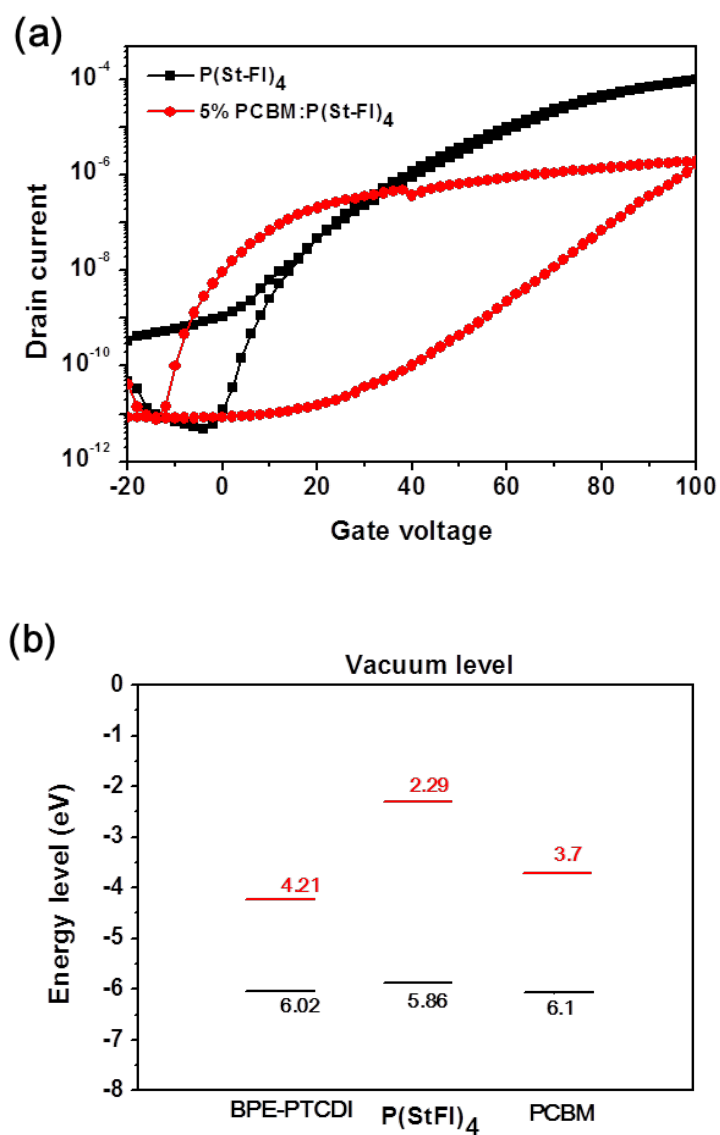


Figure S7. (a) Transfer curve in the initial state of the BPE-PTCDI-based OFET memory device with $P(\text{StFI})_4$ dielectric as compared with the PC_{61}BM blends. (b) Energy-band diagram of BPE-PTCDI, polymer $P(\text{StFI})_4$, and PC_{61}BM .