Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Electronic Supplementary Information

Low voltage, low cost, flexible and balanced ambipolar OFETs based on Br_2PTCDI-C18/CuPc fabricated on Al foil gate substrates with good ambient stability

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1. Leakage Current and Capacitance curves of MIM structures

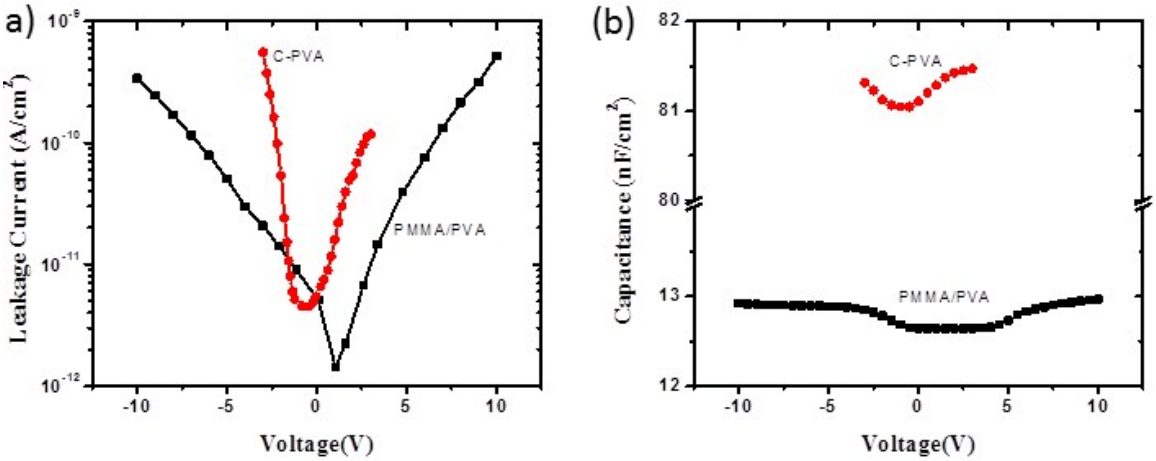

Figure S1. (a) I-V characteristics of bilayer polymer (PMMA/PVA) dielectrics and cross-linked PVA (C-PVA) dielectric materials. (b) Capacitance of polymer dielectrics films. Measurements were carried out at 100 kHz.

2. Table S1. Summary of the electrical parameters of the PMMA/PVA dielectric based organic field effect transistor measured under vacuum conditions.

Device	V_{DS}	μ(cm²/Vs)	V_{Th}(V)	S(V/dec)	$I_{on/off}$ ×10
n-type	10	8.8×10^{-5}	-7.25	8.52	1
	8	2.6×10^{-3}	-2.01	5.02	1
	6	1.2×10^{-2}	1.11	3.14	2
	4	2.5×10^{-3}	0.66	1.01	2
p-type	-10	2.7×10^{-3}	-4.98	6.75	~1
	-8	3.4×10^{-3}	-3.64	3.13	~1
	-6	5.5×10^{-3}	-2.52	2.25	1.5
	-4	7.3×10^{-3}	0.85	1.21	1.5

3. Dual sweep transfer characteristics of the OFET using PMMA/PVA dielectric

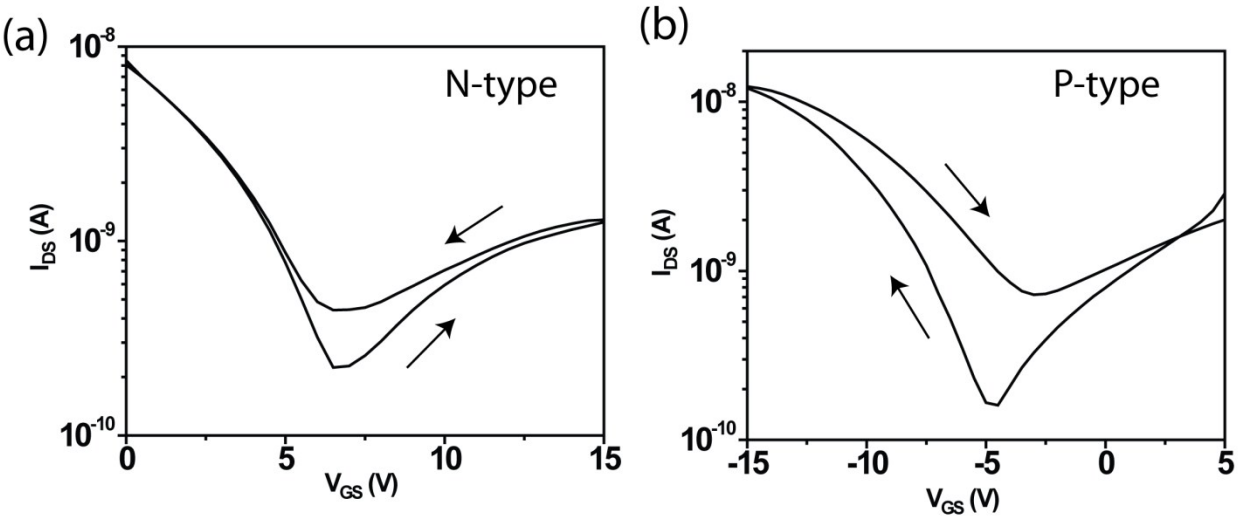

Figure S2. Dual sweep transfer characteristics of the ambipolar device fabricated using PMMA/PVA as the dielectric material (a) n-type (b) p-type measured under vacuum conditions.

4. Long term stability of the PMMA/PVA dielectric based OFET in vacuum conditions

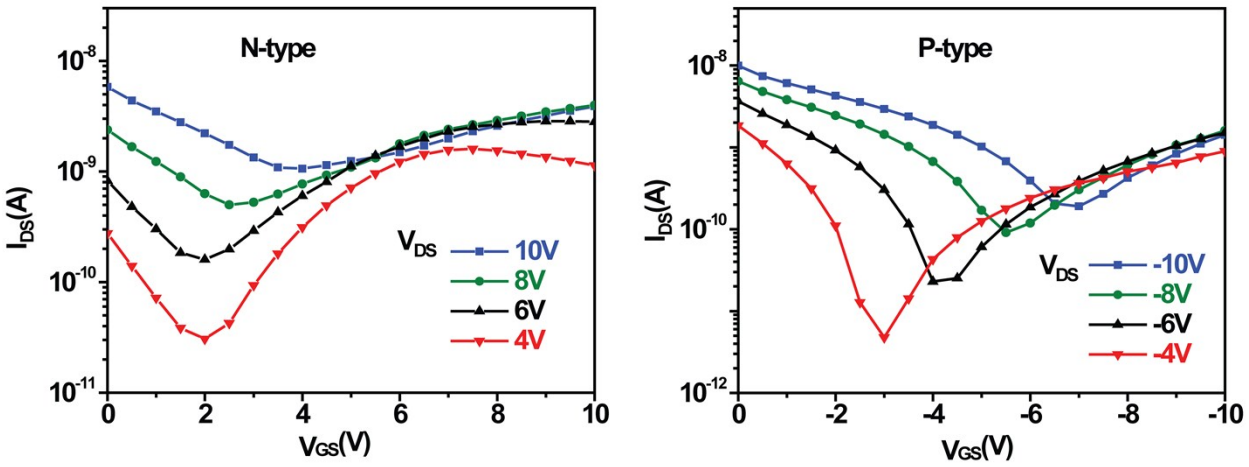

Figure S3. Transfer characteristics of the ambipolar device fabricated using PMMA/PVA as the dielectric material (c) n-type (d) p-type measured after 8 months under vacuum conditions.

5. Table S2. Summary of the electrical parameters of the PMMA/PVA dielectric based organic field effect transistor measured under humidity conditions.

Device	V_{DS}	μ(cm^2/Vs)	V_{Th}(V)	S(V/dec)	$I_{on/off}\times10^3$
n-type	10	5.4×10^{-4}	-1	0.63	1.63
p-type	-10	2.1×10^{-3}	0.6	1.85	0.21

6. Table S3. Summary of the electrical parameters of the C-PVA dielectric based organic field effect transistor measured under vacuum conditions.

Device	V_{DS}	μ(cm^2/Vs)	V_{Th}(V)	S(V/dec)	$I_{on/off}\times10$
n-type	3	2.3×10^{-4}	0.35	1.60	1
	2	2.0×10^{-4}	0.75	0.81	2
p-type	-3	3.0×10^{-4}	-0.81	1.60	~1
	-2	3.4×10^{-4}	-1.62	0.82	1.5

7. Stability of C-PVA dielectric based Ambipolar organic field effect transistor in vacuum conditions

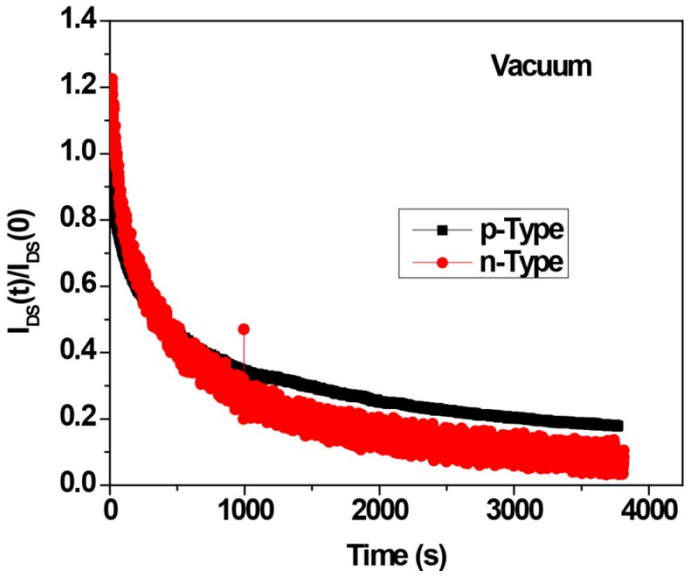

Figure S4. Time-dependent I_{DS} decay under a constant bias stress under vacuum conditions for the ambipolar organic field-effect transistors fabricated using C-PVA as the dielectric material. Both n-type and p-type transports measured for 1h.