## **Supporting Information**

## Phase Separation and Electric Performance of Bithienopyrroledione

## **Polymer Semiconductor Embedded in Insulating Polymer**

Linjing Tang, Pan He, Xiaolan Qiao, Qun Qian and Hongxiang Li



Figure S1. The HNMR spectrum of P1 in CDCl<sub>3</sub>



Figure S2 The transfer curves of homo- P1 film transistors at ambient condition with different thermal annealing temperatures.



Figure S3. The transfer curves of P1 / PMMA blend film transistors at ambient condition with different thermal annealing temperatures.



**Figure S4**. Water contact angle of (a) neat film, (b) blend film and (c) neat PMMA film.



Figure S5 Transfer and output curves of homo- P1 film transistors with BGBC device structure (thermal annealing at 120 °C).



**Figure S6** Transfer and output curves of **P1** / PMMA blend film transistors with BGBC device structure (thermal annealing at 120 <sup>o</sup>C).

Compound	Annealing temperature(°C)	Mobility (aver) <sup>a</sup>	Threshold	$I_{on}/I_{off}$
		$[cm^2V^{-1}s^{-1}]$	voltage [V]	
	As spun	0.02 (0.01)	-57	105
P1	80	0.26 (0.20)	-52	105
	120	0.48 (0.38)	-50	10 <sup>5</sup>
	160	0.14 (0.10)	-22	105
P1/PMMA	As spun	0.08 (0.05)	-32	104
	80	0.12 (0.09)	-24	105
	120	0.25 (0.20)	-26	10 <sup>5</sup>
	160	0.32 (0.29)	-23	105

Table S1 The transistor performance of homo-P1 film and P1 / PMMA blend film transistors at ambient condition.

<sup>a</sup> The average mobility was based on more than 20 devices.