

## Supporting information

### (*E*)-1,2-di(thiophen-2-yl)ethene based High Mobility Polymer for Efficient Photovoltaic devices without any Post Treatment

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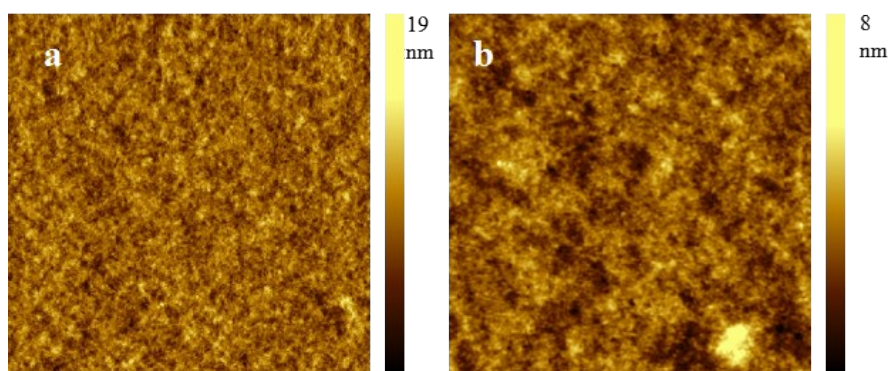


Figure S1 AFM topography of the PDT-DTBT-DT (a) and PTVT-DTBT-DT (b) films(scan size:  $5\ \mu\text{m} \times 5\ \mu\text{m}$ )

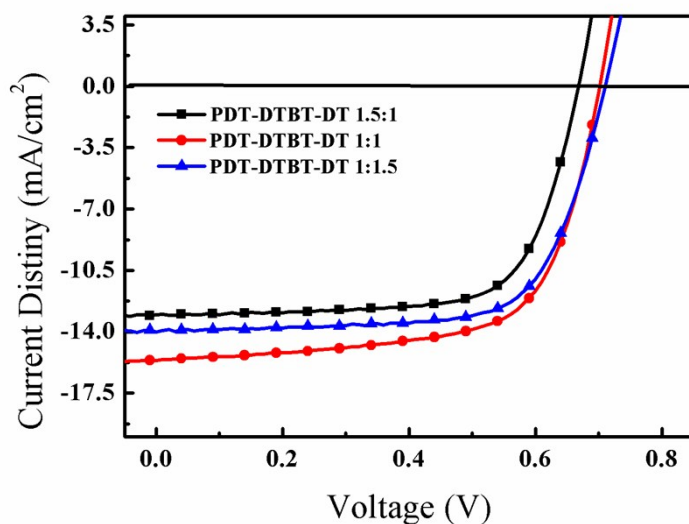


Figure S2 PSCs J-V curves based on PDT-DTBT-DT/PC<sub>71</sub>BM blends with different weight ratios.

Table S1 Photovoltaic Properties of PSCs Devices of PDT-DTBT-DT/PC<sub>71</sub>BM blends with different weight ratios

Polymer	Ratio	$V_{oc}$ (V)	$J_{sc}$ (mA/cm <sup>2</sup> )	FF (%)	PCE <sub>max</sub> /PCE <sub>ave</sub>
PDT-DTBT-DT	1.5:1	0.70	13.68	56.89	5.53/(5.22± 0.22)
	1:1	0.70	15.60	66.62	7.29/(7.09± 0.19)
	1:1.5	0.71	13.94	69.57	6.89/(6.69± 0.23)

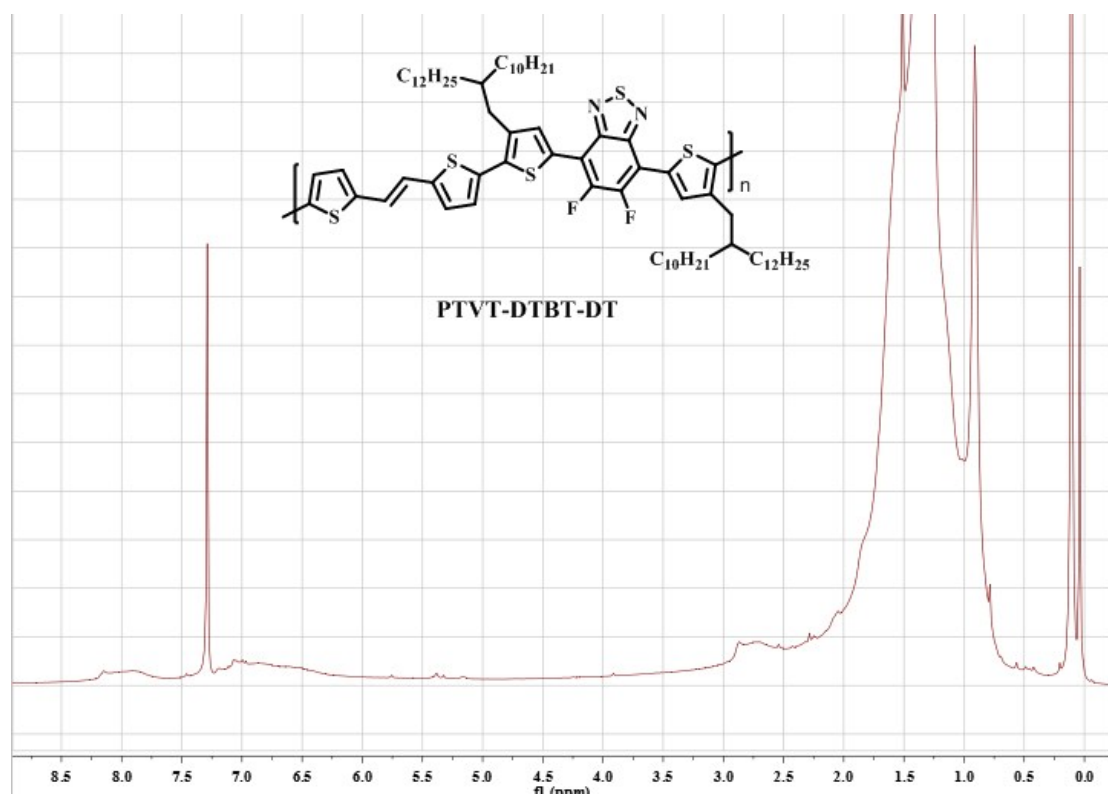


Figure S3 the  $^1\text{H}$  NMR spectrum of PTVT-DTBT-DT.

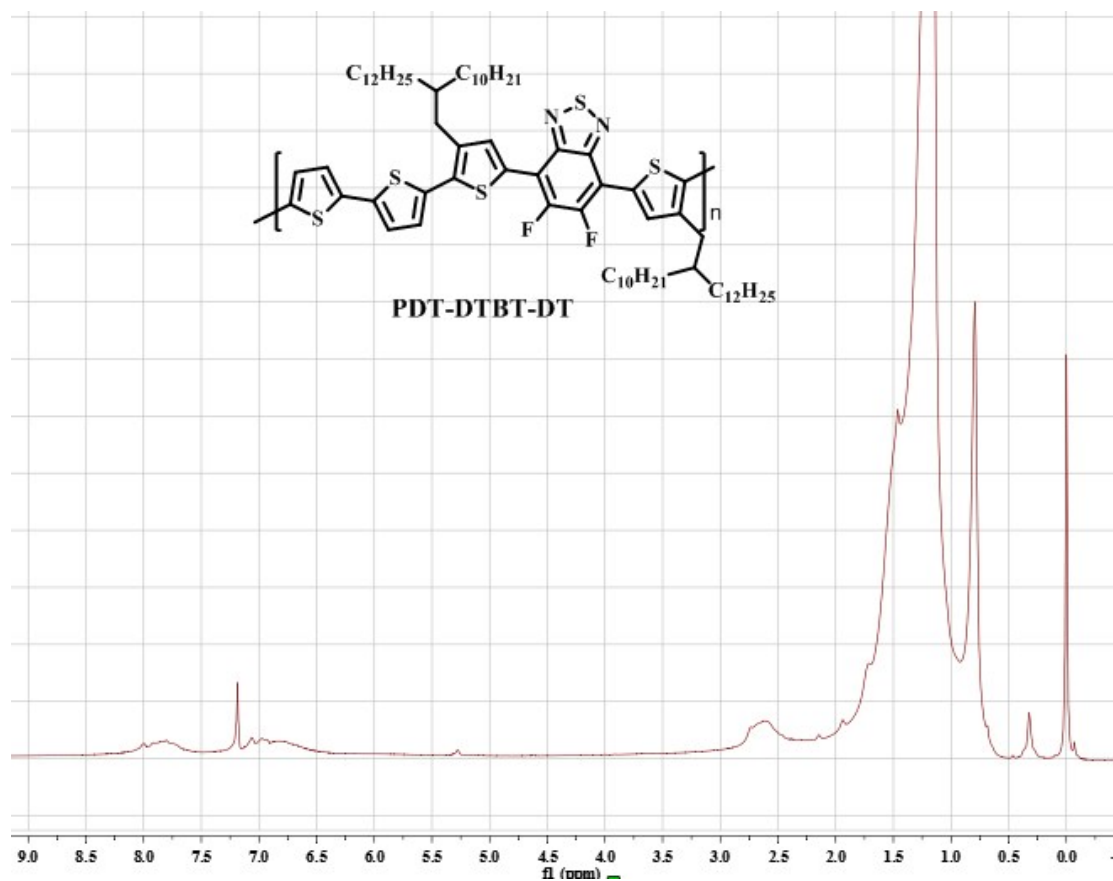


Figure S4 the <sup>1</sup>H NMR spectrum of PDT-DTBT-DT.