

## Supporting Information

### **Pyridine-based Electron Transporting Materials for Highly Efficient Organic Solar Cells**

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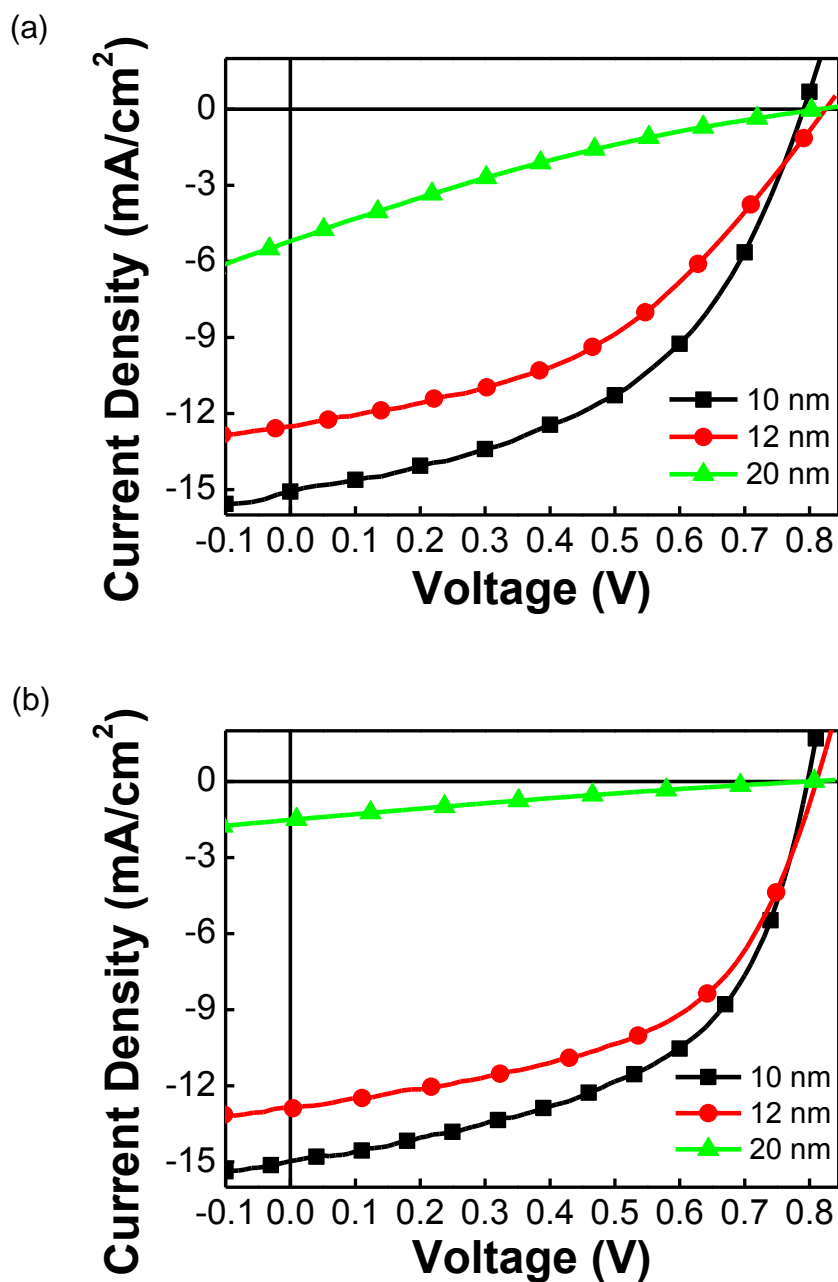
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#### **1. Effect of electron transporting layer thickness**

Fig. S1 shows the spectral mismatch corrected *J-V* characteristics of different BCP and TmPyPB thicknesses in the optimized device structure and the device performances are listed in Table S1.

**Table S1** Performance parameters of the devices.

Device type	ETL (thickness)	$J_{sc}$ (mA/cm <sup>2</sup> )	$V_{oc}$ (V)	FF	PCE (%)
	BCP (10 nm)	14.91 ± 0.17	0.78 ± 0.01	0.47 ± 0.01	5.6 ± 0.1
	BCP (12 nm)	12.35 ± 0.16	0.81 ± 0.01	0.42 ± 0.01	4.3 ± 0.1
DTDCTB:C <sub>70</sub>	BCP (20 nm)	5.15 ± 0.05	0.81 ± 0.01	0.18 ± 0.01	0.81 ± 0.01
(1:1.6)	TmPyPB (10 nm)	14.61 ± 0.36	0.79 ± 0.01	0.52 ± 0.01	6.1 ± 0.2
	TmPyPB (12 nm)	12.56 ± 0.32	0.81 ± 0.01	0.52 ± 0.01	5.4 ± 0.1
	TmPyPB (20 nm)	1.31 ± 0.20	0.79 ± 0.01	0.21 ± 0.01	0.23 ± 0.04



**Fig. S1** (a) Mismatch corrected  $J$ - $V$  characteristics (under 1 sun, AM 1.5G illumination) of the devices with the following structures: ITO/MoO<sub>3</sub> (5 nm)/DTDCTB (7 nm)/DTDCTB:C70 (1:1.6 by volume, 40 nm)/C70 (7 nm)/BCP (10, 12, 20 nm)/Ag (150 nm). (b) Mismatch corrected  $J$ - $V$  characteristics (under 1 sun, AM 1.5G illumination) of the devices with the following structures: ITO/MoO<sub>3</sub> (5 nm)/DTDCTB (7 nm)/DTDCTB:C70 (1:1.6 by volume, 40 nm)/C70 (7 nm)/TmPyPB (10, 12, 20 nm)/Ag (150 nm).