

Highly Efficient Polymer Solar Cells Employing Natural Chlorophyllin as a Cathode Interfacial Layer

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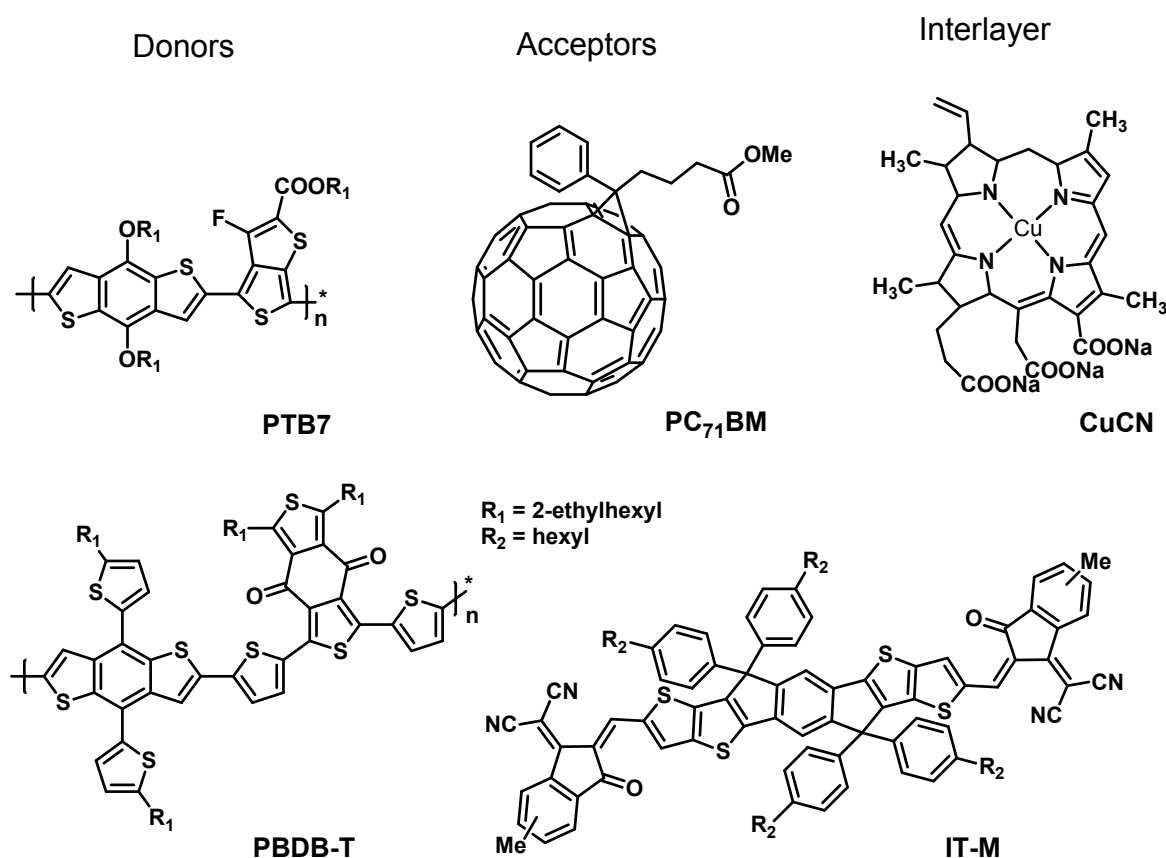


Figure S1 Molecular structure of PTB7, PC₇₁BM, PBDB-T, IT-M and CuCN.

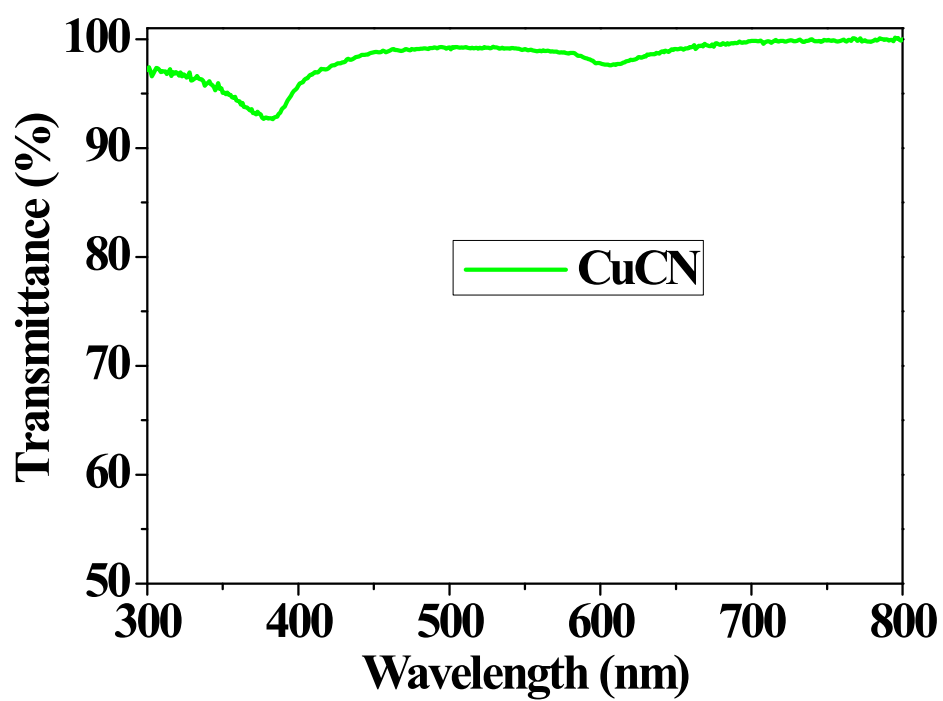


Figure S2 Transmittance spectrum of CuCN.

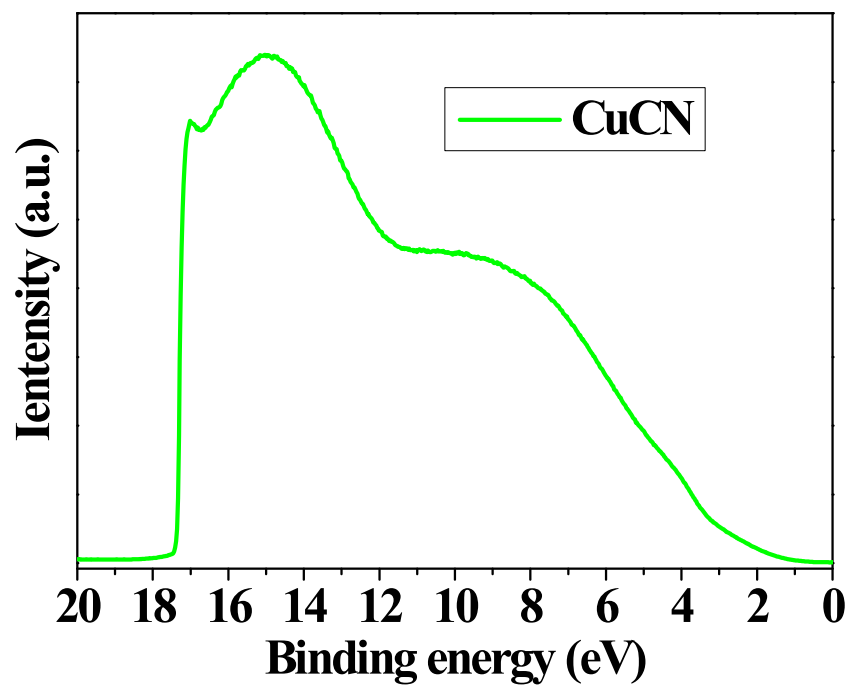


Figure S3 UPS spectrum of CuCN spin-coated on ITO substrate.

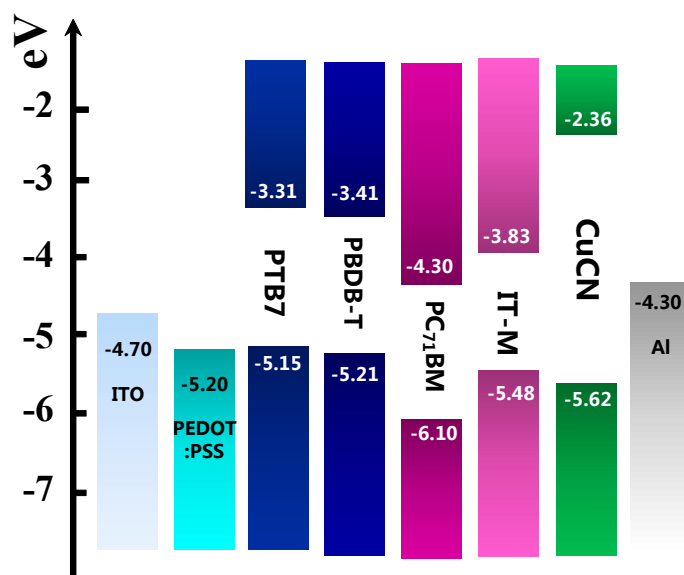


Figure S4 Energy levels of the PSCs.

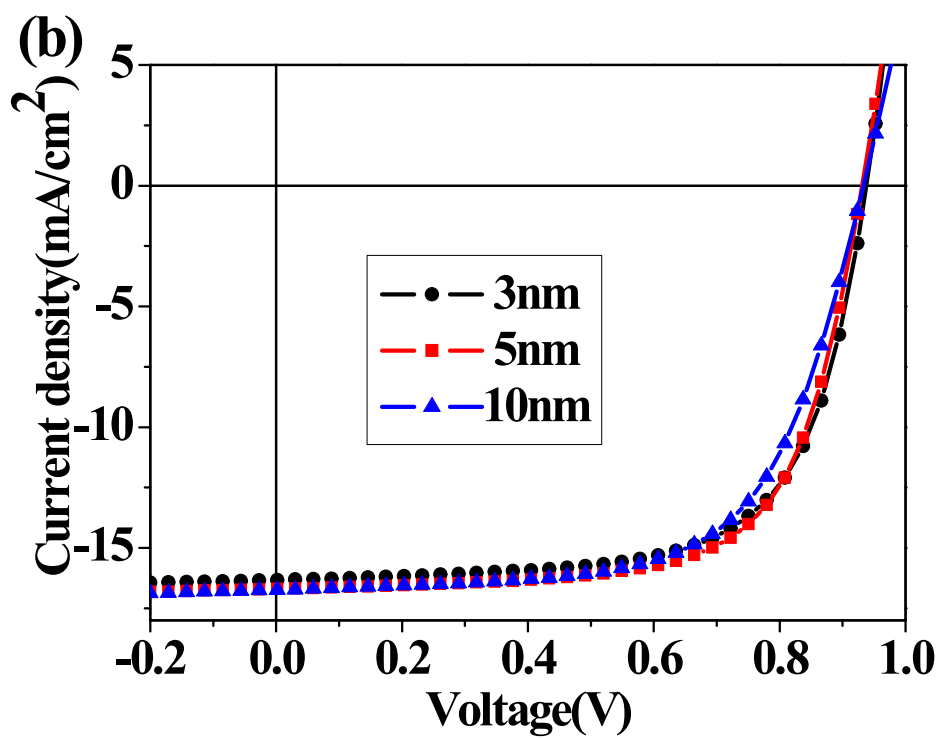
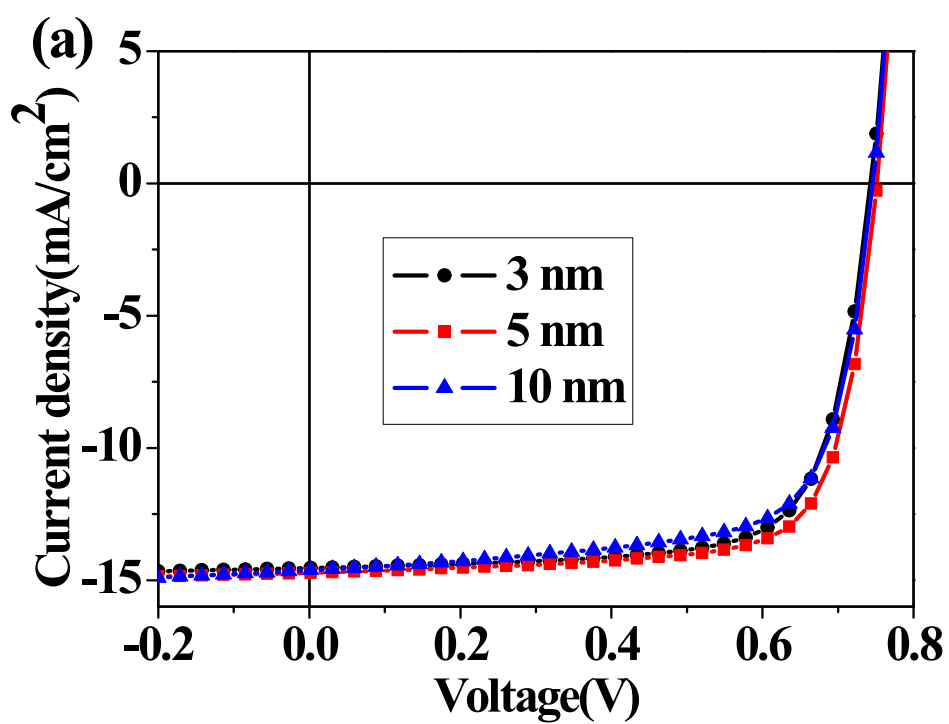


Figure S5 The J – V characteristics of PTB7-based (a) and PBDB-T based (b) PSCs with CuCN of different thickness.

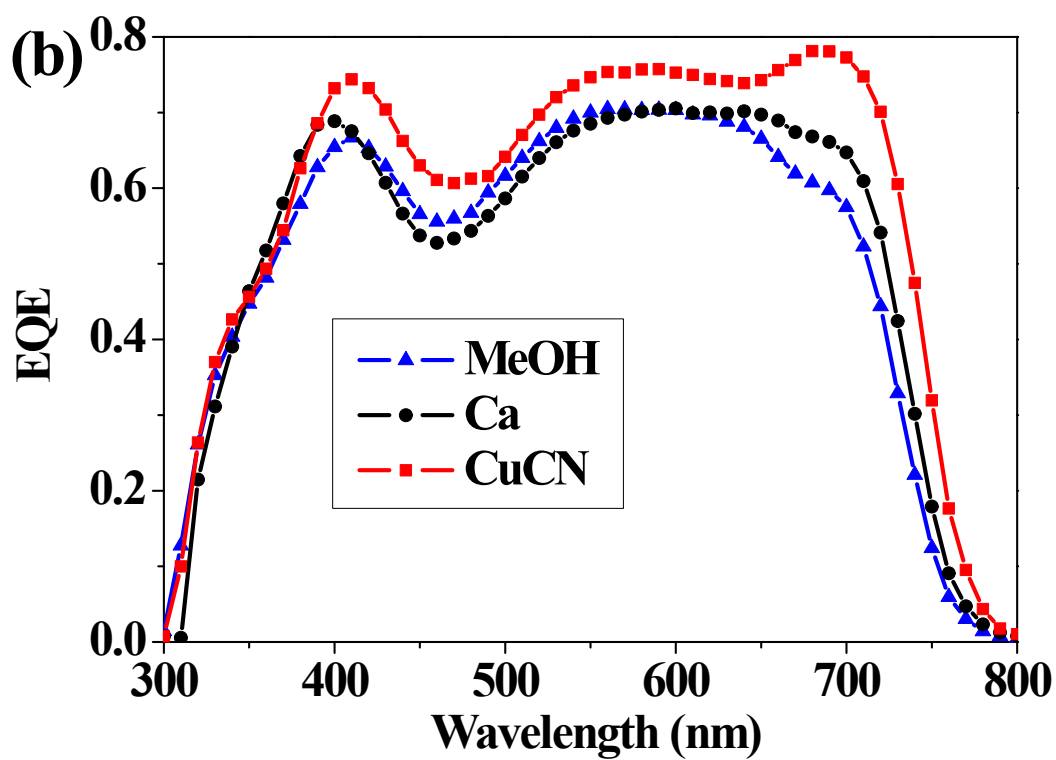
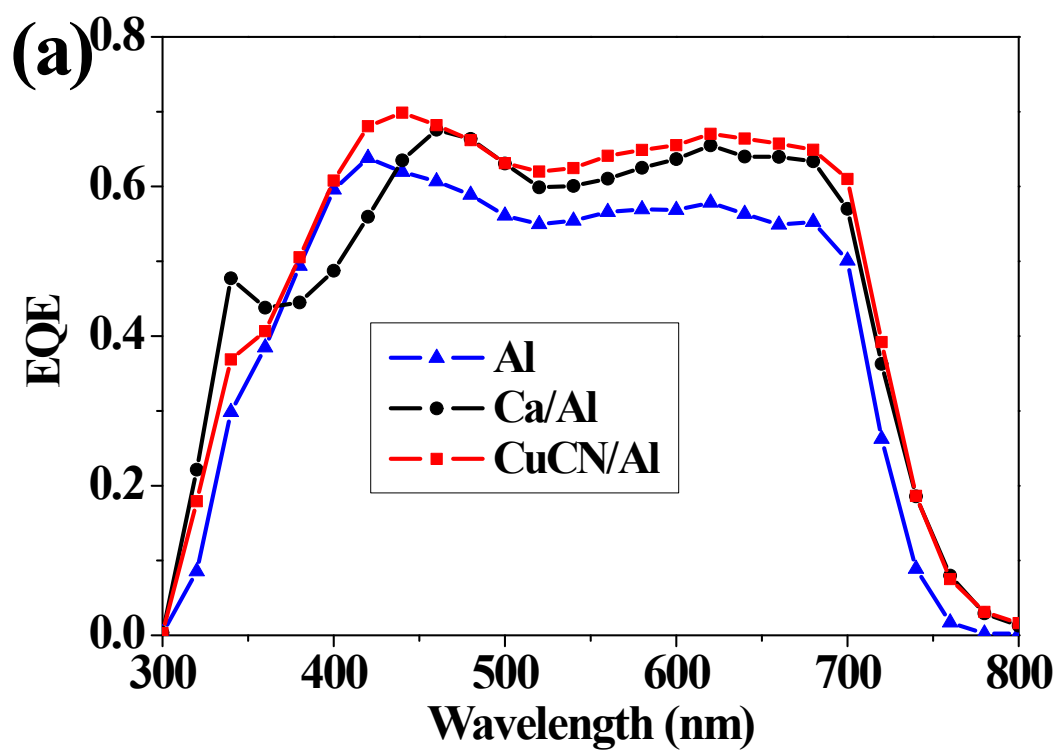


Figure S6 EQE spectra of PTB7 based (a) and PBDB-T based (b) PSCs with different cathodes.

Table S1 Photovoltaic performance of the fullerene based and non-fullerene based PSCs with different CuCN (x nm) thicknesses.

Donor	Thickness (nm)	V_{oc} (V)	J_{sc} (mA cm ⁻²)	FF (%)	PCE (%)	PCE (average %)
PTB7	3	0.75	14.49	73.12	7.92	7.78
	5	0.76	14.72	74.58	8.35	8.24
	10	0.75	14.58	70.79	7.72	7.65
PBDB-T	3	0.93	16.32	67.18	10.28	9.98
	5	0.93	16.69	67.91	10.55	10.32
	10	0.93	16.51	64.17	10.01	9.79

Table S2 Calculated J_{sc} of the fullerene based and non-fullerene based PSCs with diverse interfacial materials

Donor	CIL	J_{sc} (mA cm ⁻²)
PTB7	none	12.87
	Ca	13.79
	CuCN	14.43
PBDB-T	none	14.90
	Ca	14.81
	CuCN	16.07