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

Supporting Information
1.

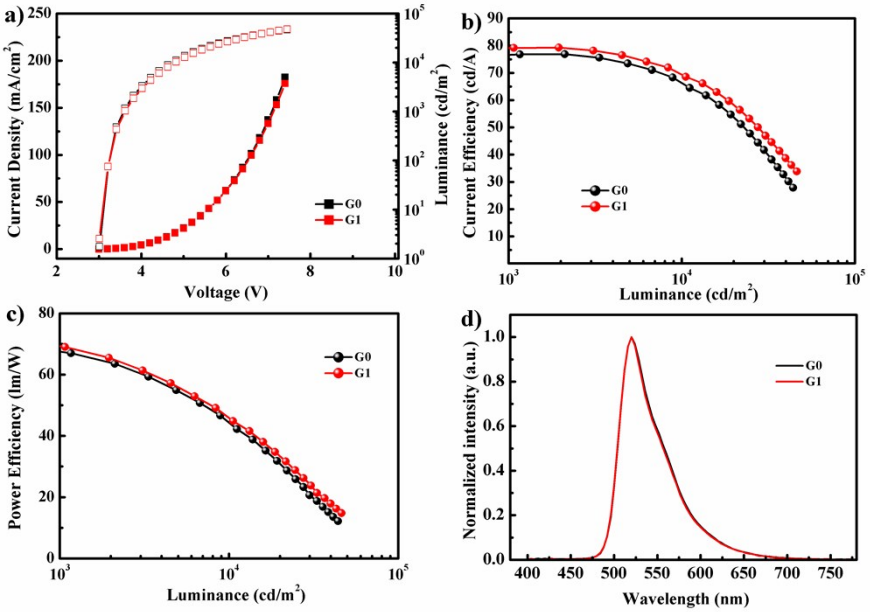

Figure S1 EL performance of the compared green phosphorescent OLEDs with $Ir(ppy)_2(acac)$ located at the interface of TCTA/26DCzPPy (G0) and BmPyPB (G1), respectively. a) Current density-voltage-luminance, b) Current efficiency-luminance, c) Power Efficiency-Luminance, and d) Normalized EL spectra of the comparable devices.

The device structures:

G_0: ITO (180 nm)/MoO_3 (10 nm)/MoO_3: TAPC (25%, 35 nm)/TAPC (10 nm)/TCTA (5 nm)/ $Ir(ppy)_2(acac)$ (0.2 nm)/26DCzPPy (2 nm)/BmPyPB (10 nm)/BmPyPB:Li_2CO_3 (3%, 25 nm)/Li_2CO_3 (1 nm) /Al (150 nm).

G_1: ITO (180 nm)/MoO_3 (10 nm)/MoO_3: TAPC (25%, 35 nm)/TAPC (10 nm)/TCTA (5 nm)/26DCzPPy (2 nm)/$Ir(ppy)_2(acac)$ (0.2 nm)/BmPyPB (10 nm)/BmPyPB:Li_2CO_3 (3%, 25 nm)/Li_2CO_3 (1 nm) /Al (150 nm).

2.

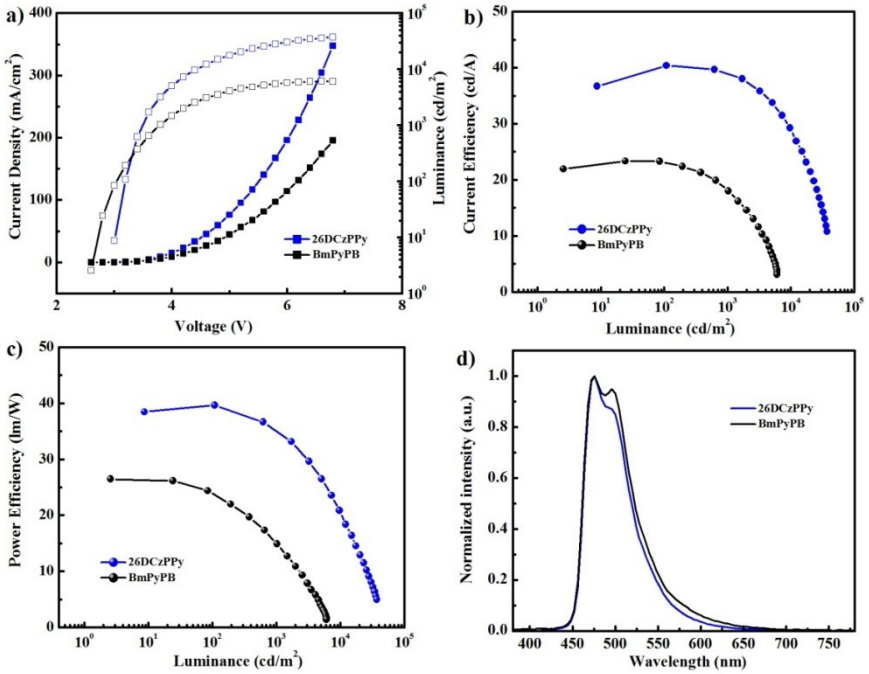

Figure S2 EL performance of the compared blue phosphorescent OLEDs with 26DCzPPy (blue solid line) and BmPyPB (black solid line) as exciton-donors to FIrpic, respectively. a) Current density-voltage-luminance, b) Current efficiency- luminance, c) Power Efficiency-Luminance, and d) Normalized EL spectra of the comparable devices.

The device structures:

ITO (180 nm)/MoO_3 (10 nm)/MoO_3: TAPC (25%, 35 nm)/TAPC (10 nm)/TCTA (5 nm)/FIrpic (0.4 nm)/26DCzPPy (2 nm) or BmPyPB (2 nm) /BmPyPB (10 nm) /BmPyPB: Li_2CO_3 (3%, 25 nm)/Li_2CO_3 (1 nm) /Al (150 nm).

3.

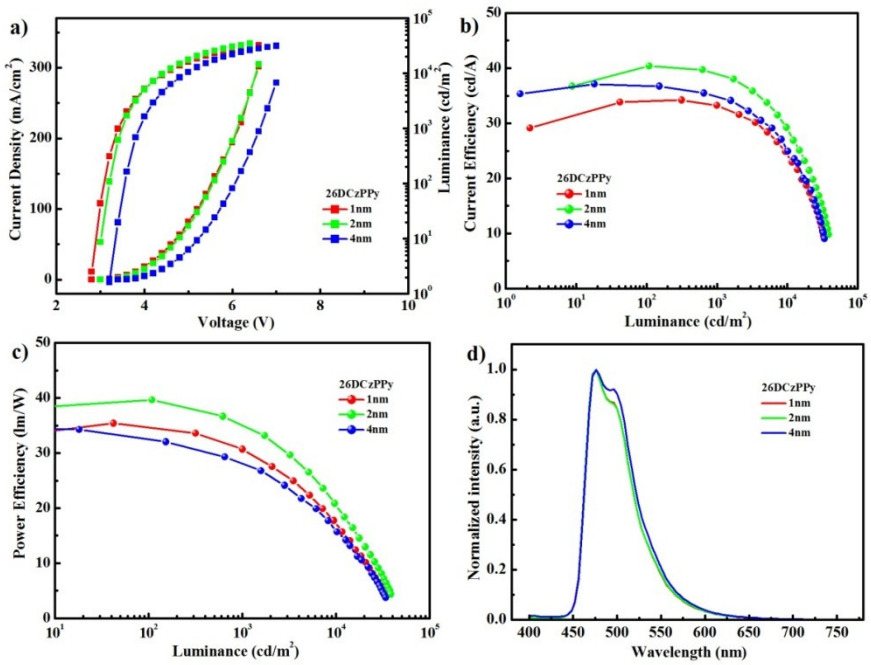

Figure S3 EL performance of the compared blue devices with different 26DCzPPy thicknesses. a) Current density-voltage-luminance, b) current efficiency-luminance, c) power efficiency-luminance, and d) normalized EL spectra of the three devices.

The device structures:

ITO (150 nm)/MoO_3 (10 nm)/MoO_3: TAPC (25%, 35 nm)/TAPC (10 nm)/TCTA (5 nm)/FIrpic (0.4 nm)/26DCzPPy (1, 2, 4 nm) /BmPyPB (10 nm) /BmPyPB: Li_2CO_3 (3%, 25 nm)/Li_2CO_3 (1 nm) /Al (150 nm).

4.

Table S1.HOMO, LUMO, and triplet energy of the materials in this work.

Materials	LUMO [a)]	HOMO [b)]	T_1 [c)]	Reference
TAPC	-2	-5.4	2.9	32
TCTA	-2.3	-5.7	2.86	26
26DCzPPy	-2.56	-6.05	2.71	24
BmPyPB	-2.63	-6.63	2.69	26
$Ir(ppy)_2(acac)$	-2.6	-5	2.4	28
$Ir(MDQ)_2(acac)$	-2.5	-5.7	2.0	27
FIrpic	-2.4	-5.8	2.62	23

a) The highest occupied molecular orbital energy level; b)the lowest unoccupied molecular orbital energy level; c) thetriplet state energy.