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

Supporting Information

Bipolar hosts and non-doped deep-blue emitters (CIE_y=0.04) based on phenylcarbazole and 2-(2-phenyl-2H-1,2,4-triazol-3-yl)pyridine groups

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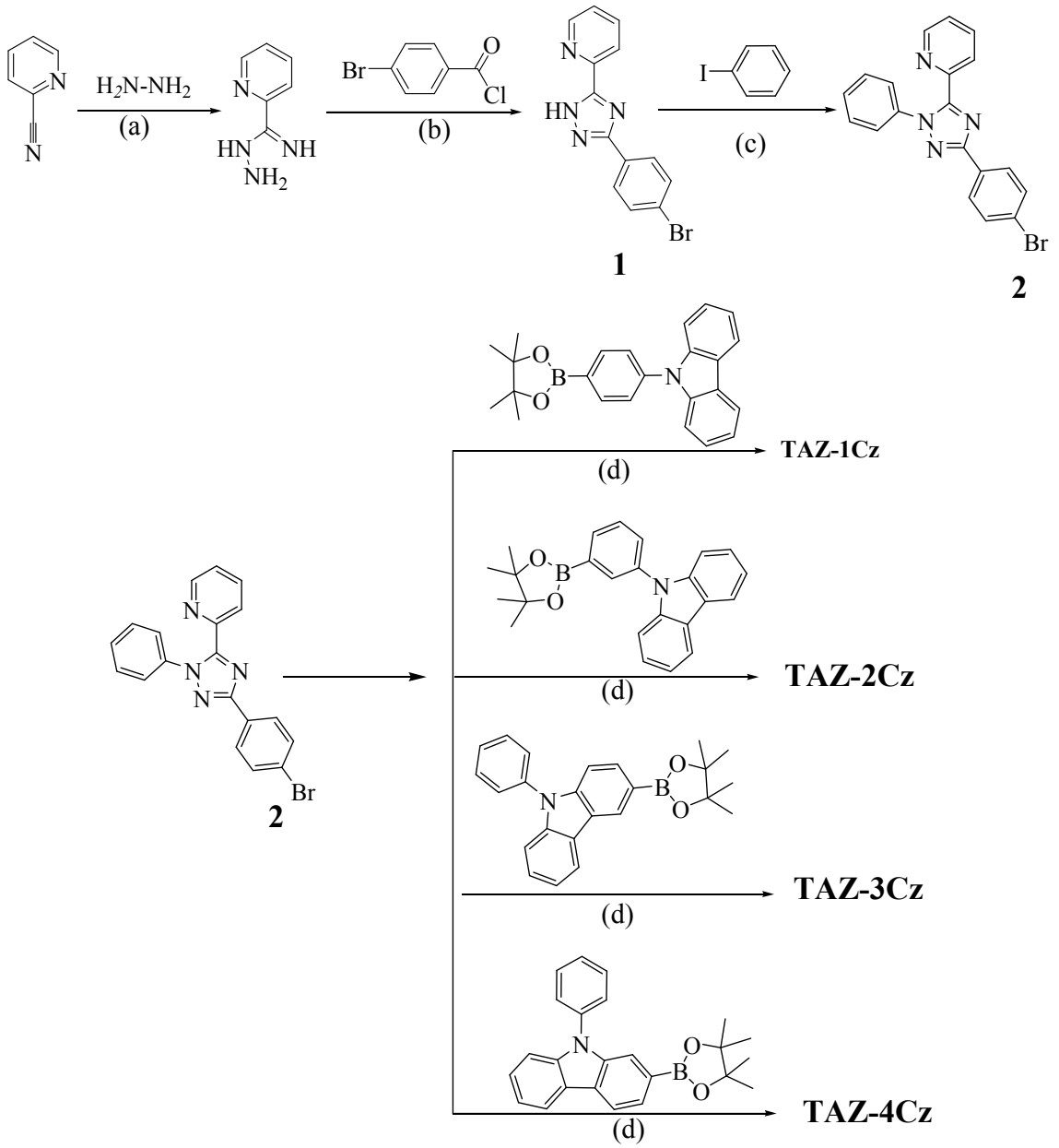


Scheme S1. Synthetic scheme of the all four bipolar materials. (a) EtOH, 8 h, N_2; (b)$NaCO_3$, DMAC, Ethylene, glycol, 6 h, N_2; (d) Phen, CuI, Cs_2CO_3, DMF, Reflux; 24 h, N_2; (e)$Pd(pph_3)_4$, $NaCO_3$, THF, reflux, 24 h, N_2

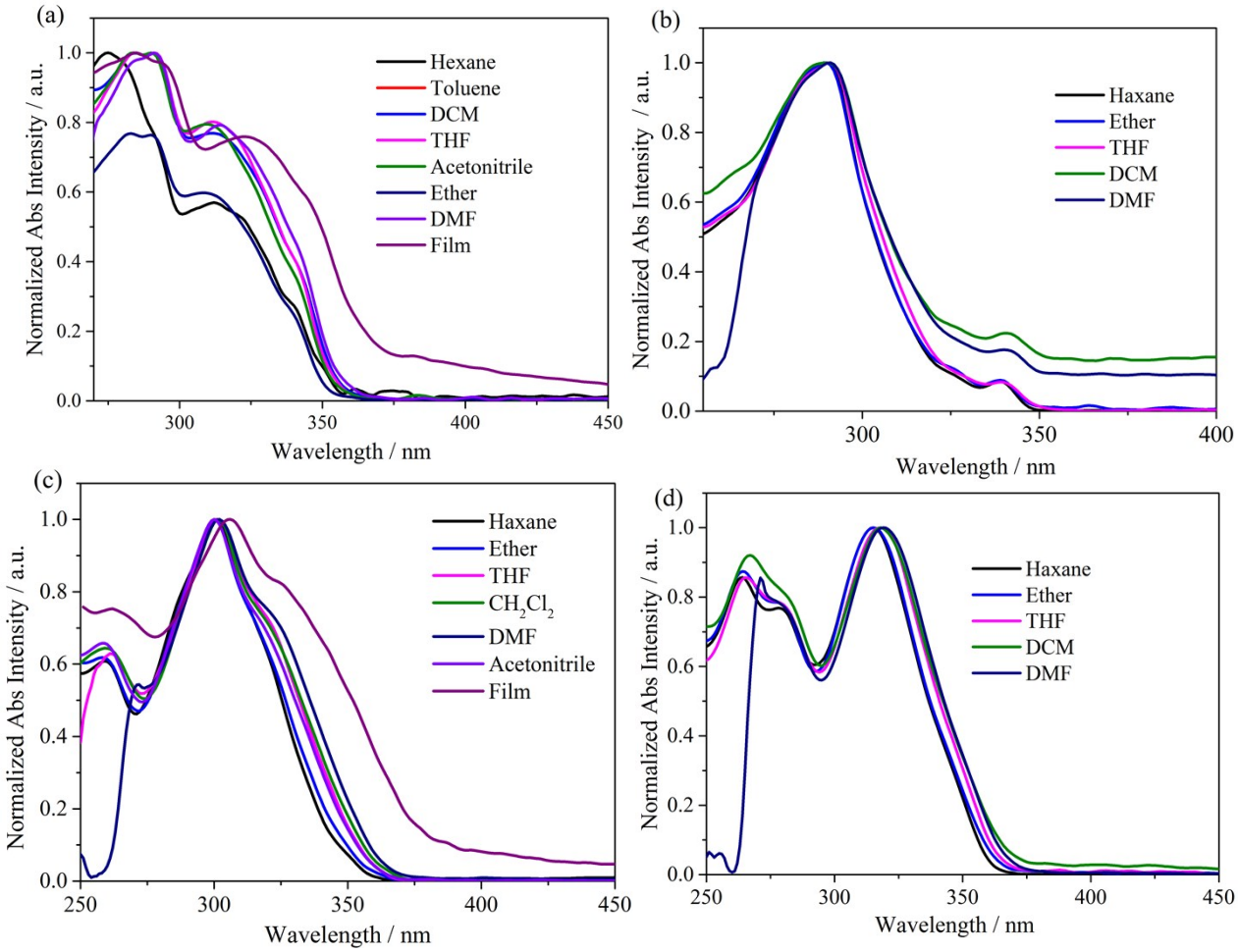


Fig. S1 Absorption spectra of host materials in different polarity solvents (a) **TAZ-1Cz**, (b) **TAZ-2Cz**, (c) **TAZ-3Cz** and (d) **TAZ-4Cz**

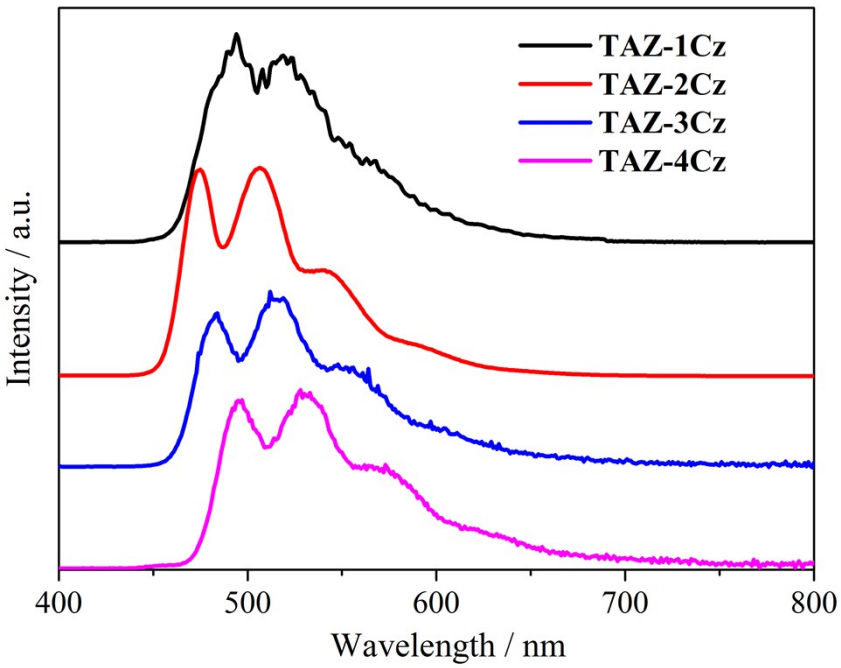
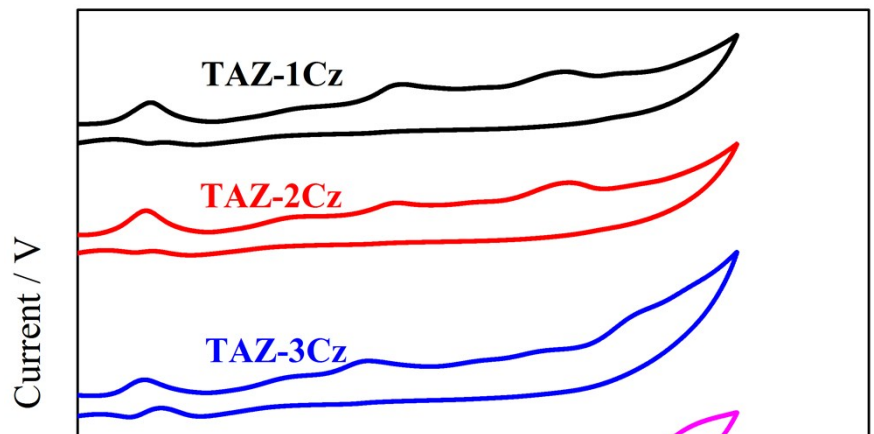
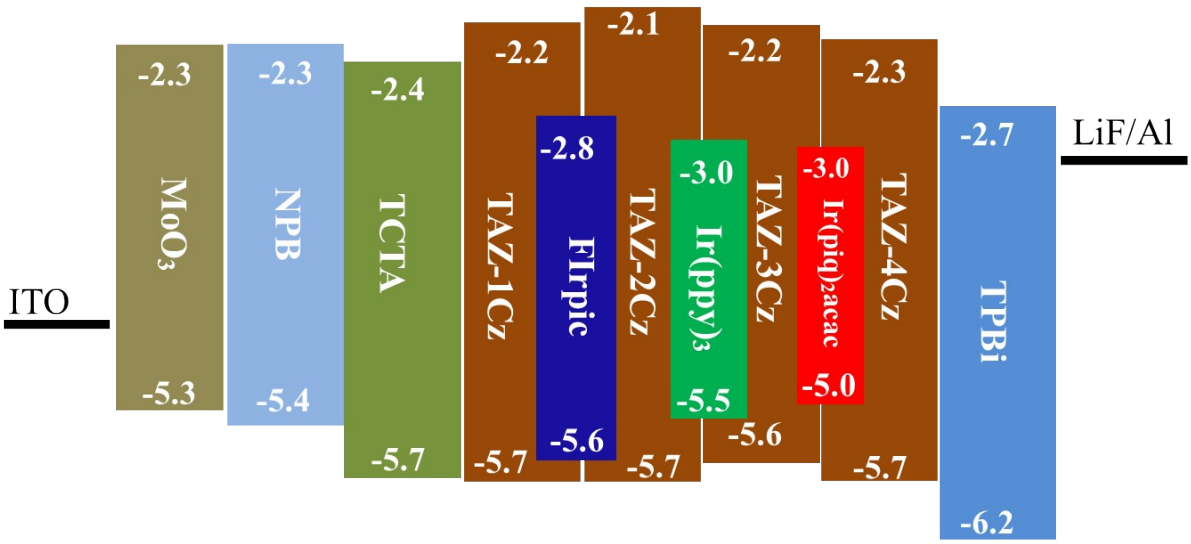


Fig. S2 Phosphorescent spectra in a frozen 2-methyltetrahydrofuran matrix at 77 K

TAZ-1Cz, **TAZ-2Cz**, **TAZ-3Cz** and **TAZ-4Cz**




ITO
LiF/Al
-2.3
MoO3
-5.3
-2.3
NPB
-5.4
-2.4
TCTA
-5.7
-2.2
TAZ-1Cz
-5.7
-2.8
FIrpic
-5.6
-2.1
TAZ-2Cz
-5.7
-3.0
Ir(ppy)3
-5.5
-2.2
TAZ-3Cz
-5.6
-3.0
Ir(piq)2acac
-5.0
-2.3
TAZ-4Cz
-5.7
-2.7
TPBi
-6.2

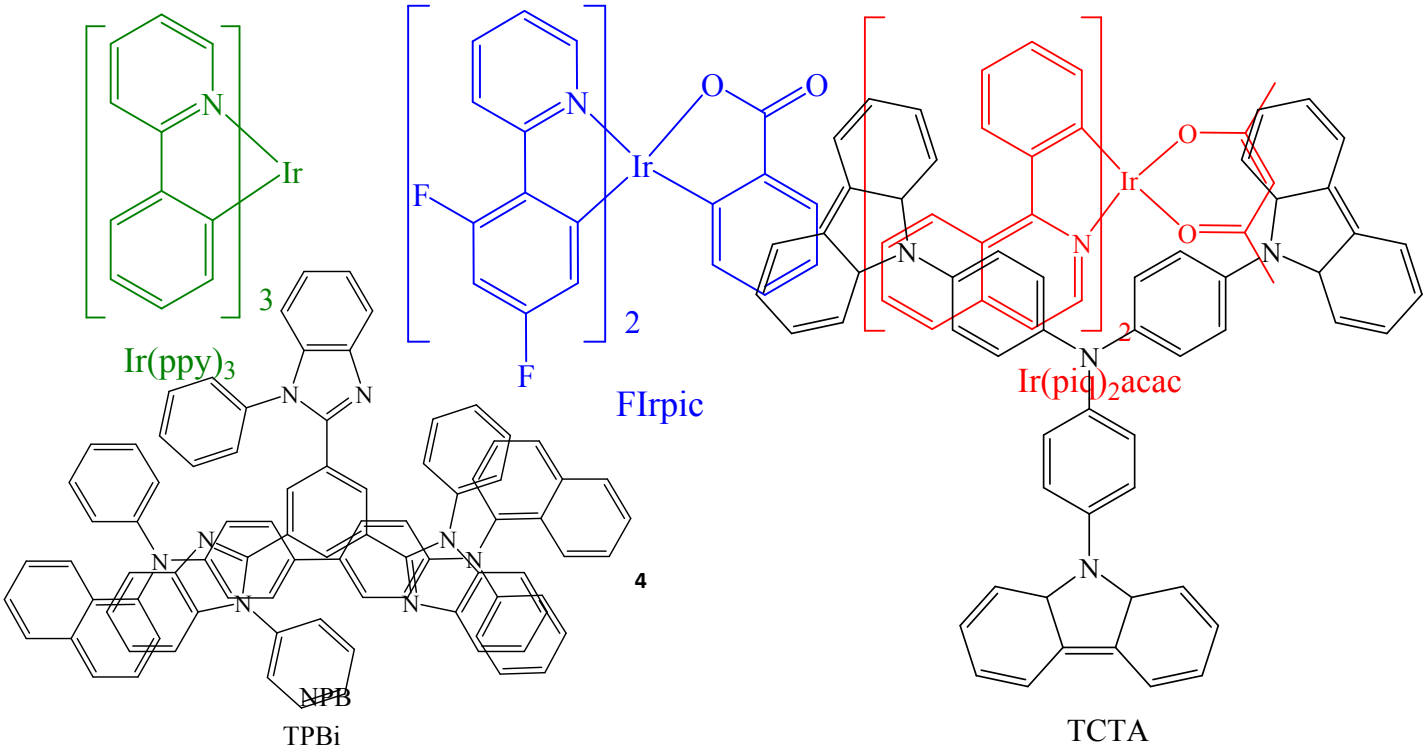

Ir(ppy)3
FIrpic
Ir(piq)2acac
NPB
TPBi
TCTA

Fig. S4 The energy level and chemical structures of the all materials

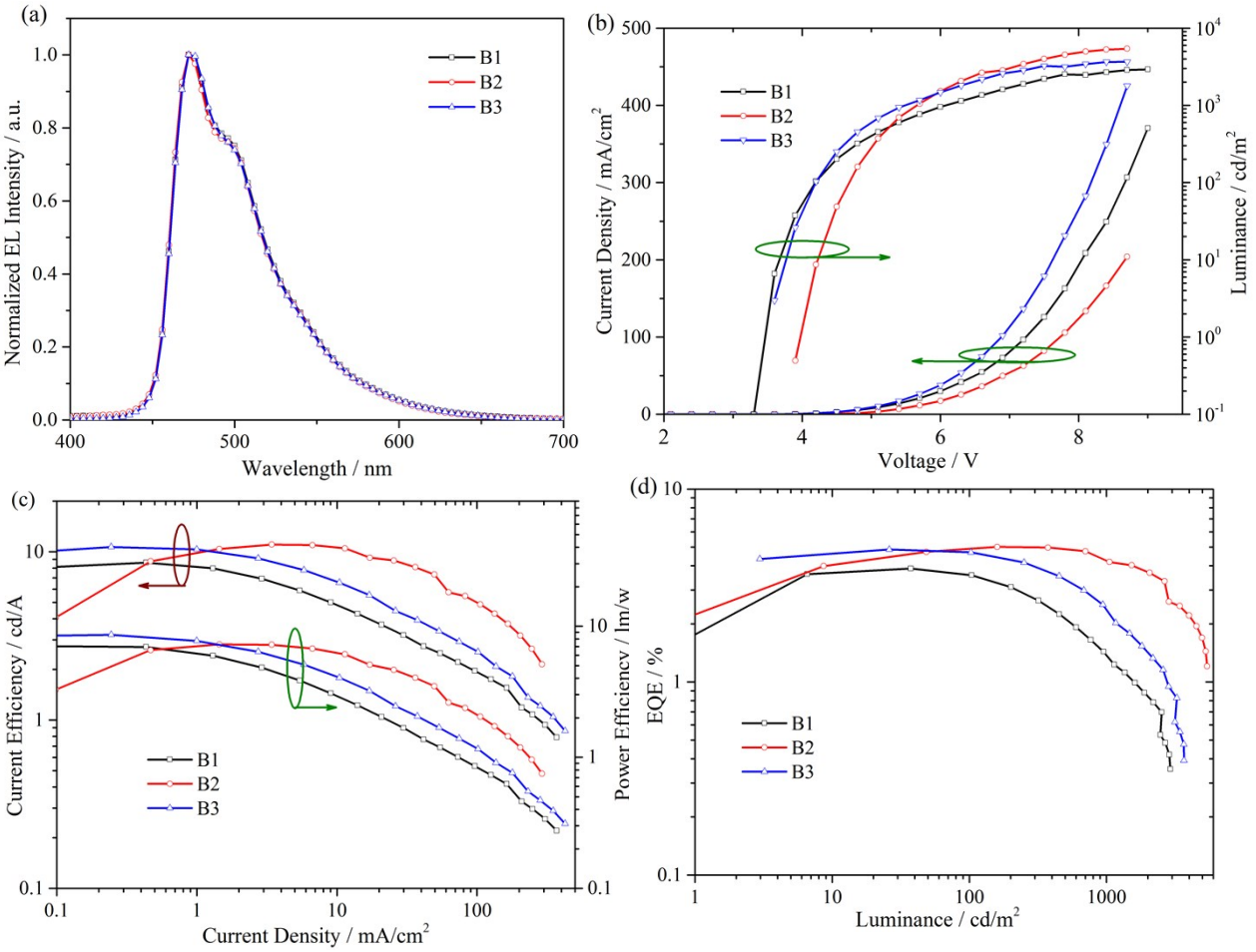


Fig. S5. (a) EL spectra of devices, (b) J-V-L characteristics, (c) $\eta_c - J - \eta_p$ curves and (d) EQE *versus* luminance for blue devices B1-B3 with the 1, 2, 4-trizole derivatives host.

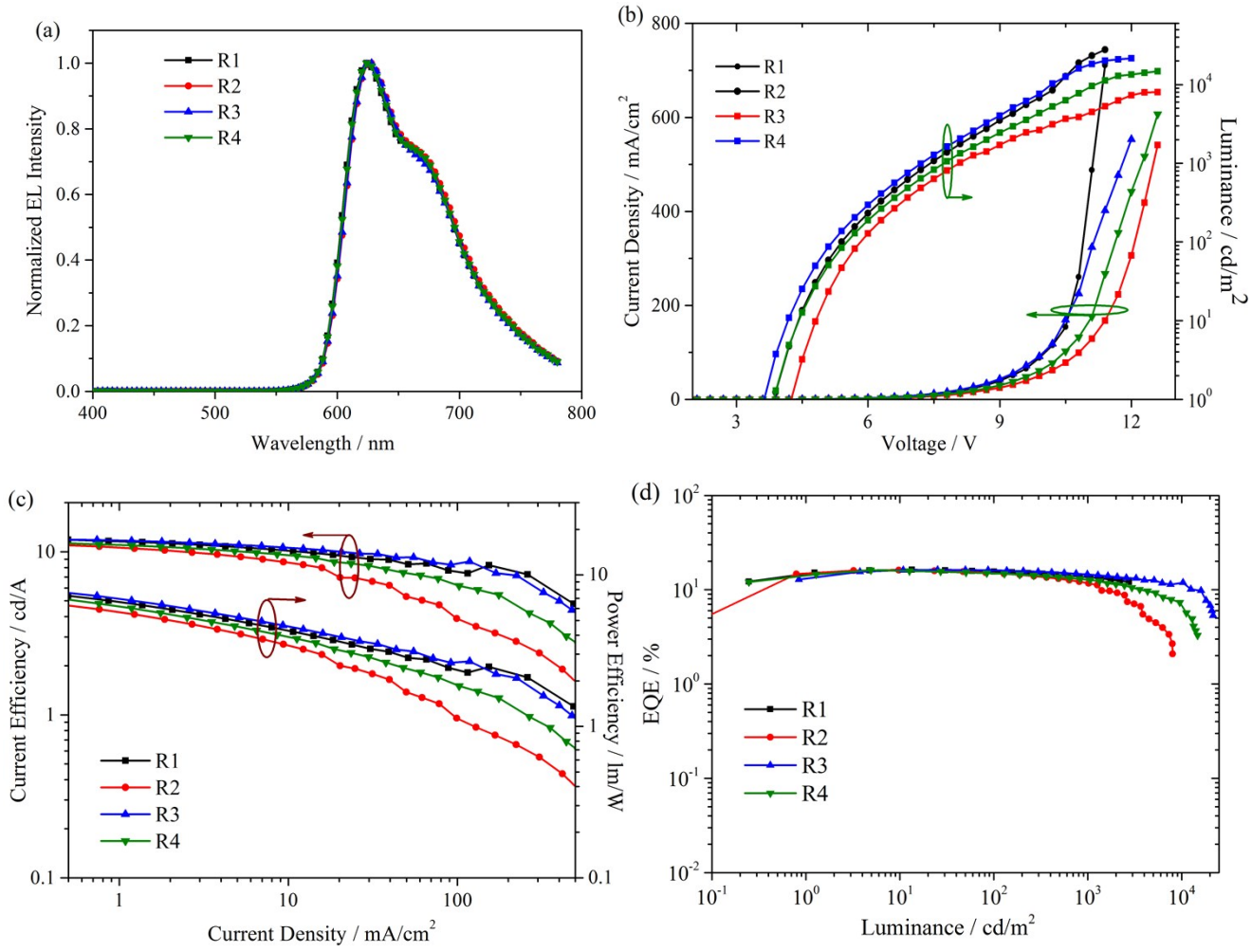


Fig. S6. (a) EL spectra of devices, (b) J-V-L characteristics, (c) $\eta_c - J - \eta_p$ curves and (d) EQE

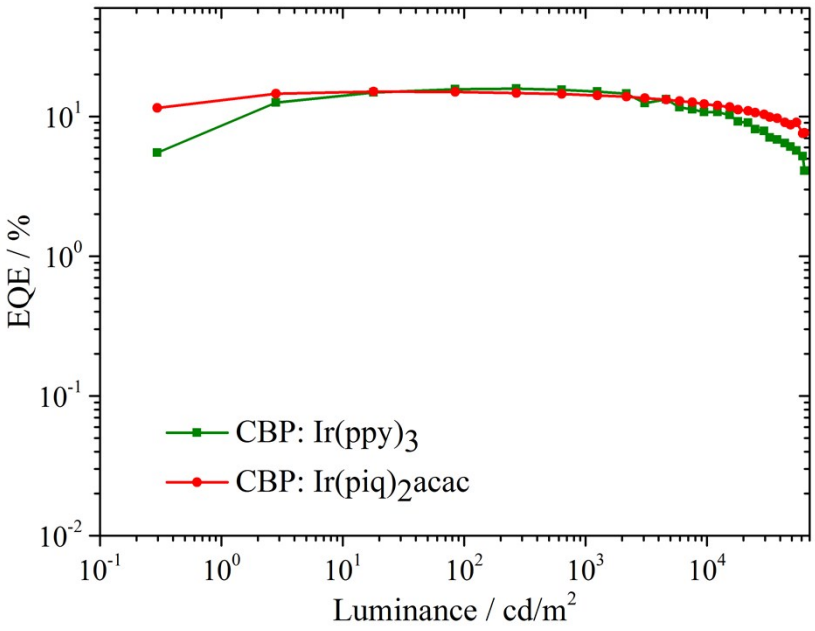


Fig. S7. The EQE *versus* luminance of green and red PhOLEDs using CBP as host

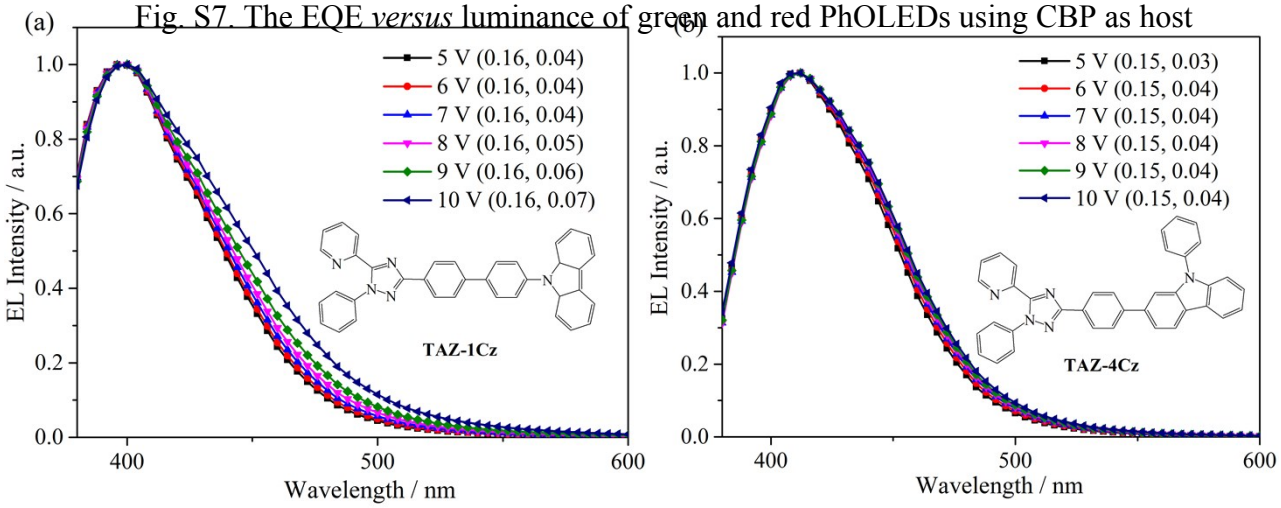


Fig. S8 The EL spectra and CIE coordination under the different voltages of devices DB1 (a) and DB2 (b)