Smart Materials and Devices

https://doi.org/10.70401/smd.2025.0002

Supplementary information

Efficient deep-blue fluorescent material serving as emitter and host for high-performance organic light-emitting diodes

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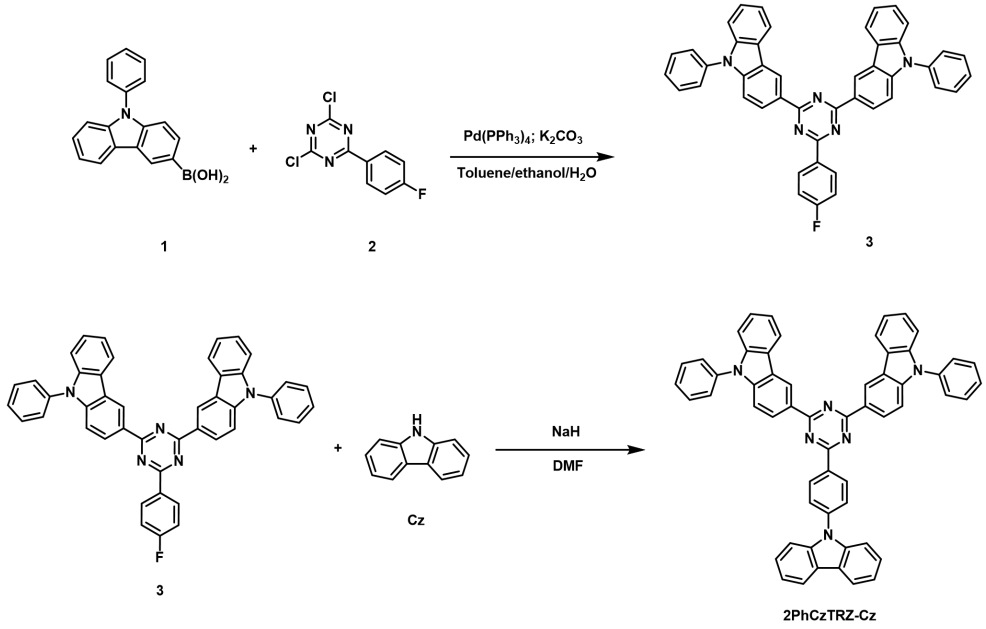

Scheme S1. Synthetic routes of 2PhCzTRZ-Cz.

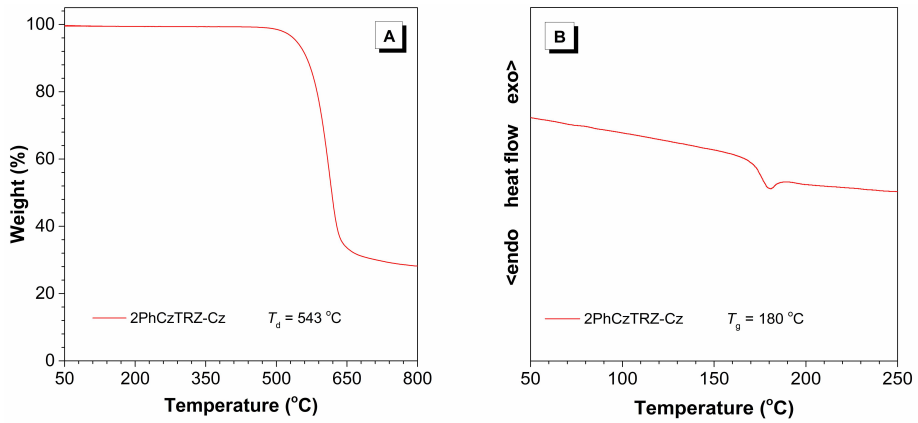

Figure S1. (A) TGA and (B) DSC curves of 2PhCzTRZ-Cz, measured under nitrogen at a scan rate of 10 °C min^{-1}.

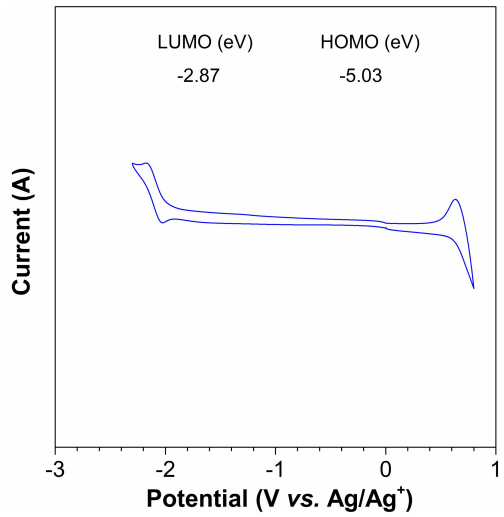

Figure S2. Cyclic voltammogram of 2PhCzTRZ-Cz measured in dichloromethane (HOMO) and dimethylformamide (LUMO).

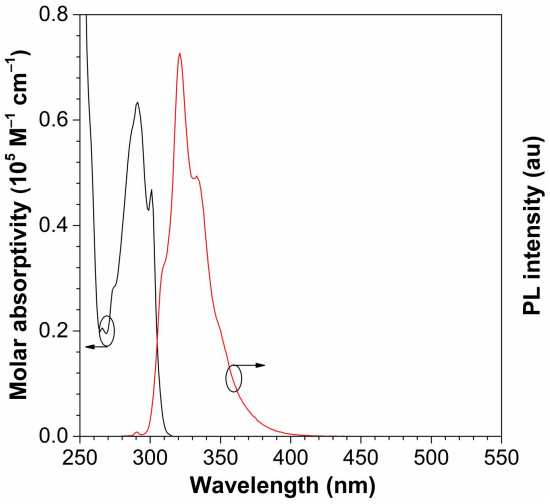

Figure S3. Absorption and PL spectra of PPF in dilute dichloromethane solution (10^{-5} M).

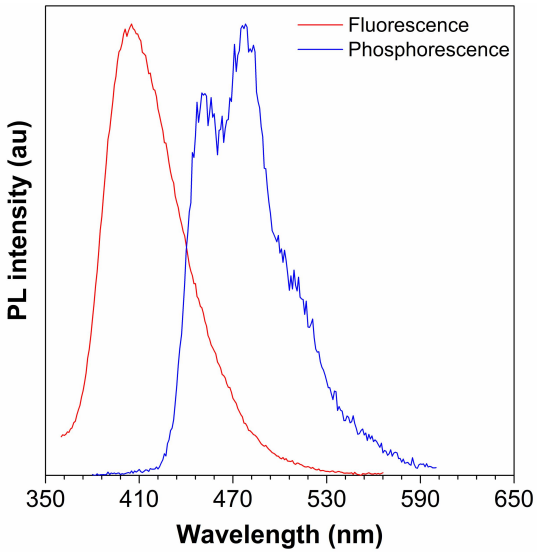

Figure S4. Fluorescence and phosphorescence spectra of 2PhCzTRZ-Cz in dilute toluene solution (10^{-5} M) measured at 77 K (delayed 20 ms).

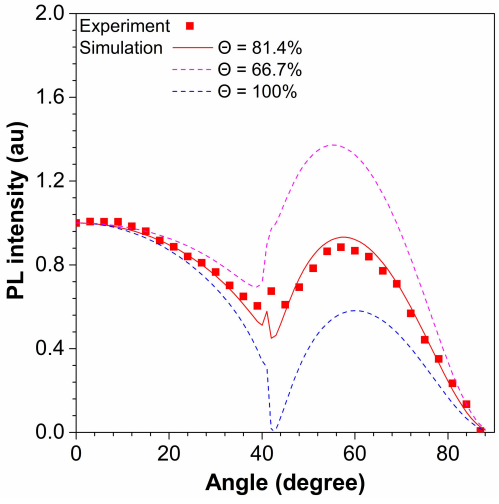

Figure S5. Measured *p*-polarized PL intensity of 2PhCzTRZ-Cz in the host of PPF with a concentration of 10 wt%.

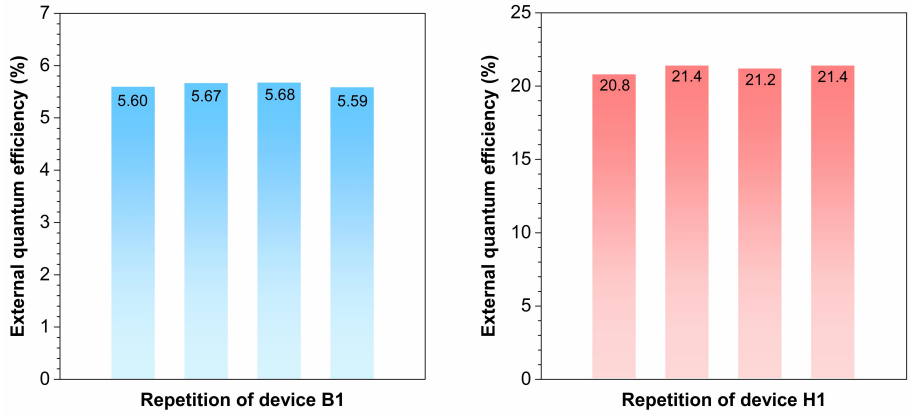

Figure S6. Repetition of the external quantum efficiencies of device B1 and H1.

Table S1. Functional layers abbreviations and full names.

Abbreviation	Full name
HATCN	Dipyrazino[2,3-f:2',3'-h]quinoxaline-2,3,6,7,10,11-hexacarbonitrile
TAPC	4,4'-Cyclohexylidenebis[*N*,*N*-bis(4-methylphenyl)aniline]
TCTA	Tris[4-(carbazol-9-yl)phenyl]amine
*m*CP	1,3-Bis(carbazol-9-yl)benzene
*m*CBP	3,3'-Di(9*H*-carbazol-9-yl)-1,1'-biphenyl
PPF	2,8-Bis(diphenylphosphoryl)dibenzo[b,d]furan
TmPyPB	1,3,5-tri(*m*-pyrid-3-yl-phenyl)benzene
TPBi	2,2',2''-(1,3,5-Benzinetriyl)-tris(1-phenyl-1-*H*-benzimidazole)

Table S2. The EL performances of OLEDs.

Reference[a)]	λ_{EL} (nm)	V_{on} (V)	L_{max} (cd m^{-2})	η_C (cd A^{-1})	η_P (lm W^{-1})	η_{ext} (%)	CIE (x, y)
				maximum value/at 1000 cd m^{-2}			
[1]	448	3.8	-	2.94/-	2.00/-	3.71/-	(0.15, 0.08)
[2]	450	4.2	1815	3.4/-	-	3.6	(0.15, 0.10)
[3]	452	2.7	9197	6.19/-	5.11/-	6.09	(0.15, 0.15)
[4]	436	3.5	4036	4.01/-	3.44/-	6.0/2.3	(0.16, 0.08)
[5]	448	3.3	4739	5.60/3.43	3.76/2.00	5.64/3.46	(0.17, 0.11)
[6]	418	-	1165	1.16/-	0.65/-	2.0/-	(0.15, 0.07)
[7]	436	-	3942	4.99/-	3.14/-	7.51/-	(0.15, 0.08)
[8]	404	3.2	4065	0.84/-	0.48/-	3.33/-	(0.16, 0.05)
[9]	436	3.0	-	2.79/2.30	2.61/1.35	4.95/4.36	(0.15, 0.06)

[a)]: Abbreviations; λ_E: electroluminescence peak at 5 V; V_{on}: turn-on voltage at 1 cd m^{-2}; L_{max}: maximum luminance; η_C/ η_P/ η_{ext}: current efficiency/power efficiency/external quantum efficiency; CIE: Commission Internationale de l'Eclairage coordinates at 1000 cd m^{-2}.

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