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

Supporting Information

Inkjet printing a small-molecule binary emitting layer for organic light-emitting diodes

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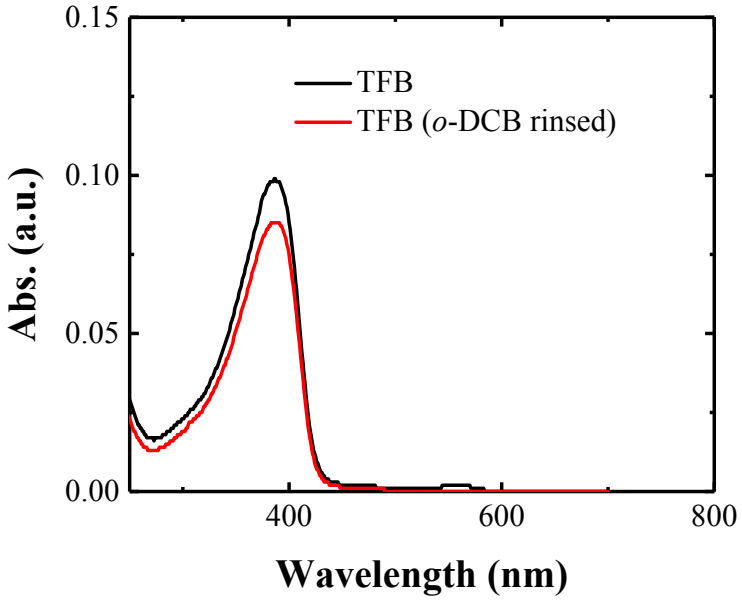
Figure S1. The UV-Vis spectroscopy on the TFB layer, subject to rinsing by the *o*-dichlorobenzene (*o*-DCB) solvent.



Experiment: the TFB film was treated by spin-casting the solvent *o*-DCB at 3000 rpm for 30 s. The influence of solvent washing to the TFB layer was confirmed by UV-Vis spectroscopy. The thickness of

TFB layer without solvent treatment was measured by Dektak 150 surface profiler (Bruker Corp.).

Figure S2. ^{1}H NMR of the host material ***t*-BuCz-*m*-NPBI** ($CDCl_3$, 500 MHz)

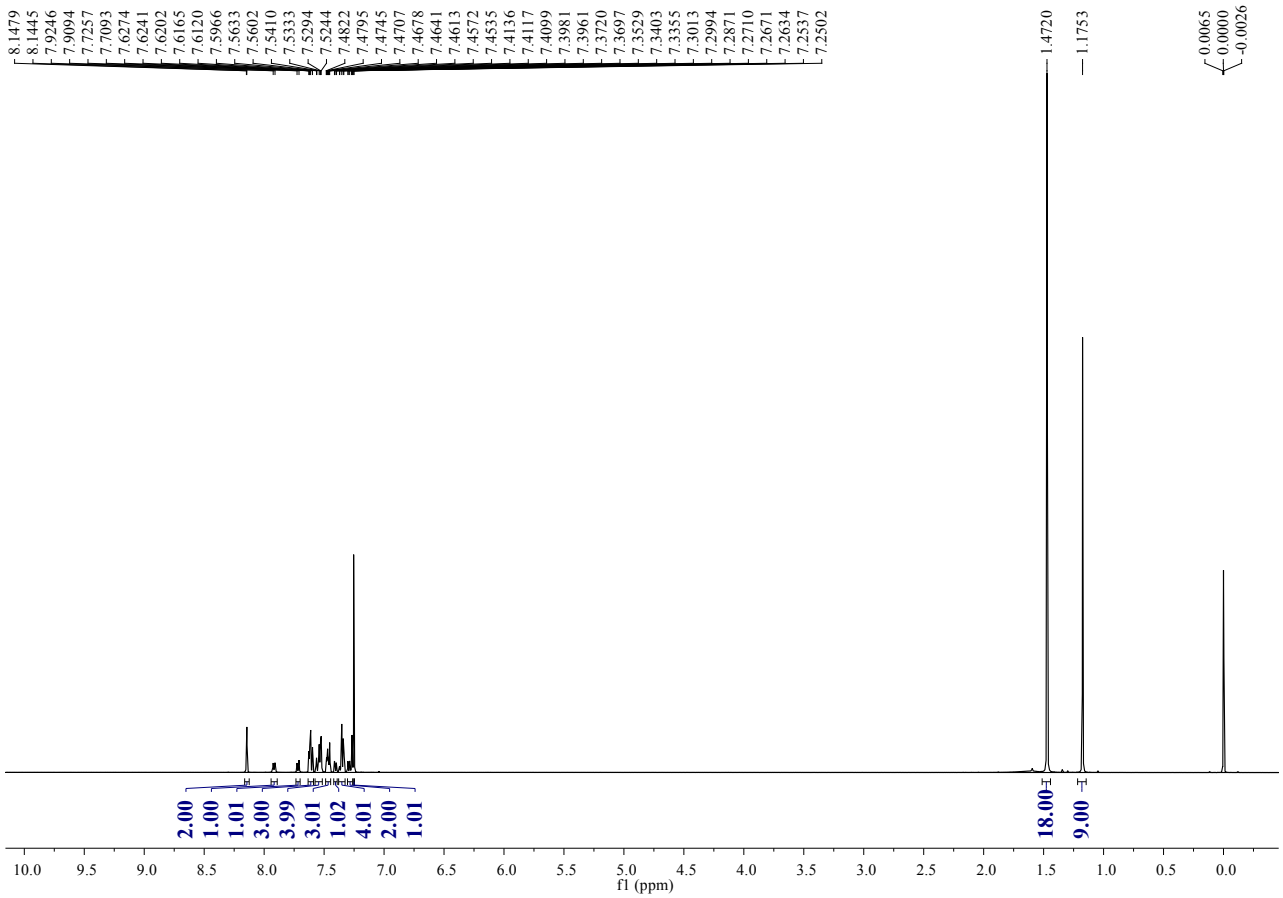


Figure S3. Mass spectroscopy of ***t*-BuCz-*m*-NPBI** (APCI)

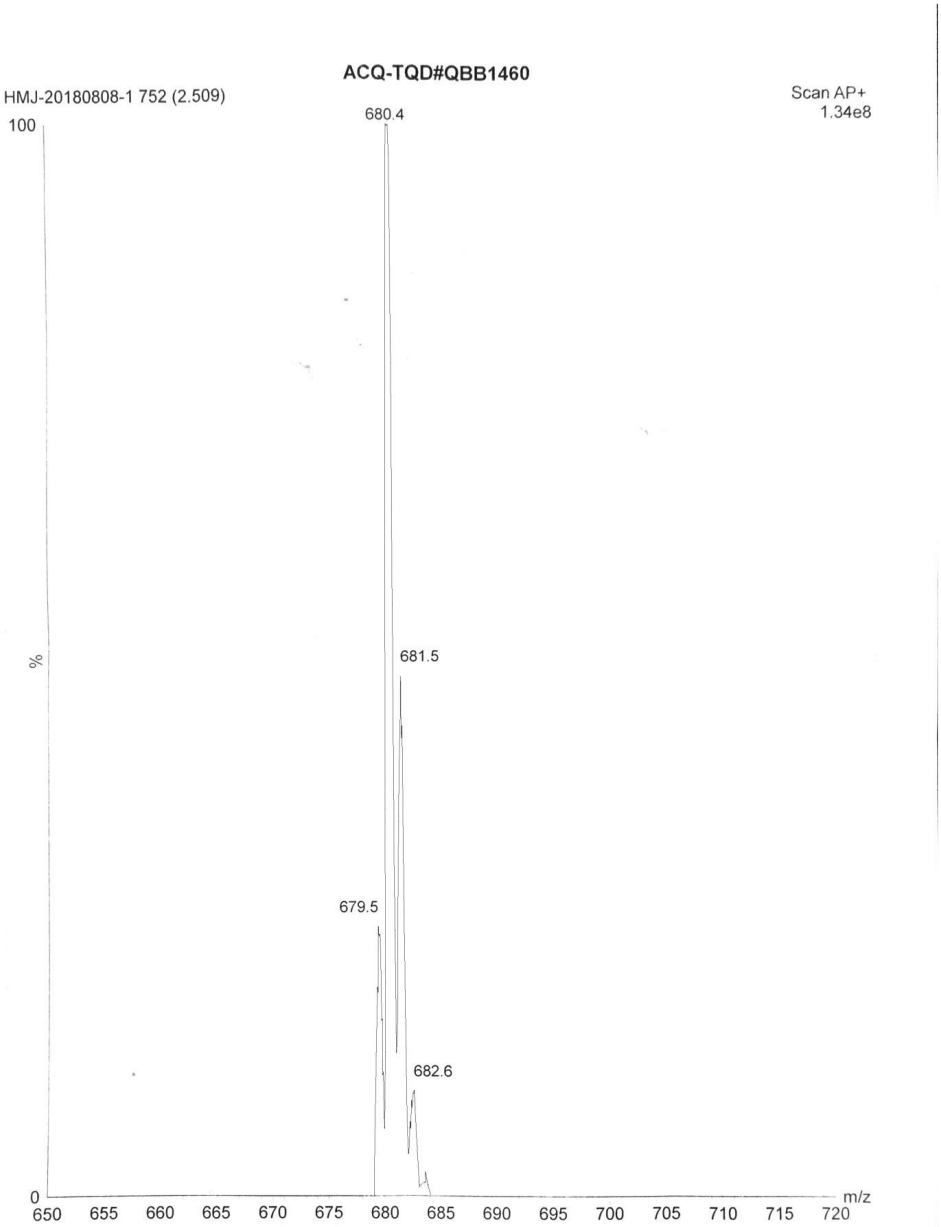


Figure S4. Microanalysis data of ***t*-BuCz-*m*-NPBI,** provided by the Instrumental Analysis & Research Center, Sun Yat-Sen University, Guangzhou, China.

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CHN元素含量测定
vario EL cube 元素分析仪

Text report

No.	Name	Weight [mg]	C [%]	H [%]	N [%]	C/N ratio	C/H ratio	Date Time
70	HMJ	1.8210	86.63	7.329	5.92	14.6250	11.8195	19.04.2017 19:00

Figure S5. Cyclic voltammograms of ***t*-BuCz-*m*-NPBI** in nitrogen-saturated CH_2Cl_2/CH_3CN (4:1 v/v) containing 0.1 M *n*-Bu_4NPF_6.

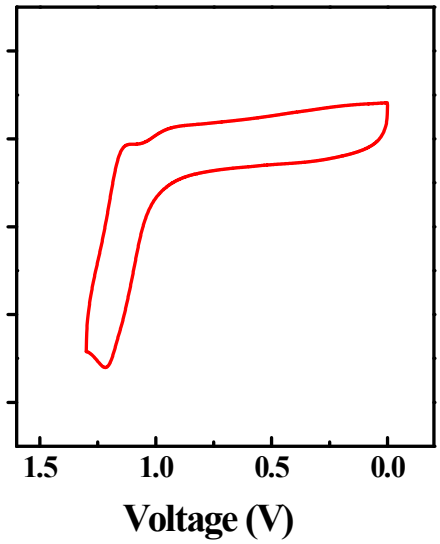

Figure S6. Flight stability of printing the host material ***t*-BuCz-*m*-NPBI** ink. The solvent: (a) *p*-xylene (*p*-xy), (b) cyclohexylbenzene (CHB), (c) 3,4-dimethyl anisole (DMA), (d) *o*-dichlorobenzene (*o*-DCB)

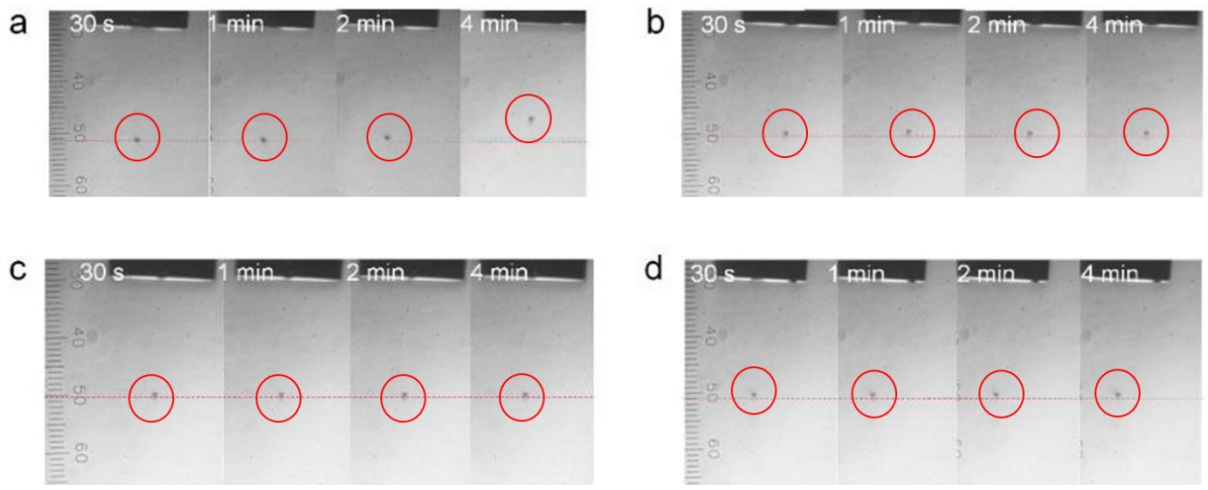

Table S1. Rheological properties of the solvents for inkjet printing※

Solvents	b. p. (°C)	Saturated vapor pressure (kPa)	Surface tension (mN/m)	Viscosity (cP)	Contact angle [a]
p-xylene (*p*-xy)	138.3	0.928	27.8	0.63	4.5
3,4-dimethyl anisole (DMA)	203	0.043	30.2	1.56	9.4.
cyclohexylbenzene (CHB)	237	0.039	41.3	2.68	4.8
o-dichlorobenzene *(o*-DCB)	180	0.13	36.5	1.32	16.5

[a] Meared on PVK substarte

※ Cheng, N. *Solvents Handbook*. (Chemical Industry Press, 2007).

Figure S7. 3D morphology of the IJP ***t*-BuCz-*m*-NPBI** (a) and blend films ***t*-BuCz-*m*-NPBI**: 9wt% $Ir(MDQ)_2(acac)$ (b) on the TFB/PEDOT/ITO substrate. Substrate temperature: 20 ºC. Concentration: 30 mg/ml ***t*-BuCz-*m*-NPBI** or ***t*-BuCz-*m*-NPBI**: 9wt% $Ir(MDQ)_2(acac)$ in *o*-DCB.

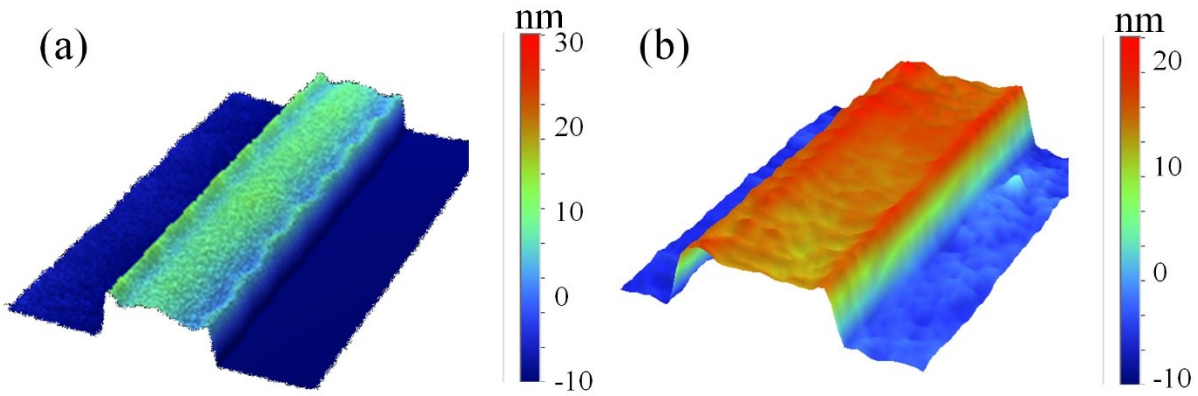

Figure S8. AFM images of TFB on PEDOT/ITO substrate.

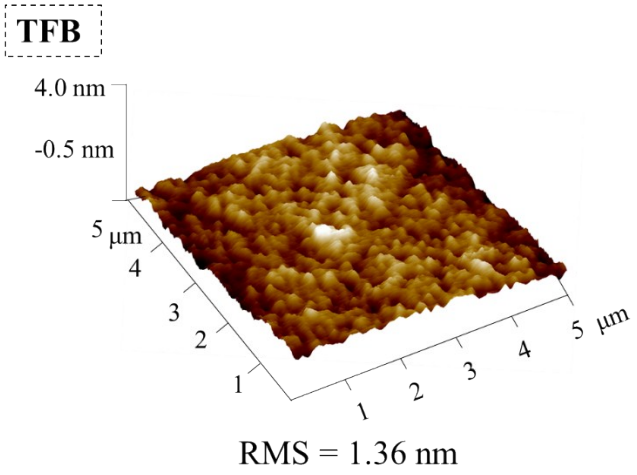

Figure S9. *J-V-L* (left) and *LE-J* (Right) of the OLEDs comprising the spin-cast EML and different HTLs (PVK or TFB). The solvent for the spin-cast EML is *p*-xylene: chlorobenzene (5:1 v/v). The substrates used for both inkjet printing and spin coating are the same.

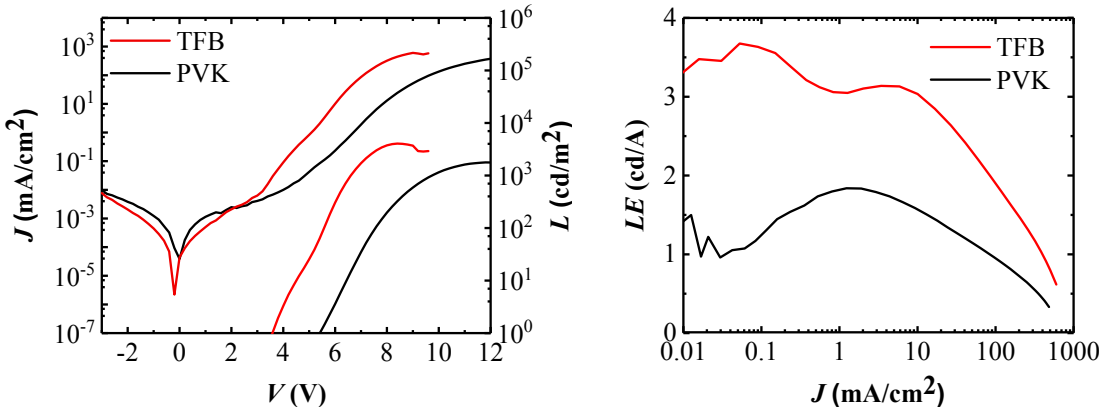

Table S2. Summary of the OLED characteristics based on the spin-cast emitting layer.

Devices	V_{on} (V)	L_{max} (cd/m^2)	LE_{max} (cd/A)	@ 1000 cd/m^2	
				V (V)	*LE* (cd/A)
TFB	3.6	4048	3.63	6.6	2.41
PVK	5.6	1774	1.84	9.8	0.91