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Electronic Supplementary Information (ESI)

Water-soluble pH neutral triazatruxene-based small molecules as hole injection materials for solution-processable organic light-emitting diodes

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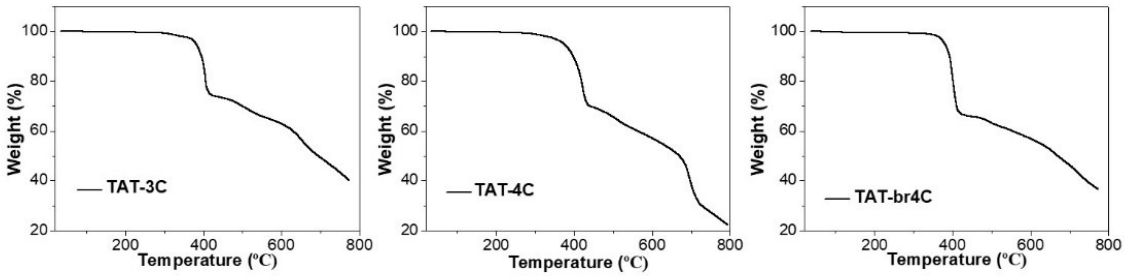


Fig. S1. The thermogravimetric thermograms of TAT-3C, TAT-4C and TAT-br4C.

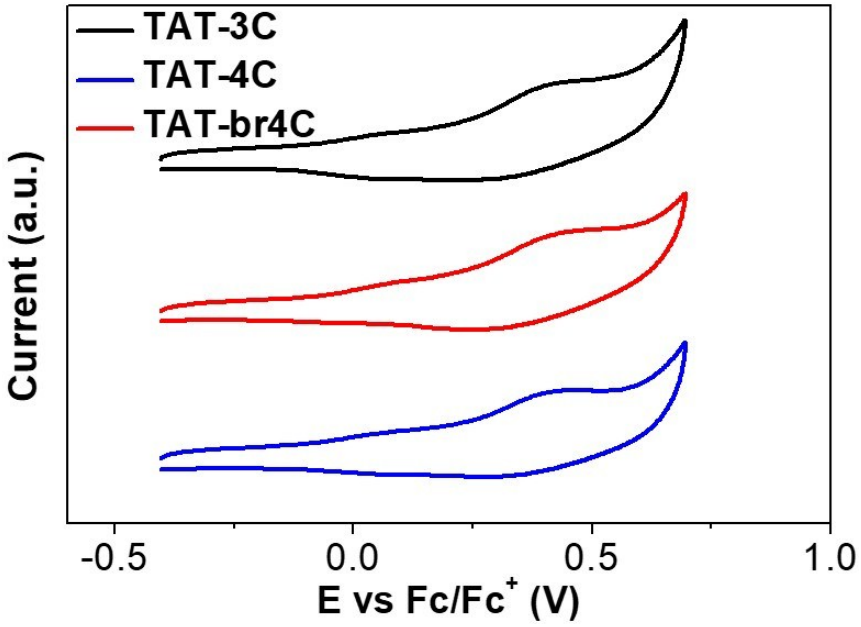


Fig. S2. Cyclic voltammetry analysis of TAT-3C, TAT-4C and TAT-br4C.

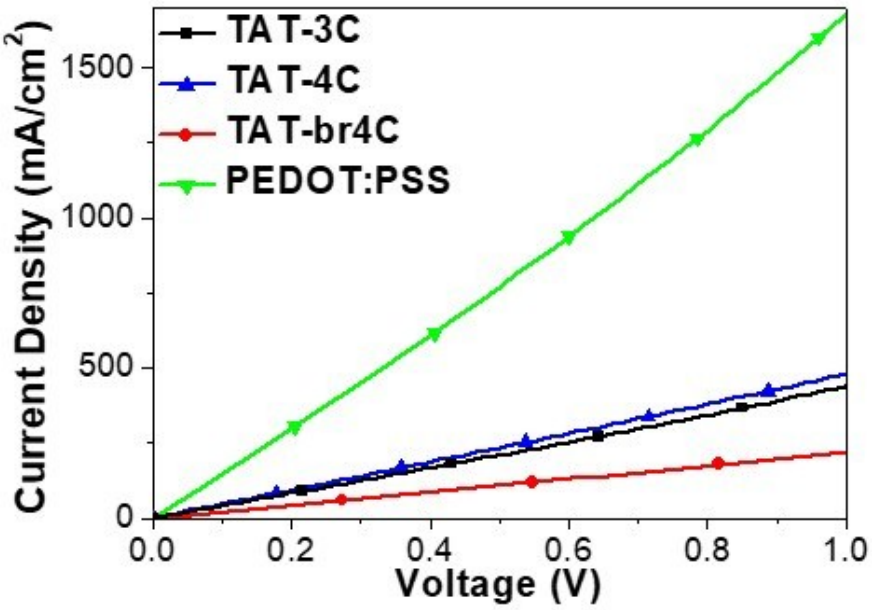


Fig. S3. The film conductivities of TAT-3C, TAT-4C, TAT-br4C and PEDOT: PSS.

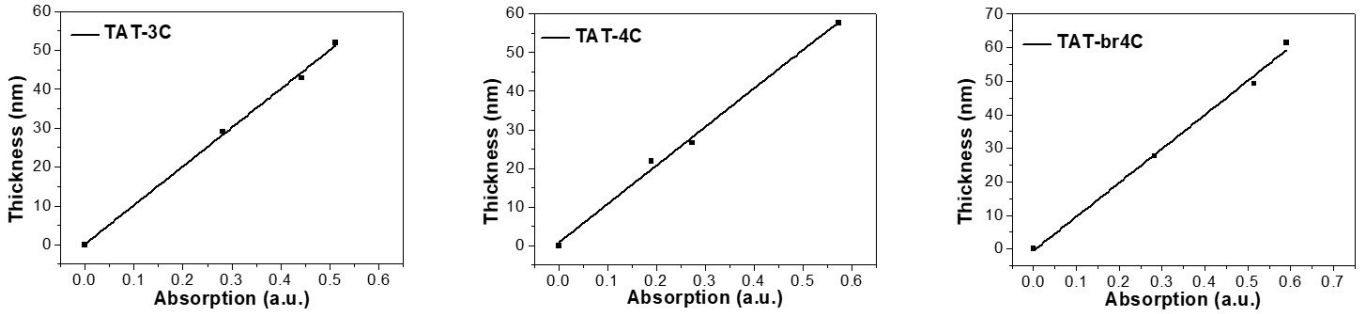


Fig. S4. The linear relationship of thickness versus absorption.

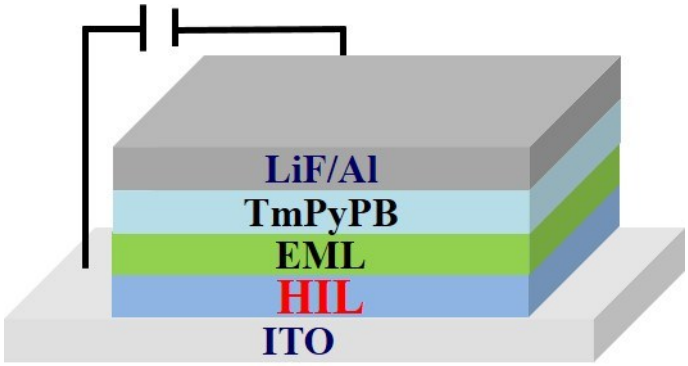


Fig. S5. Structure of OLED devices based on TAT-3C, TAT-4C and TAT-br4C.

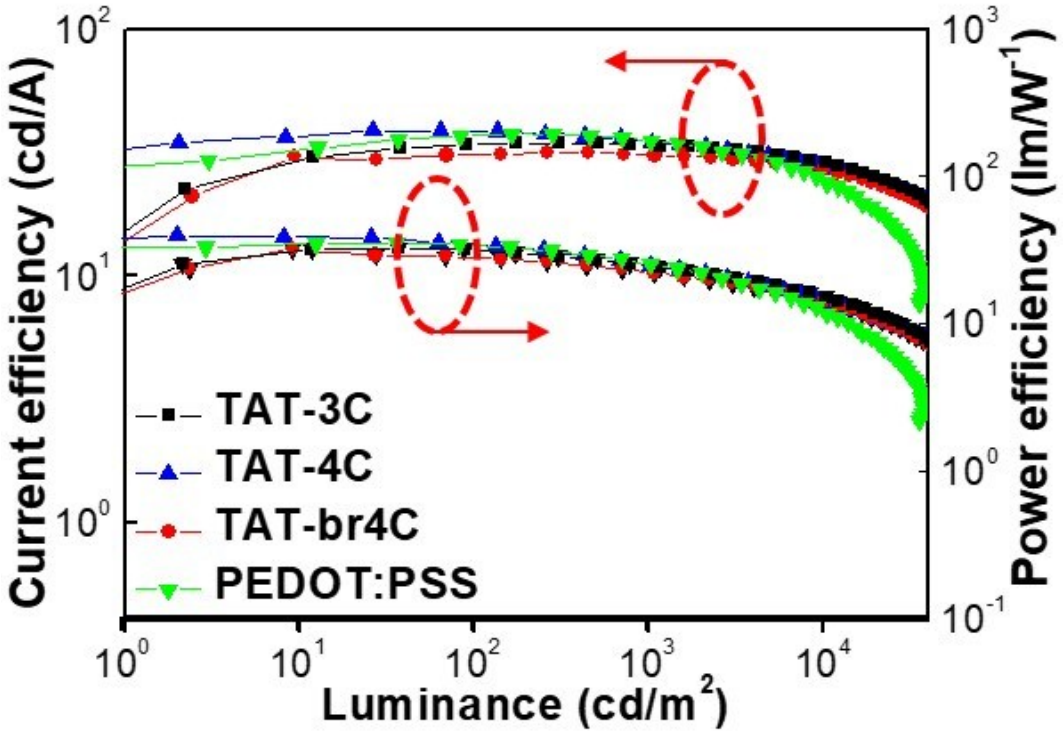


Fig. S6. Current efficiency-luminance-power efficiency curves of the devices based on the hole injection layers.

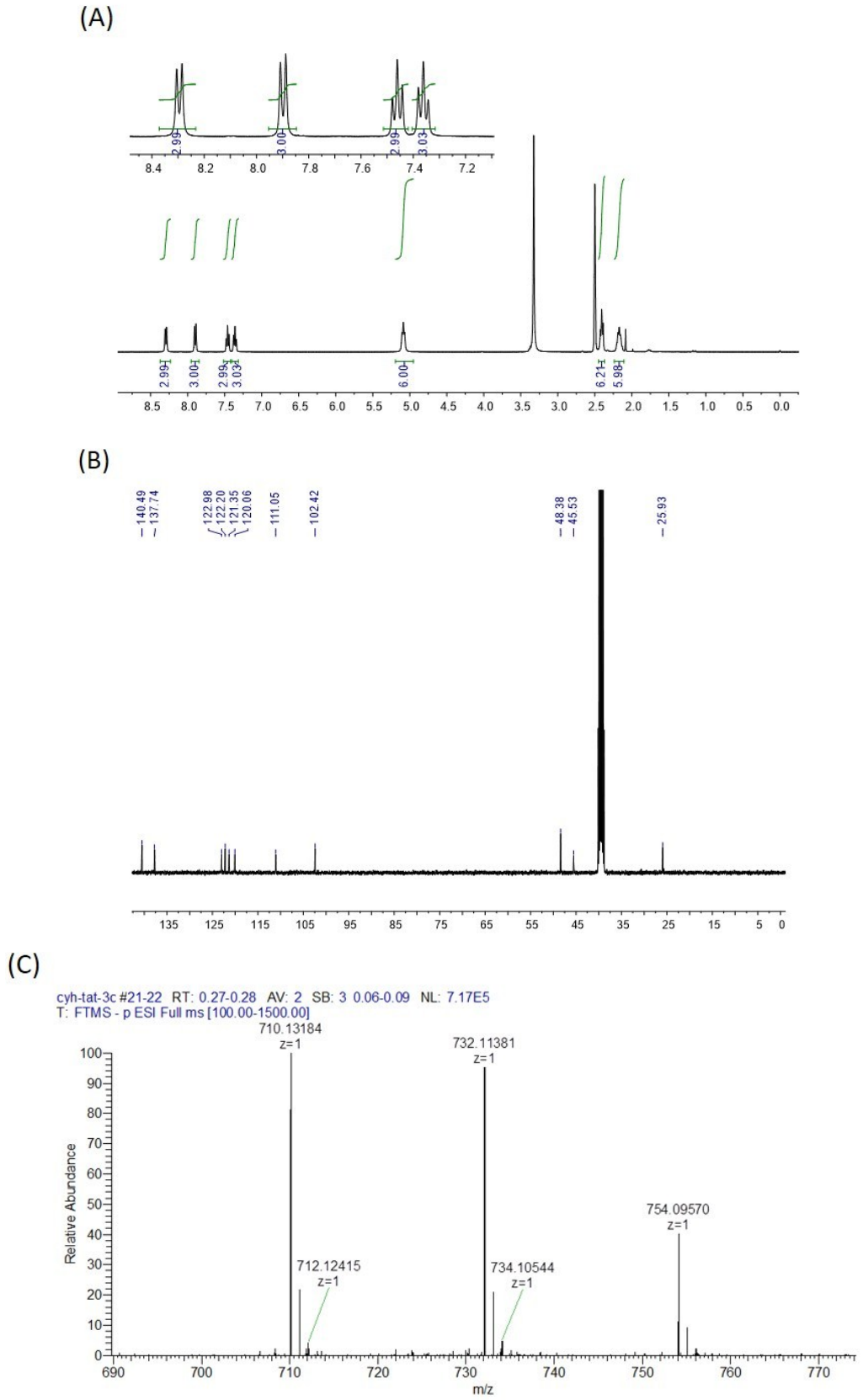
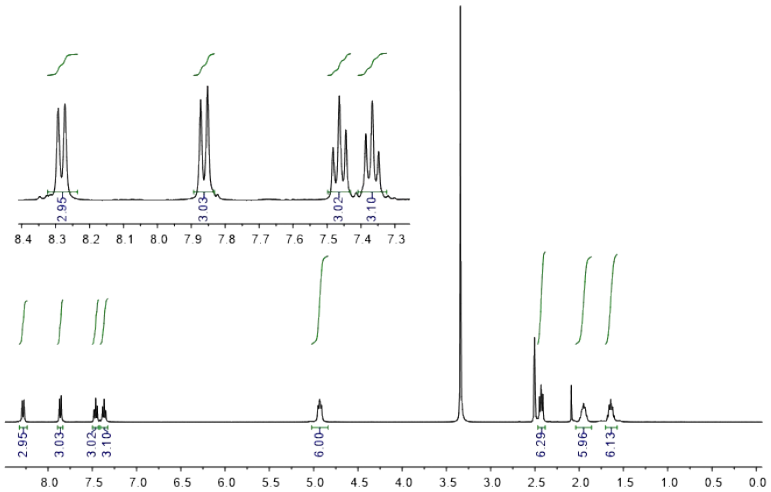
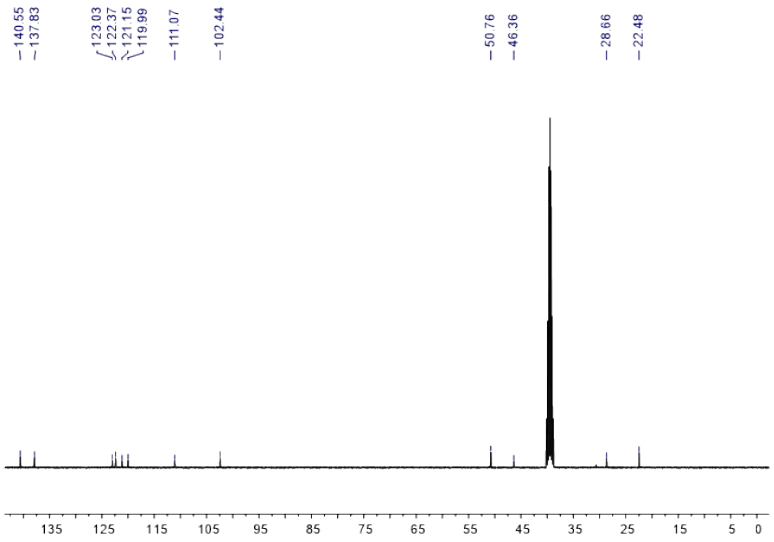


Fig. S7. ^{1}H NMR (A), ^{13}C NMR (B) and mass spectra (C) of TAT-3C.

(A)



(B)



(C)

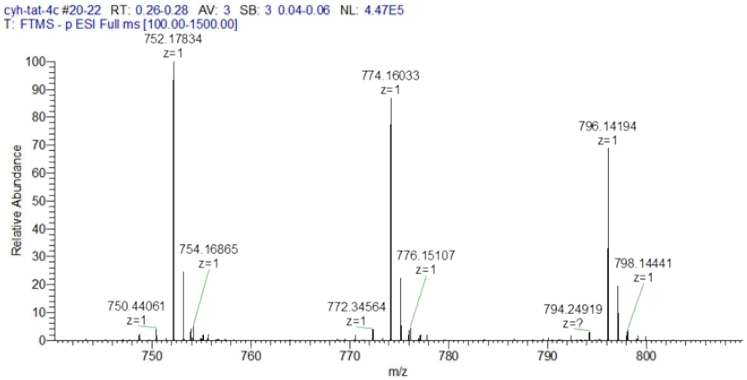
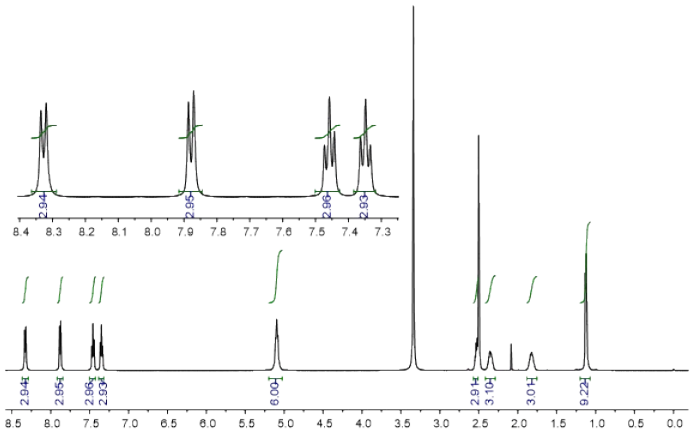


Fig. S8. ^{1}H NMR (A), ^{13}C NMR (B) and mass spectra (C) of TAT-4C.

(A)



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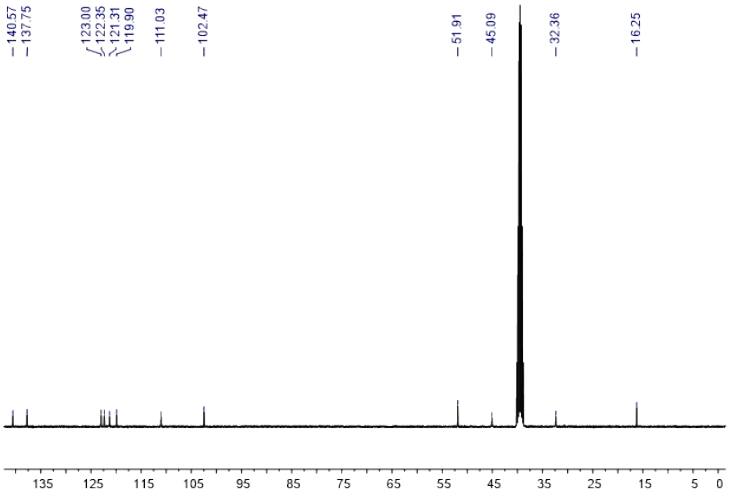

(C)

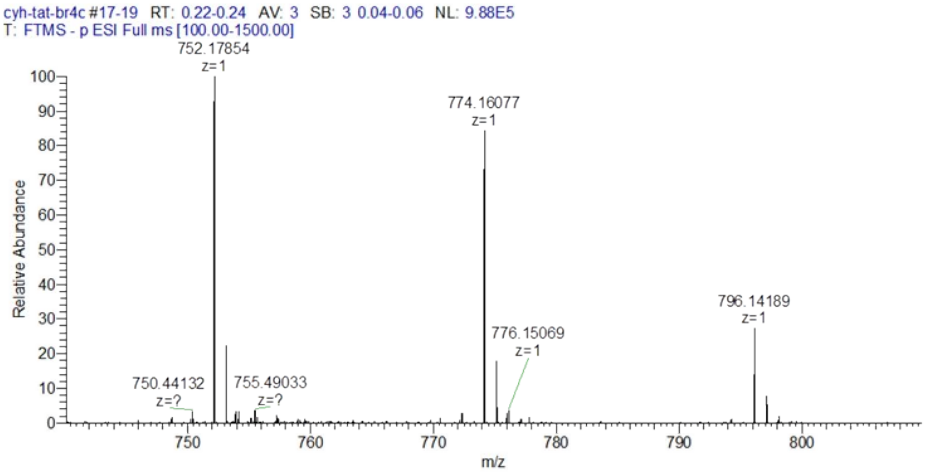

Fig. S9. ^{1}H NMR (A), ^{13}C NMR (B) and mass spectra (C) of TAT-br4C.

Table S1. EL performance of the OLEDs based on different hole injection layers with different thickness.

Hole injection layer	Thickness (nm)	V_{on} (V)	Max performance		Device performance at 10000 cd m^{-2}		
			LE (cd/A)	PE (lm/W)	V (V)	LE (cd/A)	PE (lm/W)
PEDOT:PSS	**25**	**2.7**	**37.6**	**35.1**	**6.3**	**24.5**	**12.2**
TAT-3C	**1.5**	**2.8**	**33.7**	**28.7**	**6.3**	**28.8**	**14.8**
	3.1	**2.7**	**34.7**	**32.1**	**5.9**	**29.1**	**15.5**
	4.9	**2.9**	**34.1**	**28.0**	**6.1**	**29.7**	**14.9**
	8.3	**3.1**	**27.6**	**22.1**	**6.9**	**25.0**	**11.4**
TAT-4C	**1.6**	**2.8**	**33.9**	**28.8**	**6.1**	**28.7**	**14.8**
	2.9	**2.7**	**38.8**	**39.2**	**6.1**	**27.7**	**14.4**
	5.0	**2.9**	**35.3**	**29.4**	**6.3**	**30.8**	**15.3**
	8.5	**3.0**	**29.6**	**23.3**	**7.0**	**26.7**	**12.2**
TAT-br4C	**1.7**	**2.8**	**31.9**	**27.3**	**6.1**	**27.6**	**14.1**
	2.6	**2.7**	**31.6**	**29.8**	**6.0**	**27.1**	**14.2**
	4.9	**3.0**	**25.9**	**15.7**	**6.7**	**25.3**	**11.8**
	8.3	**3.4**	**21.8**	**11.5**	**7.3**	**21.0**	**9.0**