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

Supporting Information

Excimer Emission Based on Control of Molecular Structure and Intermolecular Interactions

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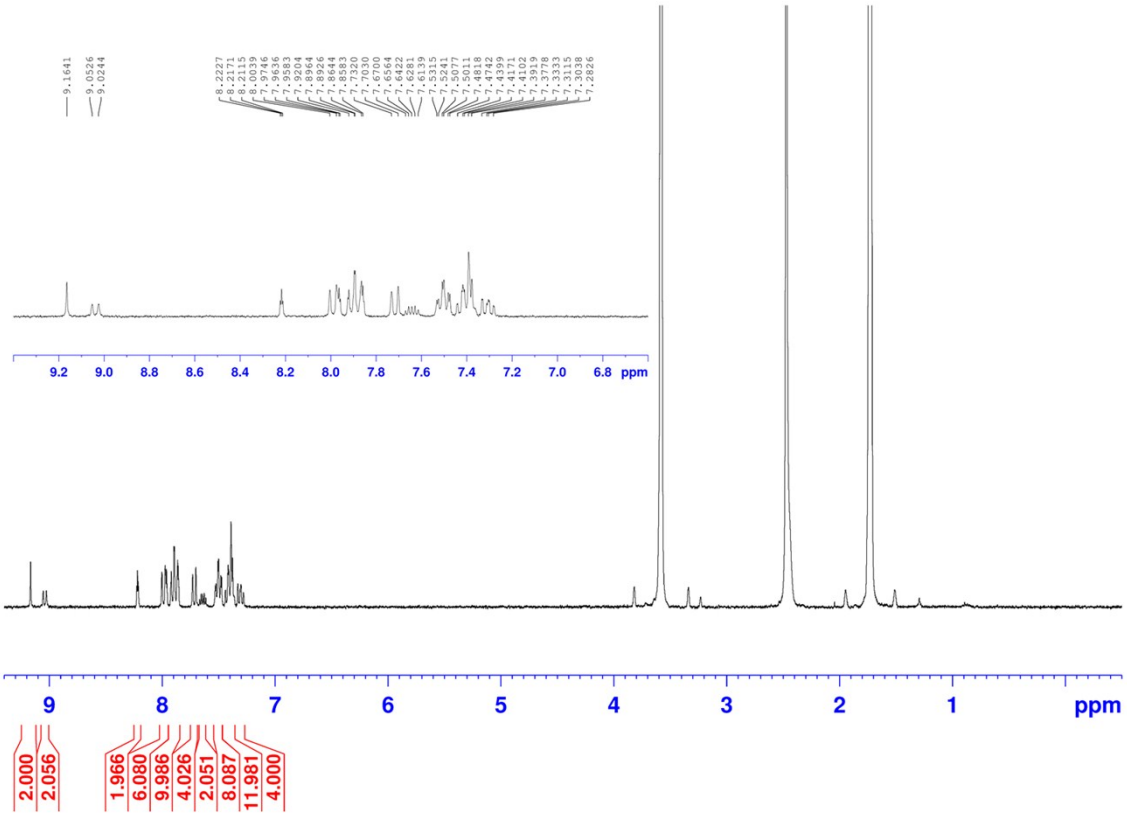

Fig. S1 ^{1}H NMR spectrum of the DAC-TP.

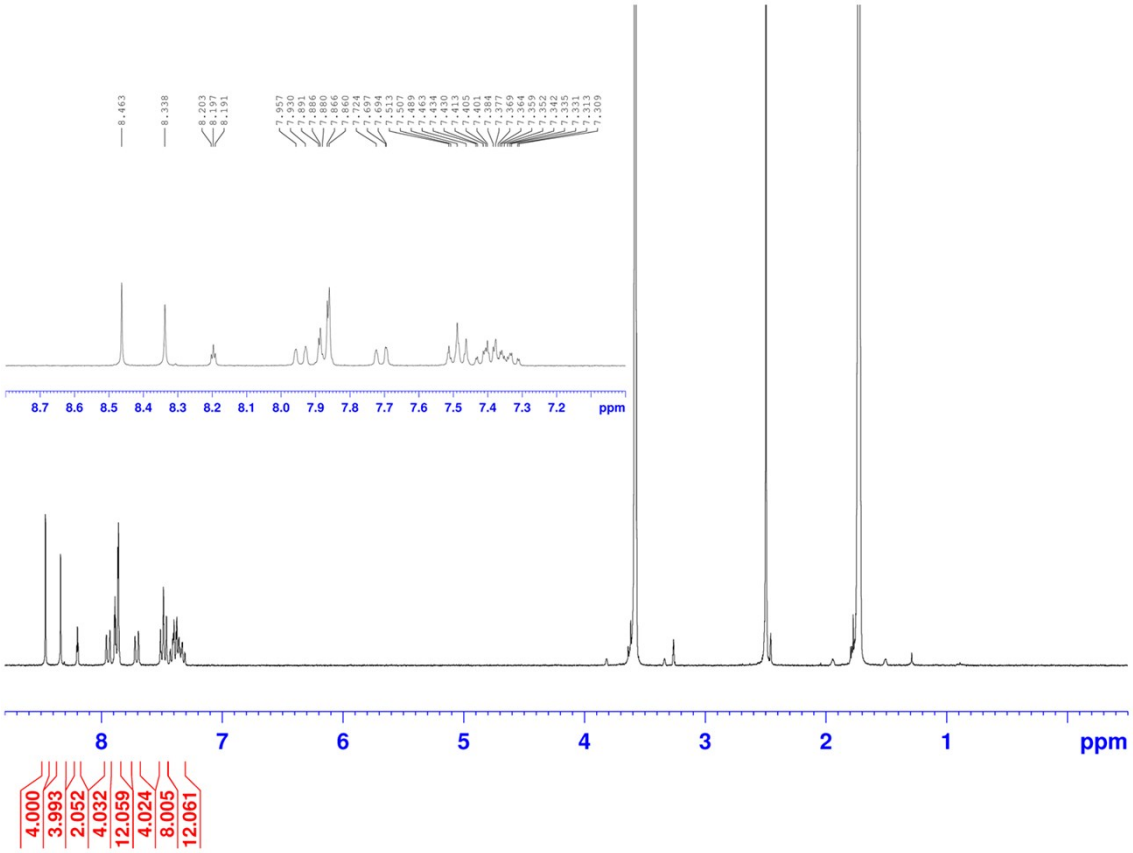

Fig. S2 ^{1}H NMR spectrum of the 2,7 DAP-TP.

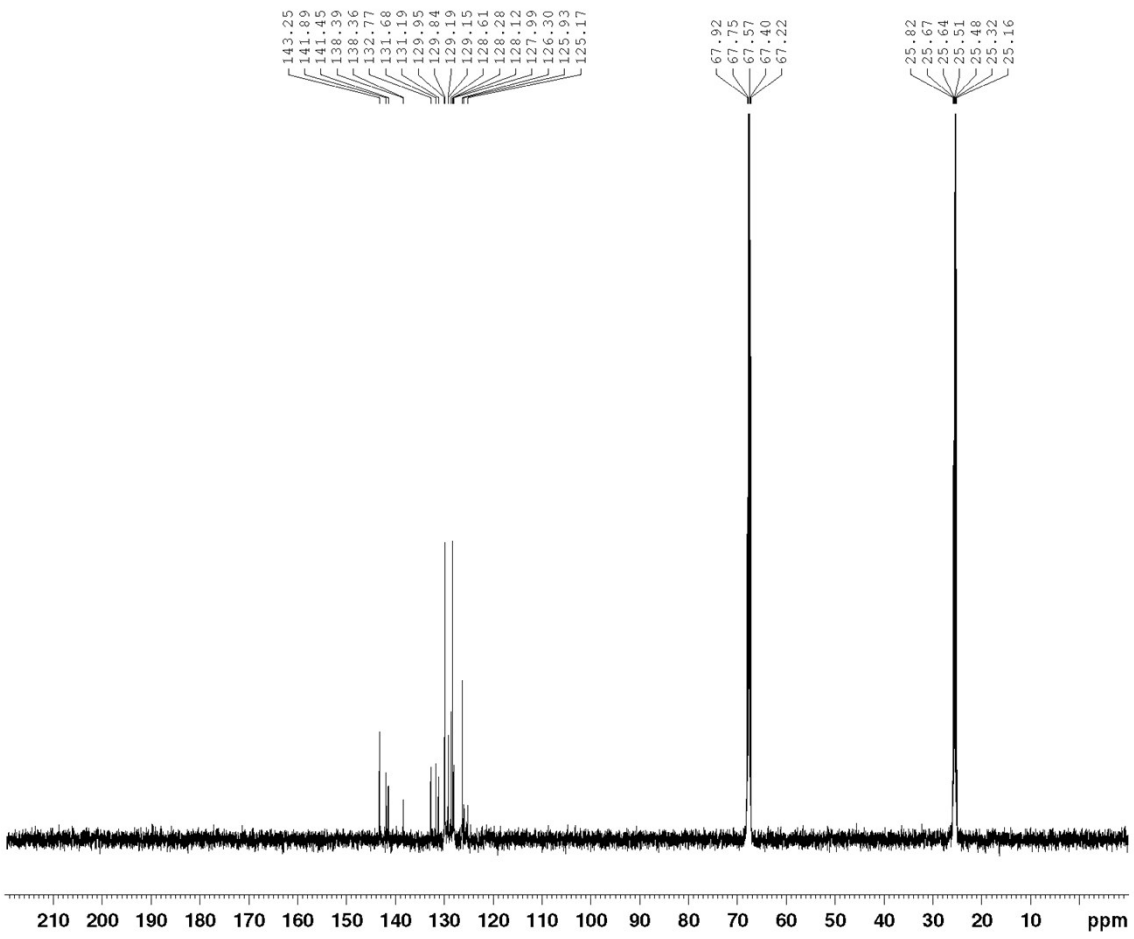

Fig. S3 ^{13}C NMR spectrum of the 2,7 DAP-TP.

Table S1. Peak wavelengths and lifetimes (τ) of 1,6 DAP-TP, DAC-TP, 2,7 DAP-TP in film state.

	Normal Emission			Excimer Emission		
	Wavelength (nm)	Lifetime[a] (ns)	Average Lifetime (ns)	Wavelength (nm)	Lifetime[a] (ns)	Average Lifetime (ns)
1,6 DAP-TP	455	0.20 (99.5%), 1.90 (0.5%)	0.24	591	0.75 (66.4%), 2.10 (31.8%), 6.80 (1.8%)	1.30
DAC-TP	453	0.24 (90.2%), 0.85 (9.4%), 4.50 (0.4%)	0.32	556	1.62 (49.9%), 4.22 (48.1%), 15.40 (2.0%)	3.15
2,7 DAP-TP	454	0.24 (89.9%), 0.97 (9.6%), 6.22 (0.5%)	0.35	537	2.30 (31.7%), 6.67 (68.3%)	5.28

[a] $I(t) = I_0 \exp(-t/\tau)$: where I_0 is the intensity at time zero and τ is the lifetime.

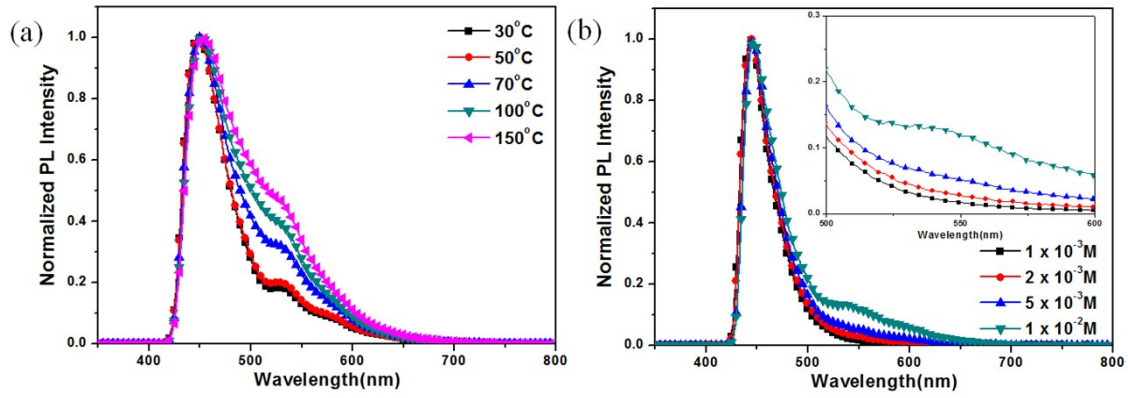

Fig. S4 (a) PL spectra of 2,7 DAP-TP in films with different temperatures, (b) PL spectra of 2,7 DAP-TP in THF solutions with different concentrations.

Table S2. Twisted angles of single crystals and calculated structures.

	Single Crystal		Predicted Structure		Overlap [a] (%)
	α (°)	β (°)	α (°)	β (°)	
1,6 DAP-TP	78.4	81.2	75.5	83.8	67
DAC-TP	74.5	76.4	67.1	69.9	60
2,7 DAP-TP	-	-	69.2	69.9	55

[a] Overlap percentage of anthracenes in calculated dimer structures.

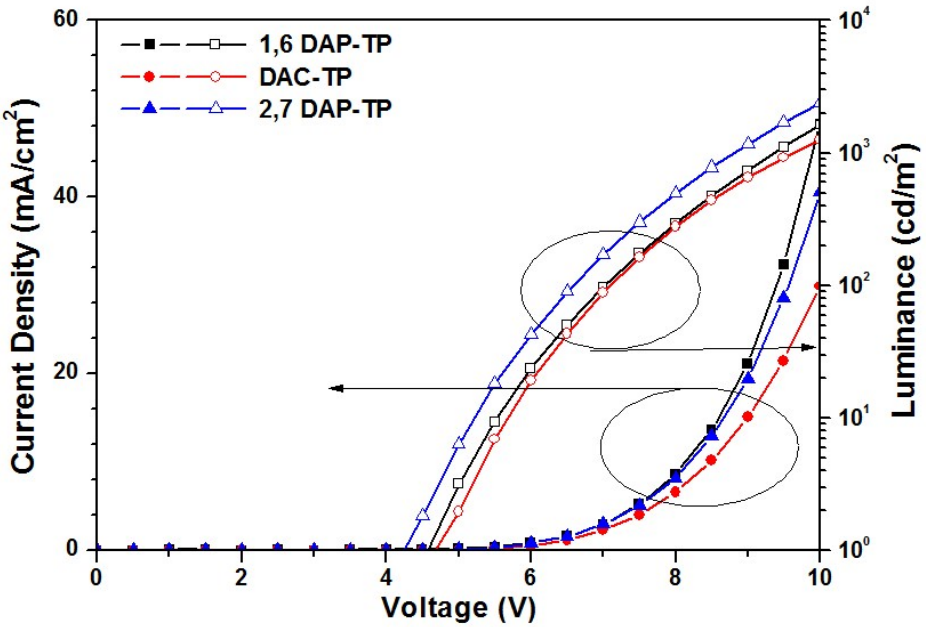

Fig. S5 Current density-voltage-luminance characteristics.

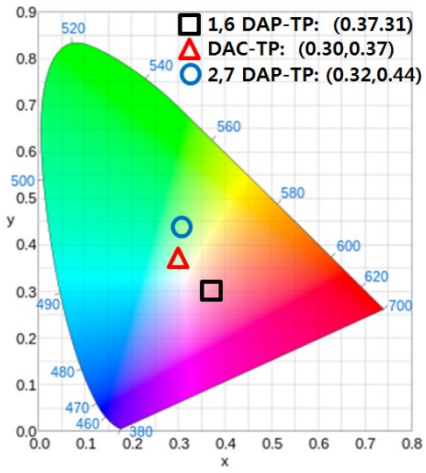

Fig. S6 CIE chromaticity diagram of the synthesized compounds using an emitting layer in the OLED device, yielding 10 mA/cm^2.