Electronic Supplementary Information (ESI)

Bipolar anthracene derivatives containing hole- and electron-transporting moieties for highly efficient blue electroluminescence devices

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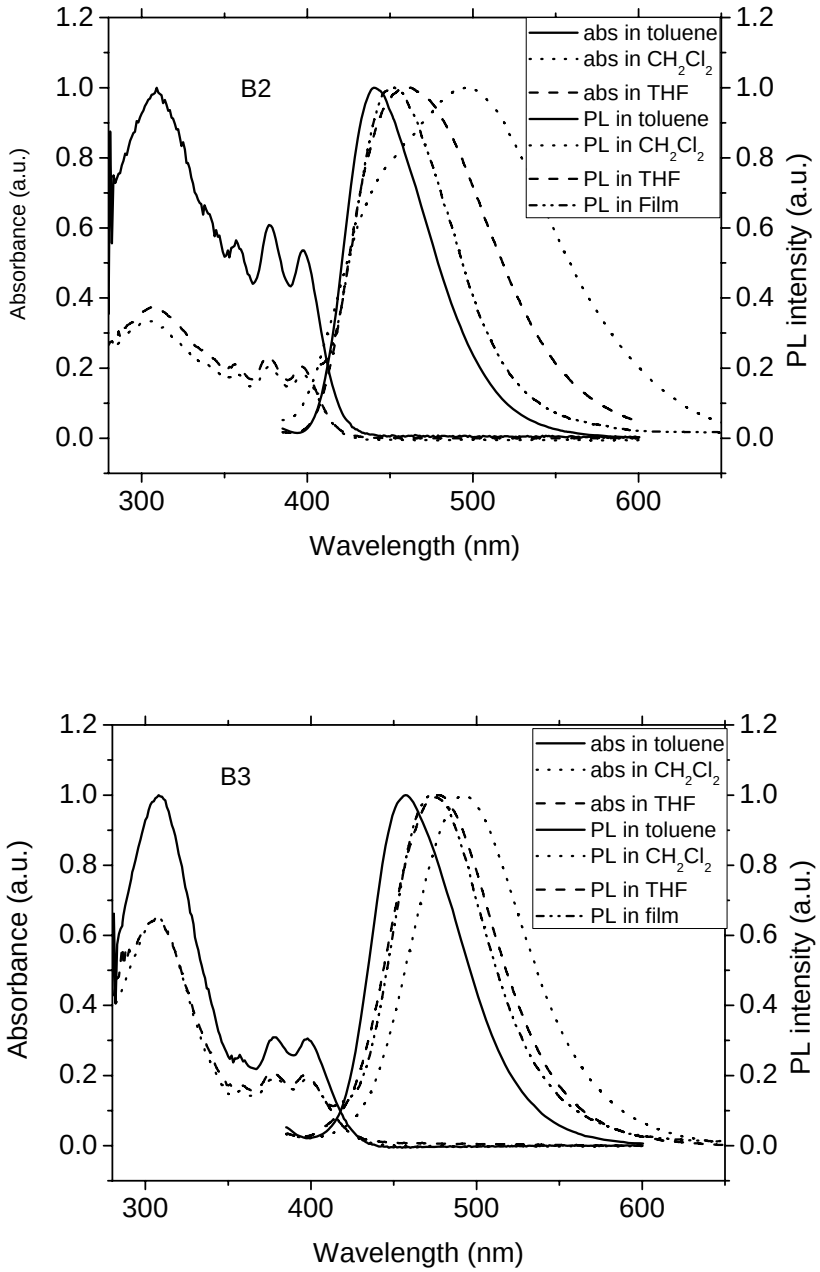


Fig. S1. The absorption spectra and fluorescence spectra (excited at 380 nm) of B2 and B3.

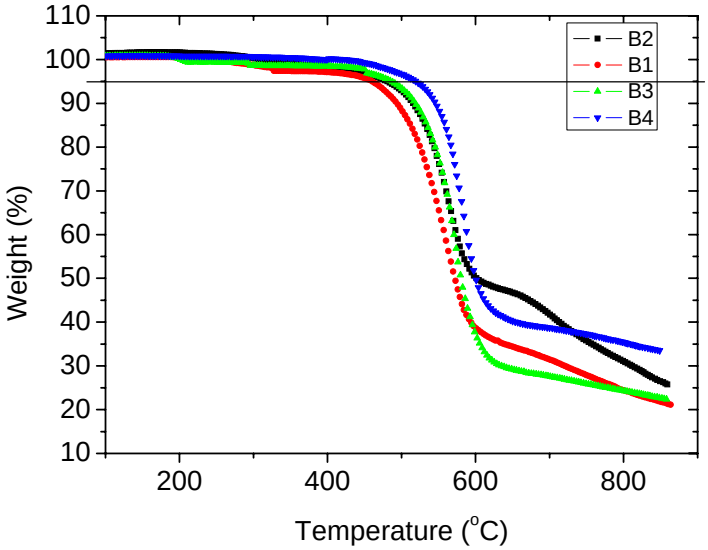


Fig. S2. The TGA curves of the bipolar compounds.

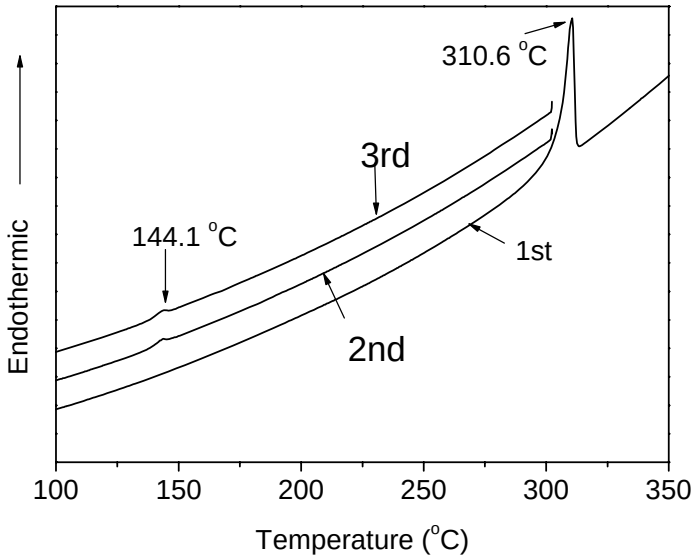
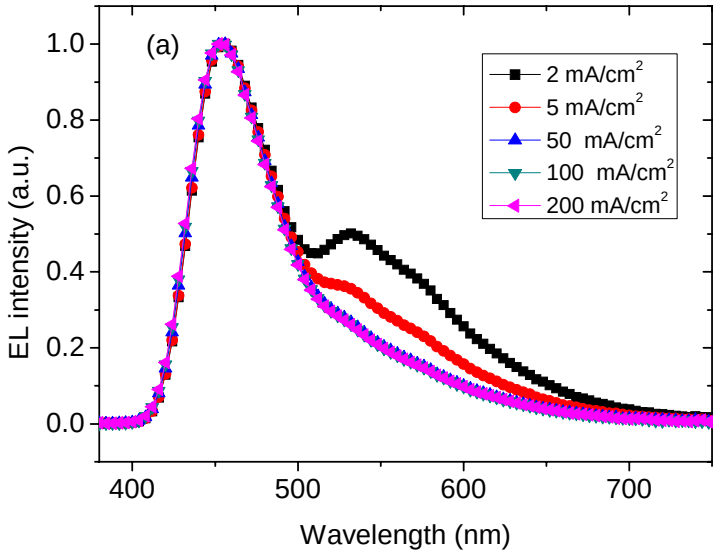
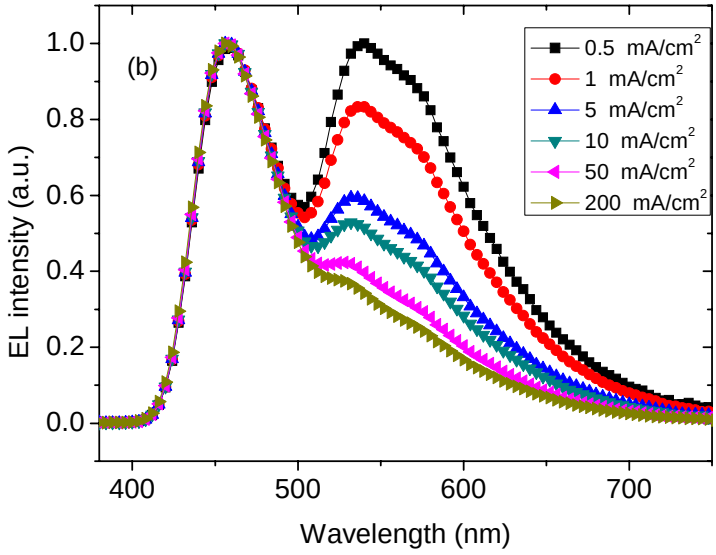


Fig. S3. DSC curves of B1 in the first, second, and third heating scan.


(a)
2 mA/cm2
5 mA/cm2
50 mA/cm2
100 mA/cm2
200 mA/cm2
EL intensity (a.u.)
Wavelength (nm)
1.0
0.8
0.6
0.4
0.2
0.0
400
500
600
700


(b)
0.5 mA/cm2
1 mA/cm2
5 mA/cm2
10 mA/cm2
50 mA/cm2
200 mA/cm2
EL intensity (a.u.)
Wavelength (nm)
1.0
0.8
0.6
0.4
0.2
0.0
400
500
600
700

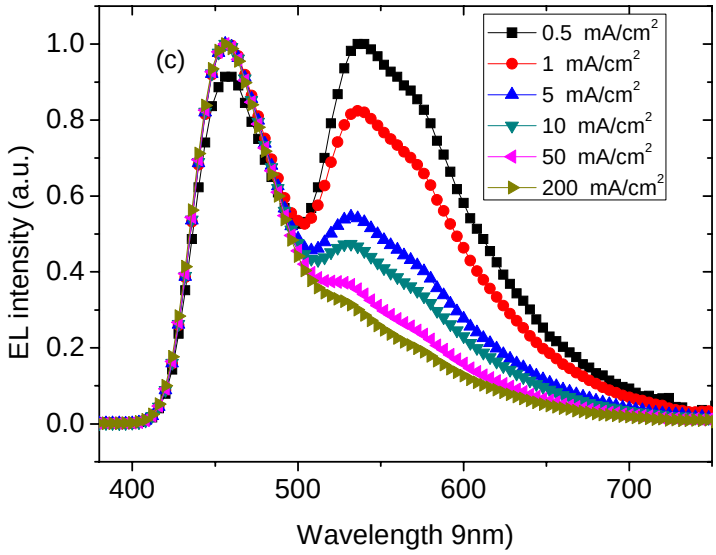


Fig. S4. EL spectra of device I (a), II (b), and III (c) for B2 at various applied current density.

Table S1. Electroluminescence performance for B1 and B2.

device		V_{on} (V) [a]	L_{max}(Voltage) (cd m^{-2}) (V) [b]	η_p (lm W^{-1})[c/d]	η_c (cd A^{-1})[e/f]	η_{ext} (%)[g/h]	L (cd m^{-2})[i]	V (V)[j]	λ_{em}(FWHM) (nm)[k]	CIE (x,y)[l]
B1	I	2.7	1301(8.3)	0.35/0.35	0.39/0.43	0.25/0.28	77.4	3.5	468(64)	(0.15,0.21)
	II	3.0	4629(9.6)	0.85/0.86	1.29/1.42	0.78/0.89	257.4	4.8	472(64)	(0.15,0.23)
	III	2.6	5995(7.8)	1.87/2.19	2.34/2.34	1.58/1.58	468.6	3.9	468(60)	(0.14,0.20)
B2	I	2.6	4323(7.5)	1.40/1.45	1.56/1.56	0.92/0.93	311.4	3.5	456(64)	(0.21,0.22)
	II	2.7	13380(8.5)	3.96/5.27	5.19/5.45	2.67/2.67	1037	4.1	456(64)	(0.24,0.27)
	III	2.7	9882(8.1)	3.00/3.68	3.70/3.85	1.99/1.99	740	3.9	456(60)	(0.23,0.25)

[a] V_{on}: turn-on voltage. [b] L_{max}: maximum luminance. Voltage: voltage at the maximum luminance. [c] η_p: power efficiency measured at 20 mA cm^{-2}. [d] Maximum power efficiency. [e] η_c: current efficiency measured at 20 mA cm^{-2}. [f] Maximum current efficiency. [g] η_{ext}: external quantum efficiency measured at 20 mA cm^{-2}. [h] Maximum external quantum efficiency. [i] L: luminance measured at 20 mA cm^{-2}. [j] V: voltage at 20 mA cm^{-2}. [k] λ_{em}: emission wavelength at 20 mA cm^{-2}. FWHM: full width at half maximum at 20 mA cm^{-2}. [l] Values at 20 mA cm^{-2}.