Electronic supplementary information

Two novel phenanthrene-based host materials in red and green organic light-emitting devices with low efficiency roll-off

Yuanyuan Wang, [a] Wenxuan Song, [a] Li Zhou, [a] Wenting Liang, *[b] Haichuan Mu, *[c] Jinhai Huang, [d] and Jianhua Su *[a]

[a] *Key Laboratory for Advanced Materials and Institute of Fine Chemicals, East China University of Science & Technology, Shanghai 200237, P.R. China; E-mail: bbsjh@ecust.edu.cn*

[b] *Institute of Environmental Science, Shanxi University, Taiyuan, 030006, PR China; E-mail: liangwt@sxu.edu.cn*

[c] *Department of Physics, School of Science, East China University of Science and Technology, 130 Meilong Road, Shanghai 200237, P. R. China; E-mail: hcmu@ecust.edu.cn*

[d] *Shanghai Taoe Chemical Technology Co., Ltd, Shanghai, P.R. China.*

Contents

^{1}H NMR, ^{13}C NMR, HRMS and EL spectra under different driving voltages of two materials.

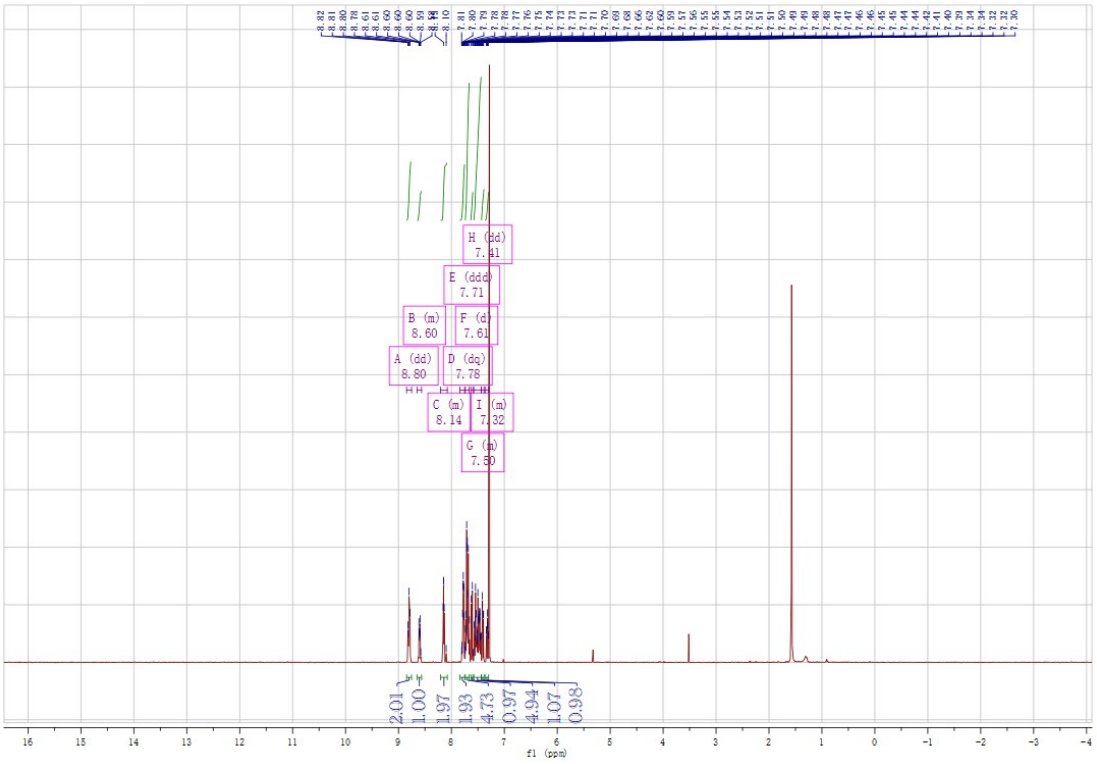
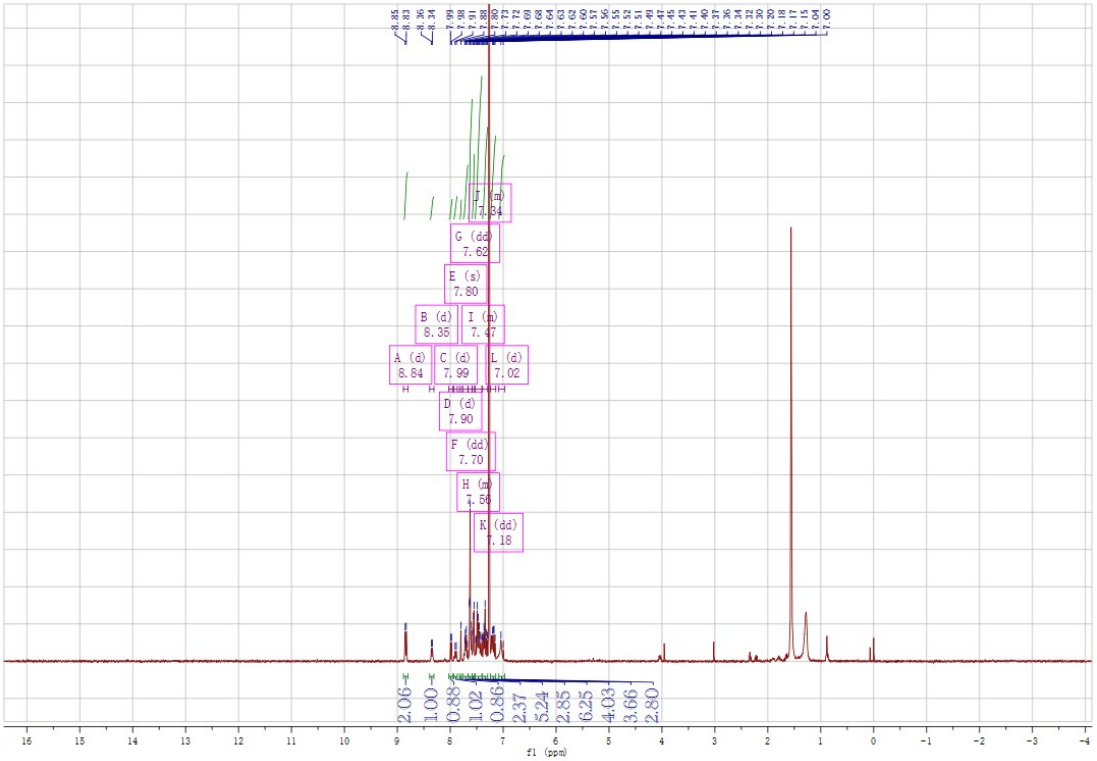
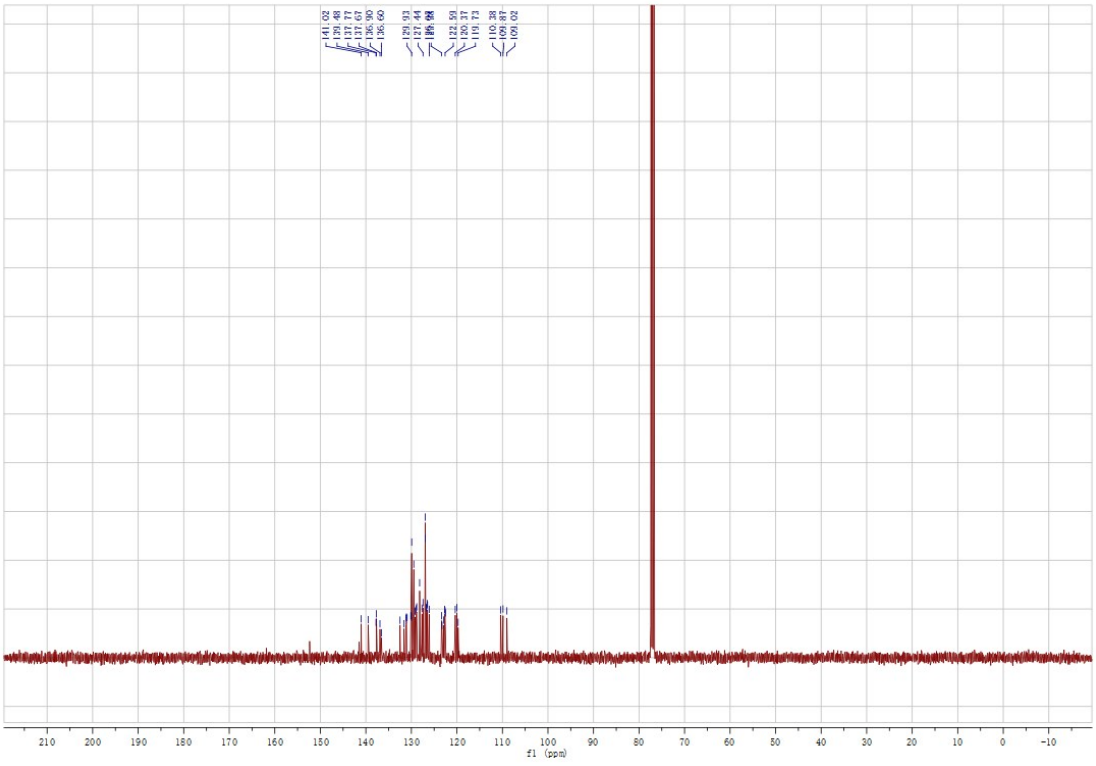


Fig. S1 The ^{1}H and ^{13}C NMR of **A**.



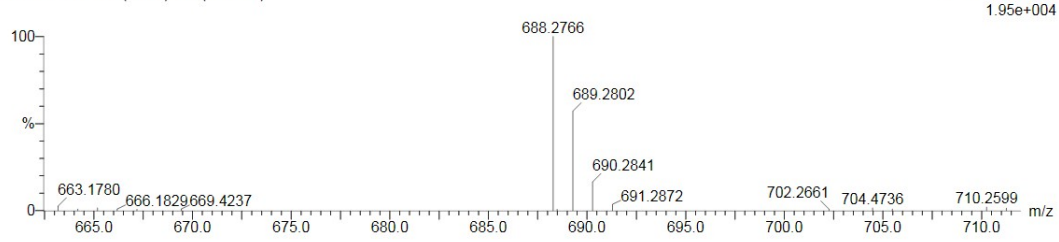


Elemental Composition Report **Page 1**

Single Mass Analysis
Tolerance = 5.0 mDa / DBE: min = -1.5, max = 50.0
Element prediction: Off
Number of isotope peaks used for i-FIT = 3

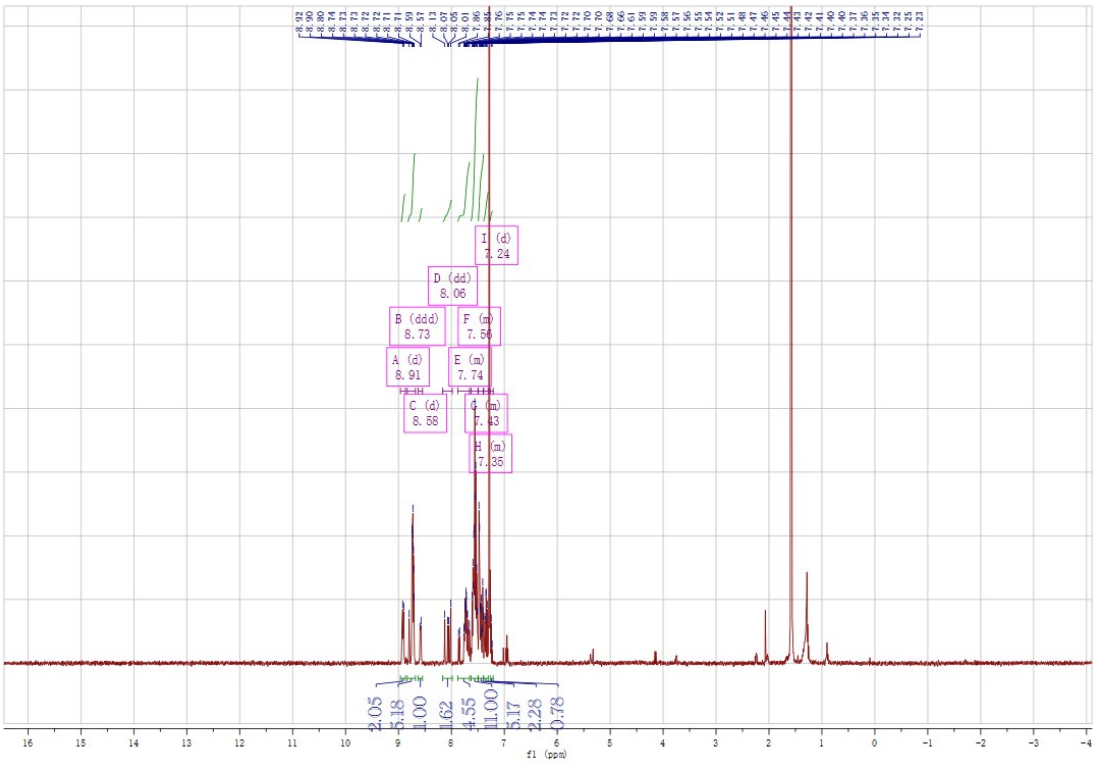
Monoisotopic Mass, Even Electron Ions
18 formula(e) evaluated with 1 results within limits (up to 50 best isotopic matches for each mass)
Elements Used:
C: 0-51 H: 0-99 N: 0-3
H-TIAN
TH-WYY-75 422 (4.855) Cm (422:427)

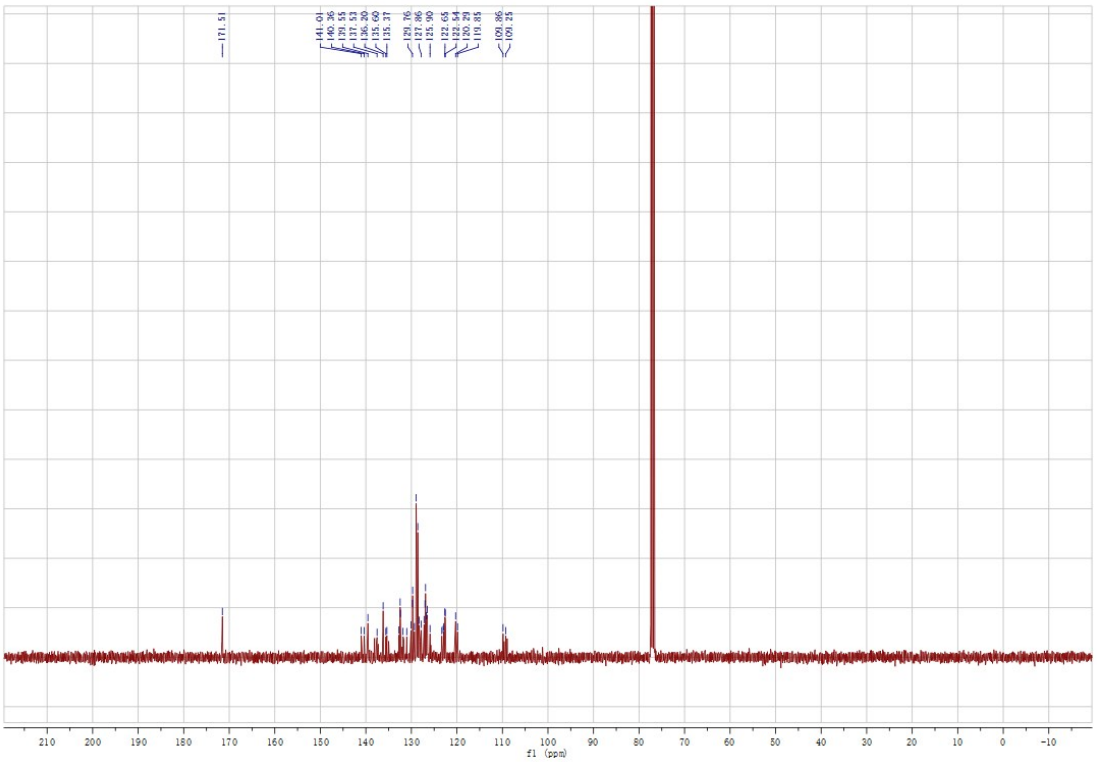
1: TOF MS ES+
1.95e+004



Minimum:				-1.5			
Maximum:		5.0	10.0	50.0			
Mass	Calc. Mass	mDa	PPM	DBE	i-FIT	i-FIT (Norm)	Formula
688.2766	688.2753	1.3	1.9	36.5	19.4	0.0	C51 H34 N3

Fig. S2 The ^{1}H and ^{13}C NMR and Mass spectrometry of **PBBM**.


I (d)
7.24
D (dd)
8.06
B (ddd)
8.73
F (m)
7.56
A (d)
8.91
E (m)
7.74
C (d)
8.58
G (m)
7.43
H (m)
7.35
2.05
5.18
1.00
1.62
4.55
11.00
5.17
2.28
0.78
f1 (ppm)


171.51
141.01
140.36
139.55
137.53
136.20
135.60
135.37
129.76
127.86
125.90
122.65
122.54
120.29
119.85
109.86
109.25
f1 (ppm)

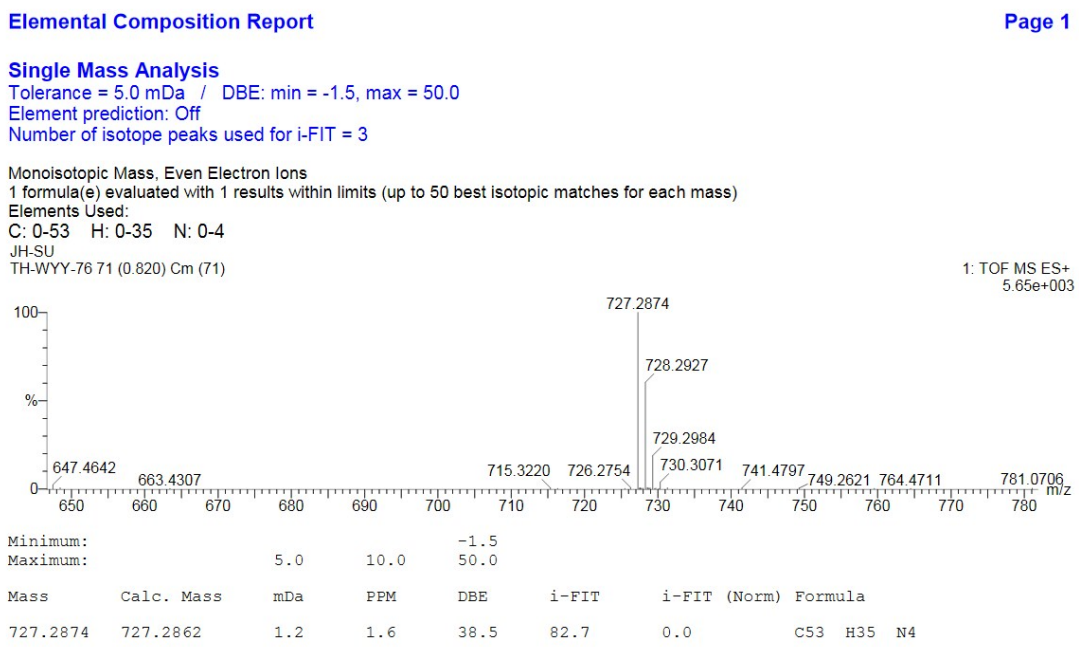


Fig. S3 The ^{1}H and ^{13}C NMR and Mass spectrometry of **PBTZ**.

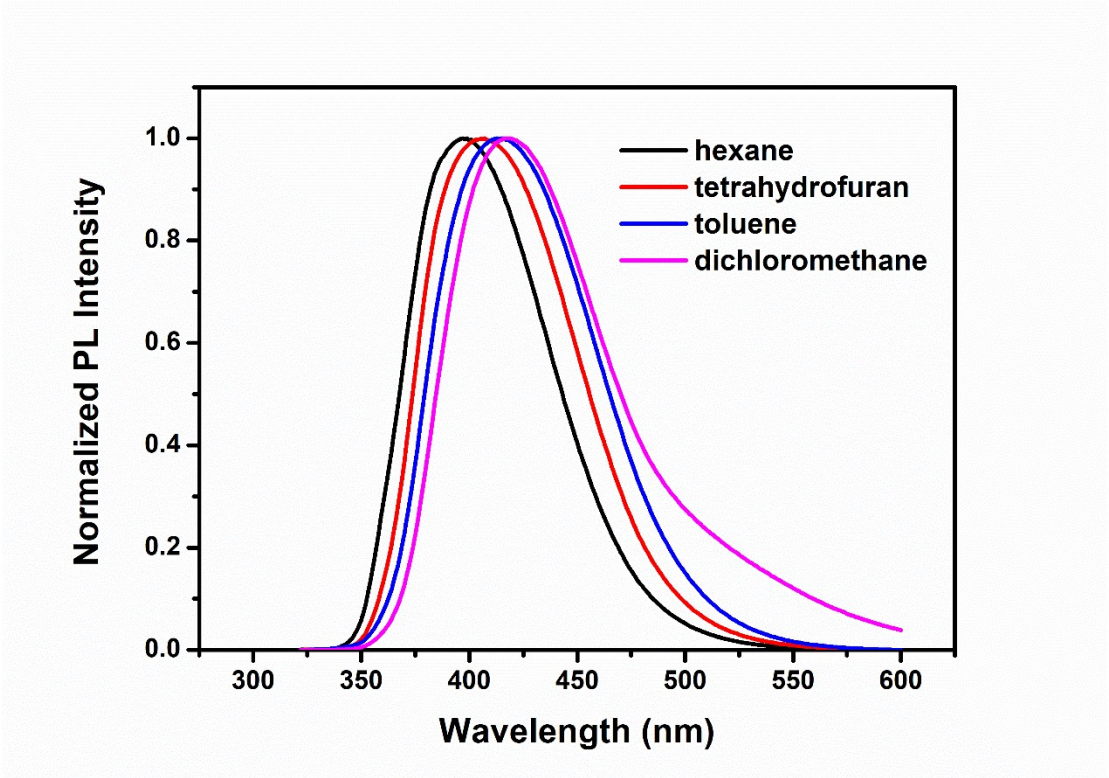


Fig. S4 PL spectra of **PBBM** in different solvents.

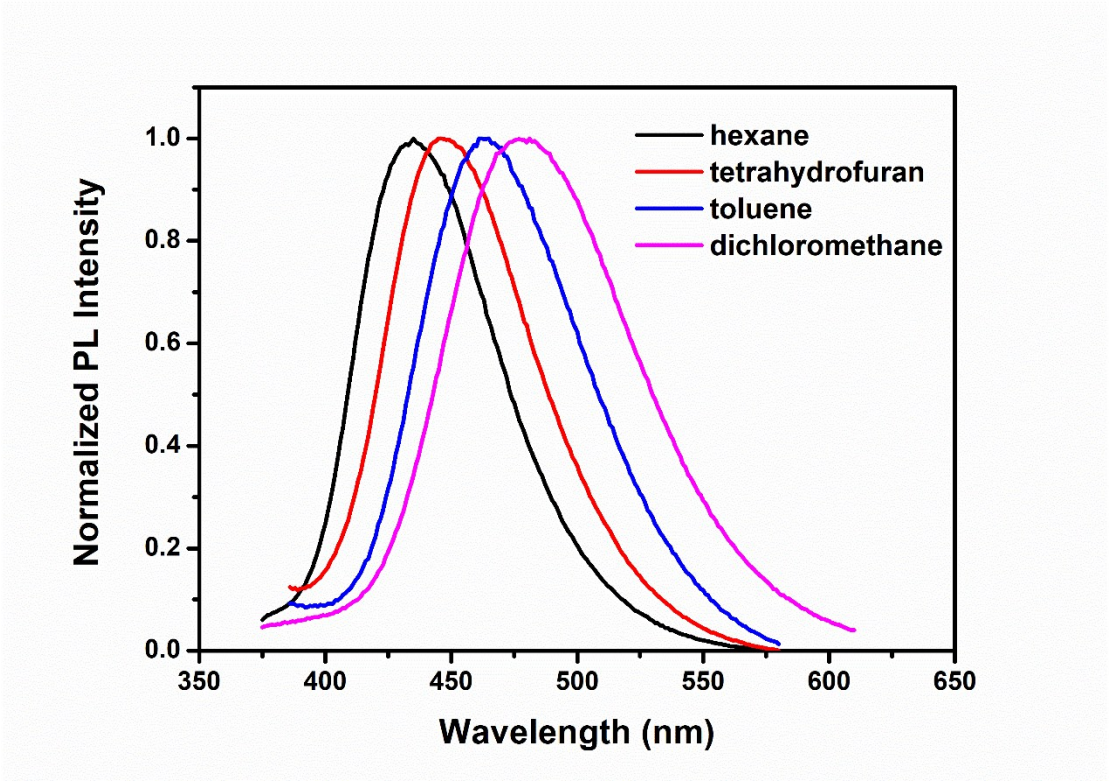


Fig. S5 PL spectra of **PBTZ** in different solvents.

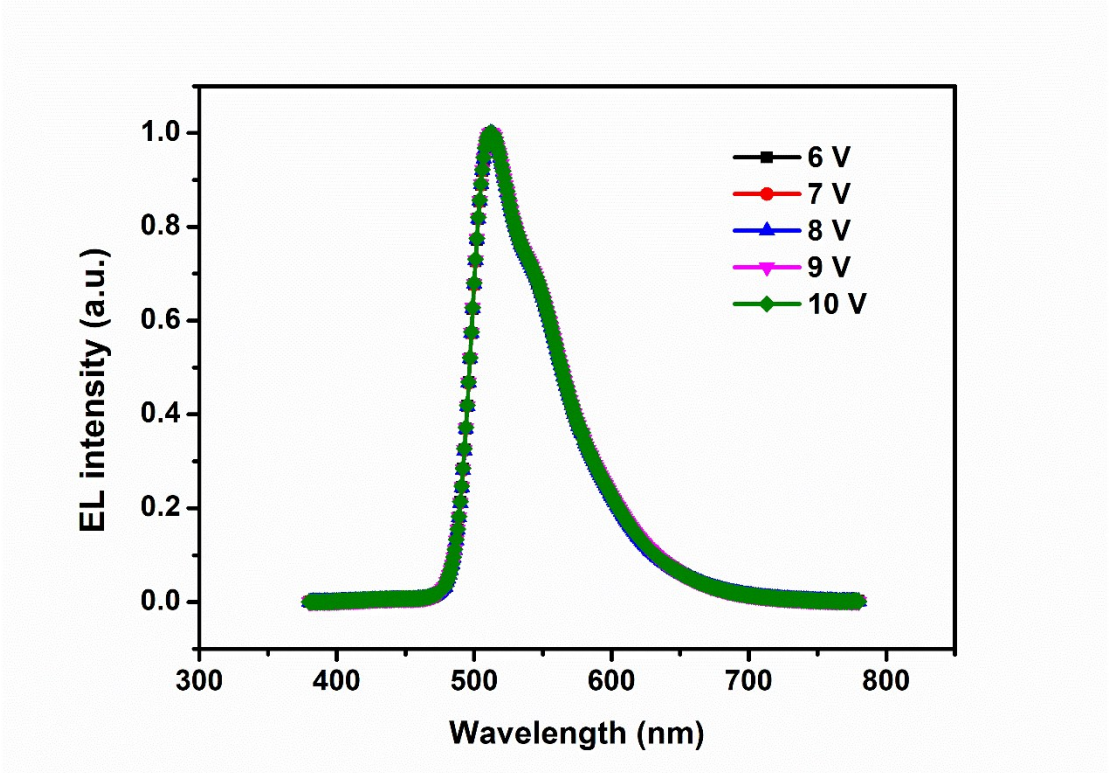


Fig. S6 EL spectra of **G1** under different driving voltages.

Fig. S7 EL spectra of **G2** under different driving voltages.

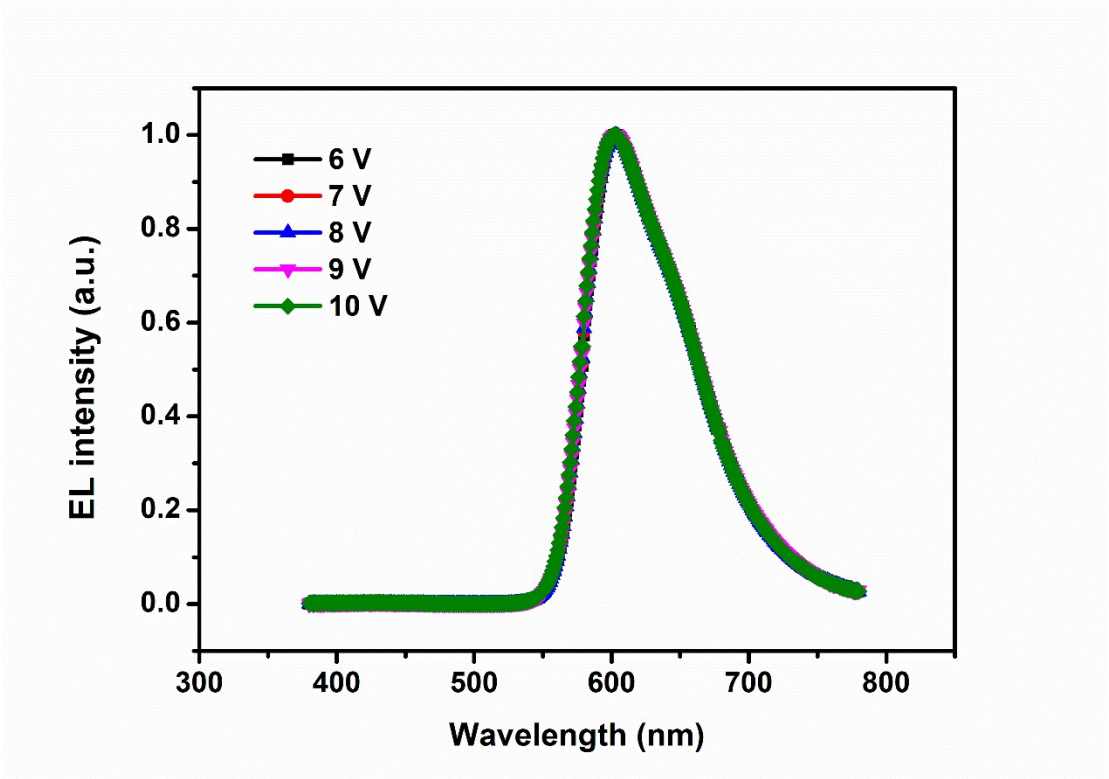


Fig. S8 EL spectra of **R1** under different driving voltages.

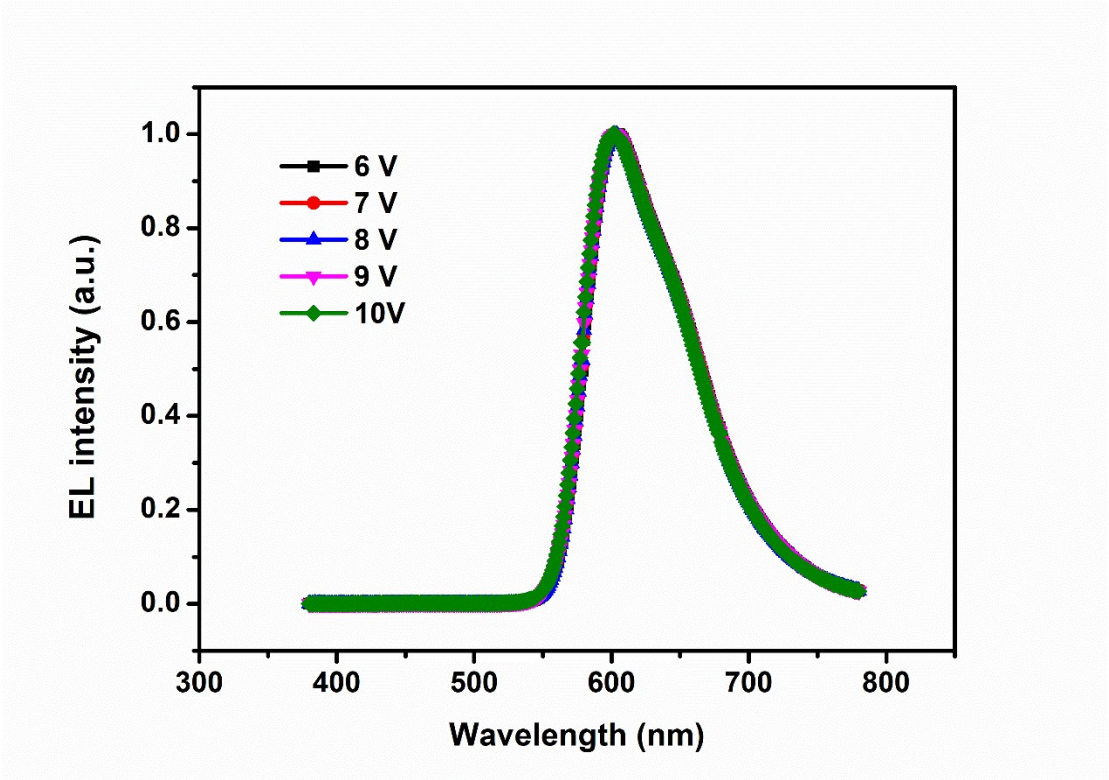


Fig. S9 EL spectra of **R2** under different driving voltages.