Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.
This journal is © The Royal Society of Chemistry 2017

Supporting Information

Improved Efficiency of Blue Polymer Light-Emitting Diodes Utilizing A Hole Transport Material

Junfei Liang,[a] Lei Ying,*,[a] Wei Yang,[a] Junbiao Peng,*,[a] and Yong Cao[a]

† Institute of Polymer Optoelectronic Materials and Devices, State Key Laboratory of Luminescent Materials and Devices, South China University of Technology, Guangzhou, 510640, China

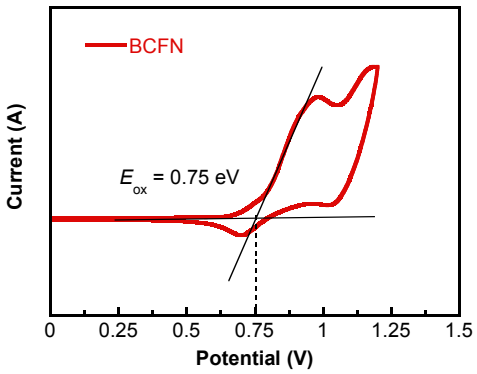

Figure S1. The CV characteristics of BCFN. The observed onset of the oxidation potential (E_{OX}) is 0.75 V, and the redox of ferrocene/ferrocenium is estimated as 0.25 V under exactly the same condition. According to the equation of HOMO = –e(E_{OX} + 4.80 – 0.25) eV, the HOMO is calculated to be –5.30 eV. The lowest unoccupied molecular orbital (LUMO) energy level of BCFN is estimated by adding the optical bandgap (E_g^{opt} = 3.06 eV, estimated from the onset of the absorption of BCFN, as shown in Figure 2a) to the HOMO, which is determined to be –2.24 eV.

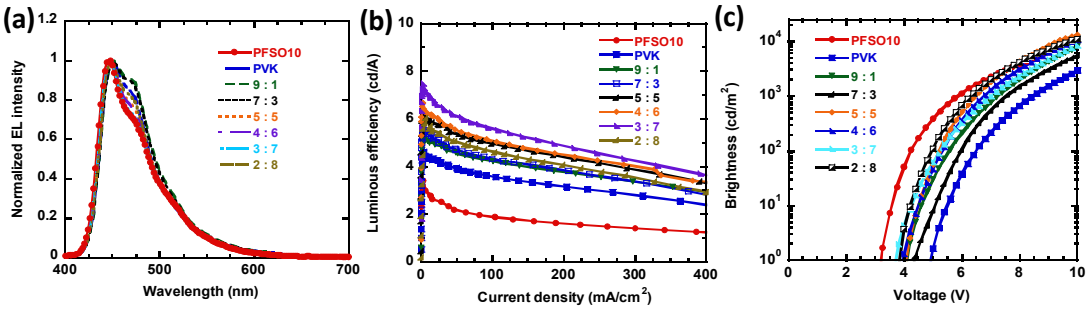

Figure S2. The electroluminescent spectra (a), luminous efficiency−current density (b) and luminance−voltage (c) characteristics of devices.

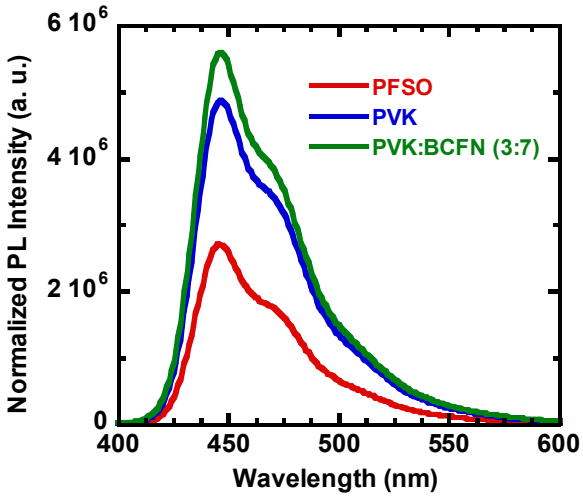

Figure S3. The PL spectra of PFSO (80 nm) films processed on quartz/PEDOT:PSS with or without 20 nm PVK or PVK:BCFN = 3:7 as hole transport layer.

Table S1. The hole mobility of the HTL computed with the field dependent space-charge limited current (SCLC) model.

HTL	**Hole mobility** [a]
PVK	2.09×10^{-9}
PVK:BCFN = 9:1	1.03×10^{-8}
PVK:BCFN = 7:3	9.86×10^{-7}
PVK:BCFN = 5:5	1.15×10^{-5}
PVK:BCFN = 4:6	2.14×10^{-5}
PVK:BCFN = 3:7	2.89×10^{-5}
PVK:BCFN = 2:8	3.32×10^{-5}
BCFN	5.43×10^{-5}

[a] The hole mobility is calculated in the electric field of 5×10^5 V cm^{-1}.