Supporting information

Ideal blue thermally activated delayed fluorescent emission assisted by a thermally activated delayed fluorescent assistant dopant through a fast reverse intersystem crossing mediated cascade energy transfer process

Si Hyun Han¹, Jae Ho Jeong², Ji Woong Yoo², Jun Yeob Lee¹*

¹School of Chemical Engineering, Sungkyunkwan University
2066, Seobu-ro, Jangan-gu, Seobu-ro, Suwon, Gyeonggi, 16419, Korea
*E-mail : leej17@skku.edu

²Material Science Co. Ltd. Ace Techno 10-cha, Gasan-dong
196, Gasandigital 1-ro, Geumcheon-gu, Seoul, Korea
List of Figures

Figure S1. The $^1$H NMR spectrum of isolated compound (a) in CDCl$_3$, t-DABNA in C$_6$D$_6$ (b). The $^{13}$C NMR spectrum of t-DABNA in CDCl$_3$ (c).

Figure S2. The TGA thermogram of t-DABNA.

Figure S3. The UV-Vis absorption, fluorescence and phosphorescence spectra of t-DABNA.

Figure S4. The prompt (a) and delayed fluorescence lifetime (b) from transient photoluminescence measurement of DPEPO:t-DABNA.

Figure S5. The cyclic voltammetry (oxidation) of t-DABNA.

Figure S6. Current density-voltage-luminance data of DPEPO:DABNA-1 and DPEPO:t-DABNA devices according to doping concentration.

Figure S7. Current density-voltage-luminance data of DPEPO:DMAC-DPS:DABNA-1 and DPEPO:DMAC-DPS:t-DABNA devices.

Figure S8. Current density-voltage data of the DPEPO:DMAC-DPS and DPEPO:DMAC-DPS:t-DABNA devices.

Figure S9. The measured angle-dependent p-polarized PL spectra of DPEPO:DMAC-DPS:t-DABNA.
Figure S1.
Figure S2.

$T_d = 418.7 \, ^\circ C$
Figure S3.
Figure S4.

(a)  

(b)
Figure S5.
Figure S6

(a) 

(b)
Figure S7

The diagram shows a plot with Voltage (V) on the x-axis and Current density (mA/cm²) on the y-axis for two different materials: DPEPO:DMAC-DPS:DABNA-1 (squares) and DPEPO:DMAC-DPS:t-DABNA (diamonds). The plot also includes a Luminance (cd/m²) scale on the right y-axis, ranging from 0.1 to 100000 cd/m², with a linear scale from 0 to 10000 cd/m². The red arrows indicate the trend of increasing Luminance with Voltage for both materials.
Figure S8

[Graph showing the relationship between voltage (V) and current density (mA/cm²) for two conditions: Without t-DABNA and With t-DABNA. The graph plots current density on the y-axis and voltage on the x-axis.]
Figure S9