Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Design and Performance Study of High Efficiency/Low Efficiency Roll-off/High CRI Hybrid WOLEDs Based on Aggregation-Induced Emission Materials as Fluorescent Emitters

Zeng Xu[1], Jiabao Gu[1], Jian Huang[1], Chengwei Lin[1], Yuanzhao Li[1], Dezhi Yang[1], Xianfeng Qiao[1], Anjun Qin[1], Zujin Zhao[1], Ben Zhong Tang[1,2,], Dongge Ma[1,]**

Mr. Z. Xu, Mr. J. Gu, Mrs. J. Huang, Mr. C. Lin, Mr. Y. Li, Dr. D. Y, Dr. X. Qiao, Prof. A. Qin, Prof. Z. Zhao, Prof. B. Tang and Prof. D. Ma

[1]Center for Aggregation-Induced Emission, Institute of Polymer Optoelectronic Materials and Devices, State Key Laboratory of Luminescent Materials and Devices, South China University of Technology, Guangzhou, 510640, China.

E-mail: msdgma@scut.edu.cn

Prof. B. Z. Tang

[2]Department of Chemistry, Hong Kong Branch of Chinese National Engineering Research Center for Tissue Restoration and Reconstruction, The Hong Kong University of Science & Technology, Clear Water Bay, Kowloon, Hong Kong, China.

E-mail: tangbenz@ust.hk

1. EL spectra of monochromatic devices

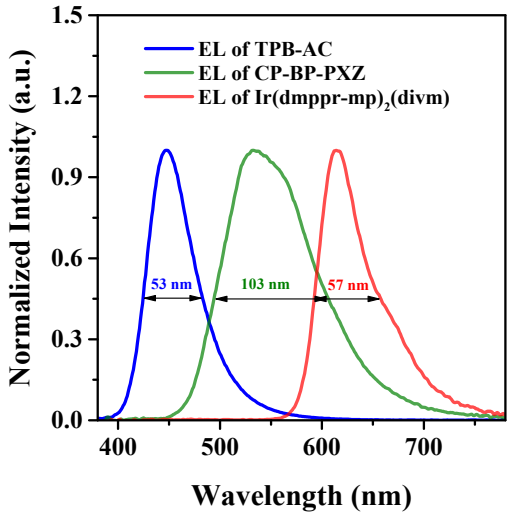

Figure S1. EL spectra of TPB-AC, CP-BP-PXZ, and Ir(dmppr-mp)$_2$(divm) based monochromatic devices.

2. Current efficiency–luminance characteristics of devices W1, W2, and W3

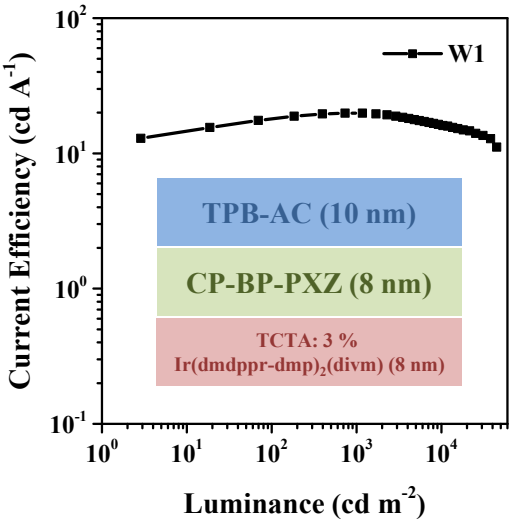

Figure S2. Current efficiency–luminance characteristic of device W1 with the configuration of ITO/HAT-CN (5 nm)/TAPC (50 nm)/TCTA (5 nm)/TCTA: 3 wt% Ir(dmppr-mp)$_2$(divm) (8 nm)/CP-BP-PXZ (8 nm)/TPB-AC (10 nm)/TmPyPB (40 nm)/LiF (1 nm)/Al (120 nm). Inset: the structure of emitting layer in device W1.

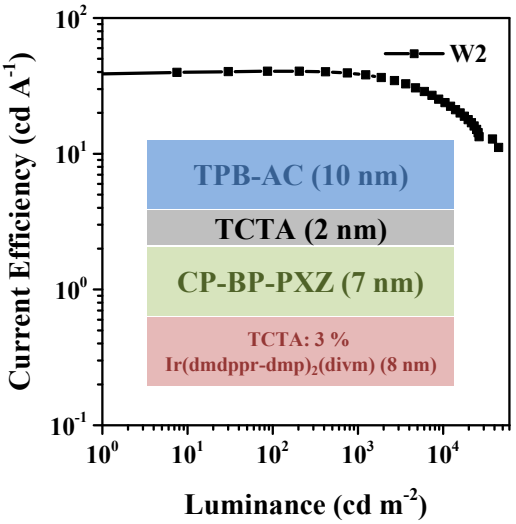

Figure S3. Current efficiency–luminance characteristic of device W2 with the configuration of ITO/HAT-CN (5 nm)/TAPC (50 nm)/TCTA (5 nm)/TCTA: 3 wt% Ir(dmppr-mp)$_2$(divm) (8 nm)/CP-BP-PXZ (7 nm)/TCTA (2 nm)/TPB-AC (10 nm)/TmPyPB (40 nm)/LiF (1 nm)/Al (120 nm). Inset: the structure of emitting layer in device W2.

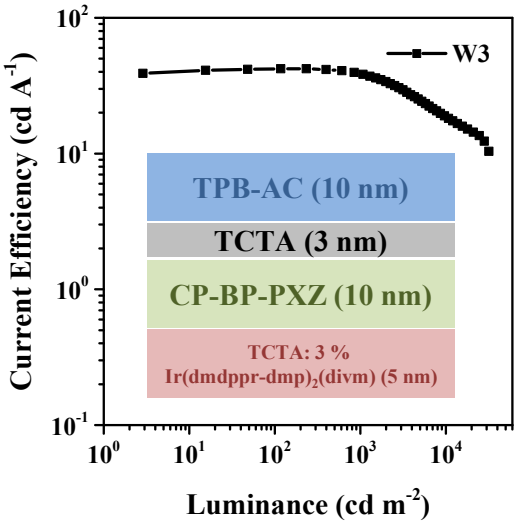

Figure S4. Current efficiency–luminance characteristic of device W3 with the configuration of ITO/HAT-CN (5 nm)/TAPC (50 nm)/TCTA (5 nm)/TCTA: 3 wt% Ir(dmppr-mp)$_2$(divm) (5 nm)/CP-BP-PXZ (10 nm)/TCTA (3 nm)/TPB-AC (10

nm)/TmPyPB (40 nm)/LiF (1 nm)/Al (120 nm). Inset: the structure of emitting layer in device W3.

3. EL spectra of devices C1-C3, and W2

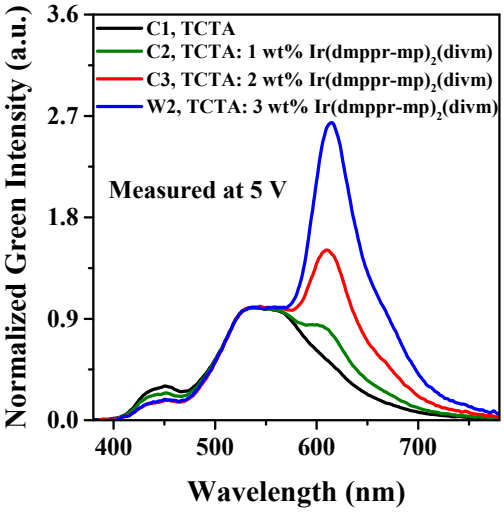

Figure S5. EL spectra of devices C1-C3, and W2 measured at 4 V. Device structure is ITO/HAT-CN (5 nm)/TAPC (50 nm)/TCTA (5 nm)/TCTA: y wt% Ir(dmppr-mp)$_2$(divm) (8 nm)/CP-BP-PXZ (7 nm)/TCTA (2 nm)/TPB-AC (10 nm)/TmPyPB (40 nm)/LiF (1 nm)/Al (120 nm), where y = 0 for device C1, y = 1 for device C2, y = 2 for device C3, y = 3 for device W2.

4. PL spectra of film 1-4

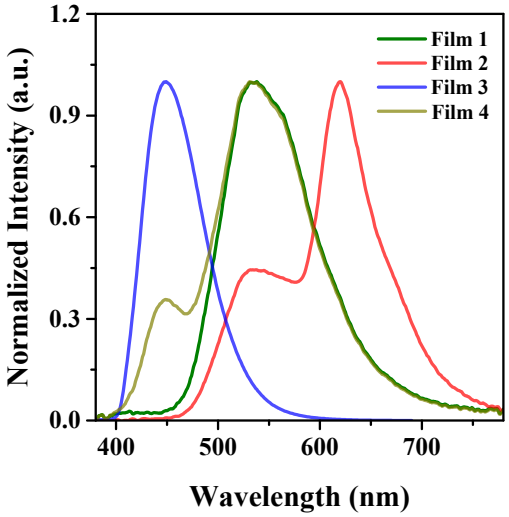

Figure S6. PL spectra of films 1-4. Structures of film 1: substrate/TCTA (8 nm)/CP-BP-PXZ (7 nm), film 2: substrate/TCTA : 3 wt% $Ir(dmppr\text{-}mp)_2(divm)$ (8 nm)/CP-BP-PXZ (7 nm), film 3: substrate/TCTA (2 nm)/TPB-AC (10 nm), film 4: substrate/CP-BP-PXZ (7 nm)/TCTA (2 nm)/TPB-AC (10 nm).