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Supporting information

A new strategy for structuring white organic light-emitting diodes by combining complementary emissions in the same interface

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Section S1

ITO glass substrates were scrubbed and sonicated consecutively with detergent water, deionized water, and acetone, dried in drying cabinet, and then exposed to a UV ozone environment for 10 min. After these processes, the cleaned ITO glass substrates were loaded in a vacuum chamber, a base pressure of ≤ 5×10^{-4} Pa, for film deposition using thermal evaporation technology. The deposition rate and film thickness were monitored controlled by the calibrated crystal quartz sensors, e.g., the deposition rates of organic materials, MoO_3, LiF, and cathode Al were controlled at about 1 Å/s, 0.3 Å/s, 0.1 Å/s, and 3−6 Å/s, respectively. The array arrangements for different exciplex acceptor layers on the same exciplex donor layer are realized by switching mask technology under a high vacuum environment. Specifically, in this work, exciplex acceptor material TPBi is firstly deposited on the part surface of exciplex donor (TAPC) layer by controlling a pattern mask, and then, by switching pattern mask, another exciplex acceptor material PO-T2T is further deposited on the remaining surface of the same exciplex donor (TAPC) layer, on which there is no covering TPBi film. The TPBi and PO-T2T layers, with the same thickness, forming the seamless dense arrangement on the same exciplex donor (TAPC) layer. Organic films for PL measurements were fabricated with the same method as device fabrication. The EL spectra, CRI, CCT, and CIE coordinates of all OLEDs were measured by a computer controlled PR-655 spectra scan spectrometer. The current density-voltage-luminance characteristics, and current efficiency, and power efficiency were recorded by a computer-controlled Keithley 2400 source integrated with a BM-70A luminance meter. The external quantum efficiency was calculated from the current density-voltage-luminance curve and spectra data.

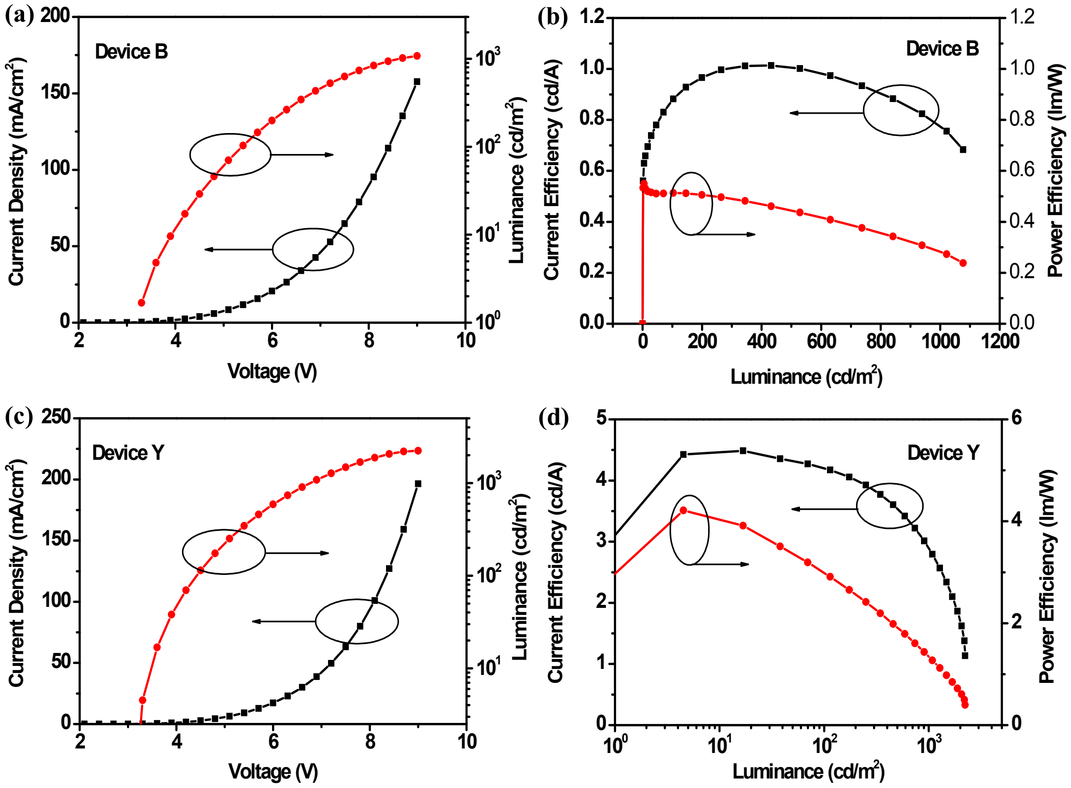

Figure S1 The current density-voltage-luminance characteristics curves (a and c), and current efficiency-luminance -power efficiency characteristics curves (b and d) for exciplex-based blue and yellow devices B and Y.