Electronic supplementary information

Thermally Activated Delayed Fluorescence of Co-deposited Copper(I) complexes: Cost-effective Emitters for Highly Efficient Organic Light-Emitting Diodes

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General Information.

All chemicals and reagents were used as received from commercial sources without further purification unless stated otherwise, such as 1,3,5-tris(N-phenylbenzimidazole-2-yl) benzene (**TPBi**), 8-hydroxyquinoline lithium (**Liq**), ,4,5,8,9,11-hexaaza triphenylene-hexacarbonitrile (**HAT-CN**), *N,N′*-bis (1-naphthyl)-*N,N′*-diphenyl-[1,1'-biphenyl]-4,4'-diamine (**NPB**), tris(4-carbazoyl-9-ylphenyl)amine (**TCTA**). Bis(1-(biphenyl)isoquinoline)iridium(III) acetylacetonate (**Ir(bpiq)$_2$acac**) were purchased from Yurui (Shanghai) Chemical Co. Ltd. CzBPCb and CzBPDCb were synthesized as reported literature.[36]

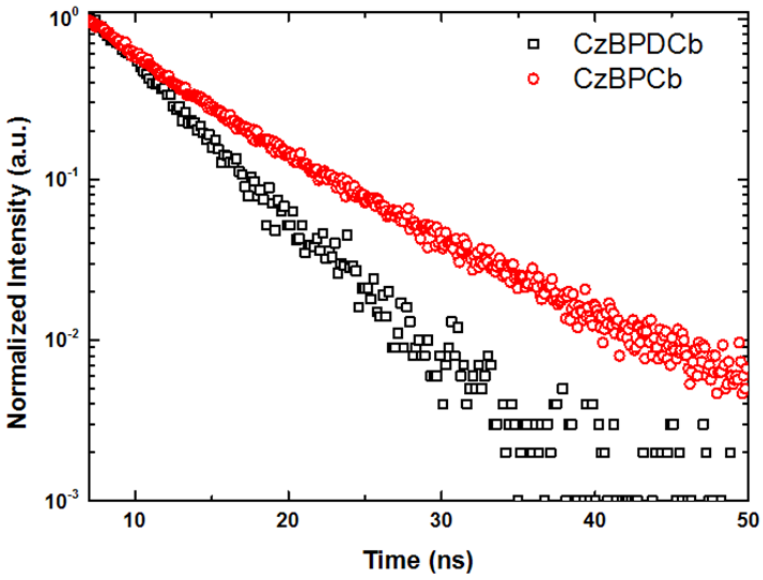

Figure S1. Transient PL decay curves of the neat films of CzBPDCb and CzBPCb.

$$\tau_p = {}^1/_{k_p} \quad , \quad \tau_d = {}^1/_{k_d} \qquad (1)$$

$$k_r^S = \Phi_{prompt} k_p \qquad (2)$$

$$k_{nr}^T = k_d - \Phi_{prompt} k_{RISC} \qquad (3)$$

$$k_{ISC} = (1 - \Phi_{prompt}) k_p \qquad (4)$$

$$k_{RISC} = \frac{k_p k_d}{k_{ISC}} \frac{\Phi_{delayed}}{\Phi_{prompt}} \qquad (5)$$

Figure S2. Equations for estimating the kinetic parameters

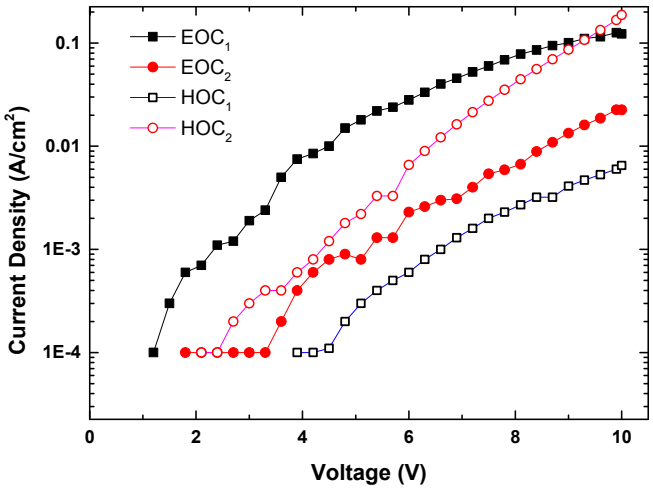

Figure S3. Current density-voltage (J-V) curves of EOCs and HOCs.

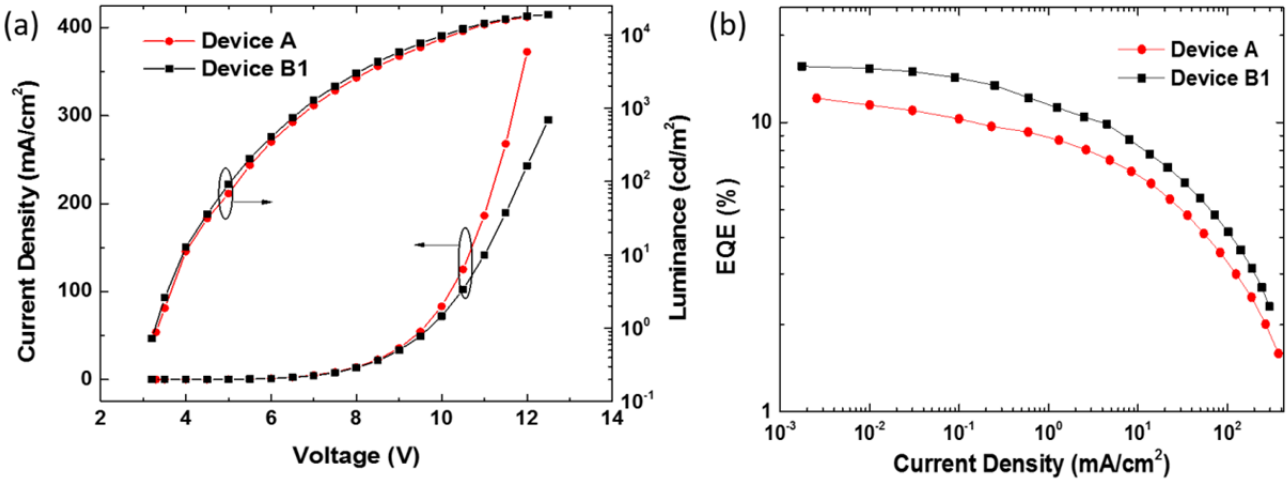

Figure S4. (a) Current density-Voltage-Luminance (J-V-L) characteristics, (b) EQE-J curves of device A and B1.

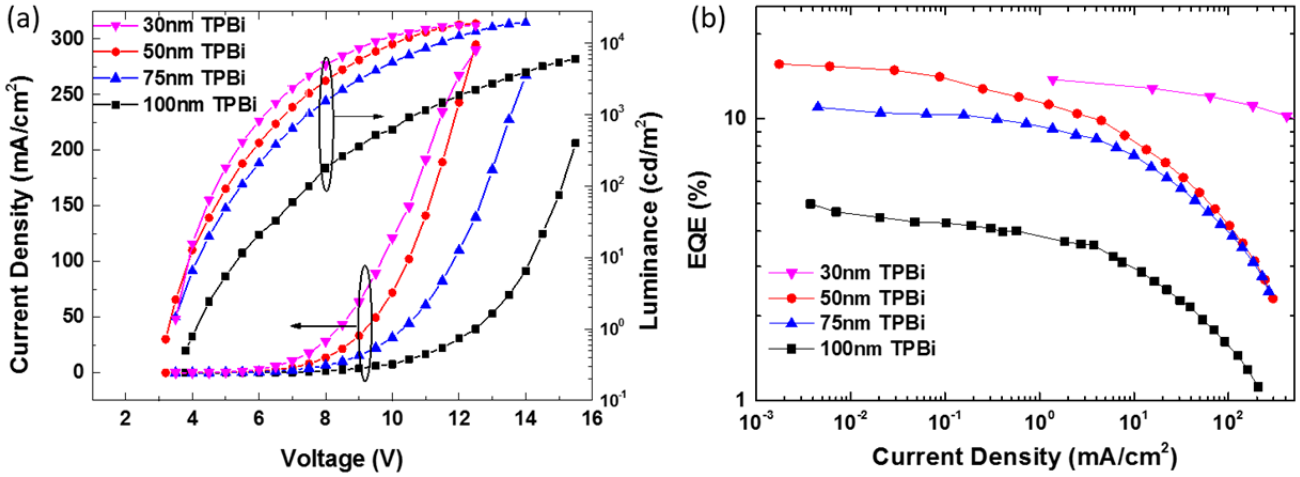

Figure S5. (a) J-V-L characteristics, (b) EQE-J curves of device B1-B4 with different thicknesses of TPBi.

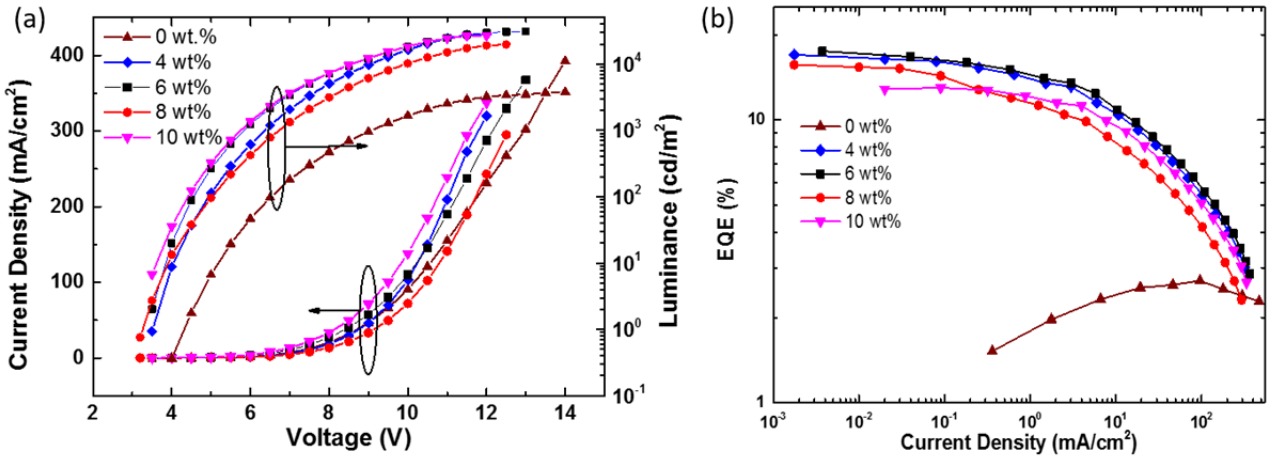

Figure S6. (a) J-V-L characteristics, (b) EQE-J curves of devices B1 and B5-B8 with different doping concentrations of CuI.

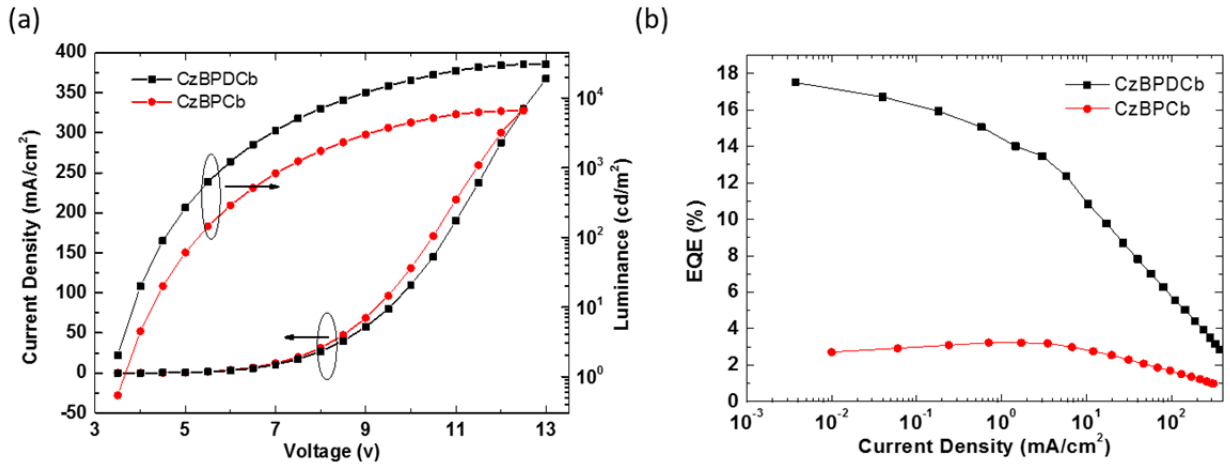

Figure S7. (a) J-V-L characteristics, (b) EQE-J curves of of devices B7 and C using CzBPDCb and CzBPCb as co-deposited ligand with 6 wt% of CuI.