

Electronic Supplementary Information

Extremely low efficiency roll-off of phosphorescent organic light-emitting diodes at high-brightness based on acridine heterocyclic derivatives

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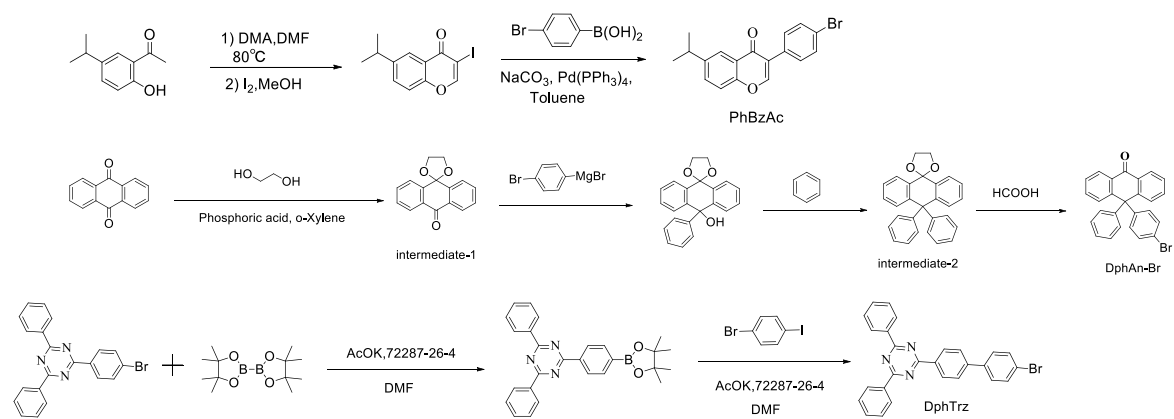
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Scheme. S1 Synthesis of intermediates and ancillary ligands

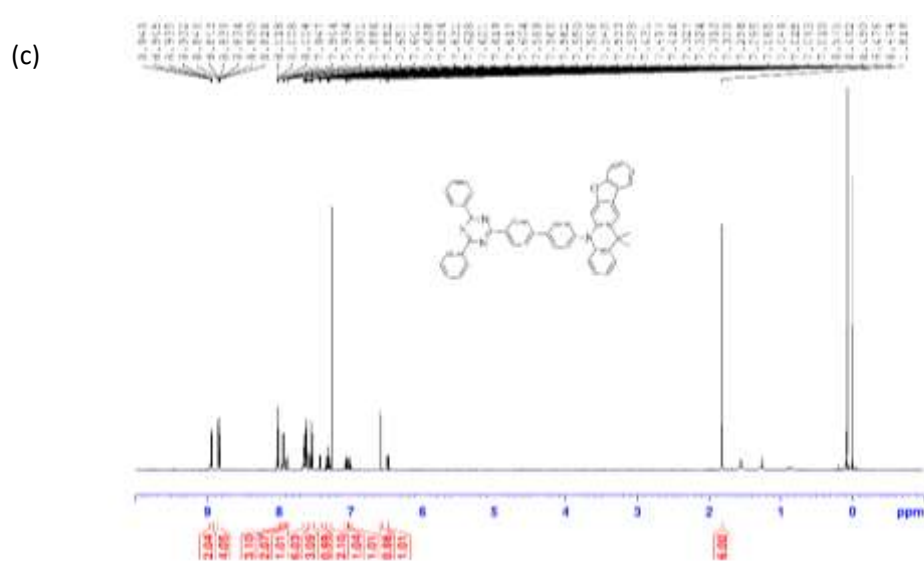
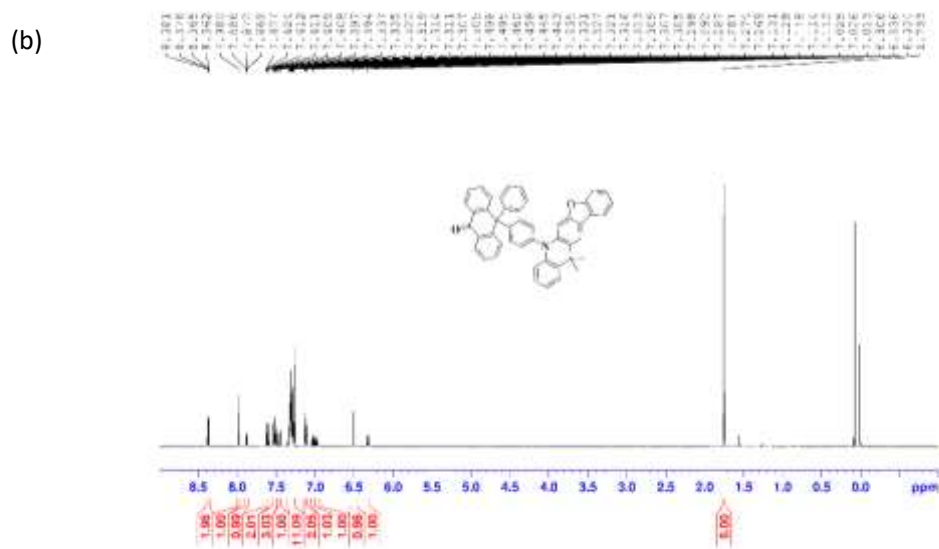
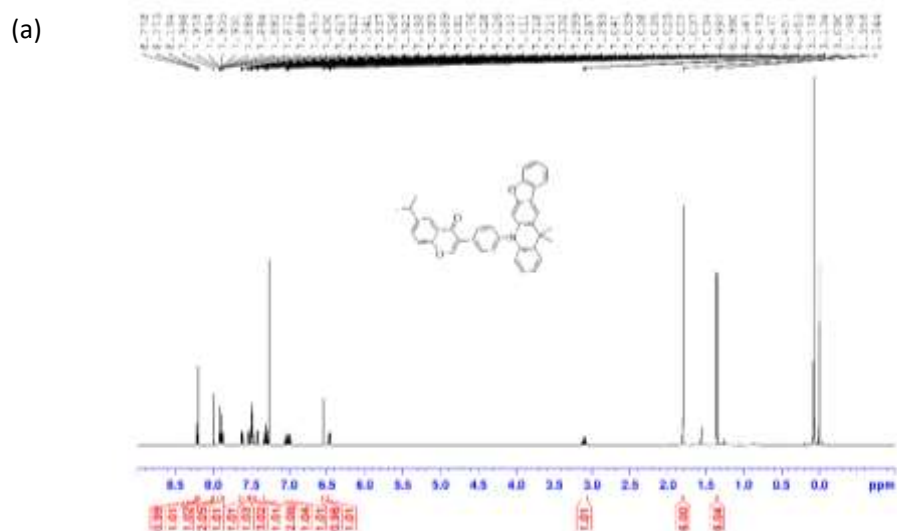


Fig. S1 ^1H NMR spectra of IpCm-PhBzAc (a), DpAn-BzAc (b) and DpTrz-BphBzAc (c).

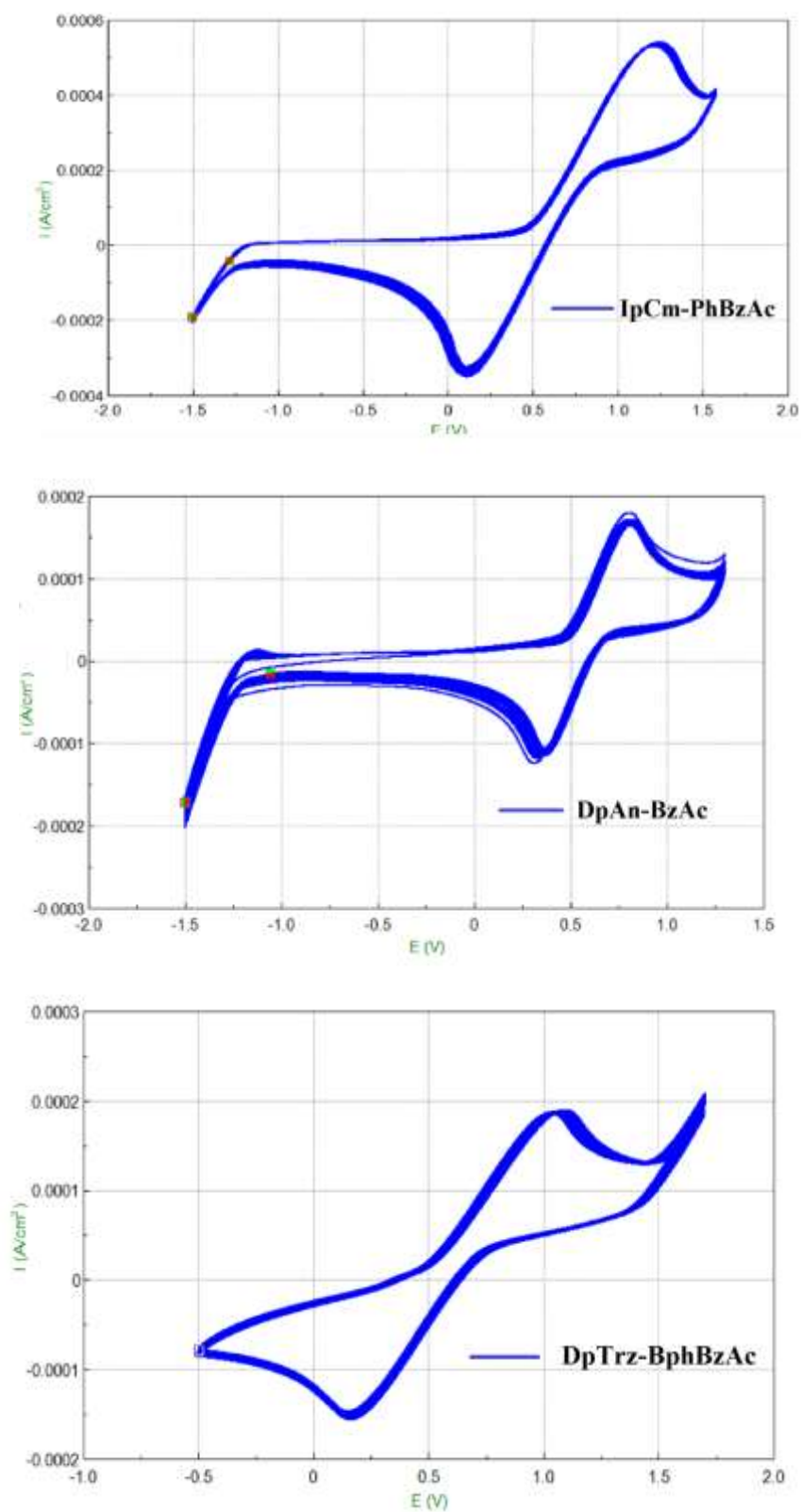


Fig. S2 Cyclic voltammograms of IpCm-PhBzAc, DpAn-BzAc and DpTrz-BphBzAc

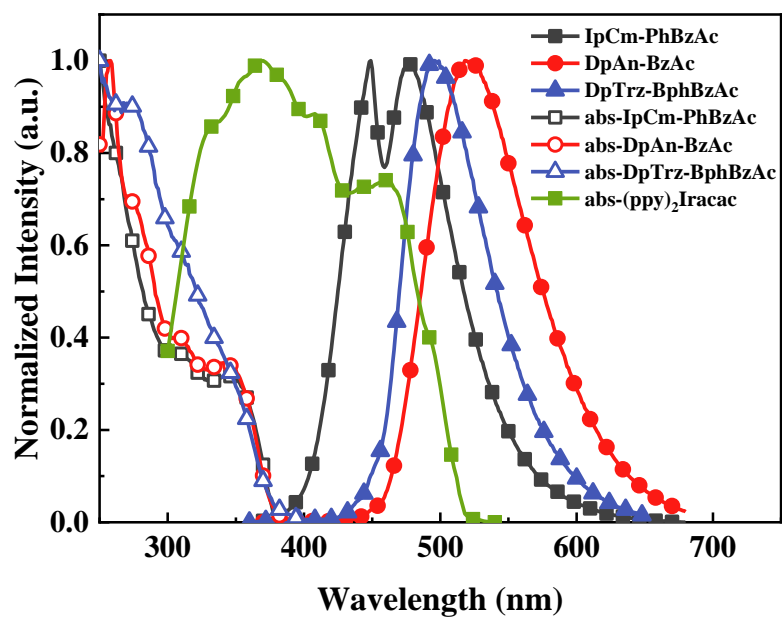


Fig. S3 UV-vis absorption (Abs) and PL spectra of three host materials and Ir complex in thin solid film at room temperature and low temperature

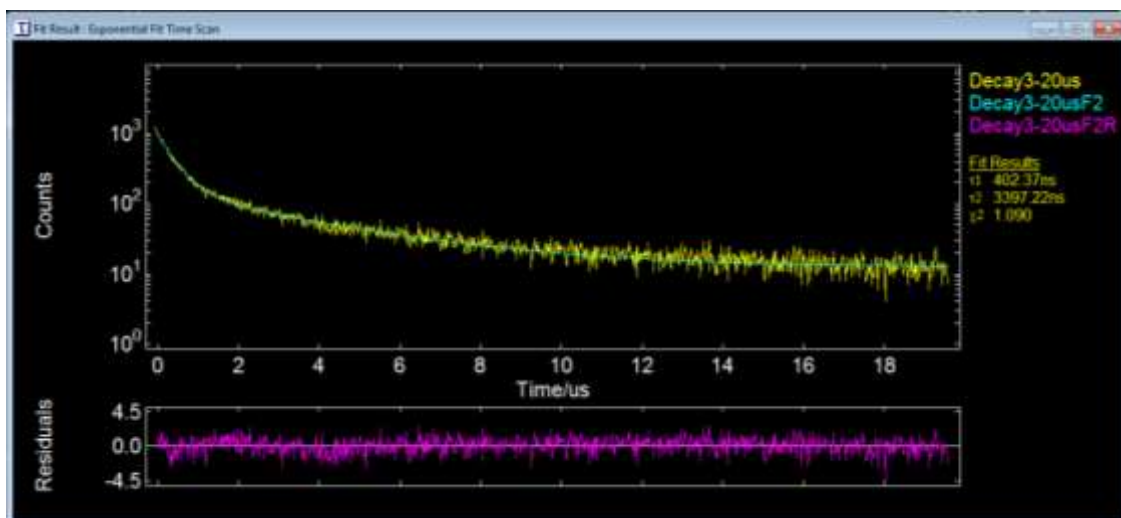


Fig. S4 The testing and fit results of delayed lifetime of DpAn-BzAc.

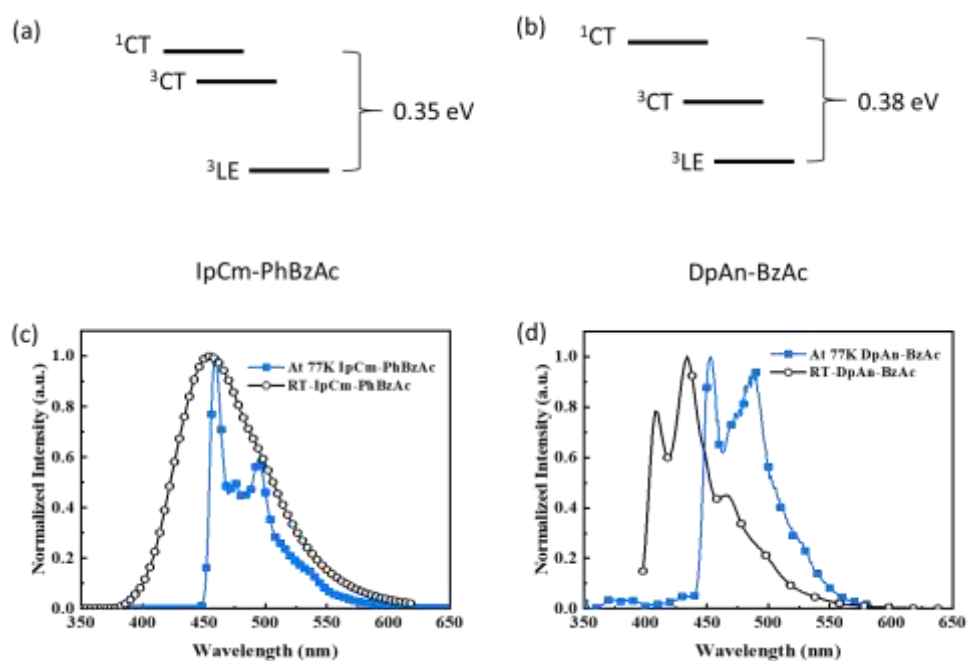


Fig. S5 The excited state energies of ^1CT , ^3CT and ^3LE states of IpCm-PhBzAc (a) and DpAn-BzAc (b); The fluorescence (black line) and phosphorescence (blue line) spectra of IpCm-PhBzAc (c) and DpAn-BzAc (d) in toluene at room temperature and 77K, respectively.

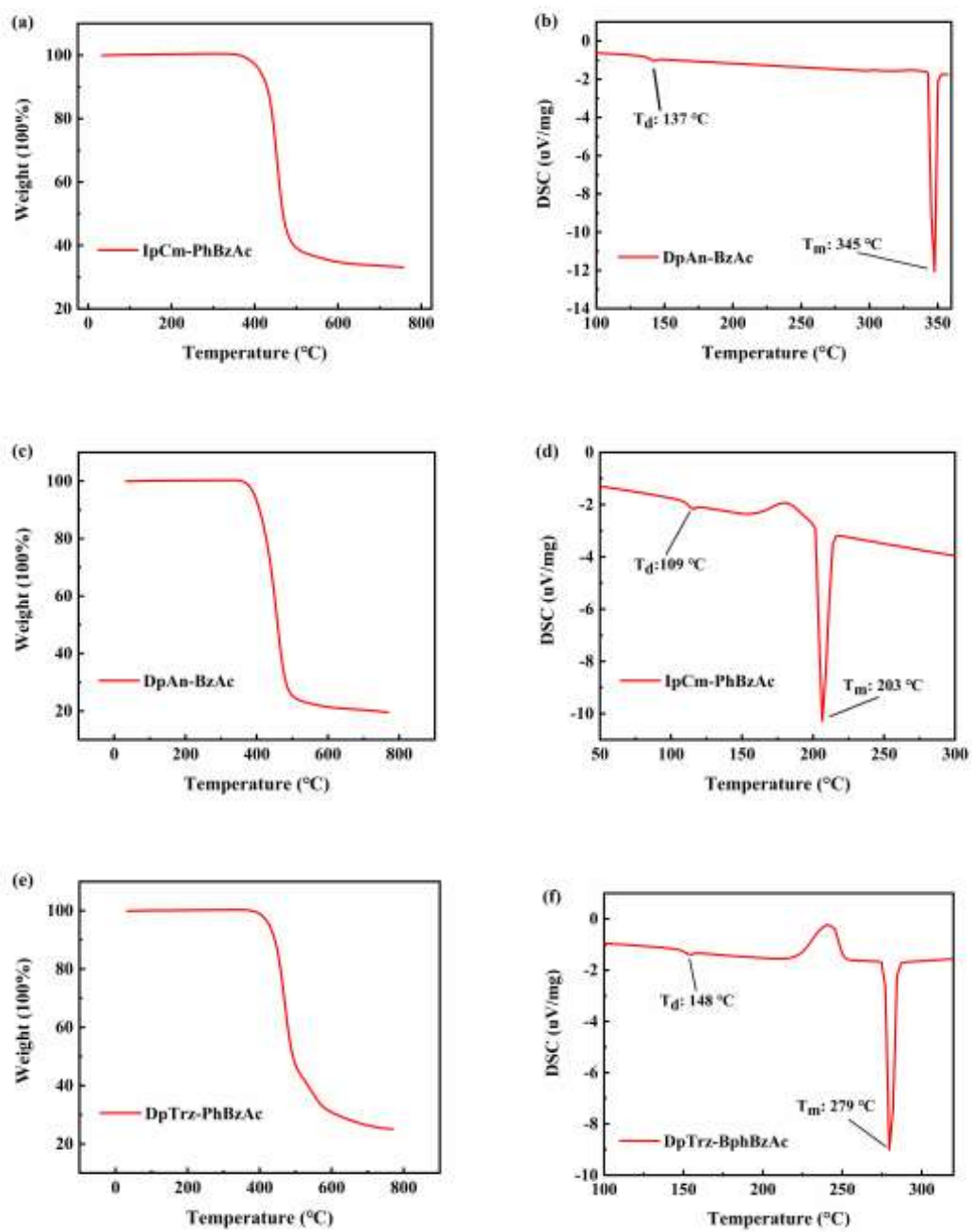


Fig. S6 TGA (left) and DSC (right) images of IpCm-PhBzAc (a,b), DpAn-BzAc (c,d) and DpTrz-BphBzAc (e,f).

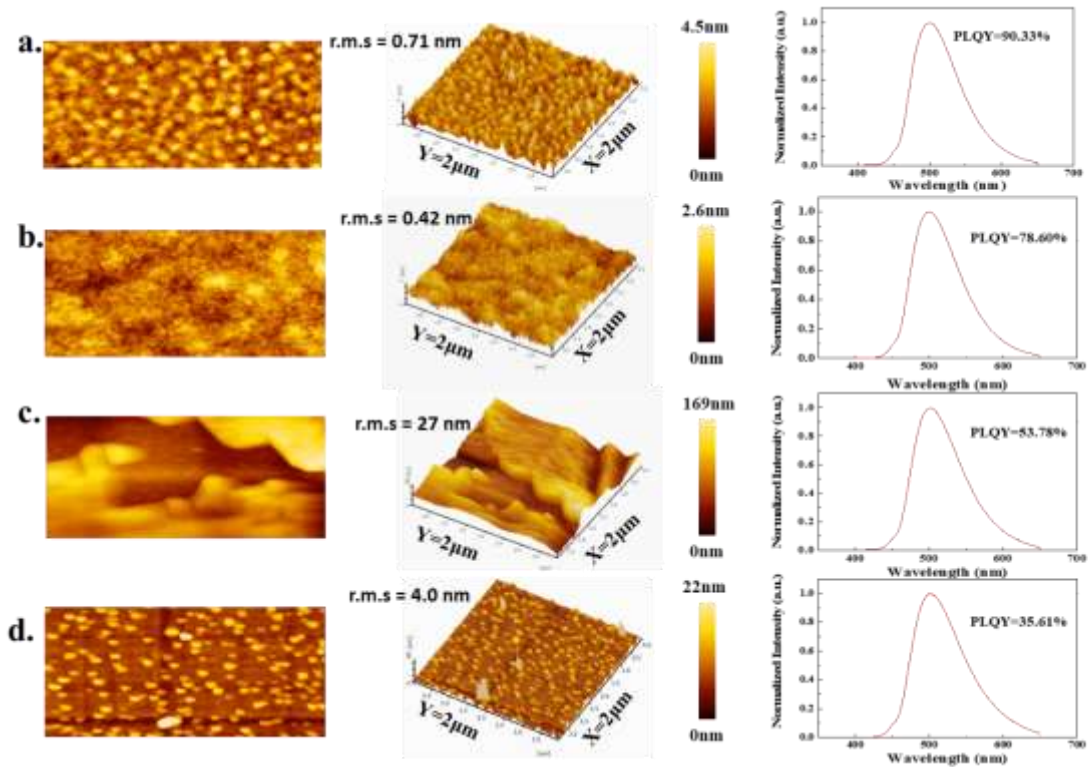


Fig. S7 (a-d) AFM characterization and PL spectra. Height images (left), three-dimensional images (middle) and PL spectra (right) of DpAn-BzAc films at room temperature (a) and under 100 °C (b), 200 °C (c), 300 °C (d) annealing temperatures (20 minutes).

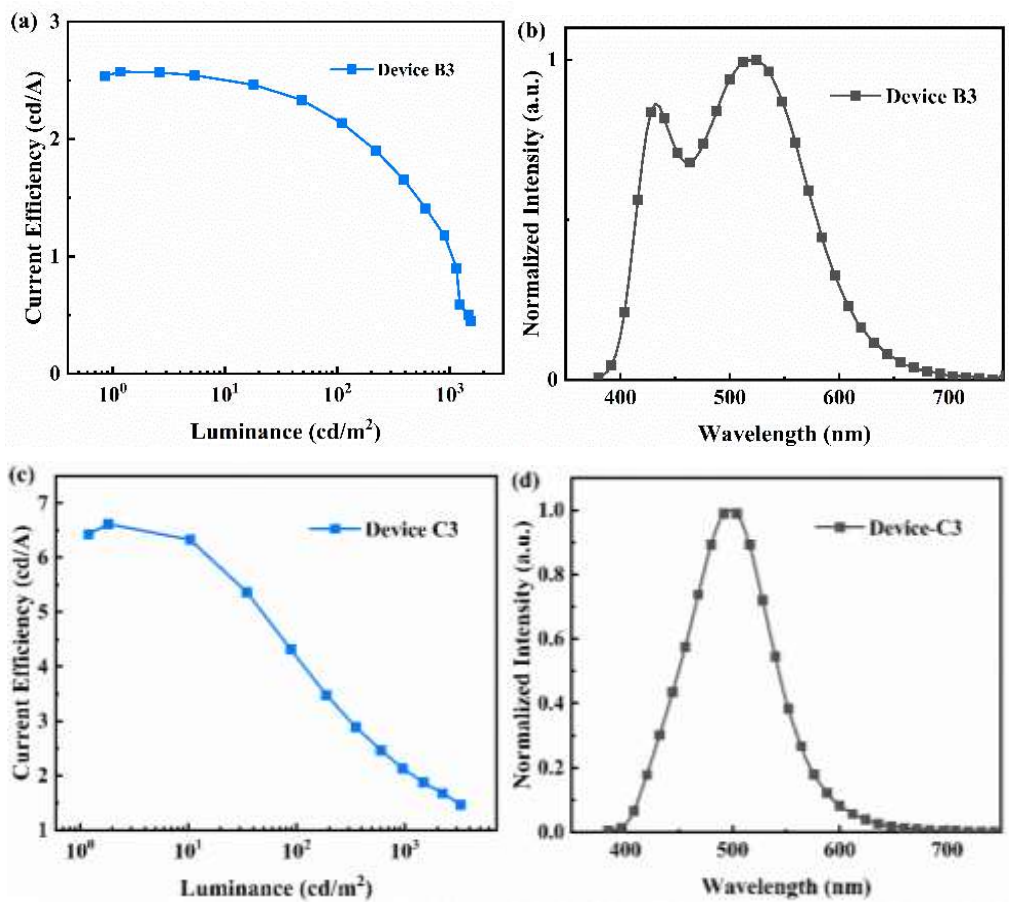


Fig. S8 The current efficiency (left) and normalized EL spectra (right) of Device B3 (a,b) and Device C3 (c,d).