

Table S1 Key performances of green OLED with various concentrations of emitter.

| Device | $V_{\text{turn-on}}$ (V) | B^a (cd m^{-2}) | η_c^b (EQE ^c) (cd A^{-1}) | η_p^d (lm W^{-1}) | η_c^e (cd A^{-1}) (EQE ^f) (1000 cd m^{-2}) | $\text{CIE}_{x,y}^g$ |
|--------|-----------------------------|---------------------------------|--|--------------------------------------|---|----------------------|
| 6 wt% | 2.8 | 21723 | 39.48 (11.8%) | 29.33 | 38.82 (11.6%) | (0.29, 0.62) |
| 8 wt% | 3.0 | 20886 | 40.42 (11.9%) | 34.74 | 38.06 (11.2%) | (0.30, 0.62) |
| 10 wt% | 2.9 | 21136 | 41.07 (12.1%) | 35.70 | 38.93 (11.5%) | (0.29, 0.60) |
| 12 wt% | 3.0 | 24782 | 44.30 (13.0%) | 39.18 | 42.08 (12.3%) | (0.30, 0.62) |
| 14 wt% | 3.0 | 24511 | 42.99 (12.6%) | 40.71 | 40.98 (12.0%) | (0.30, 0.62) |
| 16 wt% | 2.9 | 23700 | 40.66 (11.9%) | 37.00 | 37.90 (11.1%) | (0.30, 0.62) |

^a The data for maximum brightness (B), ^b maximum current efficiency (η_c), ^c maximum external quantum efficiency (EQE), ^d maximum power efficiency (η_p), ^e current efficiency (η_c) at the practical brightness of 1000 cd m^{-2} , ^f external quantum efficiency (EQE) at the practical brightness of 1000 cd m^{-2} , ^g Commission Internationale de l'Eclairage coordinates ($\text{CIE}_{x,y}$) at 10 mA cm^{-2} .

Table S2 Key performances of red OLED with various concentrations of emitter.

| Device | $V_{\text{turn-on}}$ (V) | B^a (cd m^{-2}) | η_c^b (EQE ^c) (cd A^{-1}) | η_p^d (lm W^{-1}) | η_c^e (cd A^{-1}) (EQE ^f) (1000 cd m^{-2}) | $\text{CIE}_{x,y}^g$ |
|--------|-----------------------------|---------------------------------|--|--------------------------------------|---|----------------------|
| 2 wt% | 3.4 | 2331 | 18.01 (10.3%) | 14.58 | 9.21 (5.2%) | (0.57, 0.38) |
| 3 wt% | 3.4 | 4435 | 18.45 (10.0%) | 14.33 | 14.68 (7.9%) | (0.59, 0.39) |
| 4 wt% | 3.4 | 4709 | 18.37 (10.0%) | 13.14 | 15.36 (8.4%) | (0.59, 0.40) |
| 5 wt% | 3.3 | 6653 | 18.51 (10.2%) | 15.80 | 16.82 (9.3%) | (0.60, 0.40) |
| 6 wt% | 3.5 | 5801 | 15.48 (8.8%) | 11.53 | 13.83 (7.8%) | (0.60, 0.39) |
| 8 wt% | 3.7 | 7279 | 14.99 (8.8%) | 9.33 | 13.77 (8.1%) | (0.62, 0.40) |

^a The data for maximum brightness (B), ^b maximum current efficiency (η_c), ^c maximum external quantum efficiency (EQE), ^d maximum power efficiency (η_p), ^e current efficiency (η_c) at the practical brightness of 1000 cd m^{-2} , ^f external quantum efficiency (EQE) at the practical brightness of 1000 cd m^{-2} , ^g Commission Internationale de l'Eclairage coordinates ($\text{CIE}_{x,y}$) at 10 mA cm^{-2} .

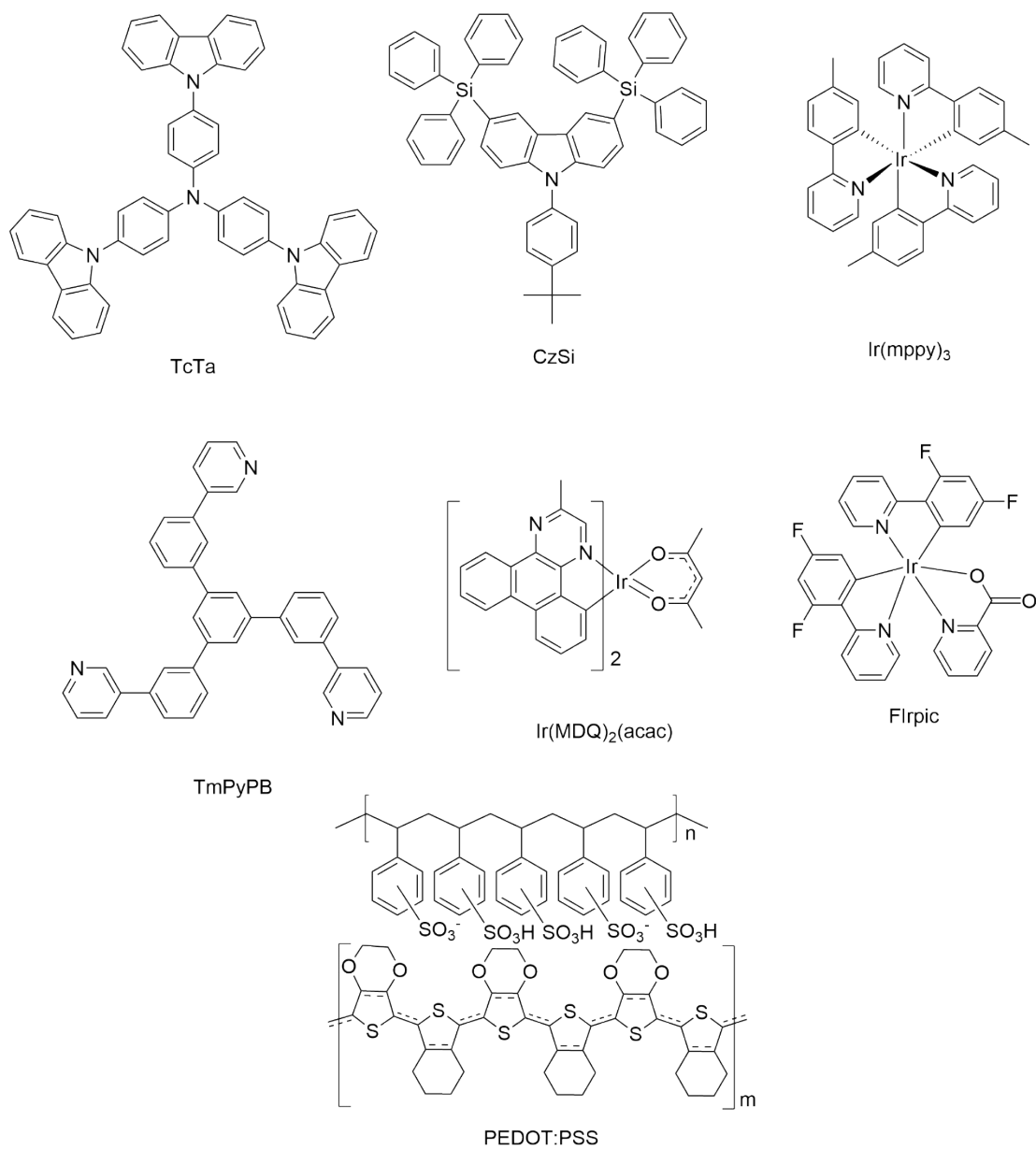


Figure S1: The structure of materials used this work.