

Electronic Supplementary Information

All-solution-processed colour-tuneable tandem quantum-dot light-emitting diode driven by AC signal

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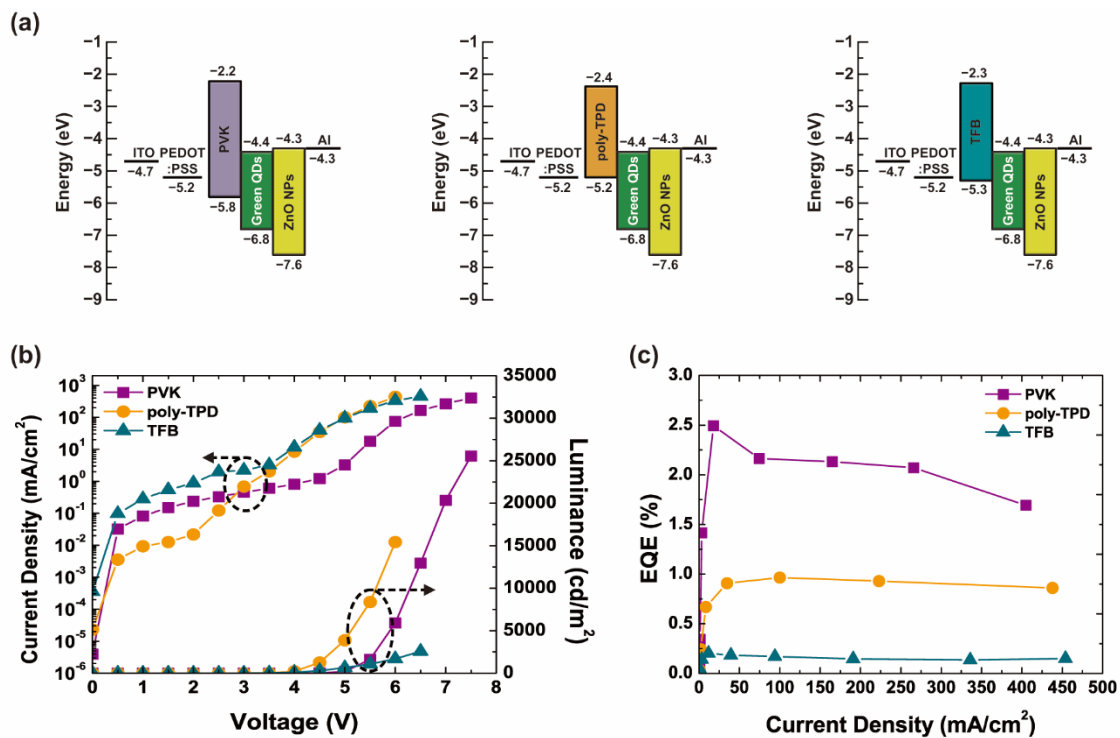


Fig. S1 (a) Energy level diagram of QD-LED with various HTLs; PVK (left), poly-TPD (middle), TFB (right). (b) J-V-L and (c) EQE characteristics of the devices. The EQE and maximum luminance of PVK device were the best. The result may be due to the smaller energy barrier between PVK and QD layer than those between other HTL and QD layer.

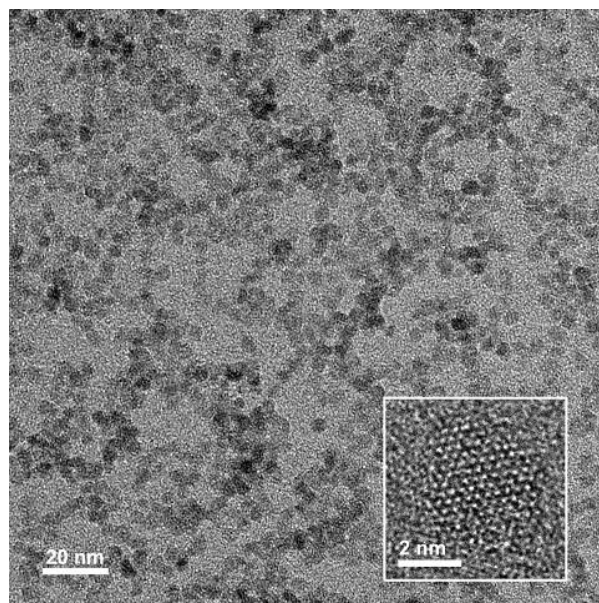


Fig. S2 HRTEM image of ZnO NPs. (inset) HRTEM image of same ZnO NPs showing lattice fringes.

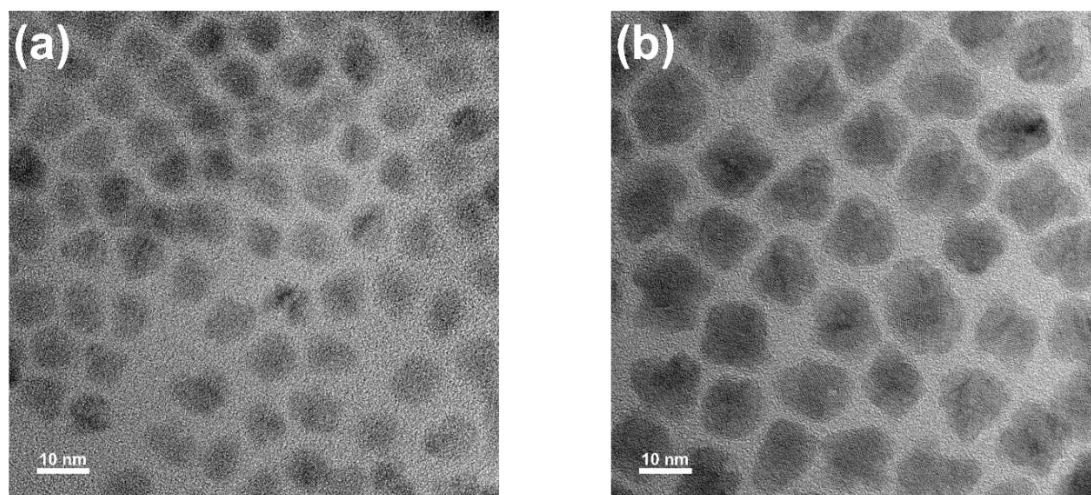


Fig. S3 HRTEM image of (a) Green QDs and (b) Red QDs. The mean sizes of green and red QDs are about 9 nm and 14 nm, respectively.

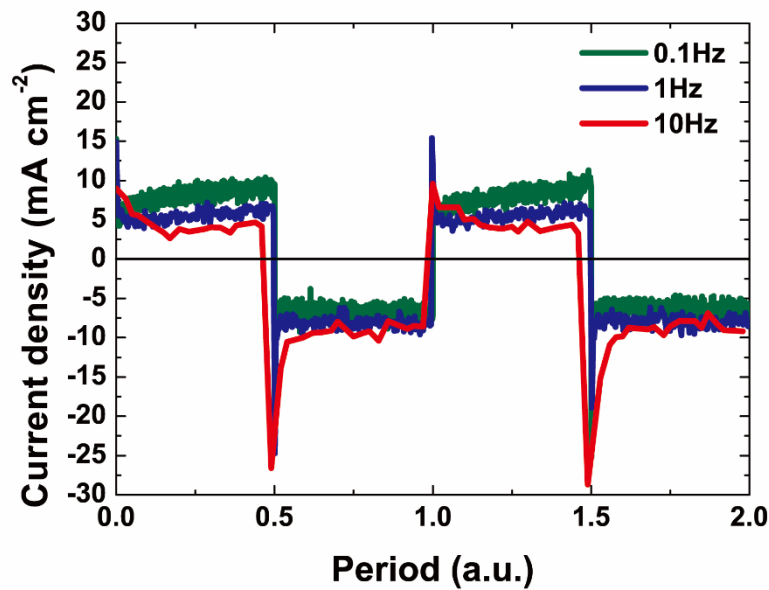


Fig. S4 Current density characteristic of the tandem QD-LED under an AC square-wave input signal with $\pm 30\text{V}$, 50% duty cycle in various frequencies. The current density in the positive polarity decreases with the increasing frequency, but the current density in the negative polarity increases.

Movie S1. AC operation of the colour-tuneable QD-LED with a square wave input signal ($\pm 33\text{V}$, 100 Hz). The operation duty cycle is increased from 20% to 80% with a step of 10%.

Movie S2. AC operation of the colour-tuneable QD-LED with a square wave input signal ($\pm 33\text{V}$, duty 50%). The operation frequency is increased from 1 Hz to 10 Hz, and 100 Hz.