

Supporting Information

Al-doped TiO₂ interfacial layer for effective hole injection characteristics of quantum-dot light-emitting diodes

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Figure S9. TRPL of QDs on glass and QDs on different structure of hole injection layer.

Table S1. Applied voltages of QLEDs with different interfacial layer at the emission peak in the EL spectra.

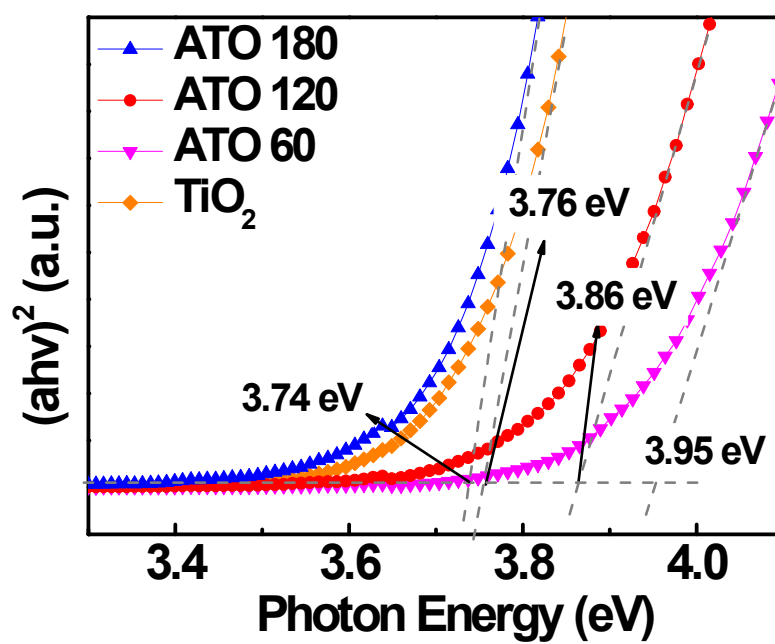


Figure S1. Tauc's plot of pure TiO₂, ATO 60, ATO 120, and ATO 180.

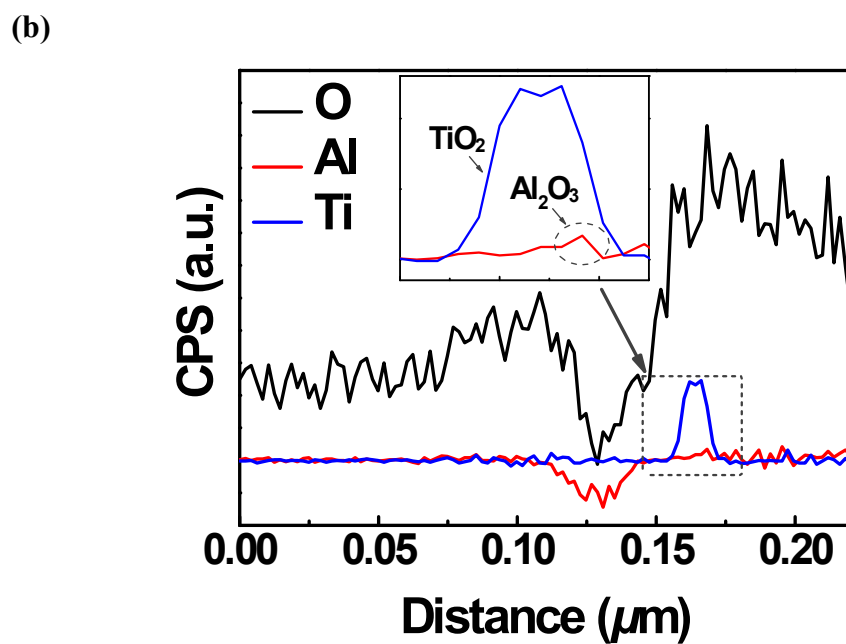
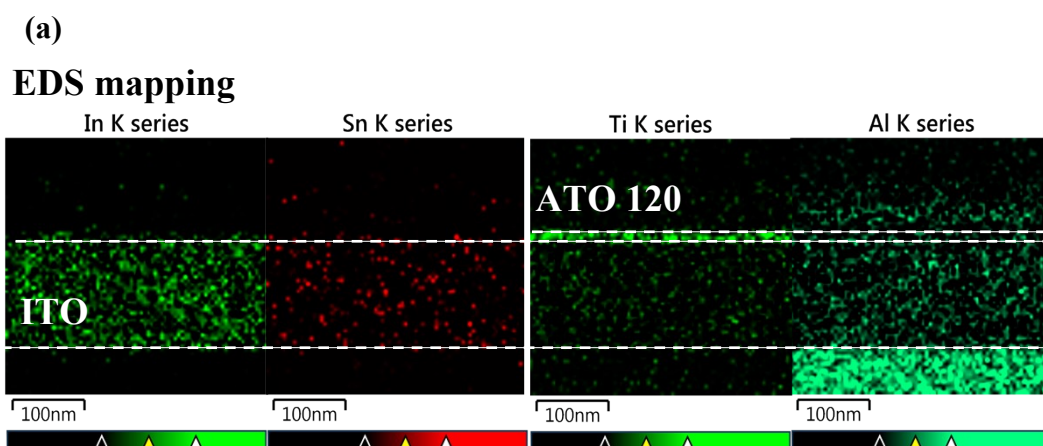


Figure S2. EDS (a) mapping images and (b) spectra of QLED device with ATO 120.

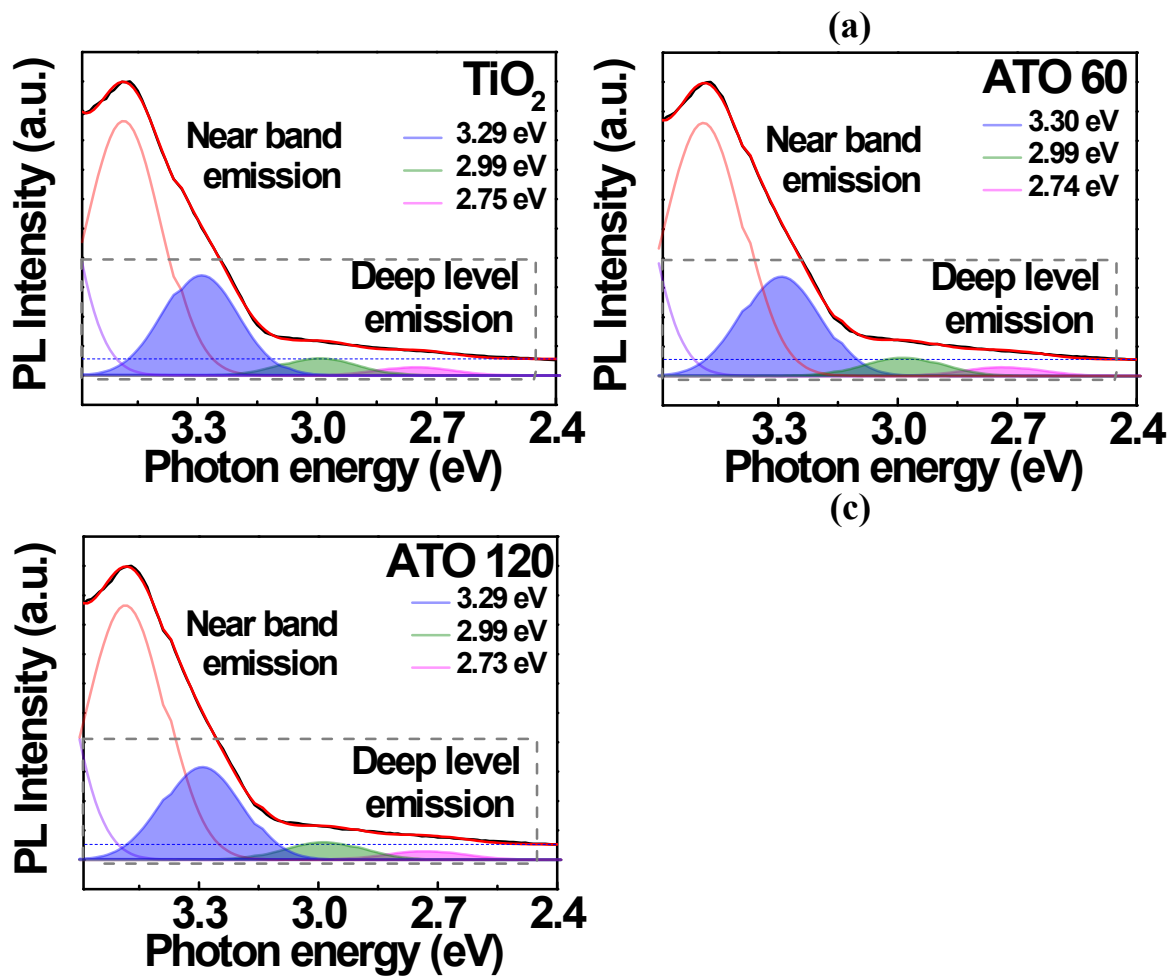


Figure S3. Deconvolution of PL intensity spectra for (a) TiO₂, (b) ATO 60, (c) ATO 120, and (d) ATO 180 at T_{dep} of 200 °C.

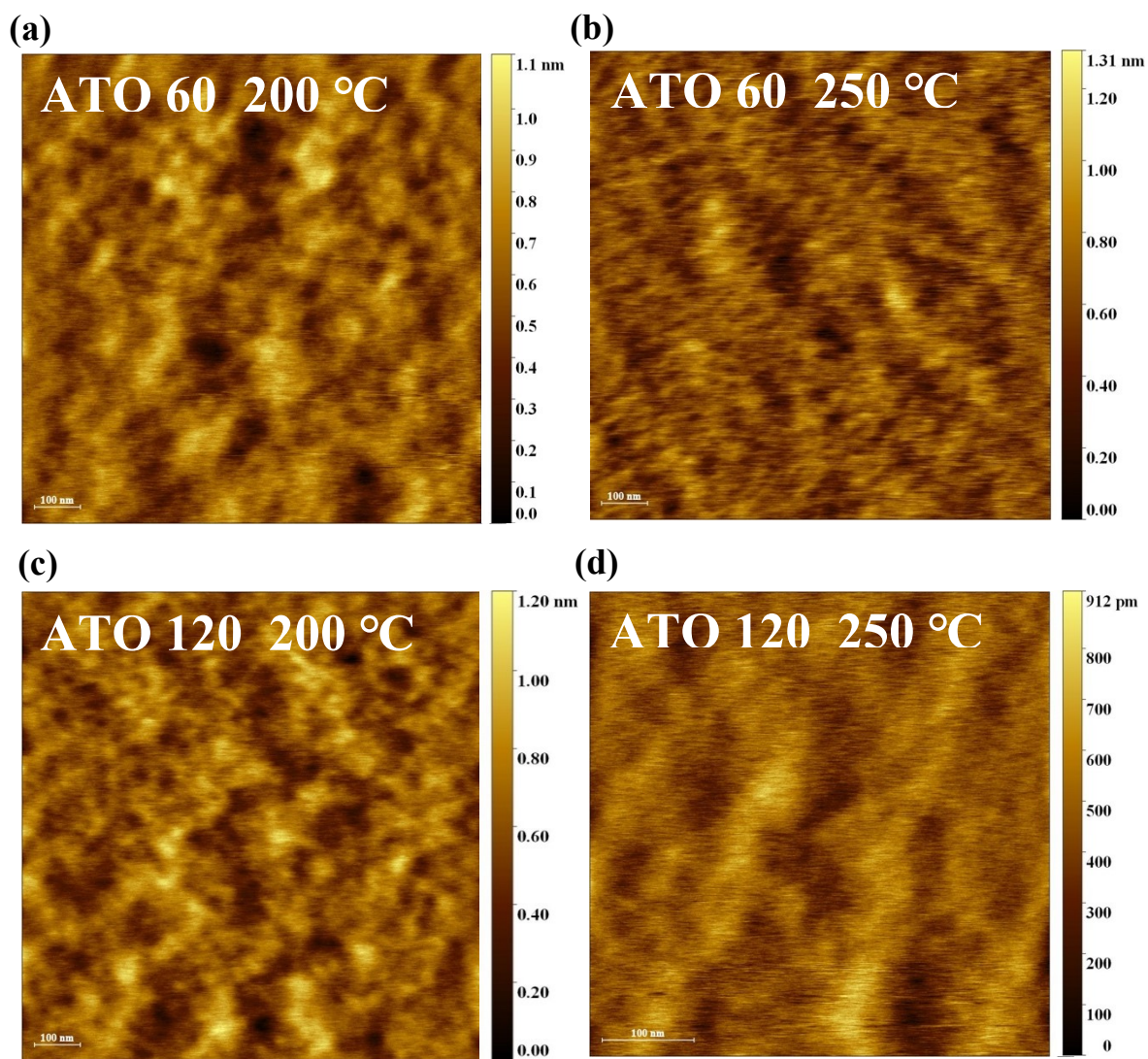


Figure S4. AFM images of (a) ATO 60, (c) ATO 120 at T_{dep} of 200 °C and (b) ATO 60, (d) ATO 120 at T_{dep} of 250 °C on ALD process.

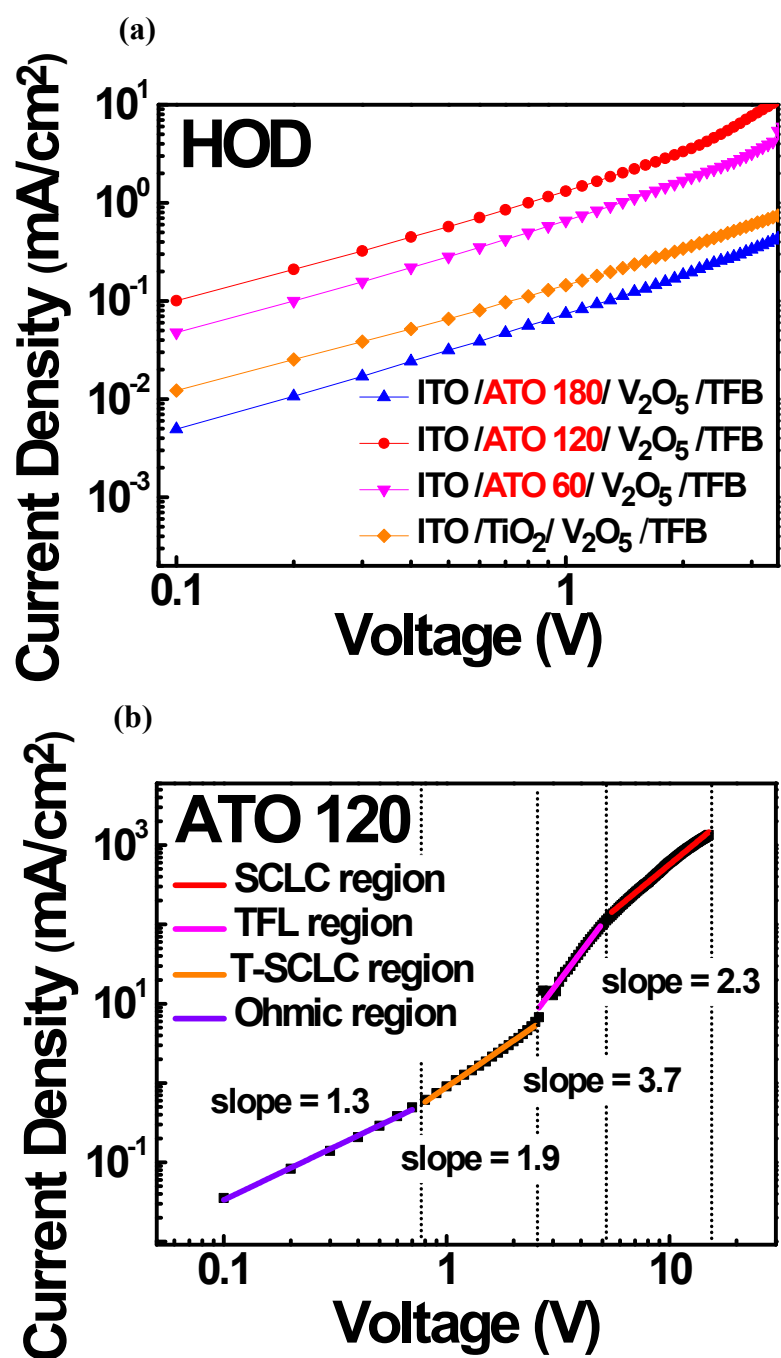


Figure S5. J-V characteristics of (a) QLEDs with ATO 180, ATO 120, ATO 60, and pure TiO_2 and (b) the analysis of ATO 120 using SCLC theory.

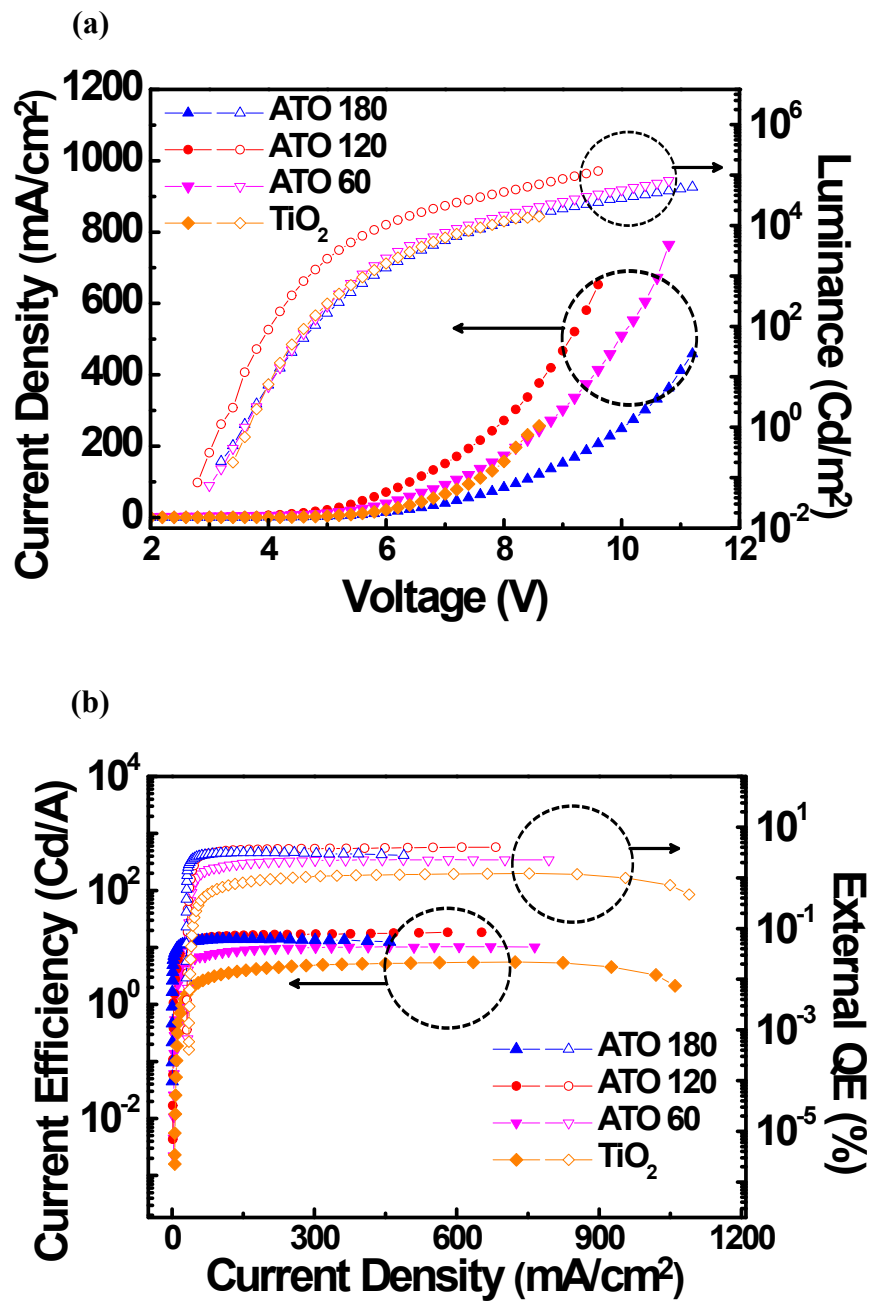
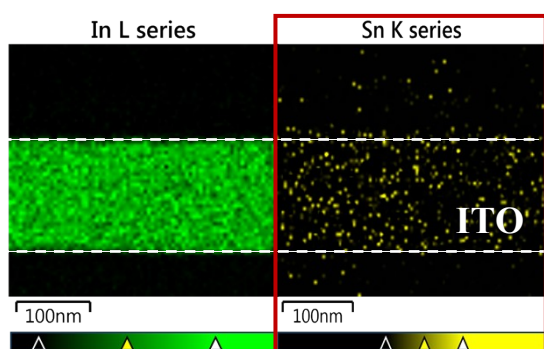


Figure S6. (a) J-V-L characteristics and (b) CE-V-EQE characteristics of QLEDs with ATOs, pure TiO_2 , and without any interfacial layer.

(a) Ref. (control device)



(b) QLEDs with an ATO 120 layer

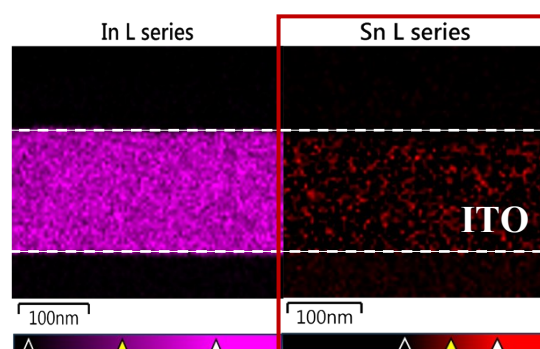


Figure S7. EDS mapping images of (a) reference device (ITO/V₂O₅/TFB/QDs/ZnO) and (b) QLEDs with an ATO layer (ITO/ATO 120/V₂O₅/TFB/QDs/ZnO).

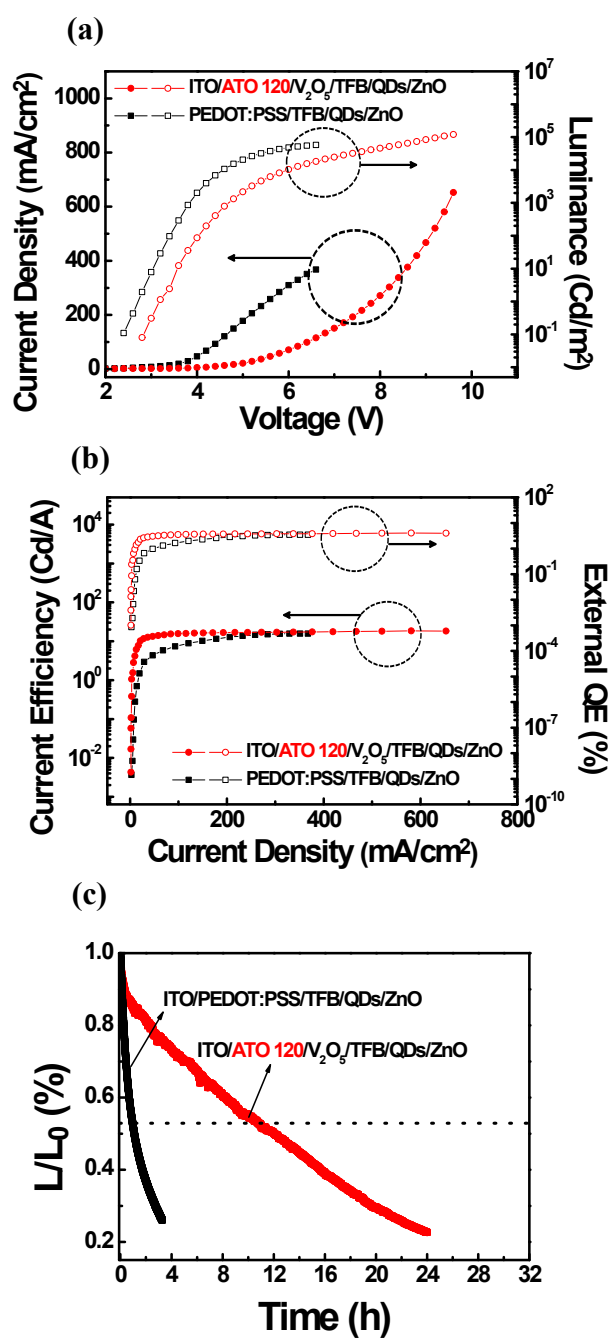


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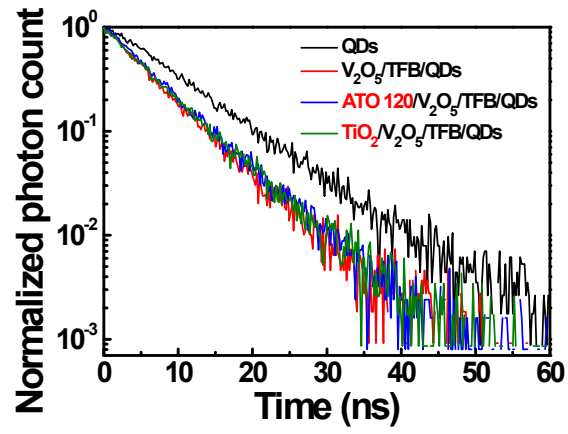


Figure S9. TRPL of QDs on glass and QDs on different structure of hole injection layer.

Table S1. Applied voltages of QLEDs with different interfacial layer at the emission peak in the EL spectra.

Samples	Applied voltages at EL peak (V)
<i>ATO 180</i>	<i>11.8</i>
<i>ATO 120</i>	<i>9.6</i>
<i>ATO 60</i>	<i>10.8</i>
<i>Ref.</i>	<i>10.8</i>