Electronic Supplementary Information

Tuning Charge Transportation Balance in Quantum Dot Light Emitting Diodes by Decreasing the Mobility and Conductivity of In-Doped SnO_2 Nanocrystal Electron Transport Layer

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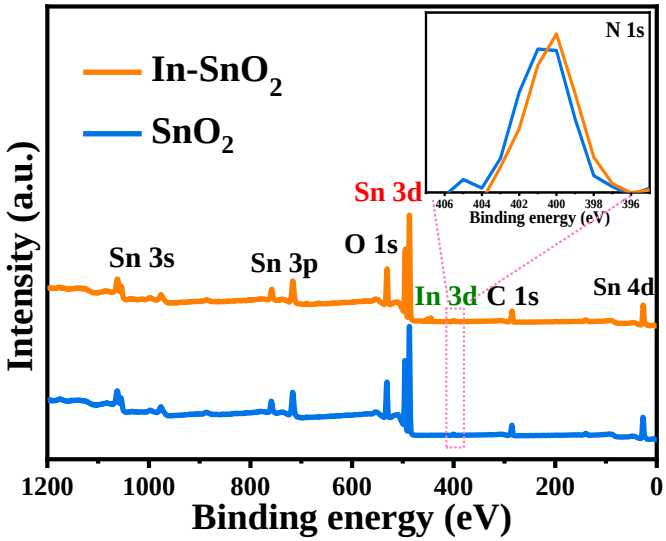

Figure S1 XPS survey spectra of pristine SnO_2 and In-SnO_2 nanocrystals (inset: the XPS peaks of N1s).

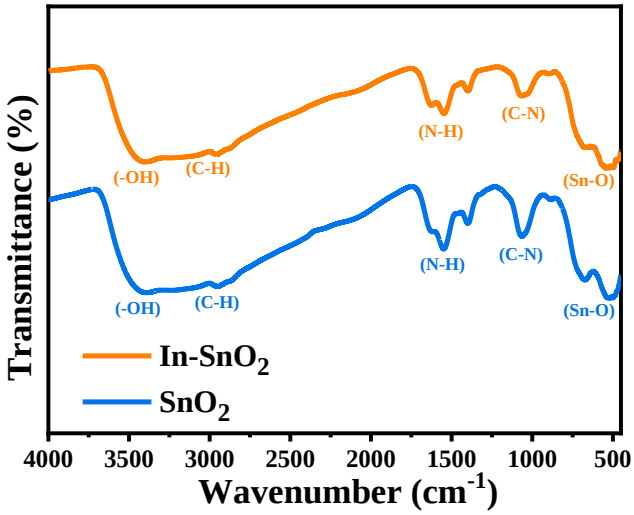

Figure S2 FT-IR spectra of ethanolamine-capped SnO_2 nanocrystals before and after doping In^{3+} ions.

Table S1 Contents of Indium in In-SnO_2 nanocrystals from EDS analysis.

Sample	Feeding doping concentrations (wt%)	Measured doping concentrations (wt%)
In-SnO_2	0	0
	2.5	2.13
	5	4.87
	7.5	7.66
	10	7.91

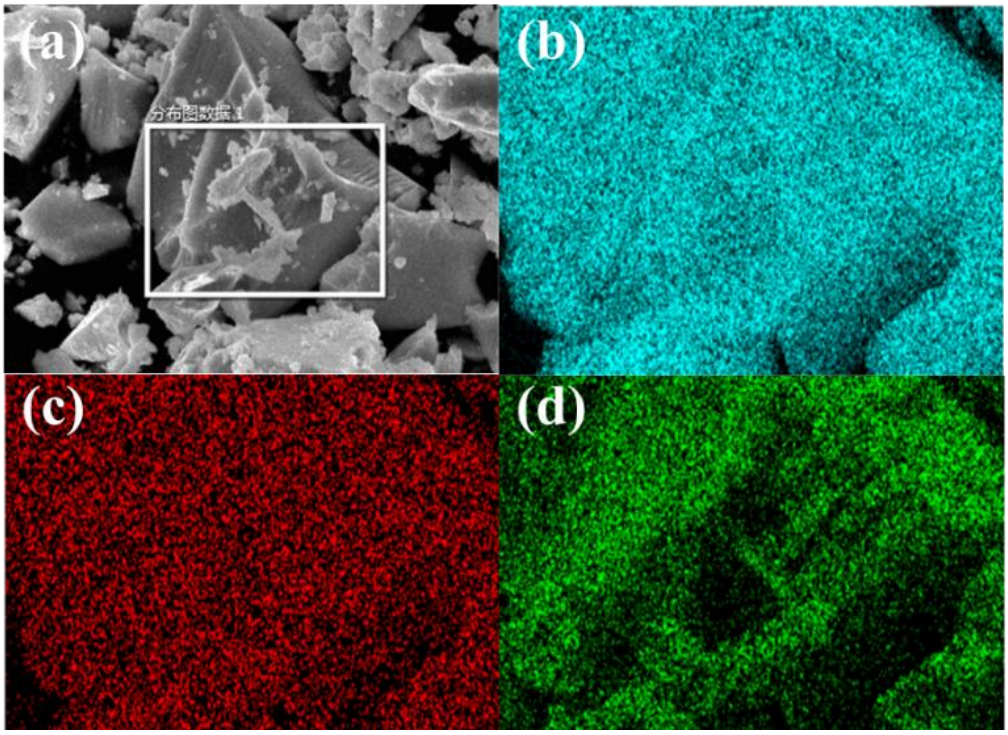

Figure S3 SEM images of (a) In-SnO_2 nanocrystals and the corresponding EDS elemental mapping images of (b) Sn, (c) In and (d) O.

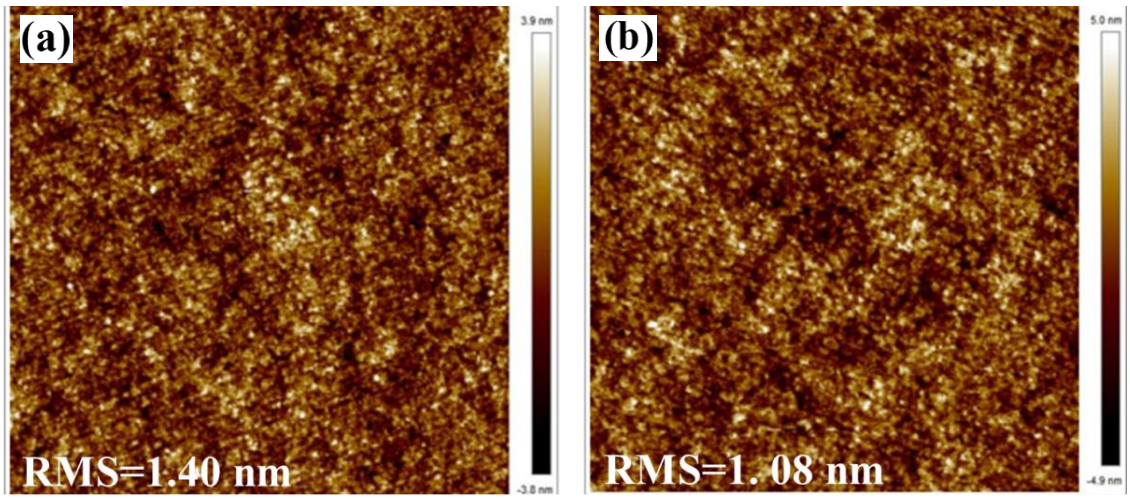

Figure S4 AFM images and RMS roughness of (a) SnO_2 and (b) In-SnO_2 nanocrystal thin films.

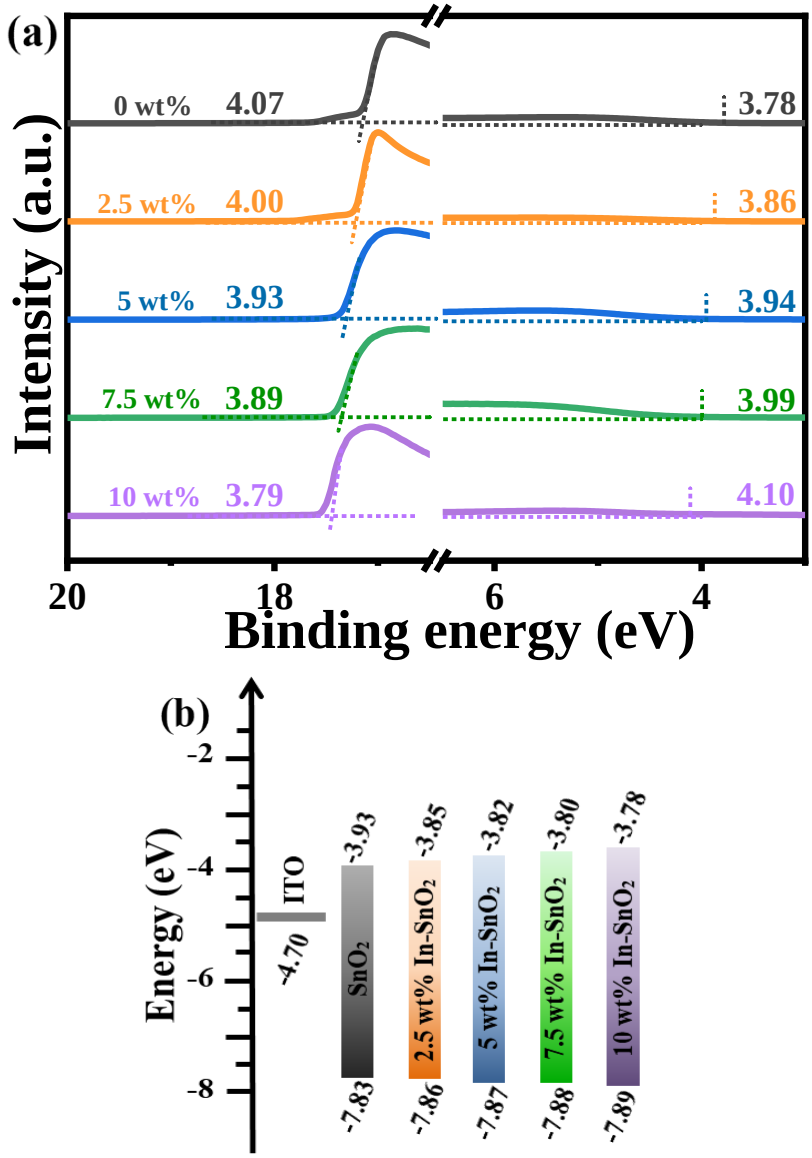

Figure S5 (a) UPS spectra and (b) energy level diagrams of In-SnO_2 nanocrystal thin films doped with different In^{3+} concentrations.

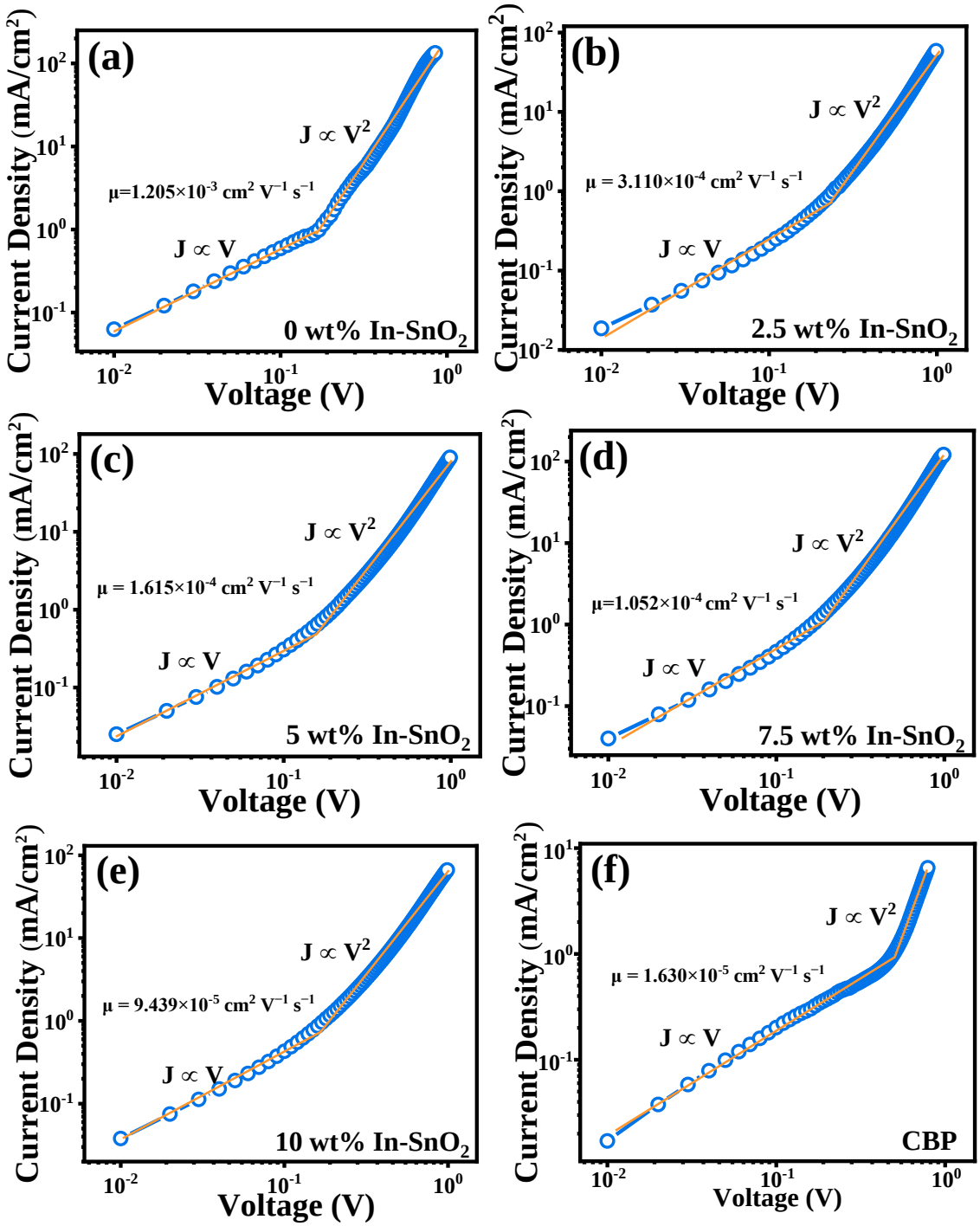

Figure S6 Current density-voltage curves of (a-e) ITO/*x* wt% In-doped SnO_2 nanocrystal thin films (*x*=0, 2.5, 5, 7.5, 10)/Al devices and (f) ITO/CBP/MoO_3/Al device.

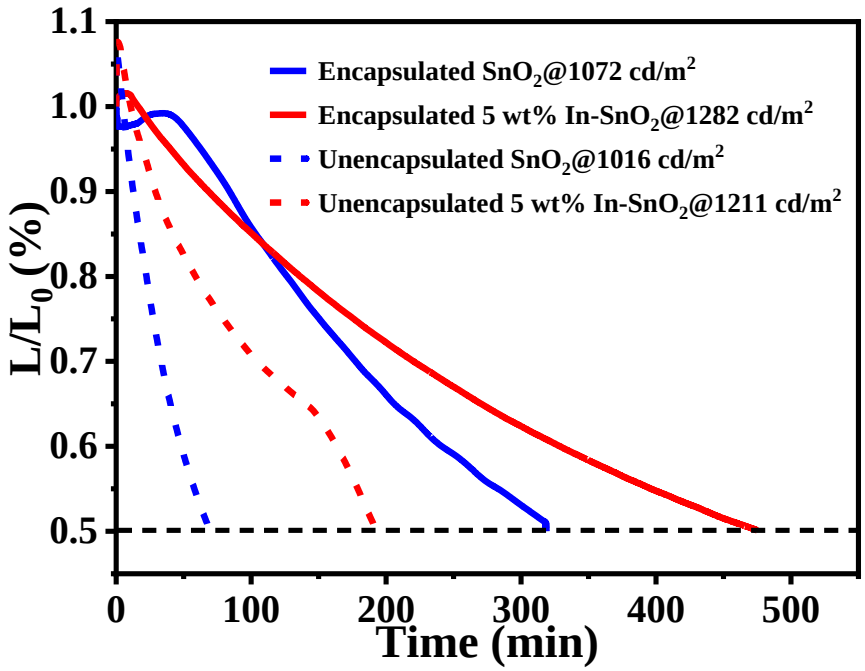

Figure S7 Comparison of the device lifetimes of encapsulated and unencapsulated pristine SnO_2 and In-doped SnO_2-based QLEDs.