

Electronic Supplementary Information (ESI)

Unconventional formation of dual-colored InP quantum dots-embedded silica composites for operation-stable white light-emitting diode

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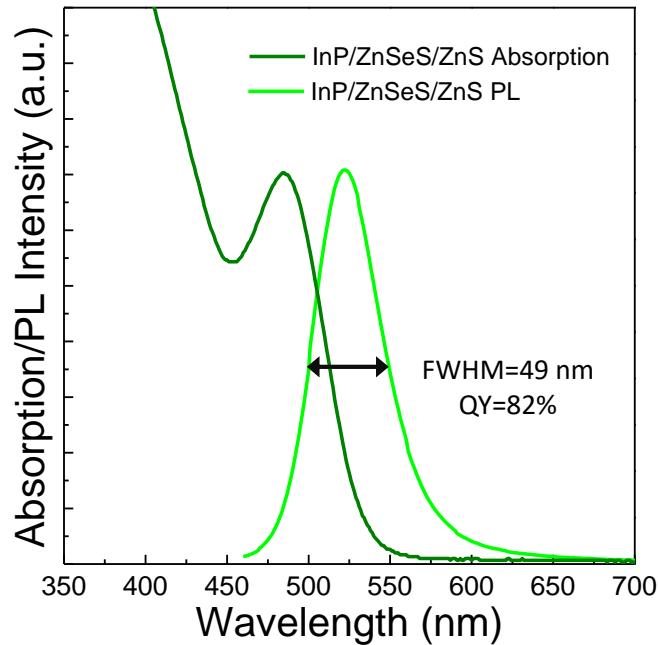


Fig. S1. Absorption and PL spectra of green InP/ZnSeS/ZnS QDs.

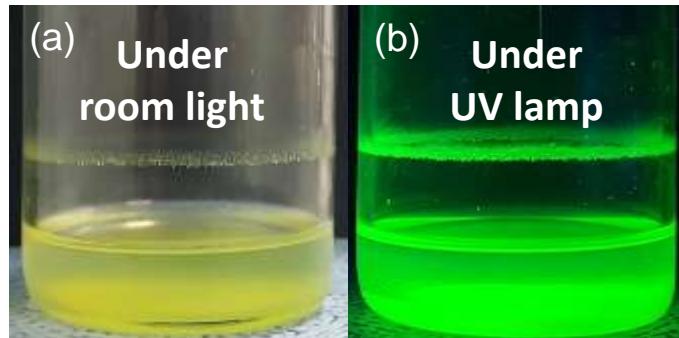


Fig. S2. Photographs of as-prepared green QDs-silica solution reacted for 20 h under (a) room light and (b) UV lamp.

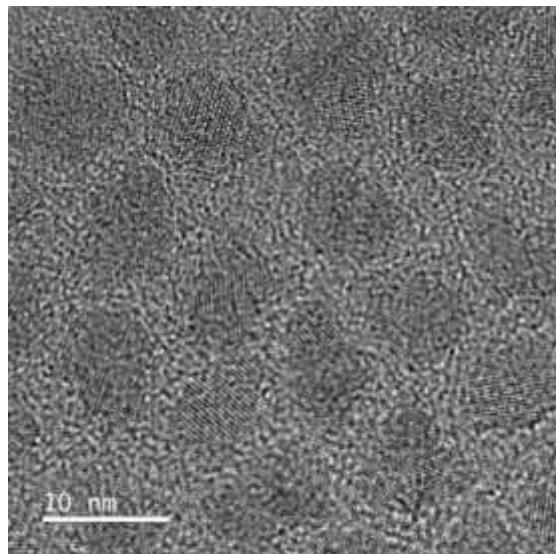


Fig. S3. High-magnification TEM image of green InP/ZnSeS/ZnS QDs (scale bar: 10 nm).

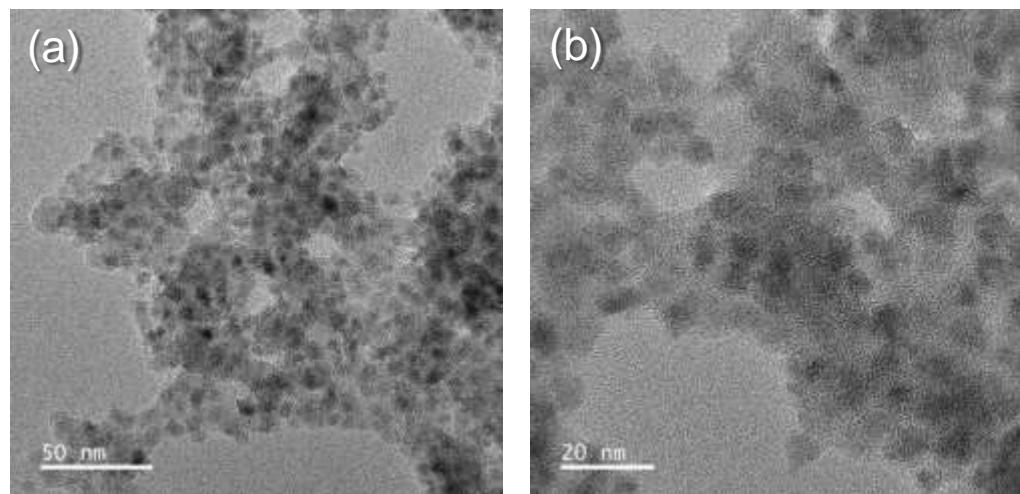


Fig. S4. (a) Low- and (b) higher-magnification TEM images additionally taken from the different areas of the same green InP QDs-silica composites as in Fig. 4(b).

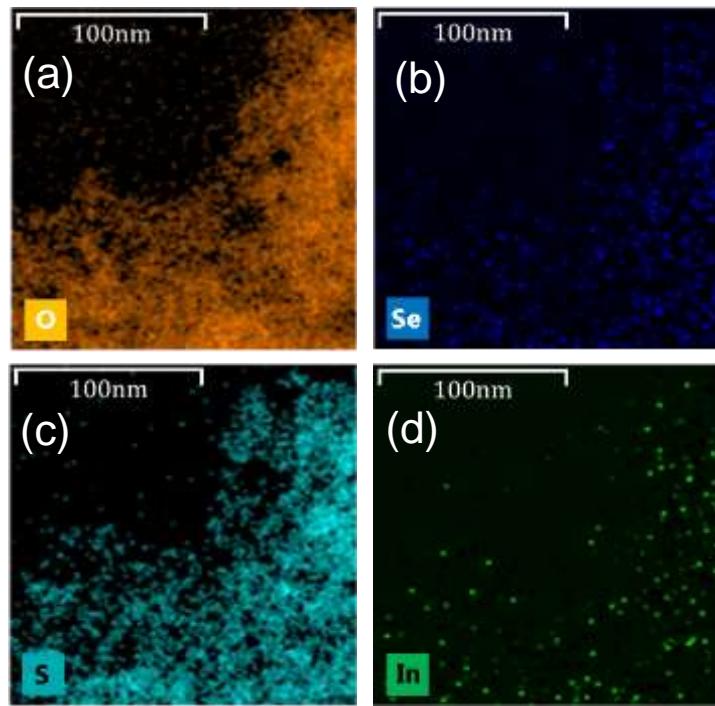


Fig. S5. (a) O-, (b) Se-, (c) S-, and (d) In-related x-ray signal-based EDS compositional mapping images corresponding to the dotted region of Fig. 4(b).

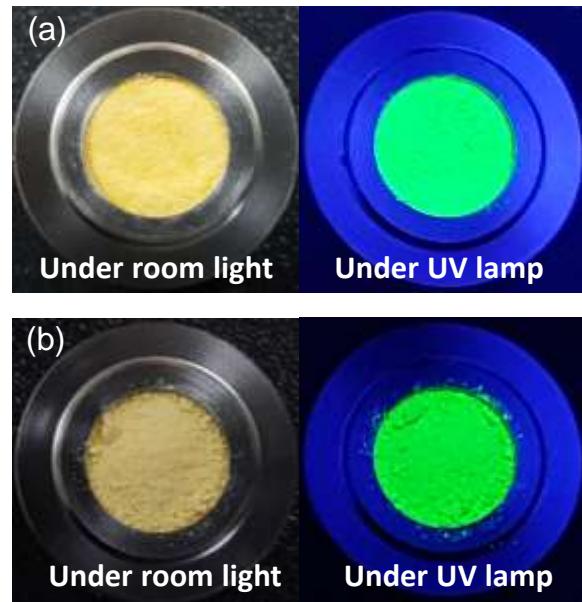


Fig. S6. Photographs of green (a) pristine QDs and (b) QDs-silica composites in a powder form under room light and UV lamp.

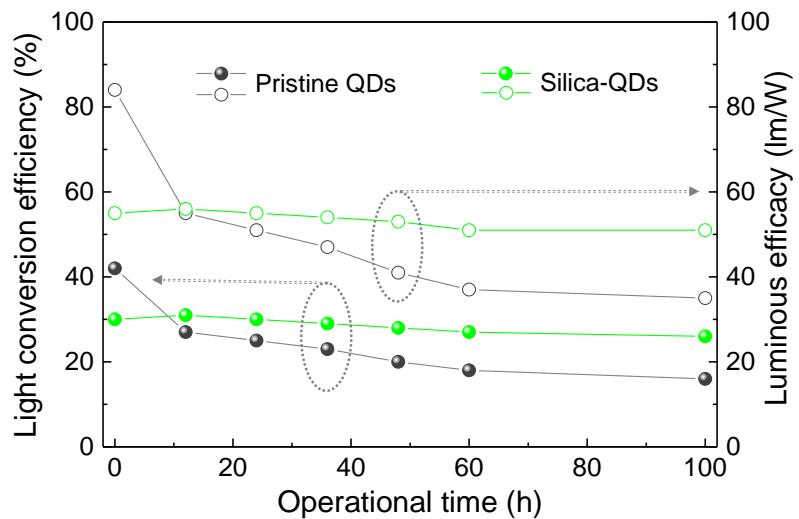


Fig. S7. Operation time-dependent variations of light conversion efficiency and luminous efficacy of QD-LEDs packaged with green pristine QDs and QDs-silica composites at a driving current of 60 mA.

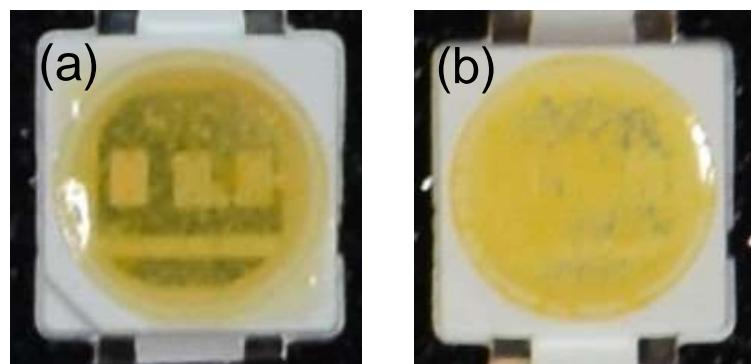


Fig. S8. Photographs of green (a) pristine QDs- and (b) QDs-silica composites-packaged QD-LEDs, showing a more turbidity from the latter compared to the former device.

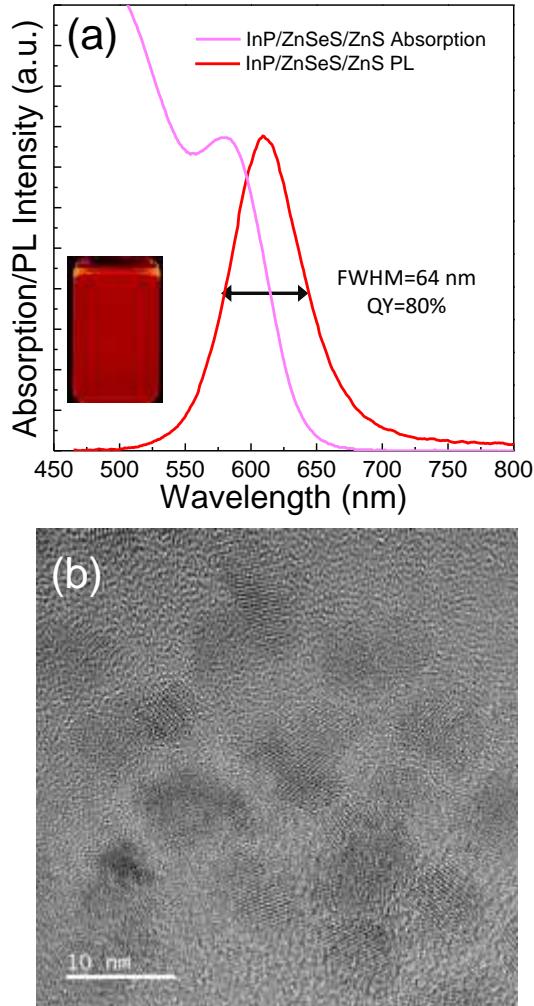


Fig. S9. (a) Absorption and PL spectra and (b) high-magnification TEM image of red InP/ZnSeS/ZnS QDs (scale bar: 10 nm).

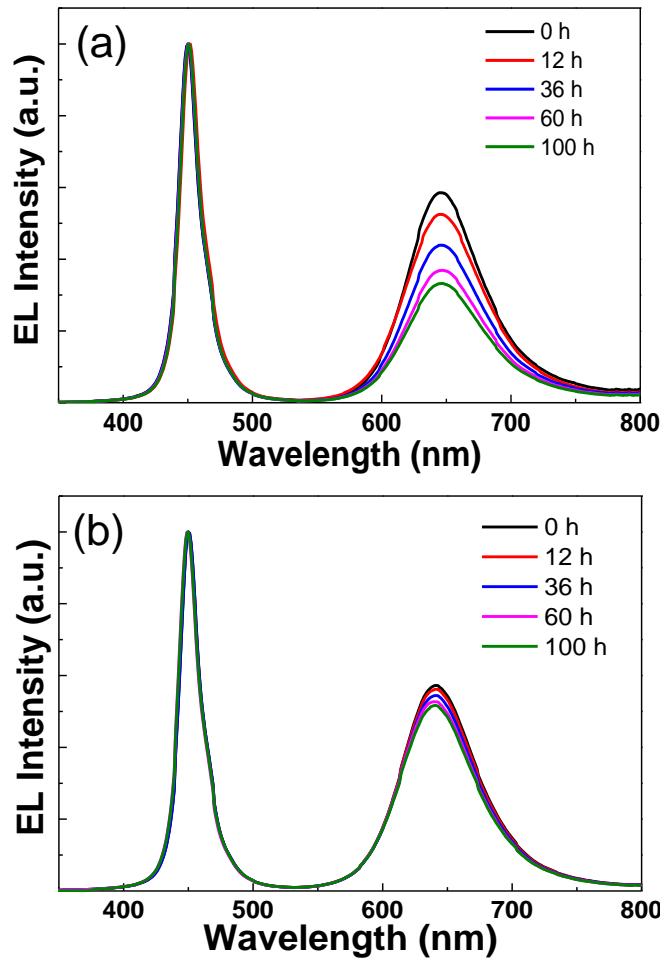


Fig. S10. As-collected EL spectral variations of QD-LEDs with (a) pristine red QDs and (b) red QDs-silica composites with operational time up to 100 h at 60 mA.

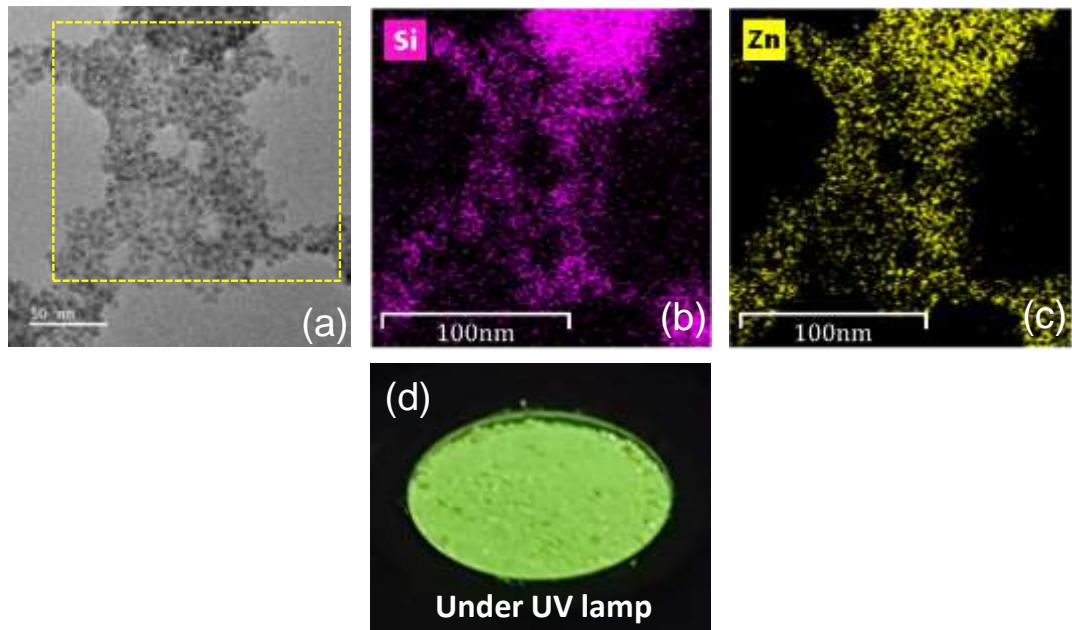


Fig. S11. (a) TEM image of silica composites coembedded with green and red QDs. (b) Si- and (c) Zn-x-ray signal-based EDS compositional mapping images corresponding to the dotted region of (a). (d) Photograph of green/red QDs-silica composites in a powder form under UV lamp.

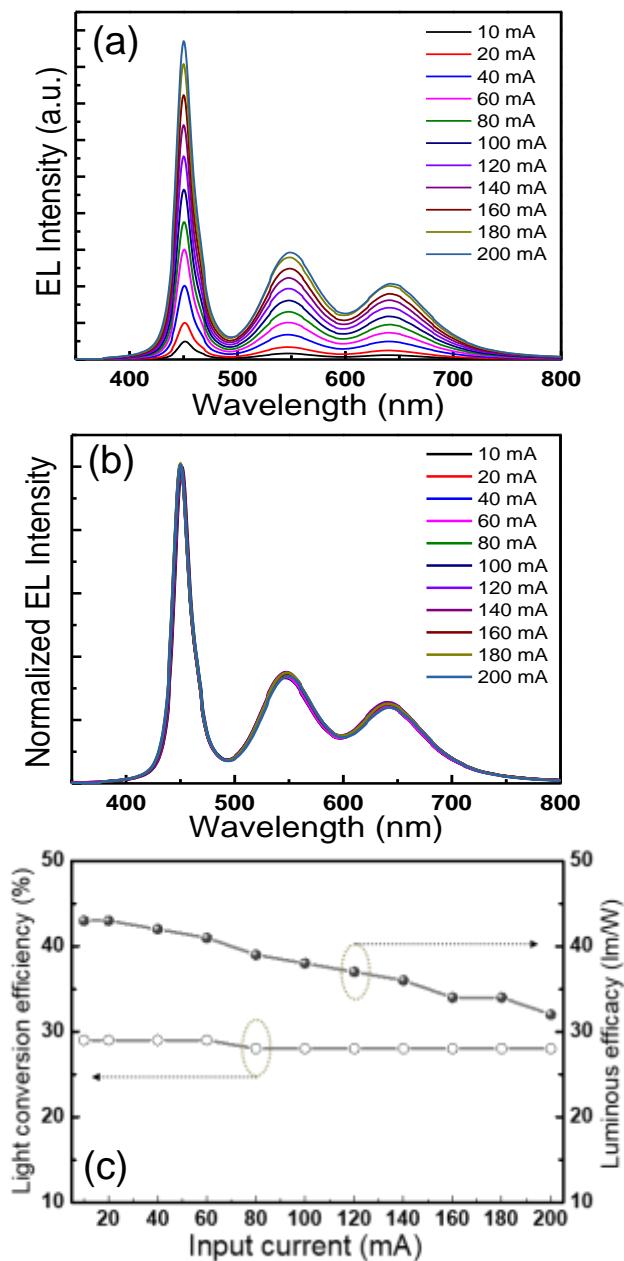


Fig. S12. (a) As-collected and (b) normalized EL spectra and (c) variations in light conversion efficiency and luminous efficacy of tricolored white QD-LED as a function of input current.