

Supplementary Information

Highly transparent phototransistor based on quantum-dots and ZnO bilayer for optical logic gate operation in visible-light

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Supplementary Note 1

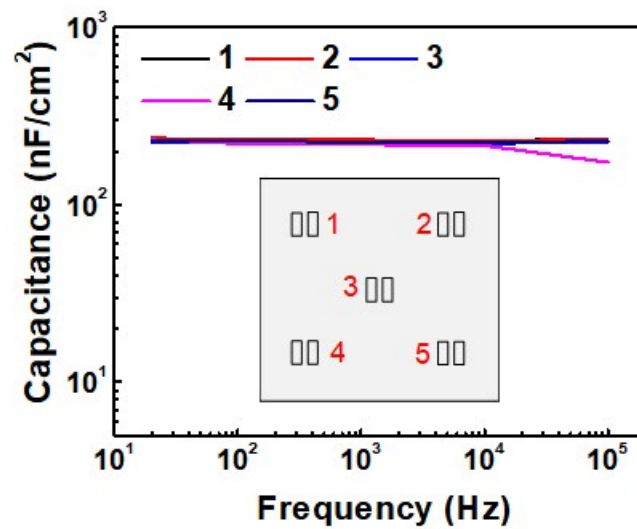


Figure S1. Capacitance versus frequency in various regions of an Al₂O₃ film. Each of the regions has an average capacitance of ~175 nF/cm² at 100 Hz. Al₂O₃ is uniformly deposited over the entire film, so each region can generally serve as a gate dielectric layer.

Supplementary Note 2

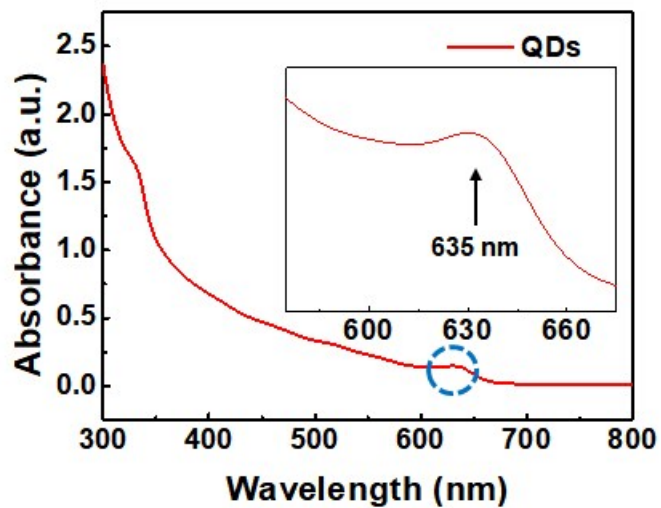


Figure S2. UV-vis absorption spectrum of a pure CdSe/ZnS QDs solution. The absorption spectrum from 600 to 660 nm is shown in the inset.

Supplementary Note 3

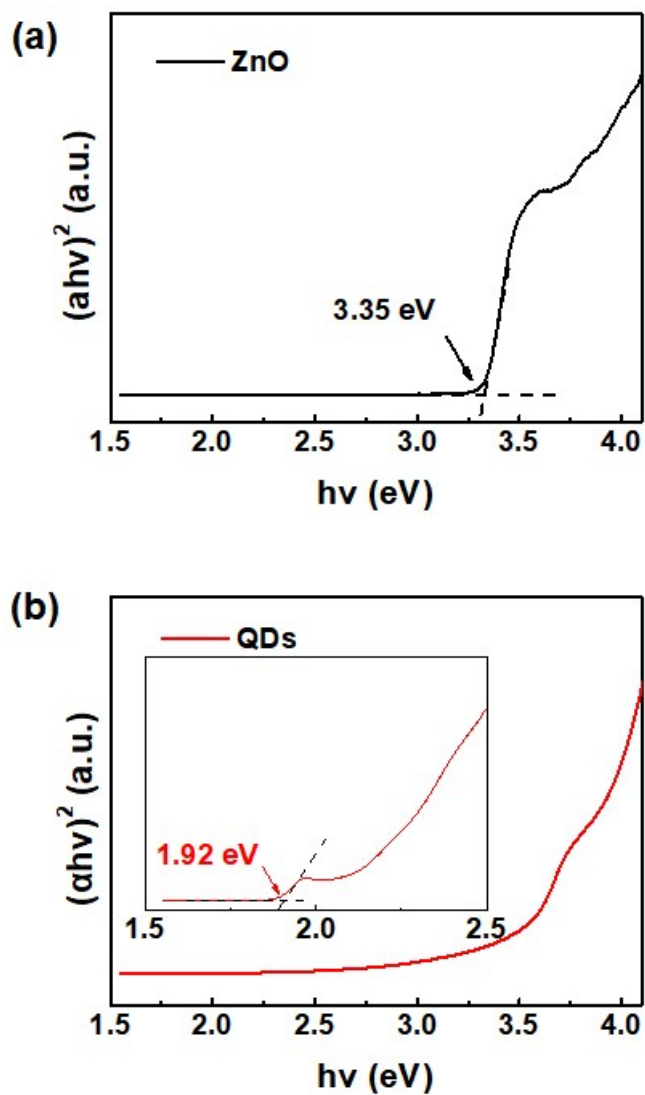


Figure S3. Tauc plots calculated from the $(\alpha h\nu)^2$ values of a) ZnO and b) the QD layer. The Tauc plot of the QD layer from 1.5 to 2.5 eV is shown in the inset of (b).