Supporting Information for:

Improving photodetection and stability of visible light QDs/ZnO phototransistor via Al₂O₃ additional layer

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Figure S1. EDS line scan showing the depth profile of the elemental distribution.
Figure S2. AFM topography images and root mean square (RMS) roughness of a) ZnO, b) Al$_2$O$_3$/ZnO, c) QDs/ZnO, and d) Al$_2$O$_3$/QDs/ZnO films.
Figure S3. a) Transfer curve characteristic (measured at $V_D = 20$ V) of $\text{Al}_2\text{O}_3/\text{ZnO}$ TFTs upon irradiation with different wavelengths of light. b) Transfer curve characteristics (measured at $V_D = 20$ V) of $\text{ZnO}$, $\text{Al}_2\text{O}_3/\text{ZnO}$, QDs/\text{ZnO}, and $\text{Al}_2\text{O}_3$/QDs/\text{ZnO} TFTs in darkness.
Figure S4. Transfer curve characteristic (measured at $V_D = 20$ V) of QDs/ZnO TFTs deposited with Al$_2$O$_3$ after a) 5 cycles, b) 20 cycles, and c) 50 cycles upon irradiation with different wavelengths of light.
Figure S5. Tauc plots of a) ZnO and Al₂O₃/ZnO, and b) QDs and Al₂O₃/QDs films.
**Figure S6.** Schematic of the photo-generated charge transportation at the Al$_2$O$_3$/QDs/ZnO TFT.
Figure S7. Transfer curve characteristics (measured at $V_D = 20$ V) of a) QDs/ZnO and b) Al$_2$O$_3$/QDs/ZnO TFTs upon irradiation with 520 nm light, measured periodically after exposure to air at room temperature.