Supporting Information

Dip-coating colloidal quantum dot film for high-performance broadband photodetector

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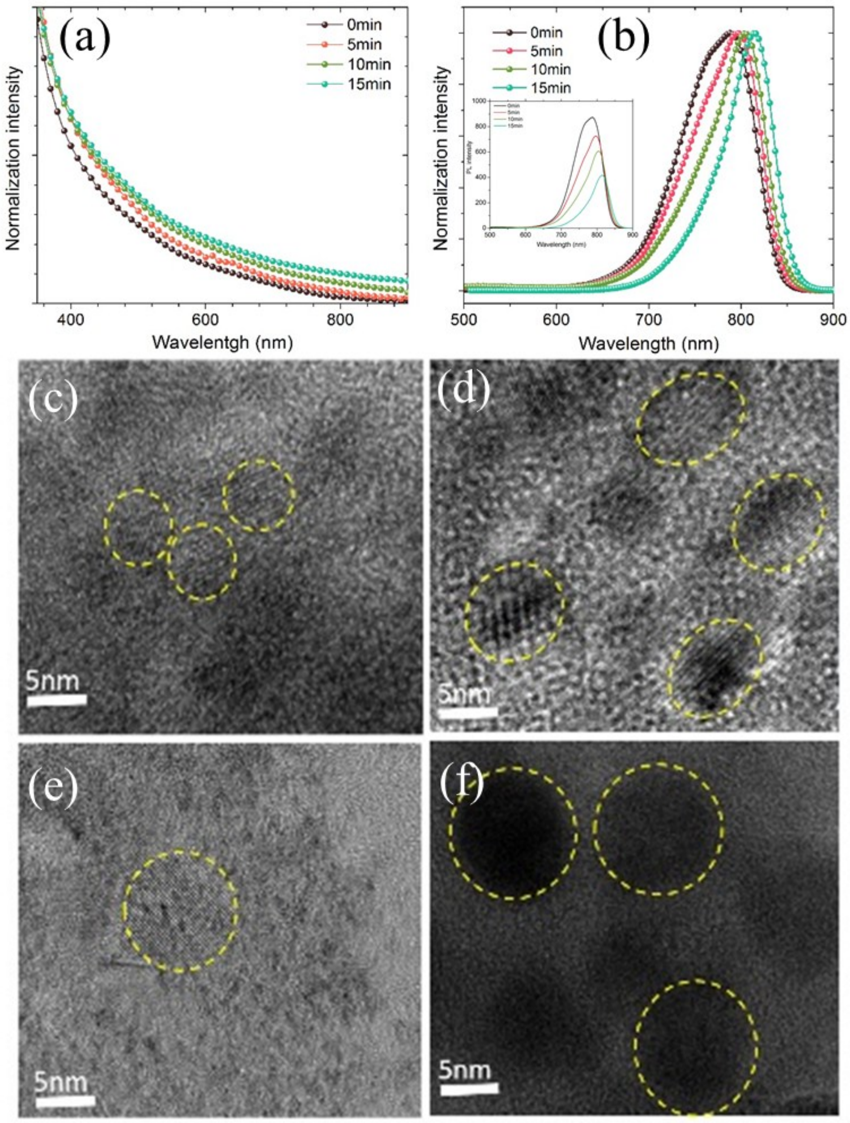

Figure S1. Absorption spectra (a) and the PL emission spectra (b) and the corresponding TEM images of QDs synthesized with different holding time, (a) 0 min, (b) 5 min, (c) 10 min, (d) 15 min.

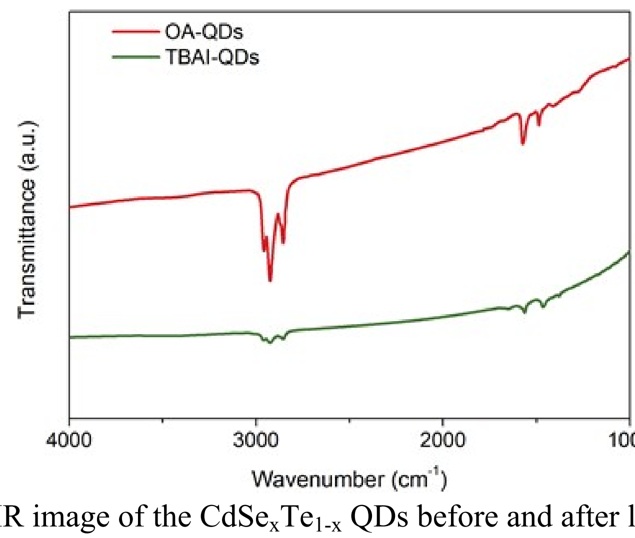

Figure S2. FTIR image of the $CdSe_xTe_{1-x}$ QDs before and after ligand exchange.

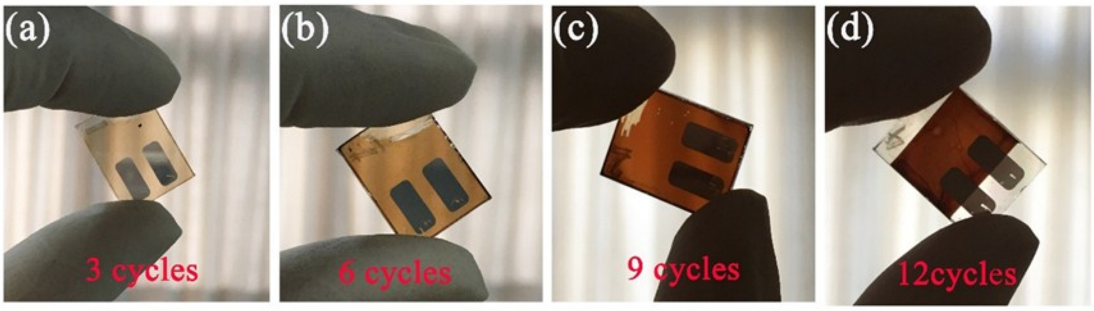

Figure S3. Photographs of sample fabricated by dip-coating at different cycles, (a) 3 cycles (b) 6 cycles (c) 9 cycles (d) 12 cycles.

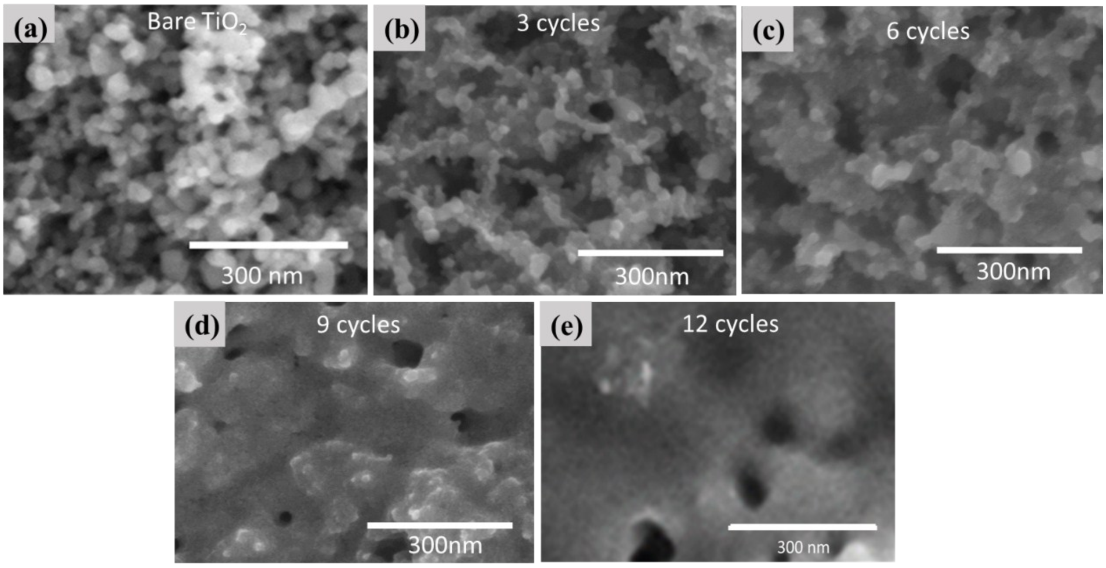

Figure S4. SEM image of the bare TiO_2 film (a) and $CdSe_xTe_{1-x}$ photoanode samples fabricated by dip-coating at different cycles, (b) 3 cycles, (c) 6 cycles, (d) 9 cycles, (e) 12 cycles.

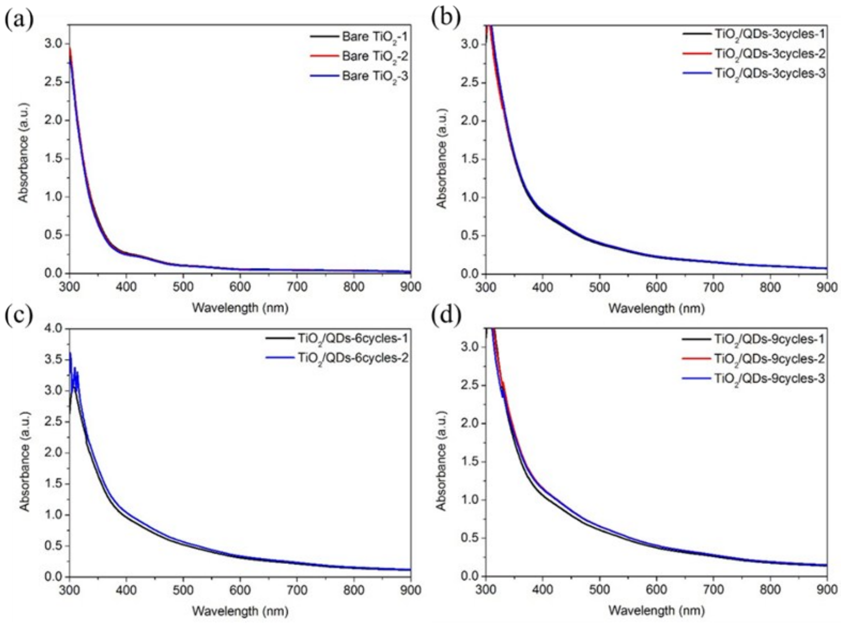

Figure S5. The repeatability property of the film preparation process. (a) the bare TiO_2 films, (b) the TiO_2/QD-3cycles, (c) the TiO_2/QDs-6cycles and (d) the TiO_2/QDs-9cycles.

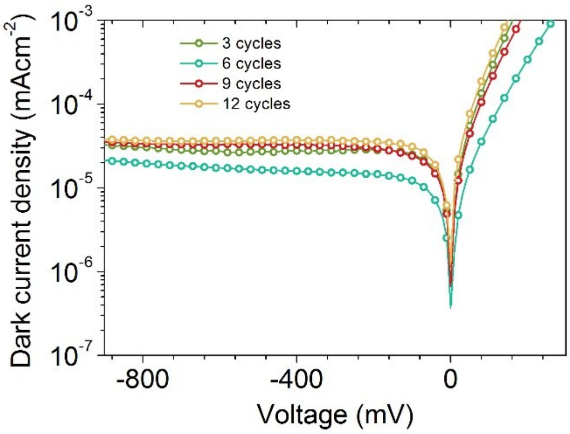

Figure S6. The dark current density-voltage curves of the four devices, 3-cycle QDs, 6-cycle QDs 9-cycle QDs and 12-cycle QDs based detectors.

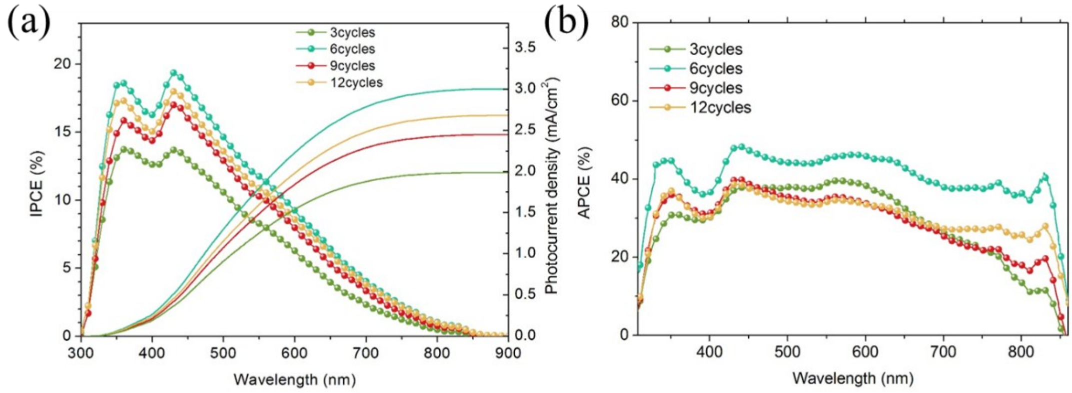

Figure S7. (a) Incident photon to charge carrier efficiency (IPCE) spectra curves and (b) absorbed photon to current conversion efficiency (APCE) curves of the device with different dip coating cycles.

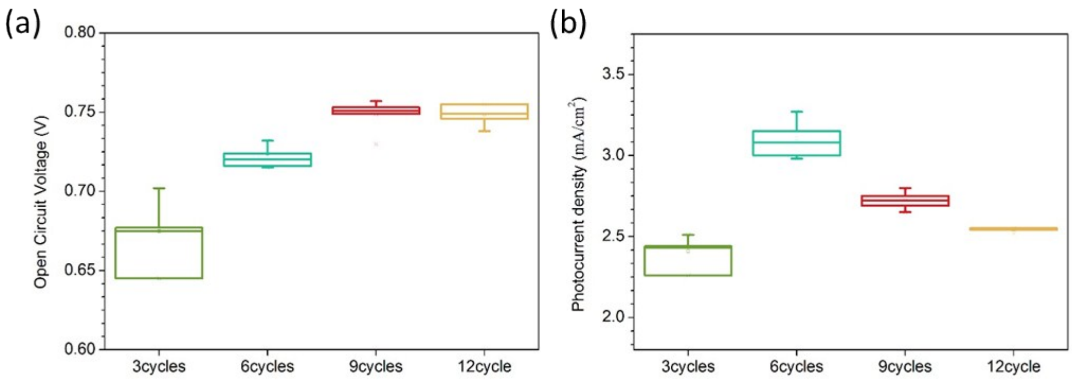

Figure S8. Influence and characterization of the different cycles in the fabricated device. (a) V_{oc}, (b) I_{sc} versus different cycles measured under AM 1.5G illumination (100mA/cm^2)

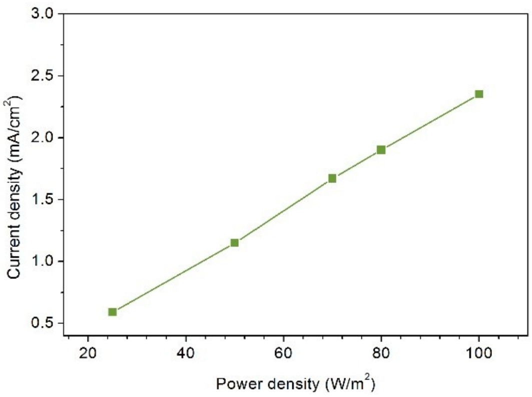

Figure S9. The relationship between current and incident irradiance.