Supplementary Information

Optimized CdS quantum dot-sensitized solar cell performance through atomic layer deposition of ultrathin TiO_2 coating

*Kehan Yu, Xiu Lin, Ganhua Lu, Zhenhai Wen, Chris Yuan**, and Junhong Chen**

Department of Mechanical Engineering, University of Wisconsin-Milwaukee, 3200 North Cramer Street, Milwaukee, Wisconsin 53211, U.S.A.

Email: * jhchen@uwm.edu, ** cyuan@uwm.edu.

---

* Corresponding authors: Tel: 1-414-229-2615; Email: jhchen@uwm.edu.

** Tel: 1- 414-229-5639: Email: cyuan@uwm.edu.

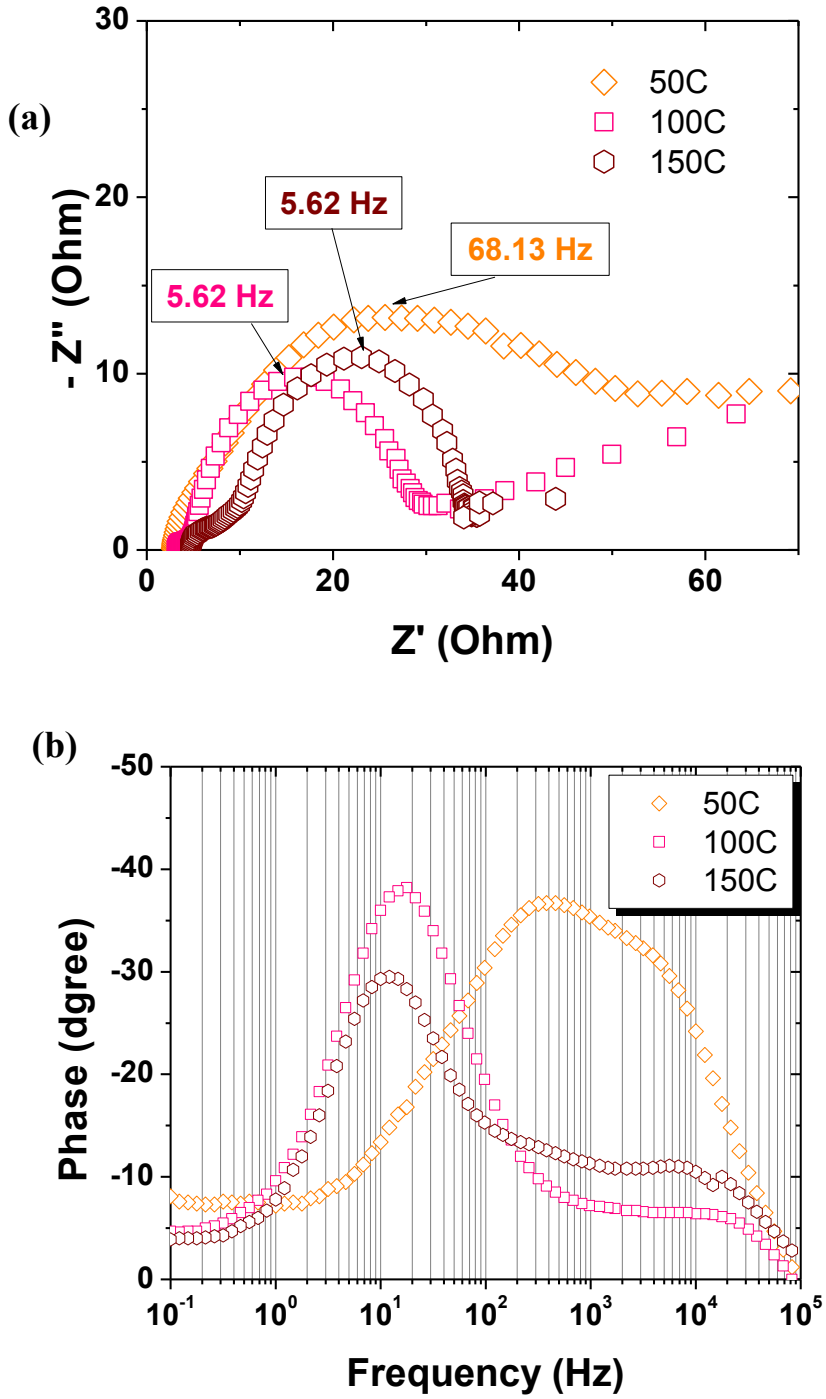

Figure S1. Electrochemical impedance spectra of additional three differently coated cells (-Δ- 50c, -□- 100c, and -○- 150c) under illumination of one sun (AM 1.5G, 100 mW/cm^2) at open circuit voltage. (a) Nyquist plots with peak frequencies indicated; (b) Bode phase plots.

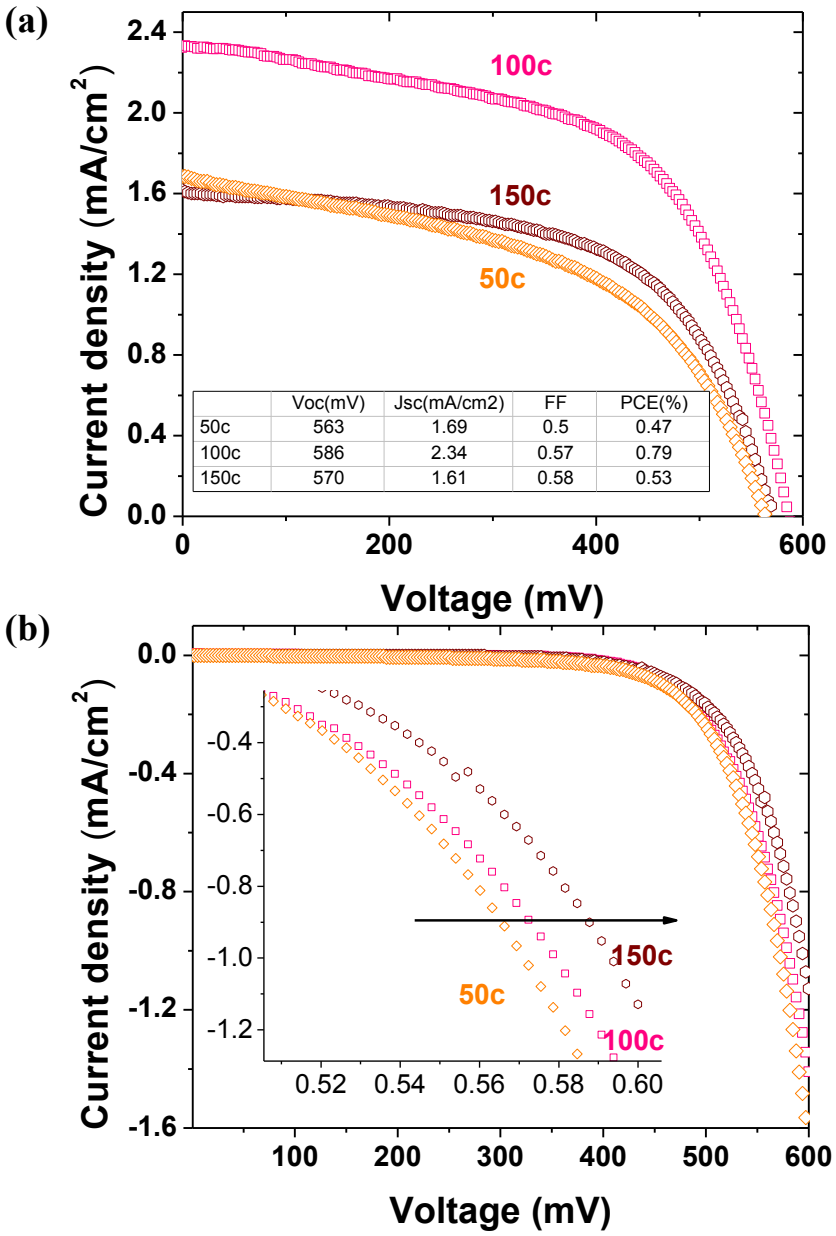

Figure S2. I-V characterization of additional CdS-QDs-sensitized TiO_2 solar cells with an ALD-TiO_2 protection layer. Differently coated solar cells with TiO_2 of 50-cycle, 100-cycle, and 150-cycle tested (a) under illumination of one sun (AM 1.5G, 100 mW/cm^2), and (b) in the dark.

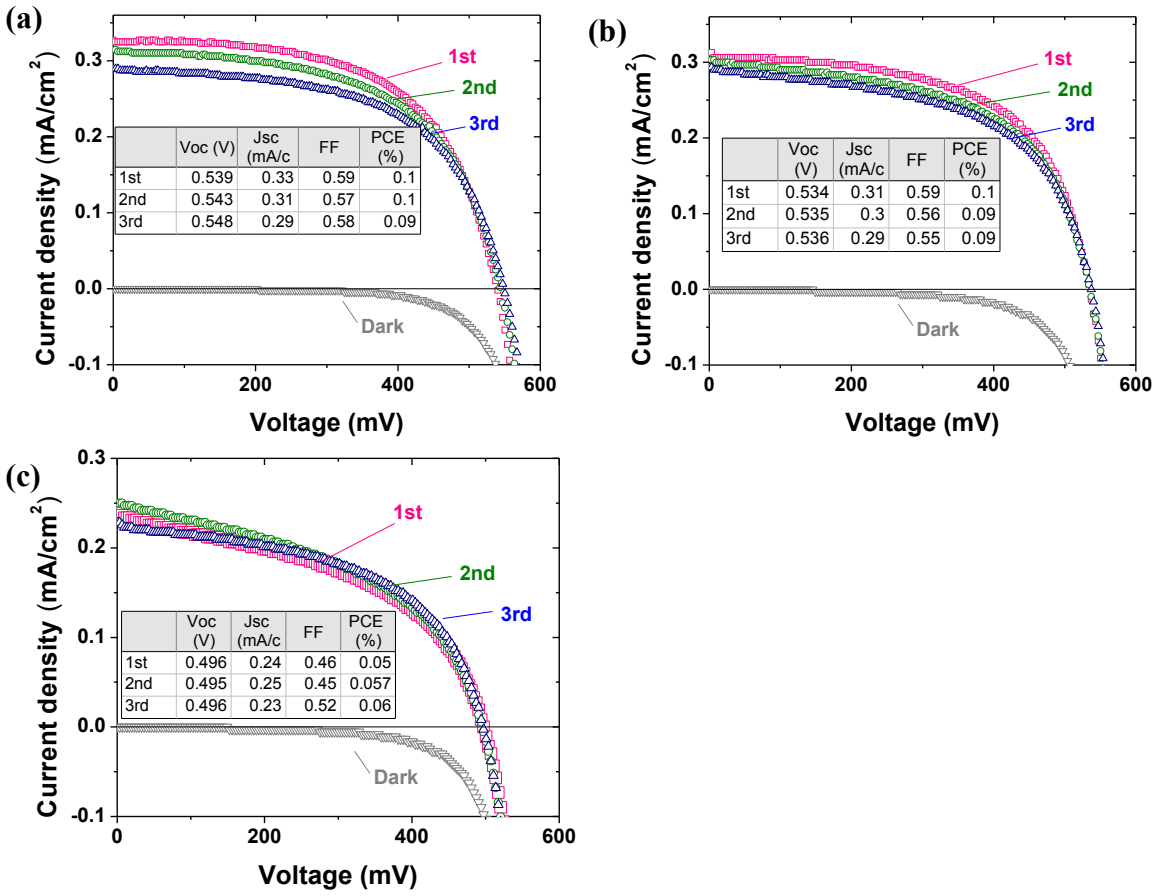

Figure S3. I-V characterization of the CdS-QDs sensitized TiO_2 solar cells with ALD-Al_2O_3 protection layer. Differently coated solar cells with Al_2O_3 of (a) 10-cycle, 1.3 nm, (b) 15-cycle, 1.85 nm, (c) 20-cycle, 2.6 nm were tested under illumination of one sun (AM 1.5G, 100 mW/cm^2). Each cell was measured three times under illumination.

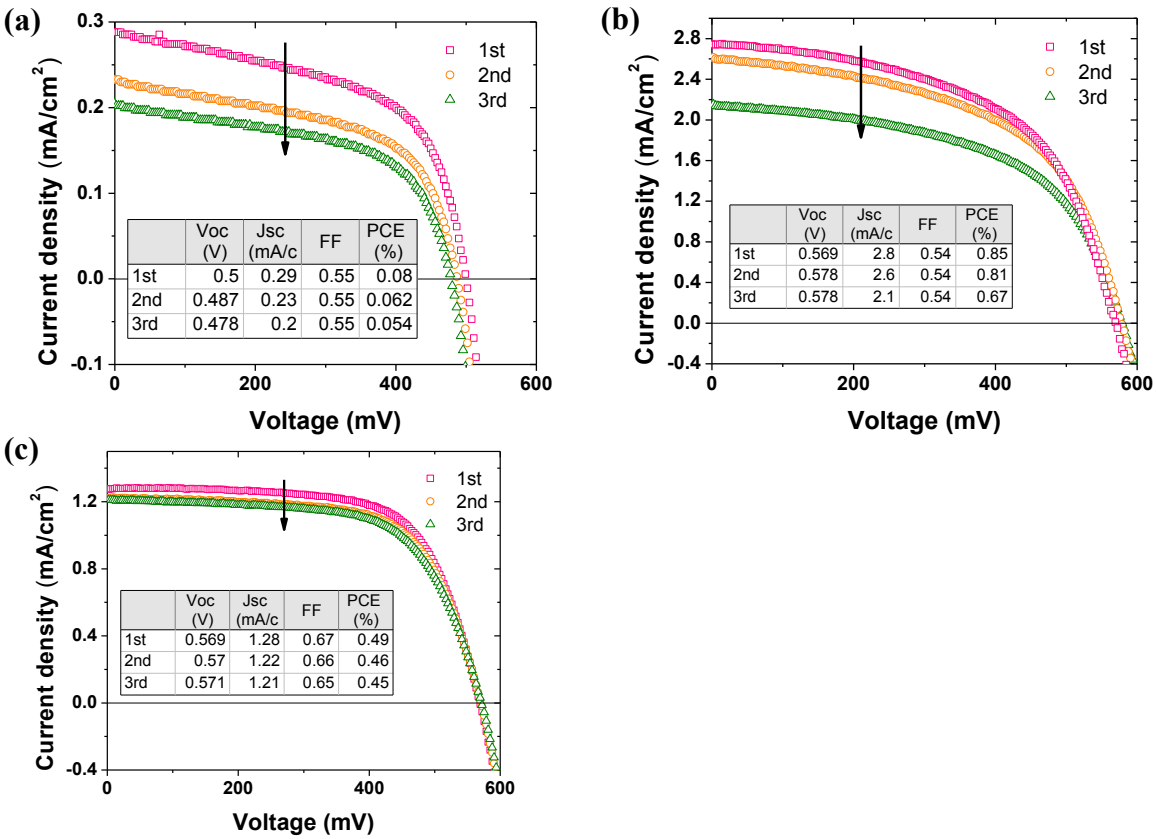

Figure S4. I-V characterization of the CdS-QDs sensitized TiO_2 solar cells with ALD-Al_2O_3 protection layer. Differently coated solar cells with Al_2O_3 of (a) 1-cycle, 1.3 Å, (b) 2-cycle, 2.6 Å, (c) 3-cycle, 3.9 Å were tested under illumination of one sun (AM 1.5G, 100 mW/cm^2). Each cell was measured three times under illumination.