Electronic Supplementary Information

Zinc-diffused silver indium selenide quantum dot sensitized solar cells with enhanced photoconversion efficiency

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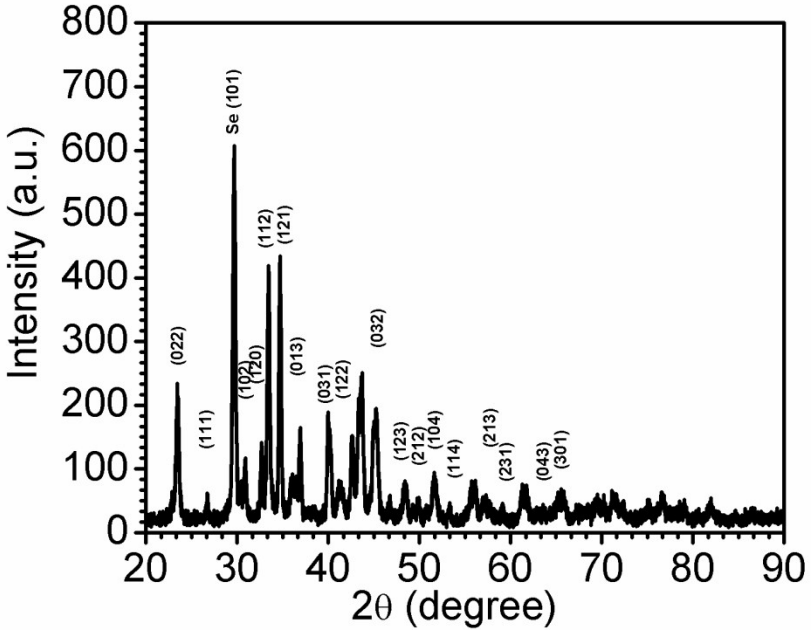

Fig. S1: Powder XRD pattern of Ag_2Se QDs synthesized at 88°C.

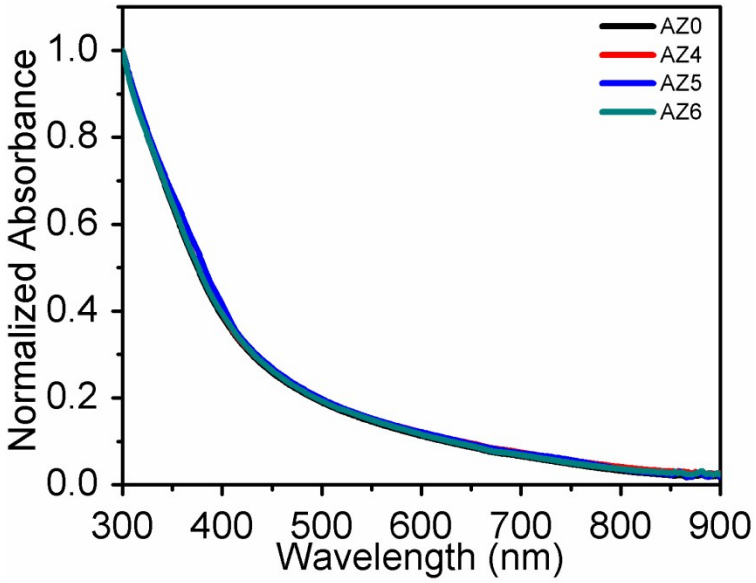

Fig. S2: Normalized absorption spectra of AZ0, AZ4, AZ5 and AZ6 spectra in chloroform.

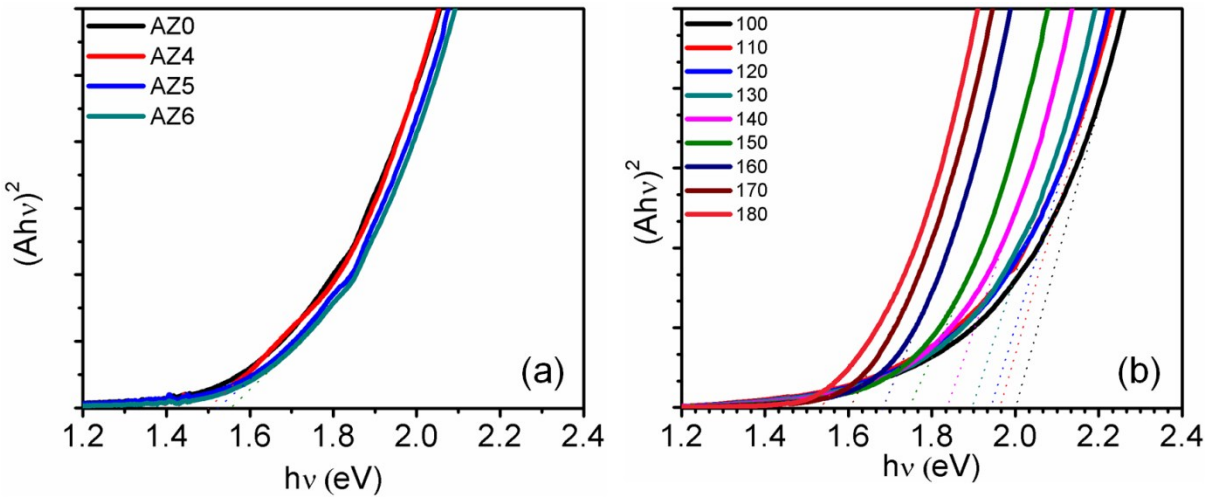

Fig. S3: Tauc plots showing the band gap of (a) AZ0, AZ4, AZ5 and AZ6 QDs, and (b) AZ5 QDs synthesized at different reaction temperatures.

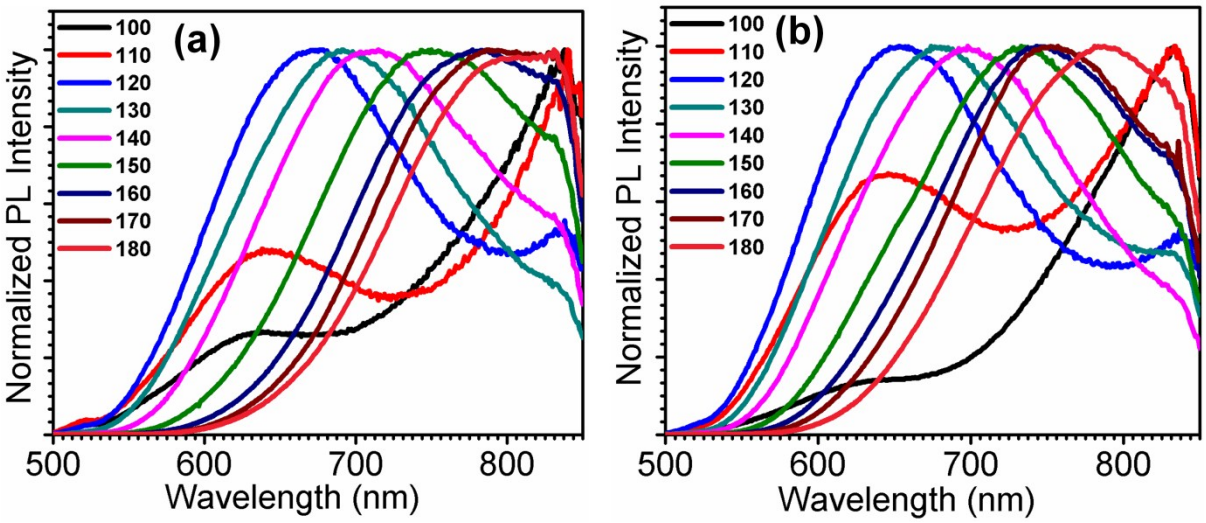

Fig. S4: Temperature dependent PL spectra of AZ4 and AZ6 QDs, respectively. Excitation wavelength was 450 nm.

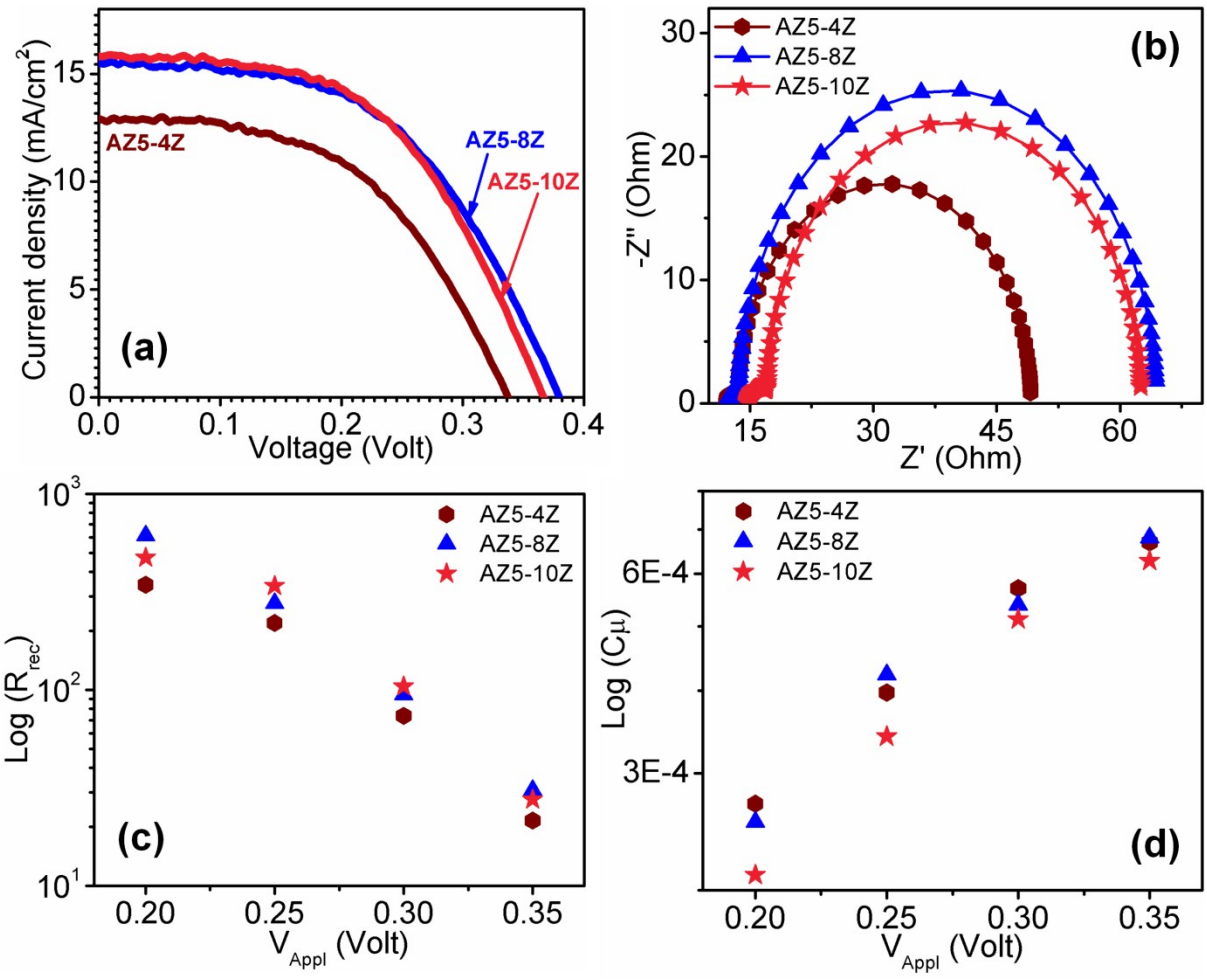

Fig. S5: (a) *J-V* characteristics of AZ5 QDSSCs at different ZnS SILAR cycles. (b) Nyquist plots of the QDSSCs at -0.35 V forward bias under dark. Variation of (c) R_{rec} and (d) C_{μ} as a function of applied potential.

Table S1: Variation of QDSSC parameters for AZ5 with number of ZnS SILAR cycles.

QDSSCs	J_{SC} (mA/cm²)	V_{OC} (V)	FF	η (%)
AZ5-4Z	12.91±0.31	0.343±0.011	0.528±0.004	2.34±0.14
AZ5-8Z	15.78±0.19	0.368±0.011	0.529±0.013	3.07±0.02
AZ5-10Z	15.73±0.21	0.359±0.021	0.523±0.012	2.9±0.15

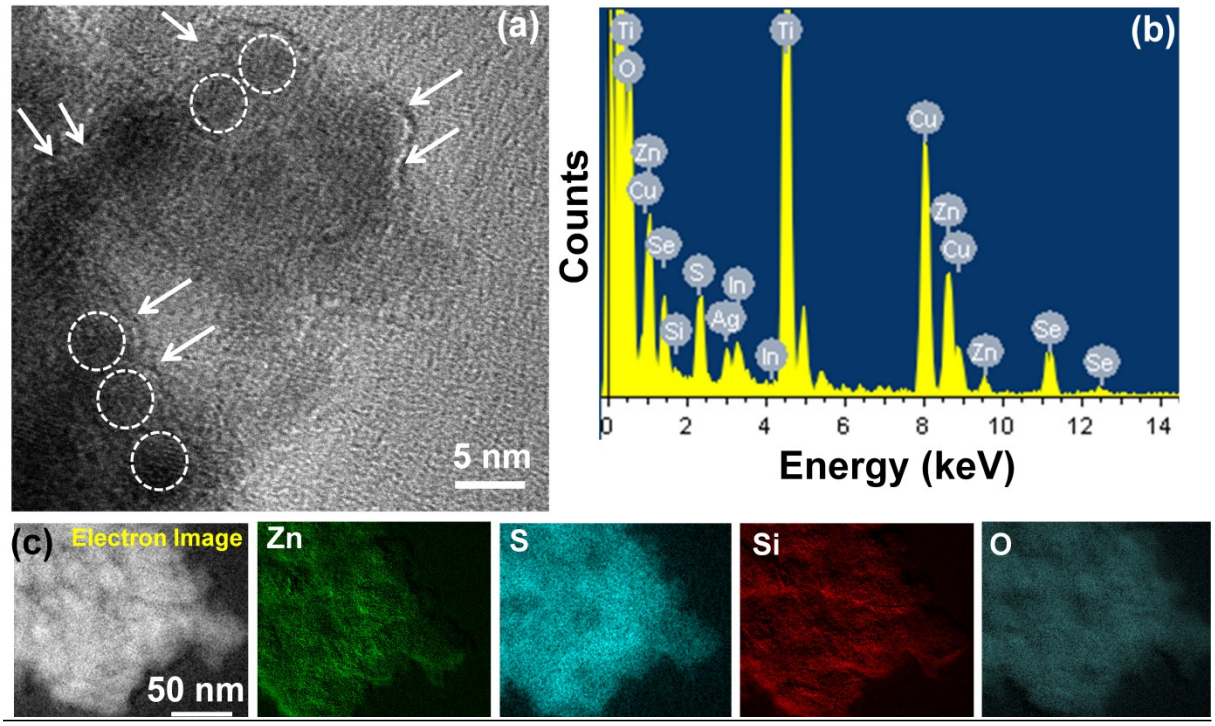

Fig. S6: (a) High resolution TEM image of QD-sensitized photoanode with amorphous TiO_2/ZnS/SiO_2 passivating layers. The arrows indicate the coating and the QDs are shown with dotted circles. (b) EDAX analysis and (c) elemental mapping of the photoanode with the amorphous passivating layers.

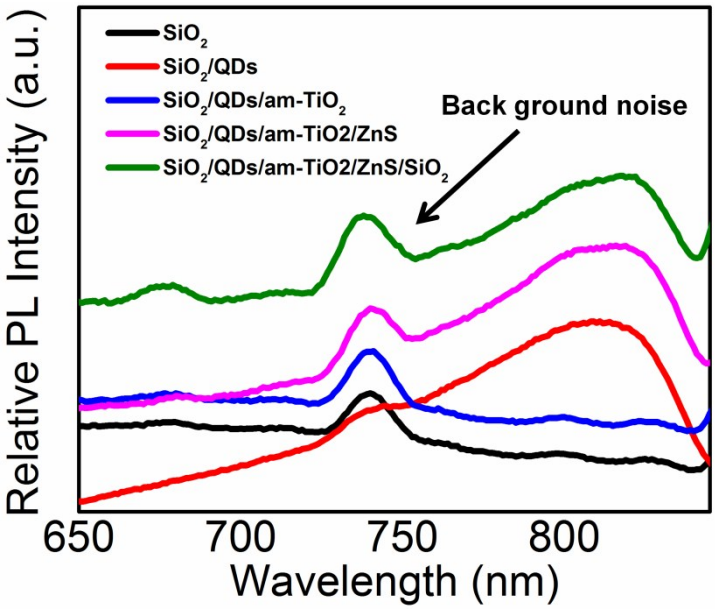

Fig. S7: PL spectra of QD-sensitized photoanode with different passivating layers.