Electronic Supplementary Information

Three-dimensional hyperbranched TiO_2/ZnO heterostructured arrays for efficient quantum dot-sensitized solar cells

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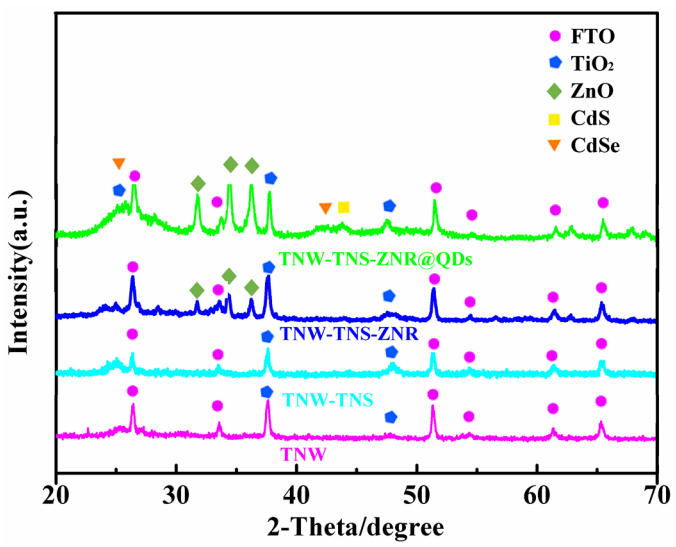

Figure S1 XRD patterns of TNW, TNW-TNS, TNW-TNS-ZNR and TNW-TNS-ZNR@QDs on FTO glass substrate.

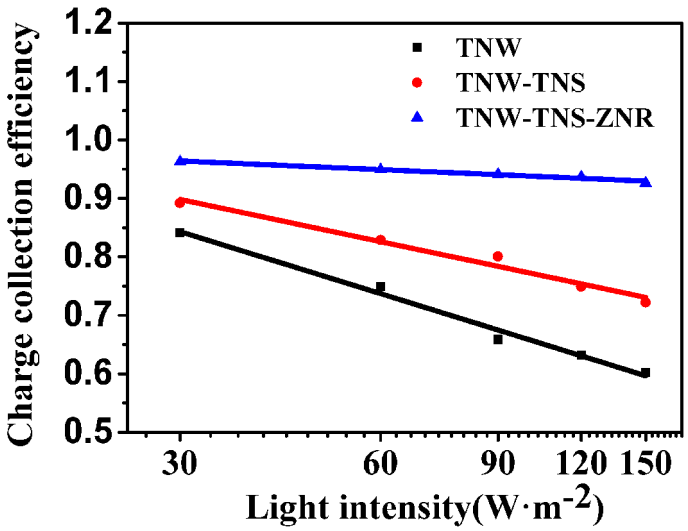

Figure S2 The charge-collection efficiency of QDSSCs based on TNW, TNW-TNS and TNW-TNS-ZNR arrays photoanodes.

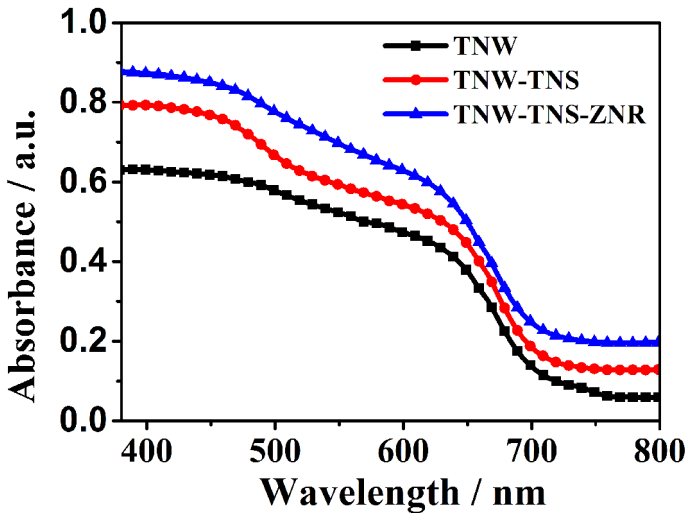

Figure S3 UV-vis absorption spectra of CdS/CdSe sensitized photoanodes based on TNW, TNW-TNS, TNW-TNS-ZNR arrays.

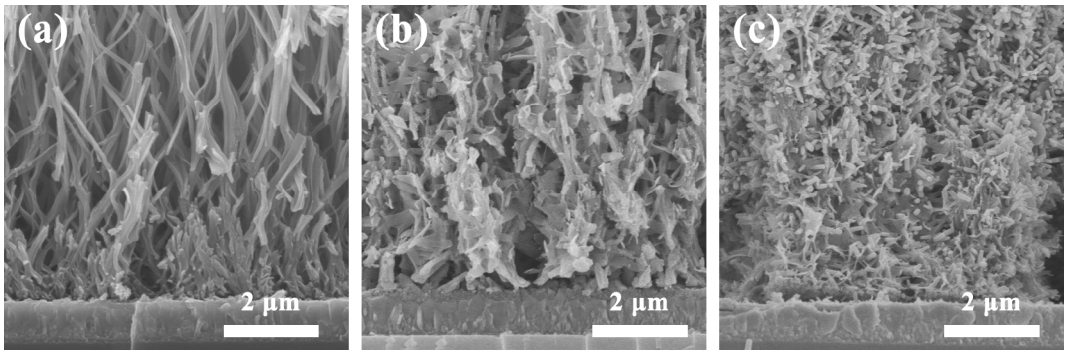

Figure S4 Zoom-in SEM images showing the connection features between the roots of (a) TNW, (b) TNW-TNS and (c) TNW-TNS-ZNR (c) arrays and FTO glass substrate.

Table S1 Detailed values of Resistance (*R*) and electron lifetime value (τ_r) from EIS spectra simulated by equivalent circuit as shown in Figure 4a.

QDSSCs	*Rs*	R_2 (ohm)	τ_r (s)
TNW	12.85	52.11	0.066
TNW-TNS	12.82	94.13	0.088
TNW-TNS-ZNR	12.01	103.9	0.096

Table S2 Detailed photovoltaic parameters of QDSSCs based on different arrays photoanodes and counter electrodes.

QDSSCs	J_{SC}/mA·cm^{-2}	V_{OC}/mV	*η*/%	*FF*
TNW	12.98	477	2.85	0.46
TNW-TNS	14.71	489	3.75	0.52
TNW-TNS-ZNR	15.95	505	4.25	0.53
TNW-TNS-ZNR with Cu_2S	19.19	517	5.38	0.54