Electronic Supplementary Information (ESI)

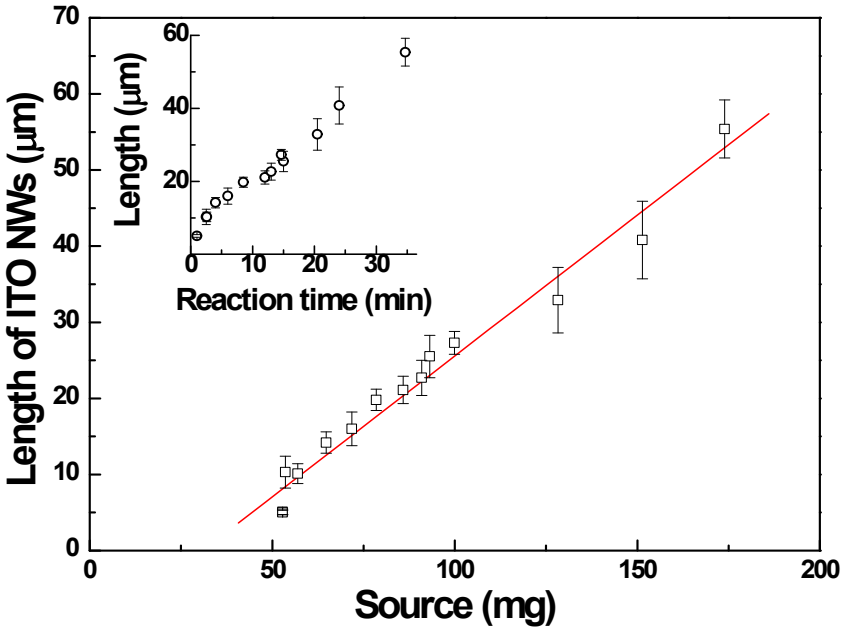


Figure S1. Length of the grown ITO NWs as a function of the consumed source amount. The x-intercept of the extrapolated line is attributed to a loss of source by evaporation during heating up to 600°C. Inset shows the length of ITO NWs as a function of reaction time.

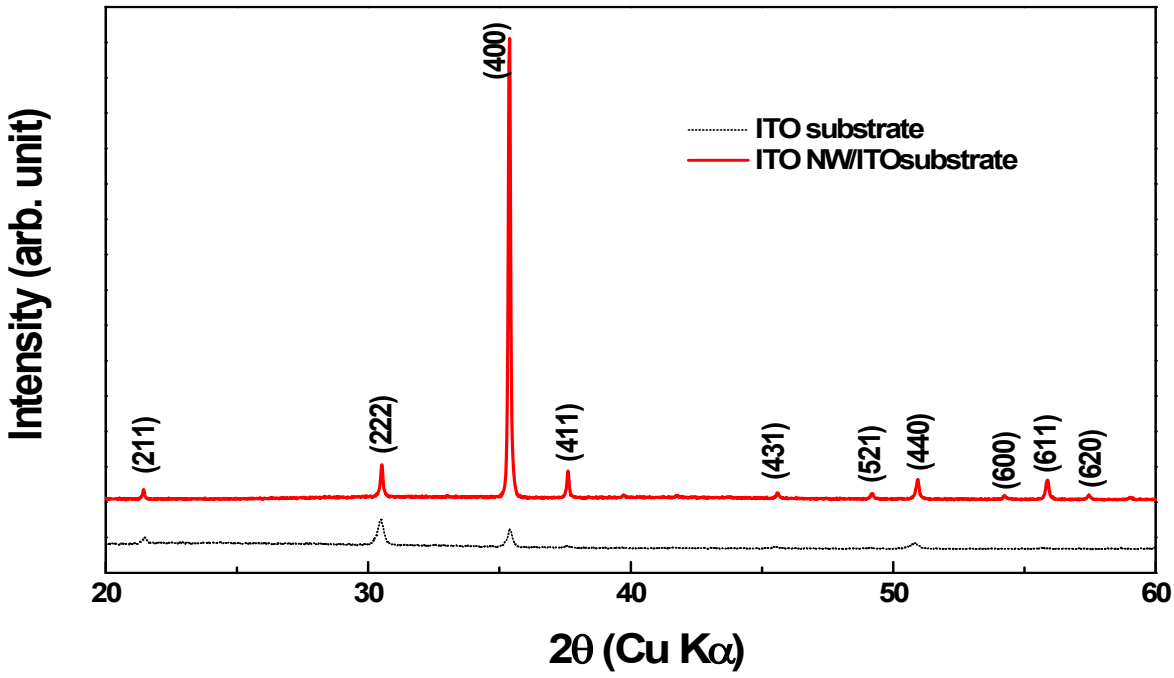
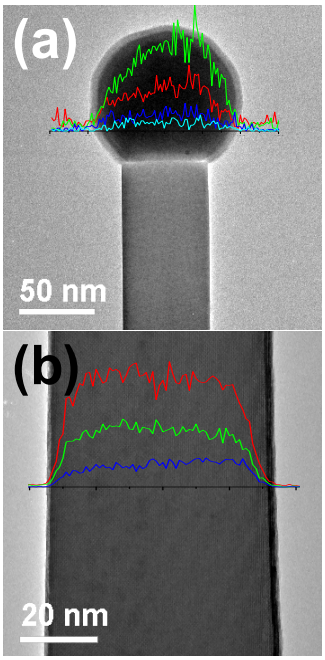


Figure S2. XRD pattern of the bare ITO substrate (ITO thin film on glass) and the grown NWs o n the ITO substrate. All the peaks correspond to the peaks for cubic In_2O_3 shown in JCPDS Card No. 06-0416.



(c)

	at%	wt%
In	12.77	27.9
Sn	22.13	49.98
O	64.43	19.61
Au	0.67	2.52

(d)

	at%	wt%
In	38.22	79.37
Sn	1.48	3.18
O	60.3	17.45

Figure S3. EDS line scan results (red: In, green: Sn, blue: O, and cyan: Au) of the (a) tip and (b) body of a NW, and the corresponding composition tables (c and d), respectively.

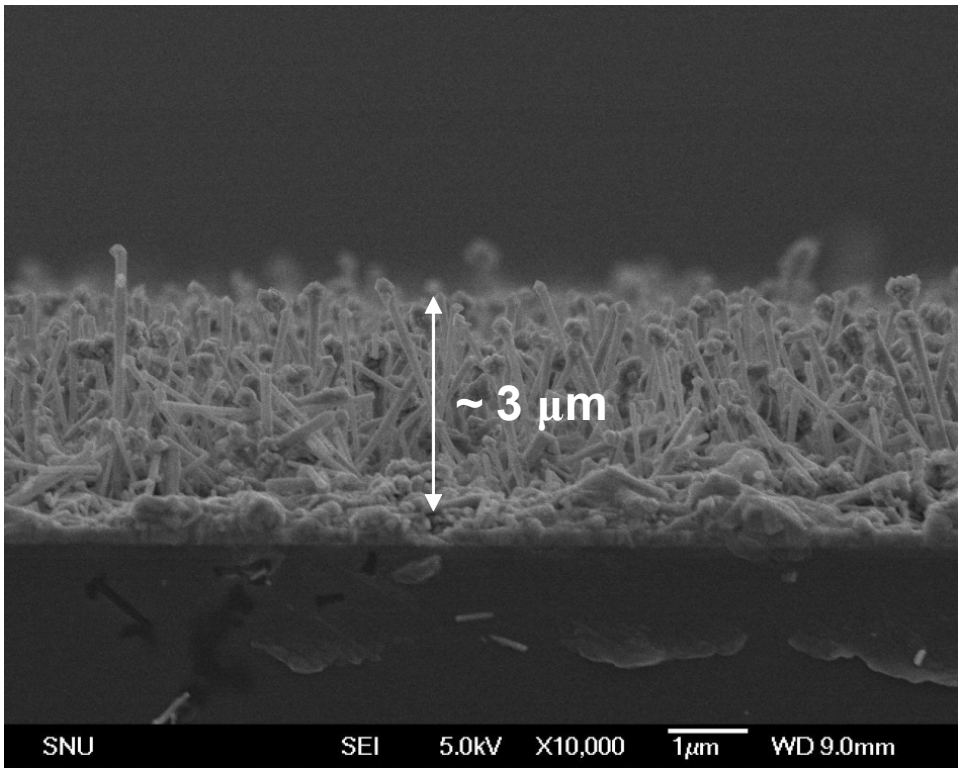


Figure S4. Cross-sectional SEM image of an ITO NW array grown without Au seeds for 30 min. All the other growth conditions are identical to the conditions for Au seed layer-mediated growth.

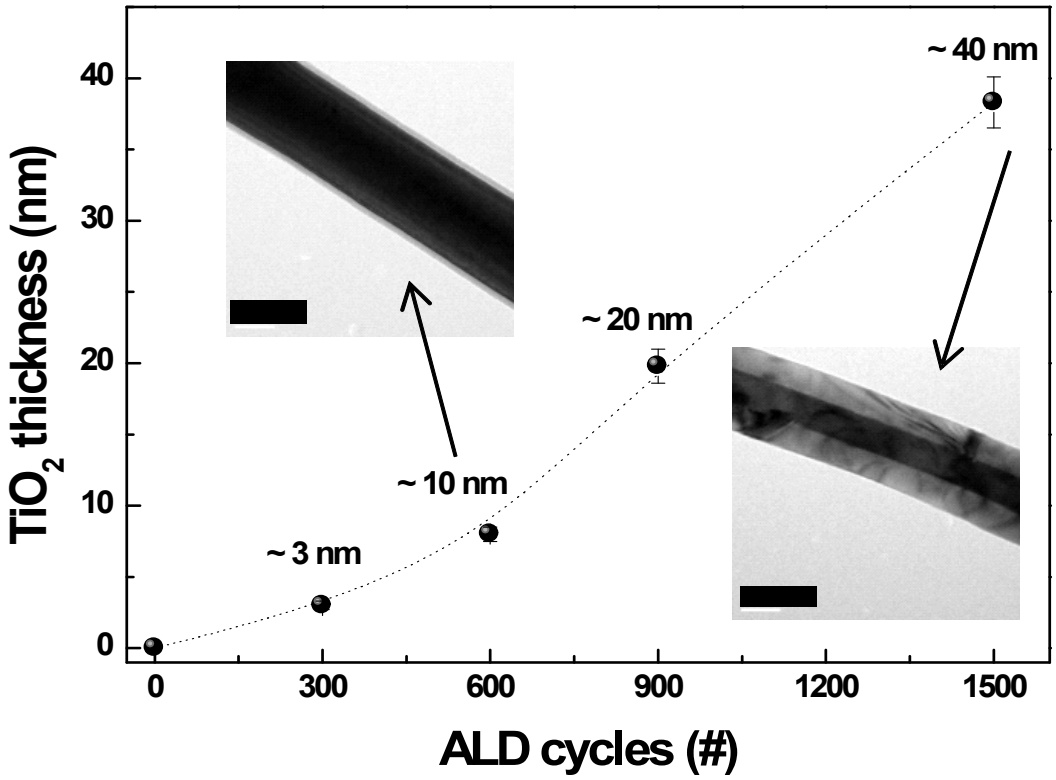


Figure S5. The thickness of the TiO_2 nanoshell versus the number of ALD cycles. The insets sho w the TEM images of the TiO_2 nanoshell coated ITO NW (scale bar: 100 nm).

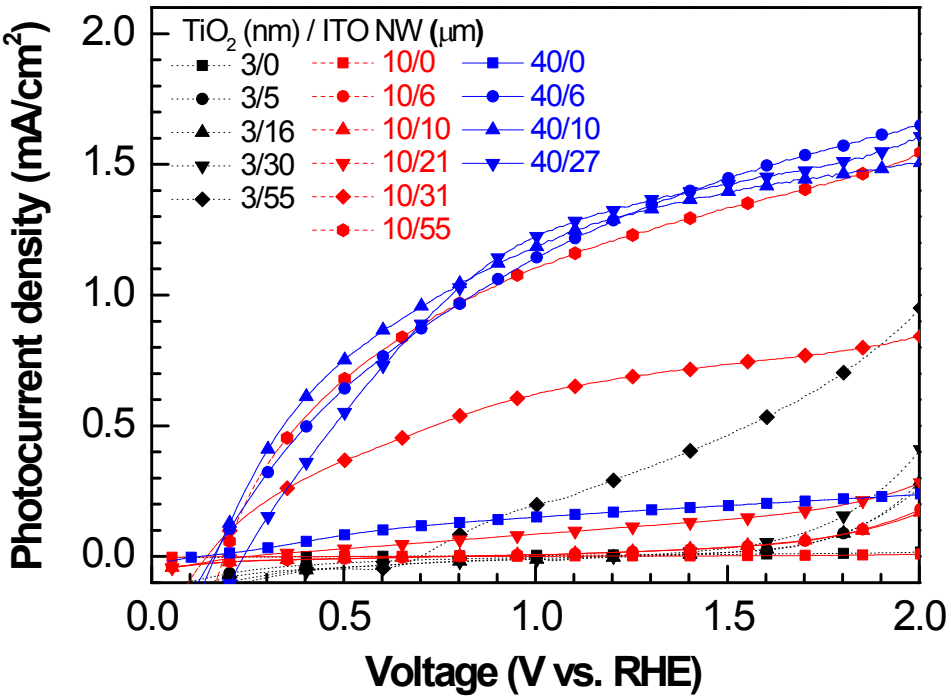


Figure S6. *J-V* curves of the TiO_2/ITO NW-based photoelectrodes, under 100 mW/cm^2 (Xe lamp) of light illumination.

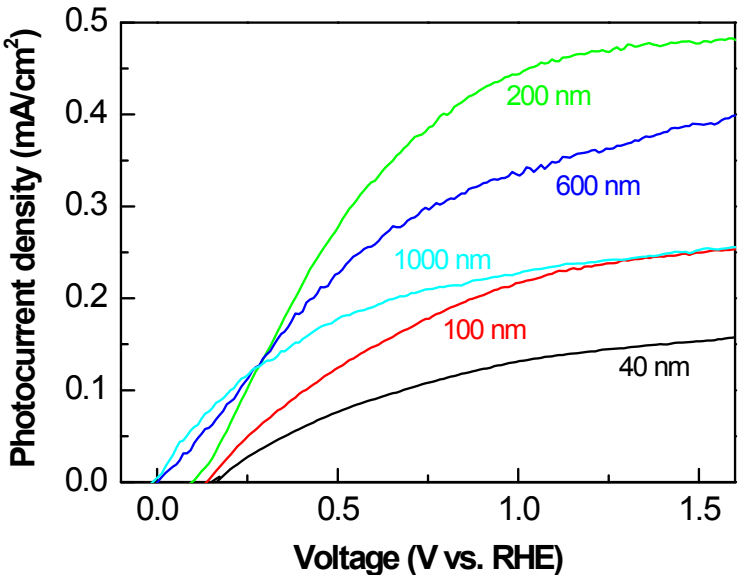


Figure S7. *J-V* curves of the TiO_2 NP (P25) film-based photoelectrodes, under 100 mW/cm^2 (Xe lamp) of light illumination.

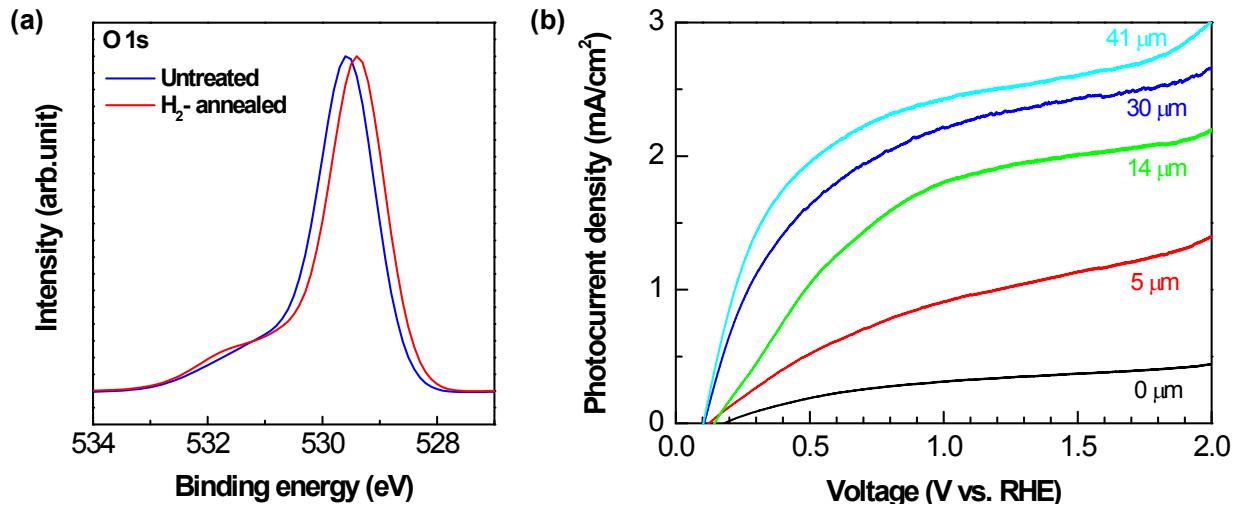


Figure S8. (a) O 1s XPS peaks of the ITO NW and (b) *J-V* curves for the H_2-annealed photoanodes (20 nm-thick TiO_2/ITO NW).

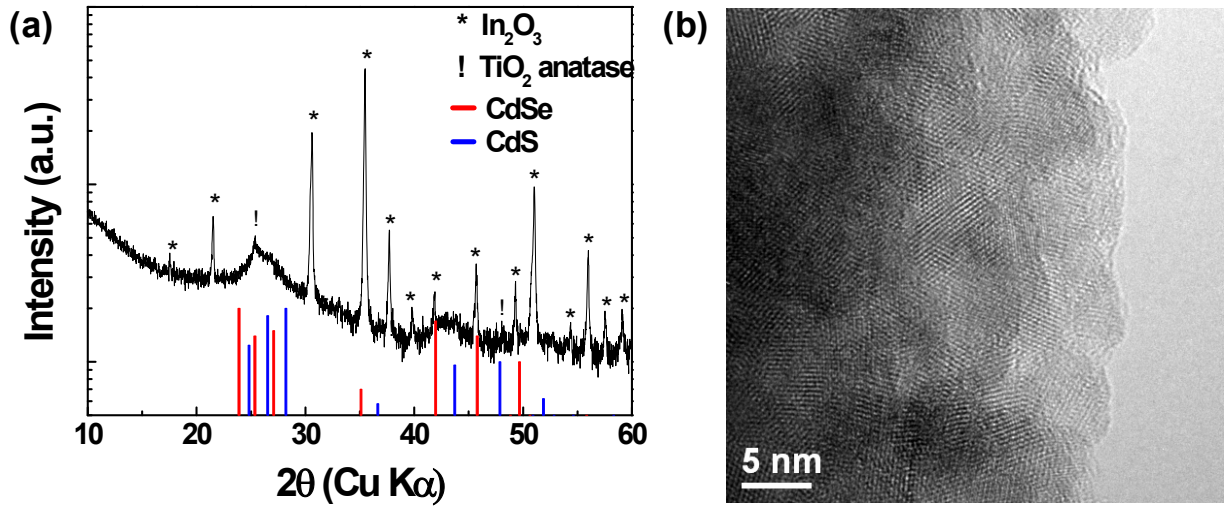


Figure S9. (a) XRD pattern and (b) HRTEM image of the CdS/CdSe crystallites coated on the surface of TiO_2 nanoshell.