Electronic Supplementary Material (ESI) for Nanoscale

Surpporting Information for Electrochemical Fabrication of ZnO-CdSe Core-Shell Nanorod Arrays for Efficient Photoelectrochemical Water Splitting

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SI-1. TEM images of ZnO/CdSe nanorods

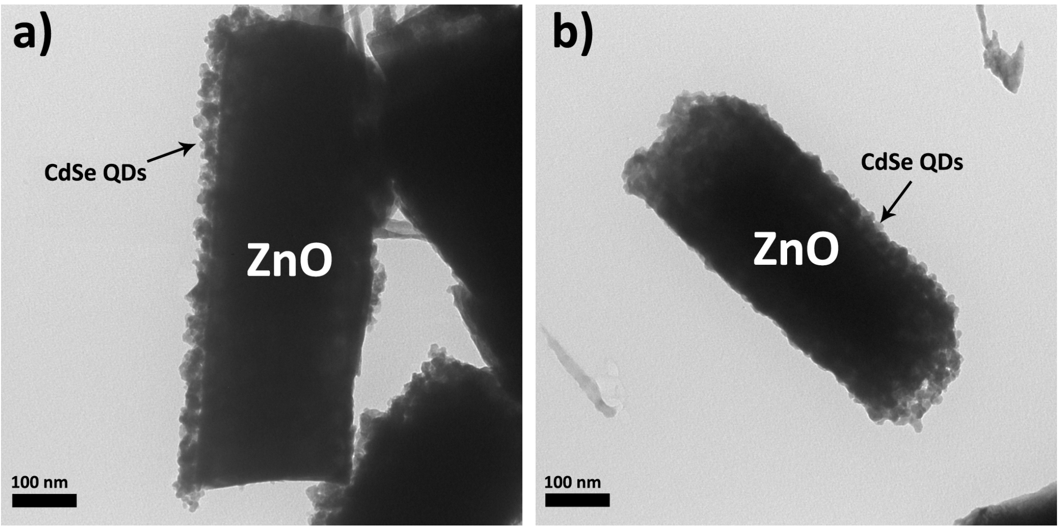
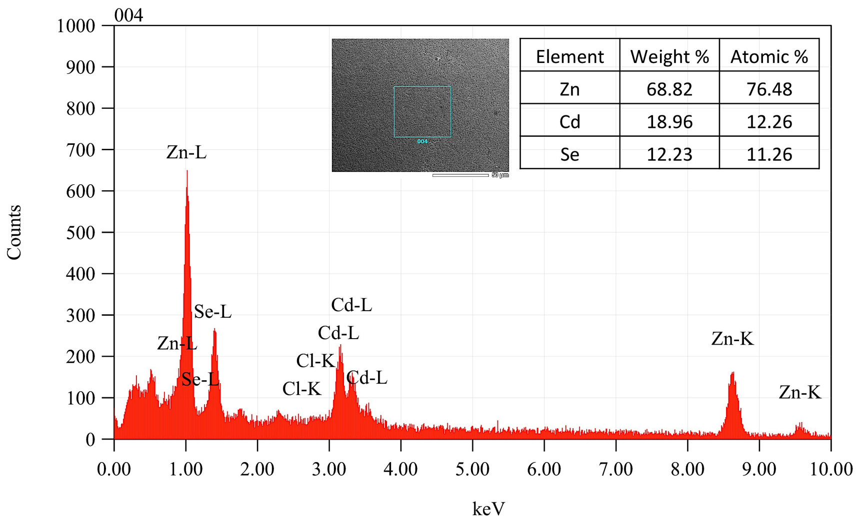


Figure S1. TEM images of ZnO/CdSe nanorods

SI-2 Energy-dispersive X-ray spectroscopy (EDS) of the ZnO/CdSe nanorod arrays



Element	Weight %	Atomic %
Zn	68.82	76.48
Cd	18.96	12.26
Se	12.23	11.26

Figure S2. EDS spectrum and elemental composition of ZnO/CdSe core-shell nanorod arrays.

SI-3 HRTEM Image of ZnO/CdSe Nanorod Arrays

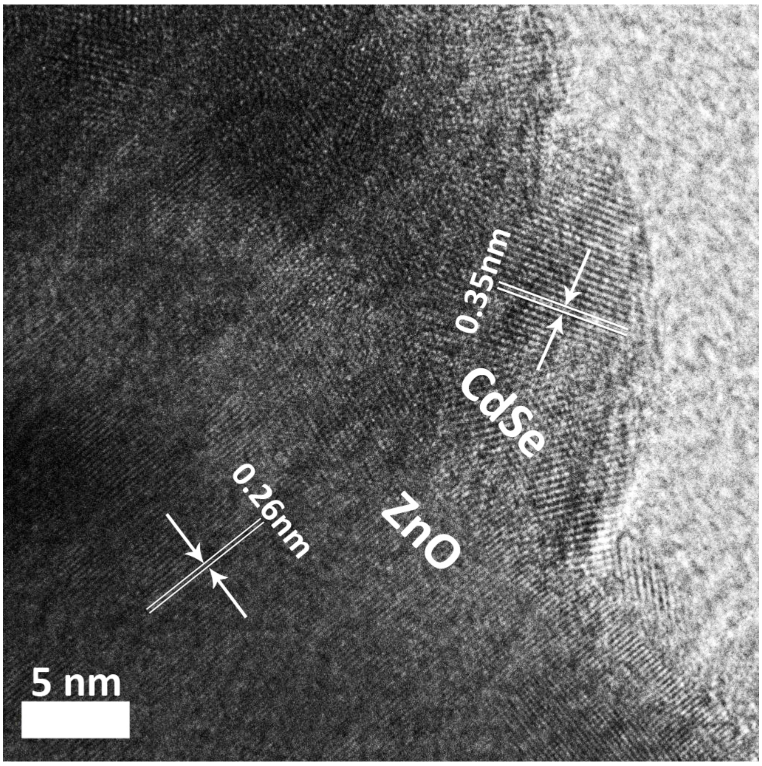


Figure S3. The HRTEM image of ZnO/CdSe core-shell nanorod arrays

SI-4 Optimization of CdSe deposition time

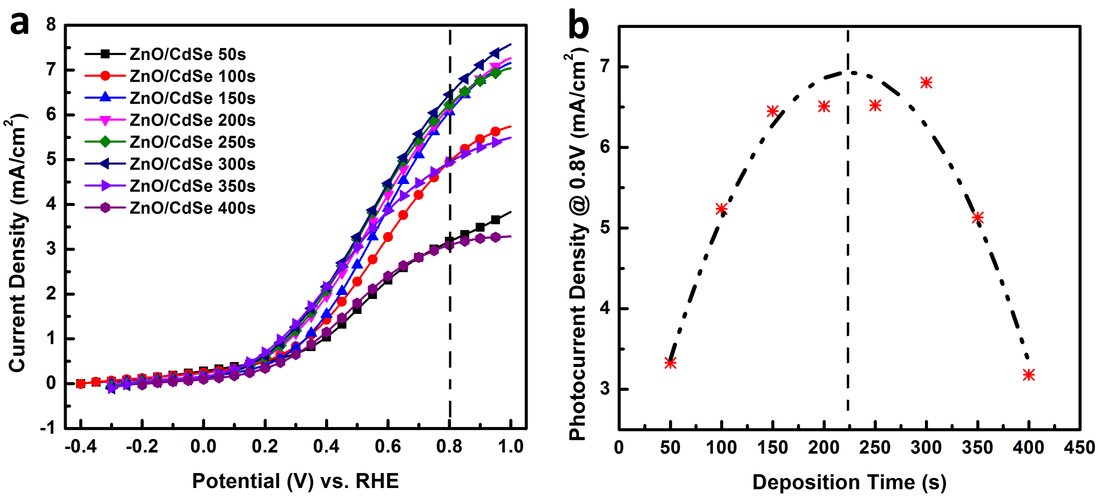


Figure S4 a) Photocurrent -photovoltage (J-V) curves of ZnO/CdSe nanorod arrays prepared with different CdSe deposition time, and b) optimization curve

SI-5 FESEM images of ZnO nanorod arrays loaded with excessive amount of CdSe QDs

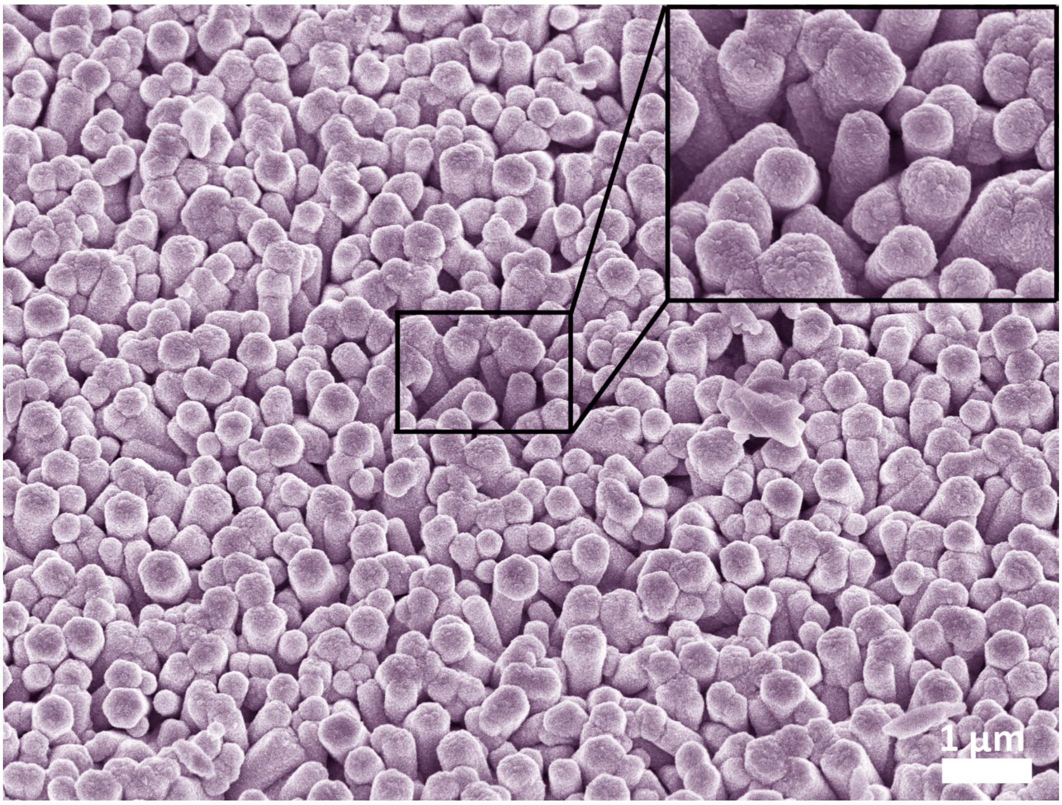


Figure S5 ZnO nanorod arrays loaded with excessive amount of CdSe QDs (350 seconds)

SI-6 Comparison of saturated photocurrent density

Table S1 Comparison of saturated photocurrent density with reported similar materials

Reported Material	Year	Light Source	Electrolyte	Saturated Photocurrent density (mA/cm^2)
ZnO/CdSe nanorod arrays[a)]	**2013**	**Simulated Sunlight**	**0.2M Na_2S**	**14.9**
$IrO_x.nH_2O$-CdSe/CdS/ZnO nanowire [1]	2013	Simulated Sunlight	0.25M Na_2S and 0.35M Na_2SO_3	13.9
Double-layered tubular CdSe/ZnO arrays [2]	2013	Xe Lamp	0.1M Na_2S	2.55
Double-shelled ZnO/CdSe/CdTe nanocable arrays [3]	2012	Simulated Sunlight	0.6M Na_2S, 0.2M S and 0.2M KCl	14.3
TiO_2/CdSeS [4]	2012	Xe Lamp	0.25M Na_2S and 0.35M Na_2SO_3	6
CdSe/CdS sensitized ZnO/WOx Nanowires [5]	2011	Simulated Sunlight	0.25M Na_2S and 0.35M Na_2SO_3	11
CdS/ZnO nanotube arrays [6]	2011	Xe Lamp	1M Na_2S	10.64
CdSe QDs sensitized N-doped TiO_2 [7]	2010	Xe Lamp	0.25M Na_2S and 0.35M Na_2SO_3	2.75
Double sided CdS CdSe QD sensitized ZnO [8]	2010	Xe Lamp	0.25M Na_2S and 0.35M Na_2SO_3	12
ZnO-CdSSe core-shell nanowire arrays [9]	2010	Xe Lamp	1M Na_2S	6.2
CdSe QD-sensitized ZnO nanowire arrays [10]	2010	Xe Lamp	0.25M Na_2S and 0.35M Na_2SO_3	2.48
CdSe/CdS co-sensitized ZnO nanowire arrays [11]	2010	Simulated Sunlight	1M Na_2S	9.15
CdS nanoparticle/ZnO nanowire [12]	2009	Simulated Sunlight	1M Na_2S	4.5
ZnO/CdS core/shell nanowire arrays [13]	2009	Simulated Sunlight	1M Na_2S	7.23

a) ZnO/CdSe nanorod arrays prepared in this work

SI-7 Photocurrent-voltage characteristics of ZnO/CdSe nanorod arrays in 0.5 M Na_2SO_4 under chopped AM 1.5 G light illumination

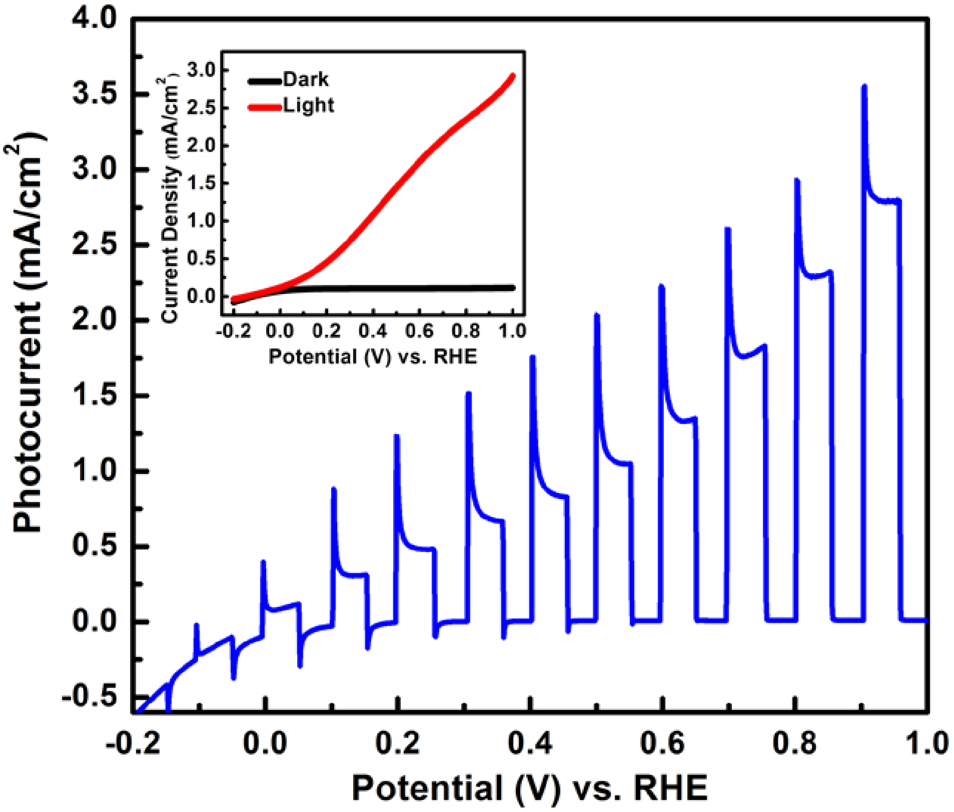


Figure S6. Photocurrent-voltage characteristics of ZnO/CdSe nanorod arrays in 0.5 M Na_2SO_4 under chopped AM 1.5 G light illumination, inset shows the corresponding LSV curves observed under dark (black) and illuminated (red) conditions in the same electrolyte.

SI-8 Stability test of ZnO/CdSe nanorod arrays under continuous AM 1.5G light illumination

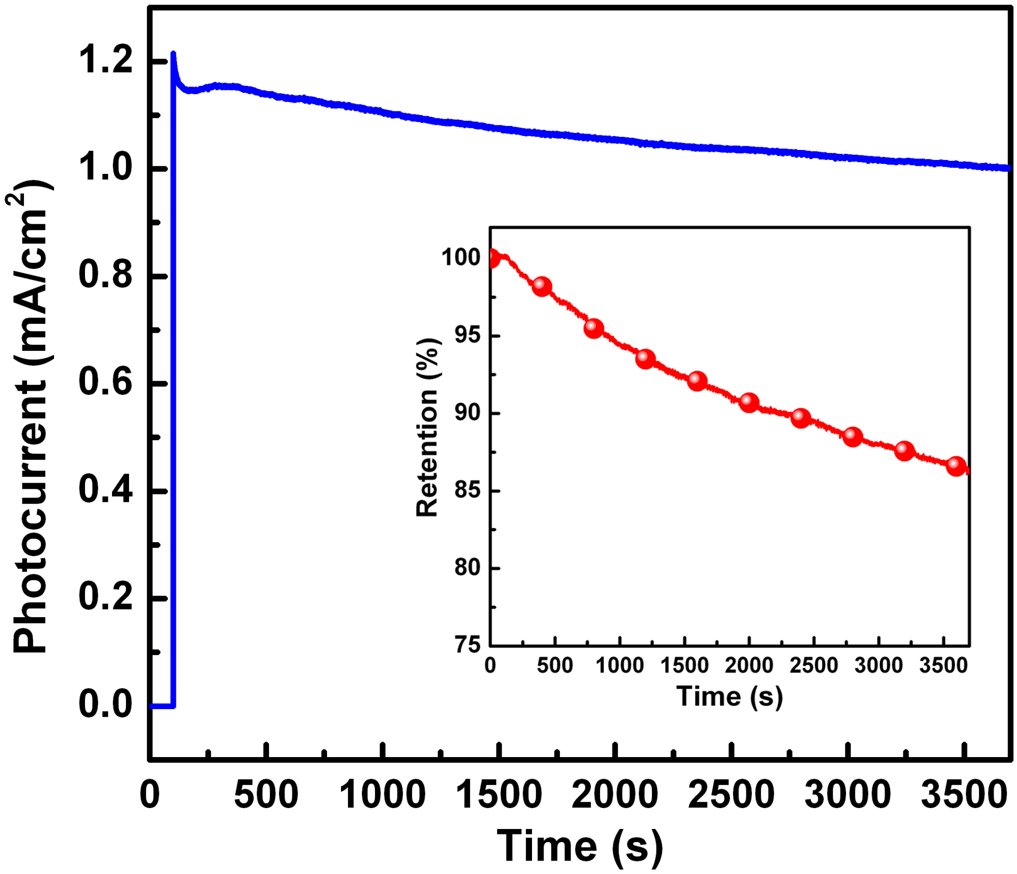


Figure S7. Stability test of ZnO/CdSe nanorod arrays under continuous AM 1.5G light illuminations for 1hour

Reference:

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