

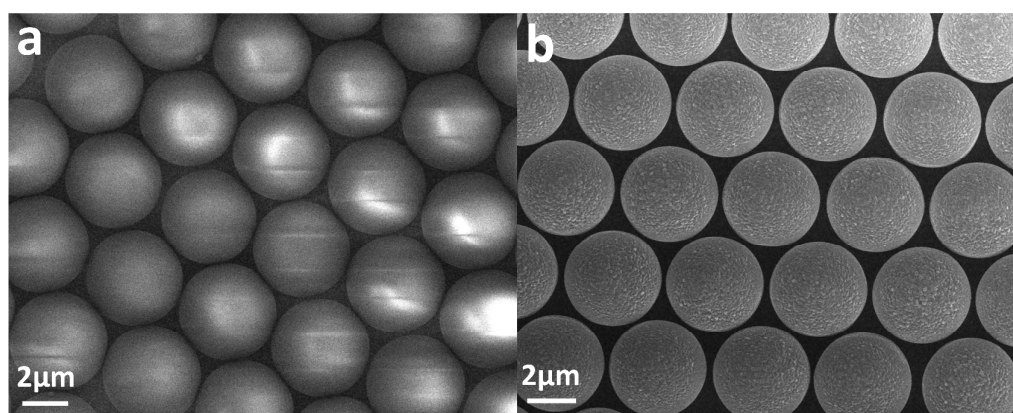
## Supporting Information

### Three-dimensional CdS Sensitized Sea-urchin like $\text{TiO}_2$ Ordered Arrays as Efficient Photoelectrochemical anodes

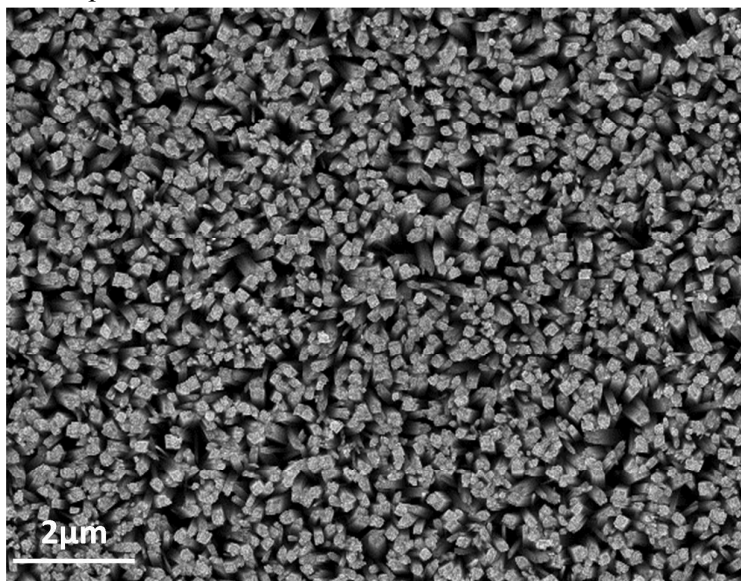
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**Figure S1.** SEM image of (a) monolayer PS microspheres (b)  $\text{TiO}_2$  hollow microspheres



**Figure S2.** SEM image of 1D  $\text{TiO}_2$  nanowires on FTO substrate

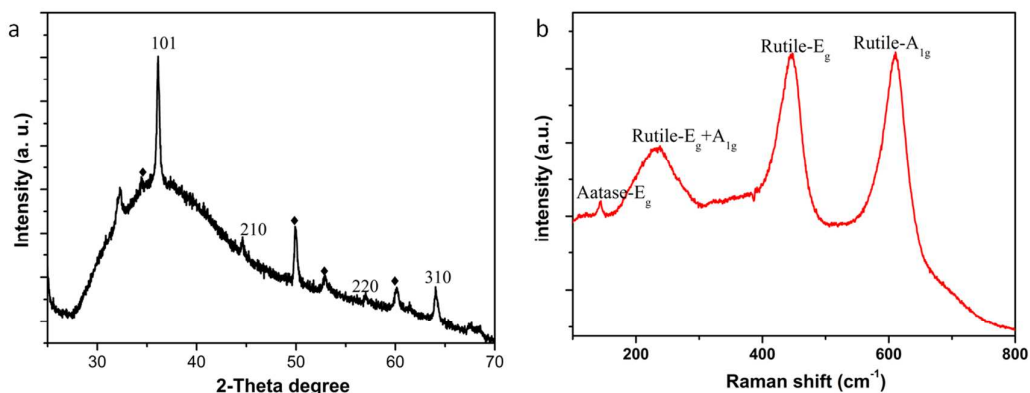
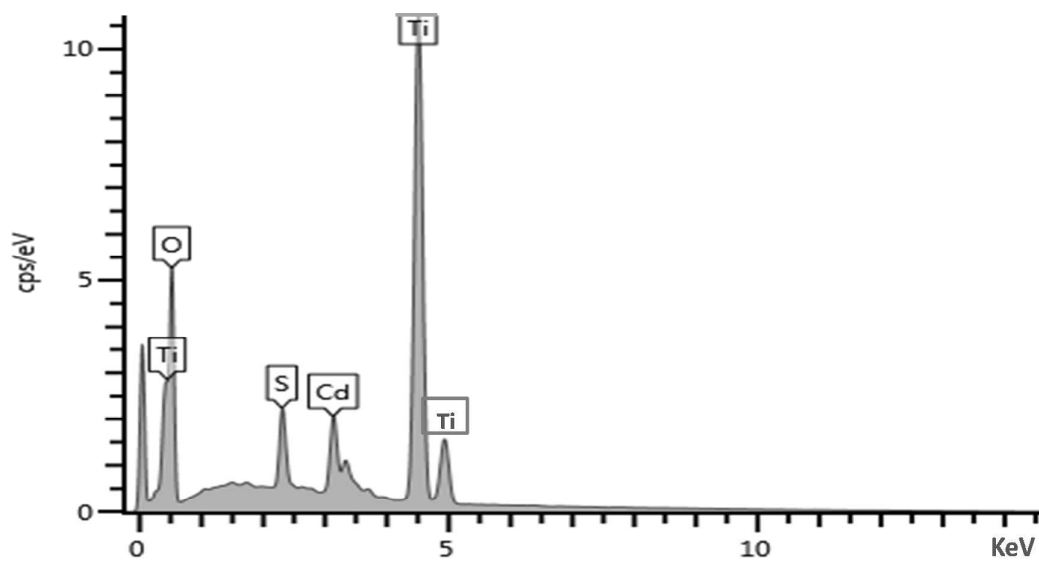


Figure S3 (a) XRD patterns of the sea-urchin like TiO<sub>2</sub> arrays, ◆labeled the peaks from the FTO substrate. (b) Raman spectrum of the sea-urchin like TiO<sub>2</sub> arrays, the three peaks centered at 232 cm<sup>-1</sup>, 446 cm<sup>-1</sup>, 611 cm<sup>-1</sup> are ascribed to the rutile phase of TiO<sub>2</sub> nanorods, and the small peak at 143 cm<sup>-1</sup> is from the anatase phase of hollow TiO<sub>2</sub> microspheres in the TiO<sub>2</sub> sea-urchin like structure.



**Figure S4** EDS spectrum of the CdS sensitized sea-urchin like  $\text{TiO}_2$