Electronic Supporting information

In situ formation of ZnO\ZnSe nanonail array as photoelectrode for enhanced photoelectrochemical water oxidation performance

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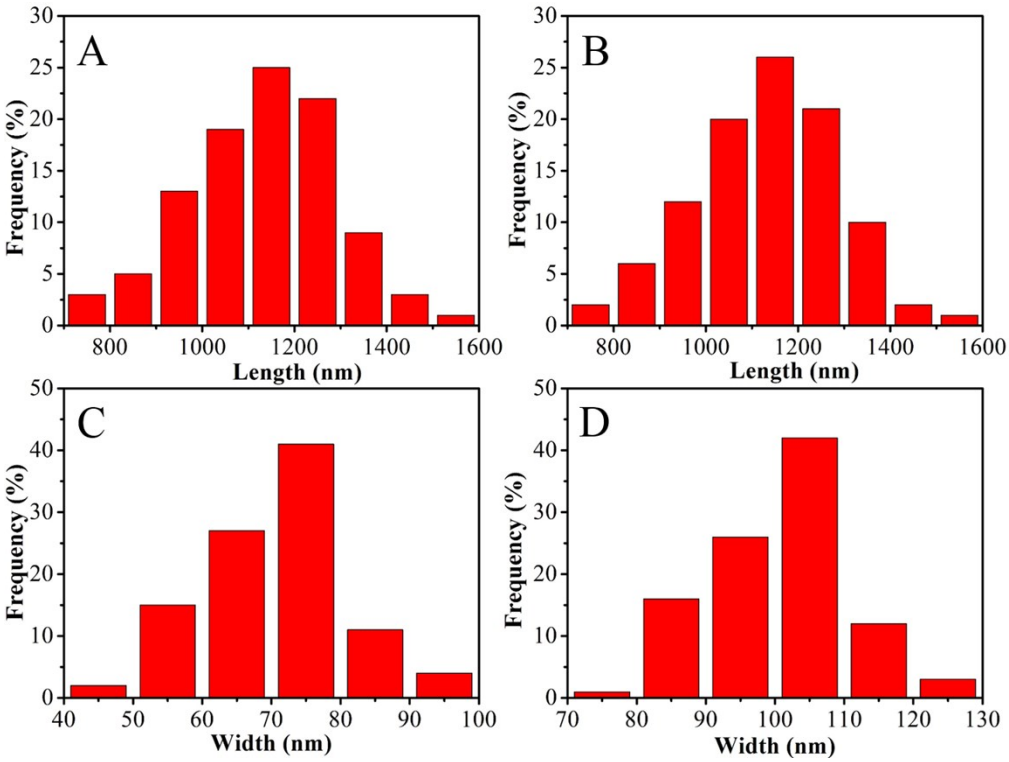

Fig. S1 The histogram of ZnO length , ZnO/ZnSe length, ZnO width, and ZnO/ZnSe width distribution.

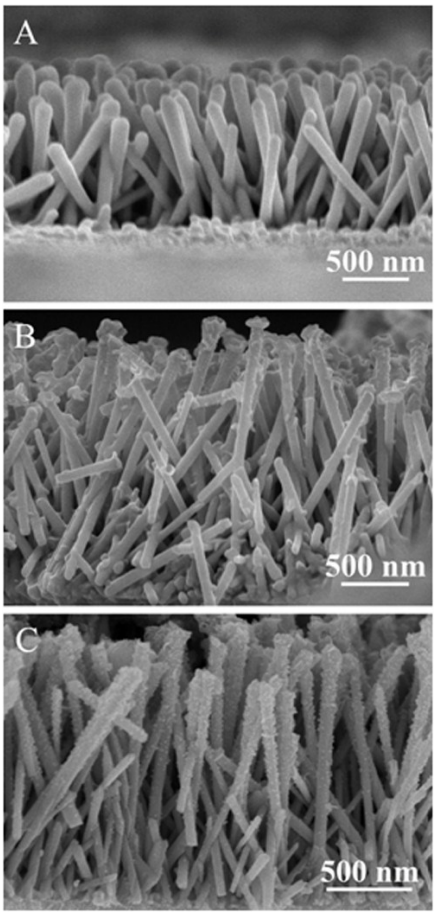

Fig. S2 Sectional views of ZnO nanorod arrays (A), and ZnO\ZnSe nano-arrays obtained from different reaction times: 20 min (B), and 30 min (C).

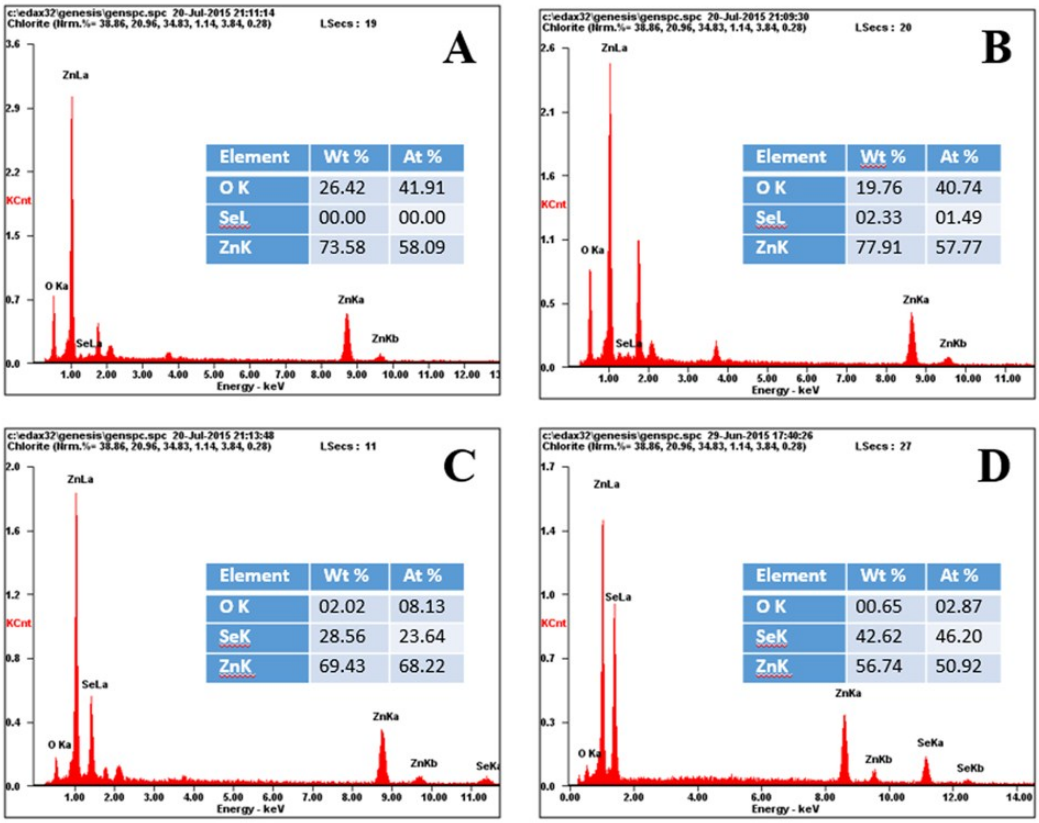

Fig. S3 Energy dispersive spectra (EDS) of the obtained products under different selenization time: (A) 0 min, (B) 20 min, (C) 30 min, and (D) 60 min.

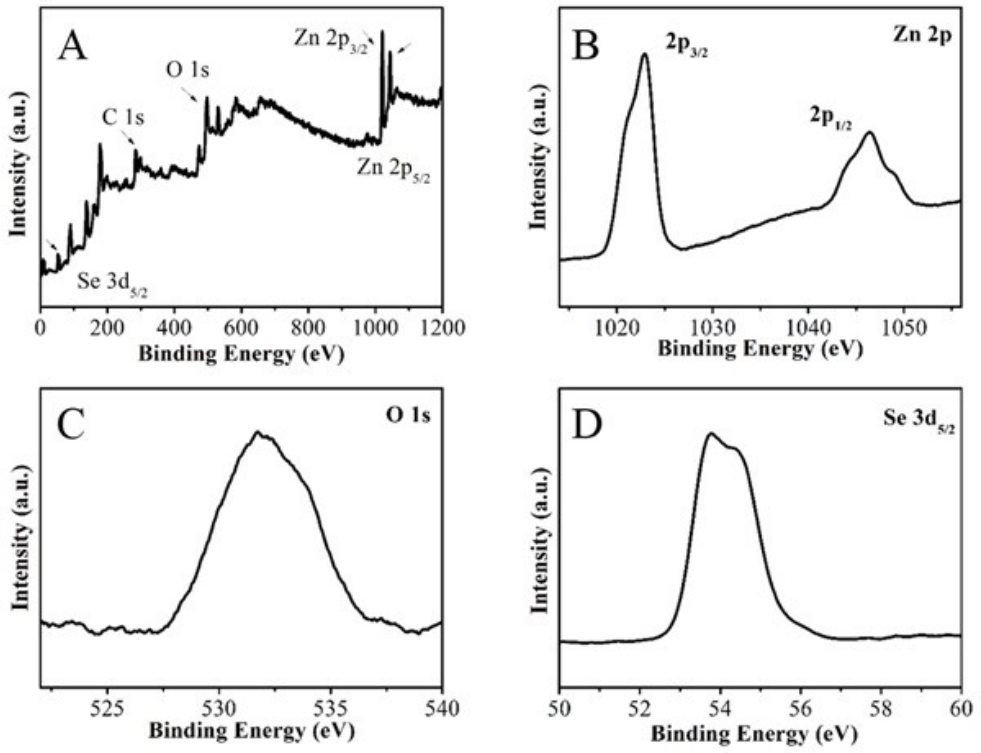

Fig. S4 (A) XPS fully scanned spectra of the sample the ZnO\ZnSe nanonail array; (B)

XPS spectra of the Zn 2p, (C) O 1s and (D) Se 3d of the ZnO\ZnSe nanonail array.

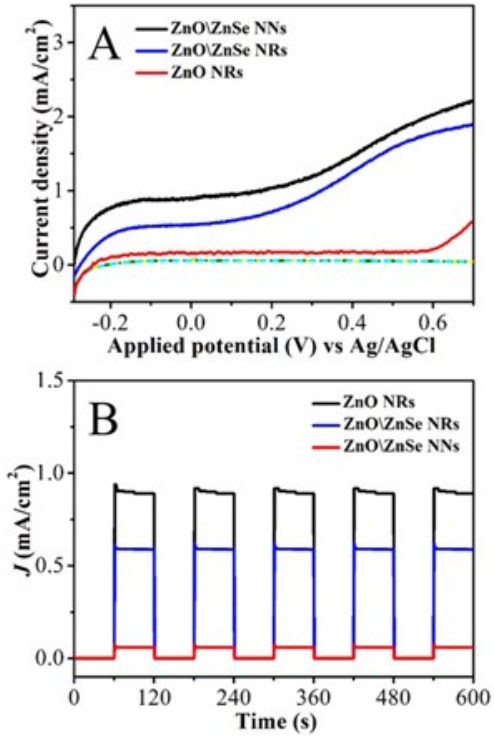

Fig. S5 (A) Photocurrent density-potential (*I–V*) curves for photoelectrochemical water oxidation of the different electrodes under dark and visible light ((λ > 420 nm) irradiation. (B) Transient photocurrent density-time curves of the different electrodes at an applied voltage of + 0.10 V vs Ag/AgCl.