Electronic Supplementary Information

Hierarchical Porous Fe_3O_4/Co_3S_4 Nanosheets as Efficient Electrocatalysts for Oxygen Evolution Reaction

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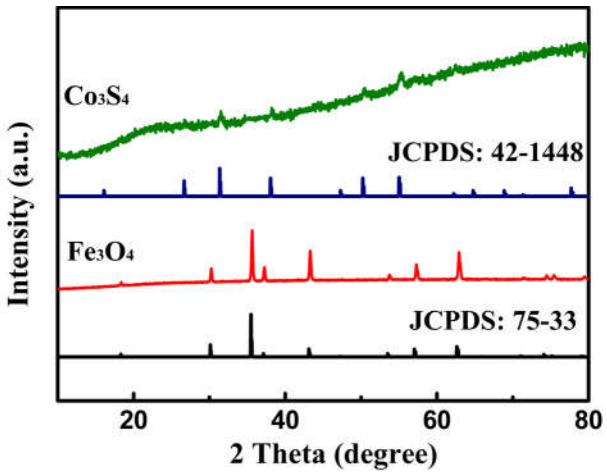

Fig. S1. XRD patterns of the prepared Fe_3O_4 and Co_3S_4 samples.

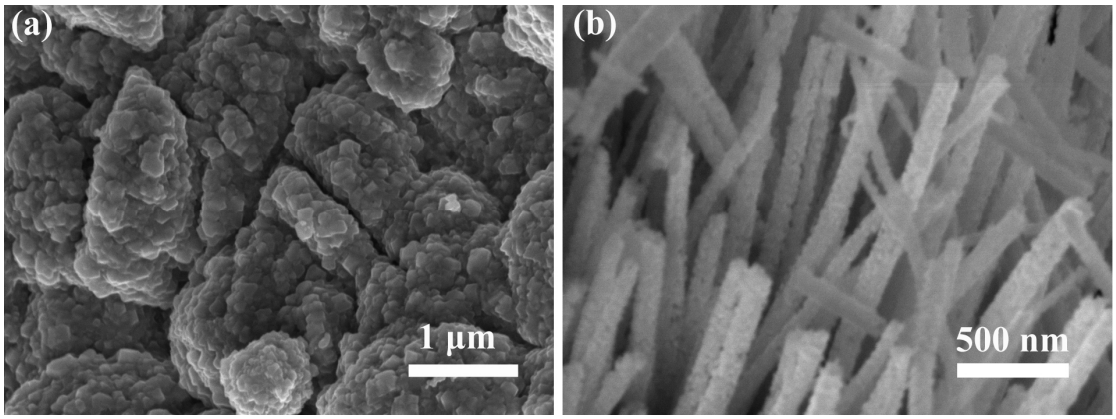

Fig. S2. SEM images of the prepared Fe_3O_4 (a) and Co_3S_4 (b) samples.

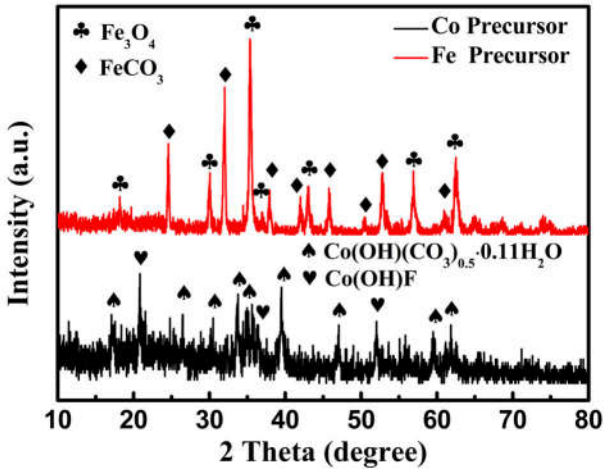

Fig. S3. XRD patterns of the iron and cobalt compound precursors. The diffraction peaks of cobalt compound precursor match well with the standard cards of Co(OH)F (JCPDS No. 50-0827) and $Co(OH)(CO_3)_{0.5}\cdot 0.11H_2O$ (JCPDS No. 48-0083). The diffraction peaks of iron compound precursor match well with the standard cards of Fe_3O_4 (JCPDS No. 75-33) and $FeCO_3$ (JCPDS No. 29-696).

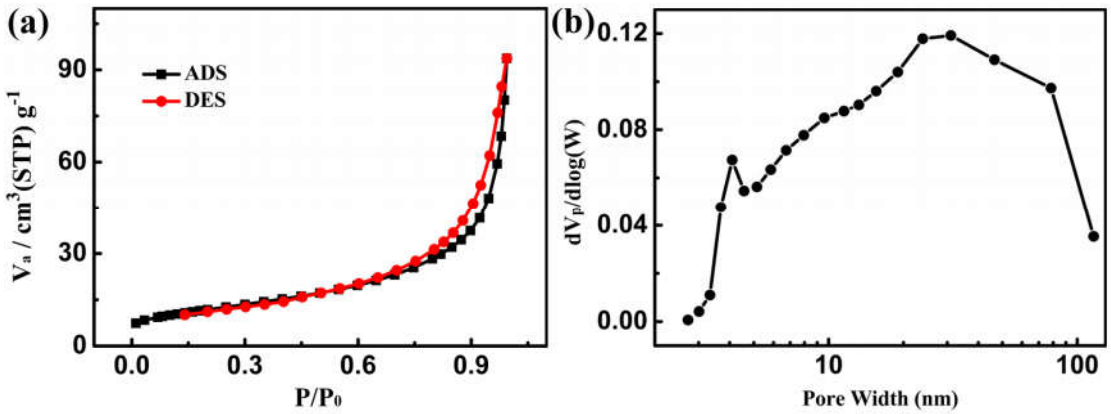

Fig. S4. (a) N_2 adsorption-desorption isotherms for porous Fe_3O_4/Co_3S_4 nanosheets. (b) The characteristic BJH pore size distributions.

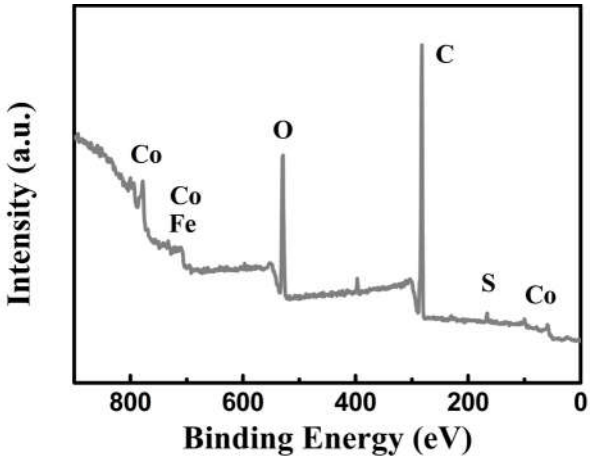

Fig. S5. XPS survey scan of hierarchical porous Fe_3O_4/Co_3S_4 nanosheets.

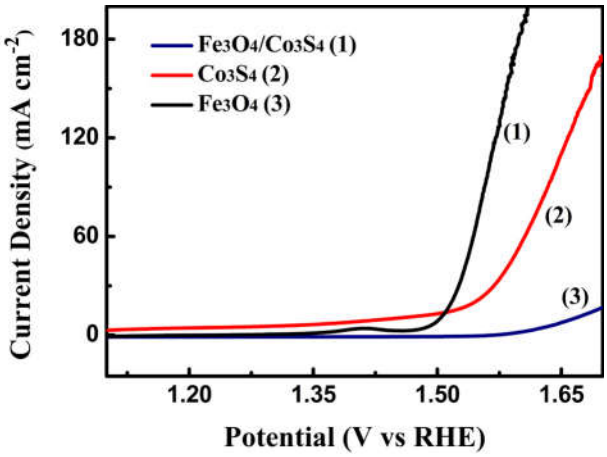

Fig. S6. Polarization curves of porous Fe_3O_4/Co_3S_4 nanosheets, Fe_3O_4 and Co_3S_4 in 1.0 M KOH at a potential sweep rate of 5 mV/s.

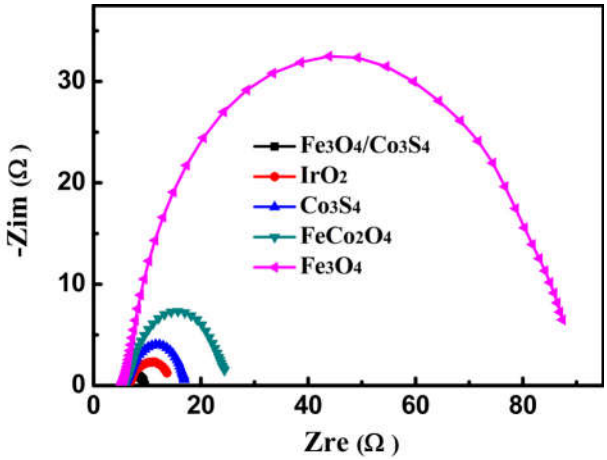

Fig. S7. Nyquist plots of porous $FeCo_2O_4$, Fe_3O_4/Co_3S_4 nanosheets, IrO_2, Fe_3O_4 and Co_3S_4 samples.

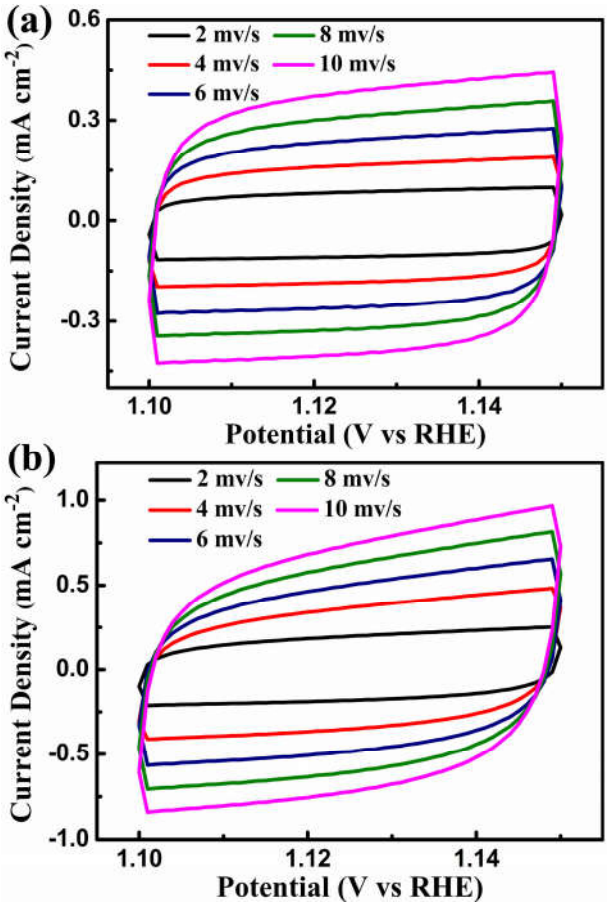

Fig. S8. Electrochemical double-layer capacitance measurements. The cyclic voltammograms (CVs) measurements with various scan rates for porous $FeCo_2O_4$ (a) and Fe_3O_4/Co_3S_4 (b) nanosheets in 1.0 M KOH.

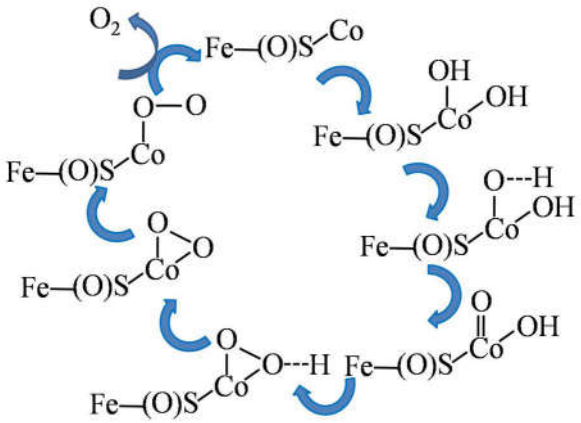

Fig. S9. The proposed OER reaction mechanism based on the Fe_3O_4/Co_3S_4 sample.

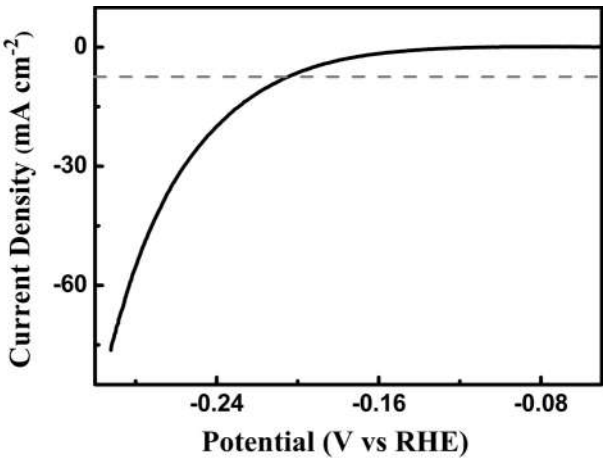

Fig. S10. Polarization curve of porous Fe_3O_4/Co_3S_4 nanosheets in 1.0 M KOH at a potential sweep rate of 5 mV/s.

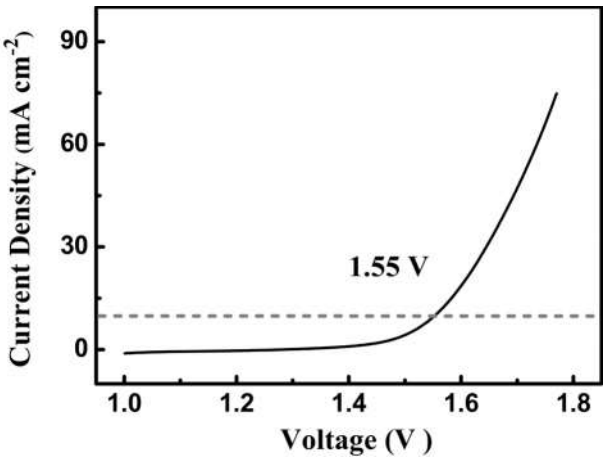

Fig. S11. Polarization curve of water electrolysis by using Pt/C-IrO_2 couple with a scan rate of 5 mV s^{-1} in 1 M KOH.