Supporting Information

Efficient Catalyst of Co@CoP\textsubscript{x} Core-shell Nanochains for Oxygen Evolution Reaction

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**Figure S1.** (a) SEM image and (b) TEM image of Co nanochains.

**Figure S2.** XRD patterns of Co@CoP$_x$ nanochains prepared under different phosphorization time.
Figure S3. SEM images of Co@CoP$_x$ nanochains prepared under different phosphorization time (a, b) 15 min, (c, d) 0.5 h, (e, f) 1.5 h, (g, h) 2 h.
Figure S4. TEM images of Co@CoP₅ nanochains prepared under different phosphorization time (a, b) 15 min, (c, d) 0.5 h, (e, f) 1.5 h, (g, h) 2 h.
Figure S5. SEM images of CoP$_x$.

Figure S6. (a) Cyclic voltammetry curves of Co@CoP$_x$ nanochains; (b) Electrochemical impedance spectroscopy (EIS) of Co, CoP$_x$, Co@CoP$_x$ and RuO$_2$. (c) Cyclic voltammetry curves of Co; (d) Cyclic voltammetry curves of CoP$_x$. 
Figure S7. Cyclic voltammetry curves of (a) Co nanochains and (b) CoP\(_x\) in the region where no redox reaction occurs, the scan rate are 10, 8, 6, 4, 2 mV s\(^{-1}\).

Figure S8. SEM image of Co@CoP\(_x\) after stability test.
Figure S9. Polarization curves of Co@CoPₓ before and after stability test.

Figure S10. CV curve measured in H₂ saturated 0.1 M KOH for RHE calibration.