

In situ grown $\text{Co}_3\text{O}_4/\text{Co}(\text{OH})_2$ hybrids as efficient electrocatalysts for water oxidation

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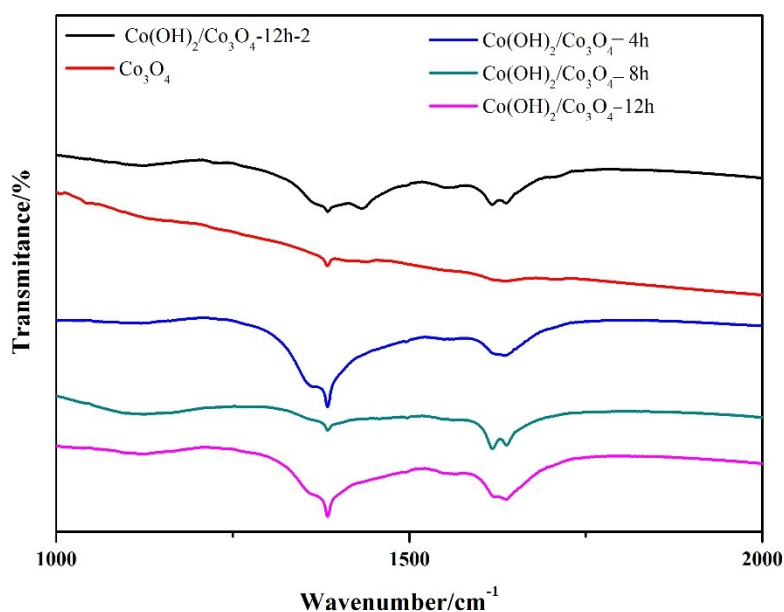


Fig.S1 FT-IR of $\text{Co}_3\text{O}_4/\text{Co}(\text{OH})_2$ -12h-2, Co_3O_4 , $\text{Co}_3\text{O}_4/\text{Co}(\text{OH})_2$ -4h, $\text{Co}_3\text{O}_4/\text{Co}(\text{OH})_2$ -8h and $\text{Co}_3\text{O}_4/\text{Co}(\text{OH})_2$ -12h.

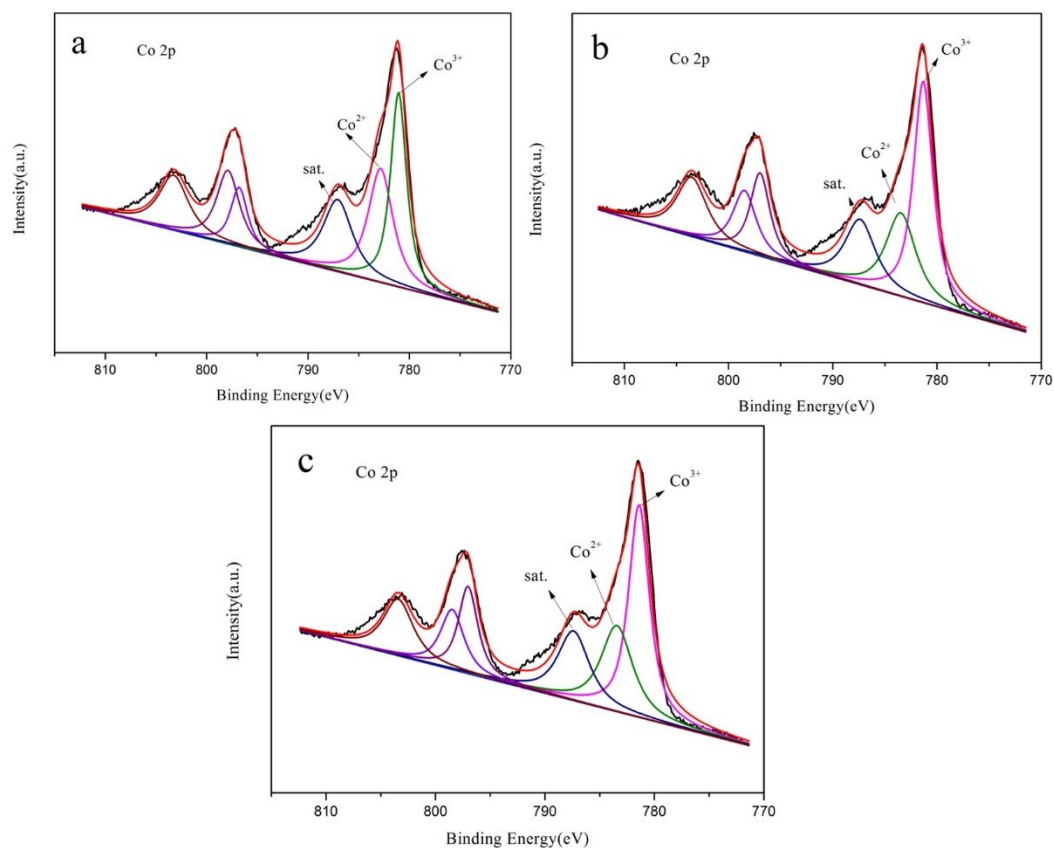


Fig.S2 XPS of Co₃O₄/Co(OH)₂-4h(a), Co₃O₄/Co(OH)₂-8h(b) and Co₃O₄/Co(OH)₂-12h(c) showing the region of Co 2p_{3/2} and Co 2p_{1/2} peaks of Co₃O₄/Co(OH)₂-4h, Co₃O₄/Co(OH)₂-8h and Co₃O₄/Co(OH)₂-12h.

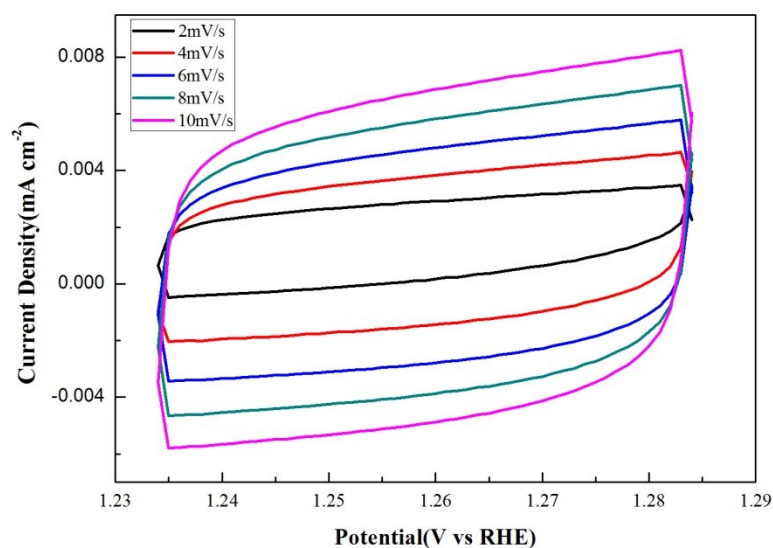


Fig.S3 Electrochemical double-layer capacitance measurements. The cyclic voltammograms (CVs) measurements with various scan rates for Co₃O₄/Co(OH)₂-12h-2, in 1.0 M KOH.

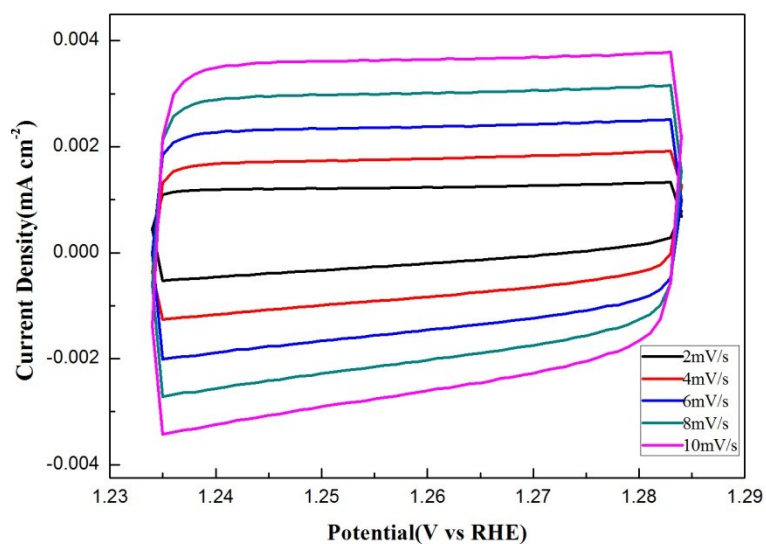


Fig.S4 Electrochemical double-layer capacitance measurements. The cyclic voltammograms (CVs) measurements with various scan rates for Co_3O_4 in 1.0 M KOH.

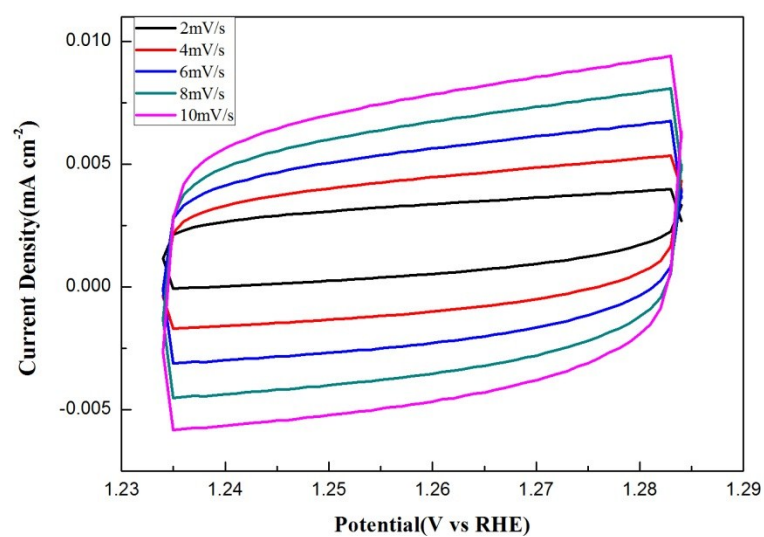


Fig.S5 Electrochemical double-layer capacitance measurements. The cyclic voltammograms (CVs) measurements with various scan rates for $\text{Co}_3\text{O}_4 / \text{Co}(\text{OH})_2$ -4h, in 1.0 M KOH.

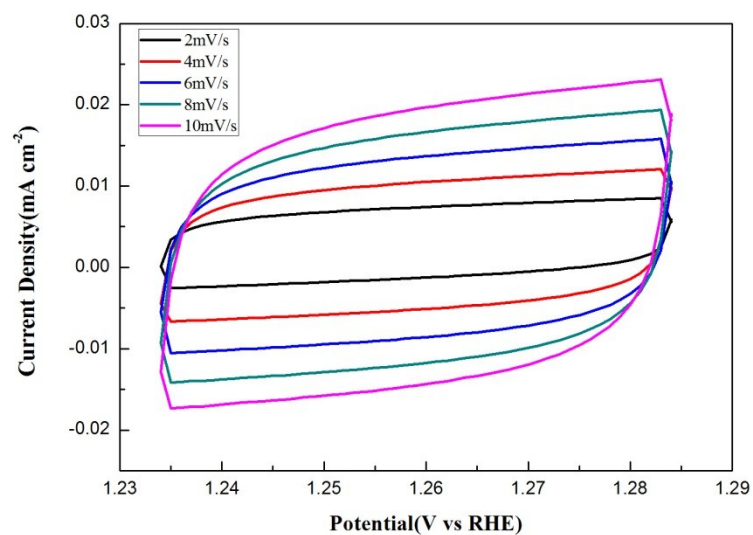


Fig.S6 Electrochemical double-layer capacitance measurements. The cyclic voltammograms (CVs) measurements with various scan rates for $\text{Co}_3\text{O}_4 / \text{Co}(\text{OH})_2$ -8h, in 1.0 M KOH.

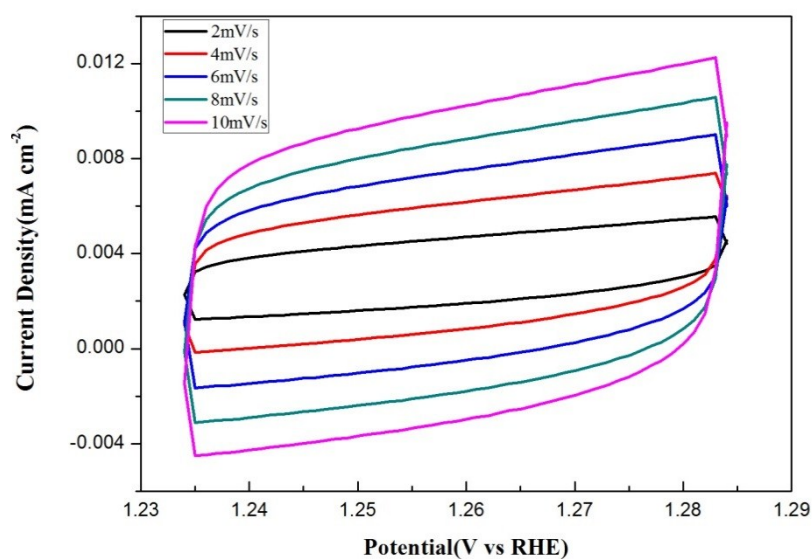


Fig.S7 Electrochemical double-layer capacitance measurements. The cyclic voltammograms (CVs) measurements with various scan rates for $\text{Co}_3\text{O}_4 / \text{Co}(\text{OH})_2$ -12h, in 1.0 M KOH.

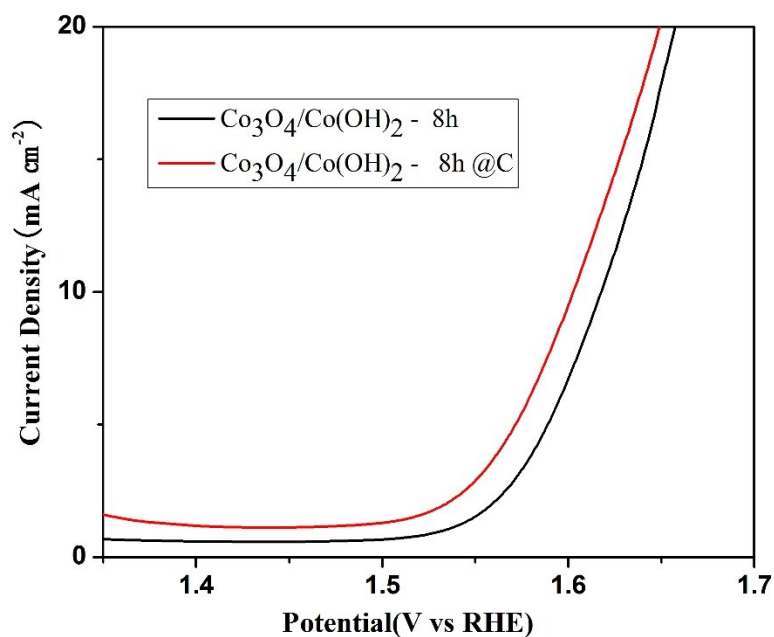


Fig. S8 (a) Polarization curves of Co₃O₄/Co(OH)₂-8h and Co₃O₄/Co(OH)₂-8h@C in 1.0 M KOH at a potential sweep rate of 5 mV s⁻¹. Condition: The following steps were taken to prepare the working electrode: (1) 10 mg of catalyst(black) ;10 mg of catalyst and 5 mg C power (red)was first dispersed in ethanol (2 mL) to form a homogeneous mixture; (2) 20 μ L of this solution was then drop-cast onto a glassy carbon electrode and left to dry in air; and (3) 20 μ L of 0.5% Nafion solution in ethanol was cast on the top of the sample film to coat the catalyst.

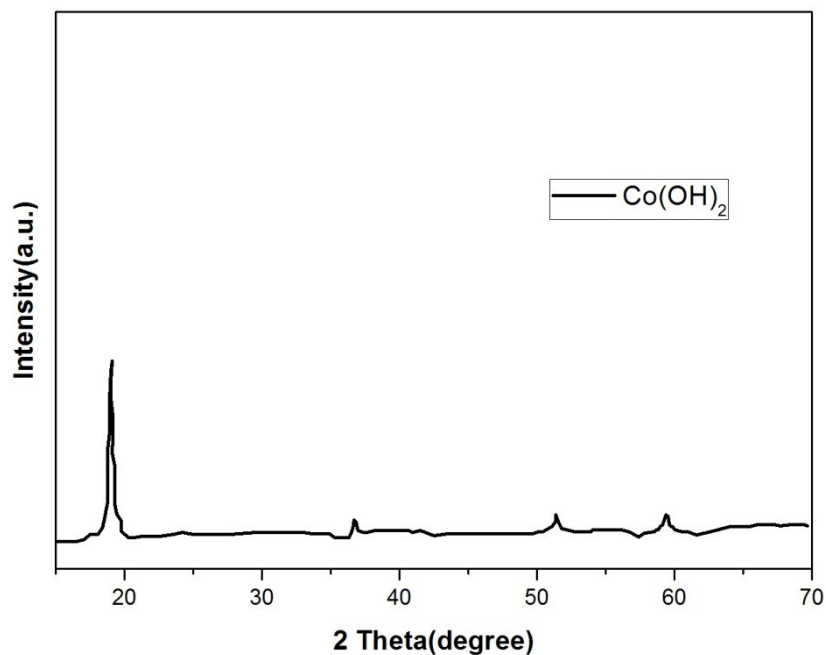


Fig. S9 XRD of Co(OH)₂.

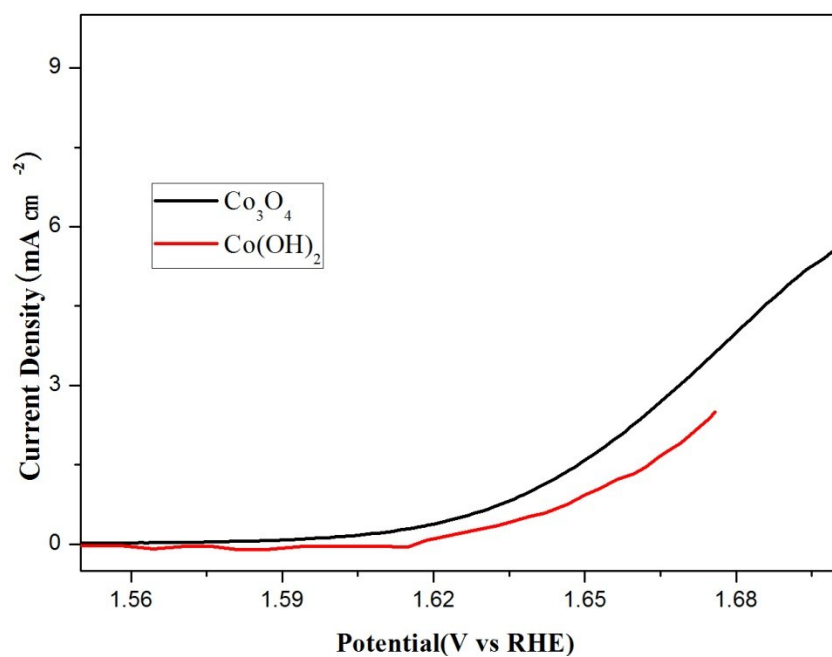


Fig. S10 (a) Polarization curves of Co_3O_4 and $\text{Co}(\text{OH})_2$ in 1.0 M KOH at a potential sweep rate of 5 mV s^{-1} .