

Enhanced hydrogen evolution *via* regulating the adsorbability between 2D CoO nanosheets and CC substrate

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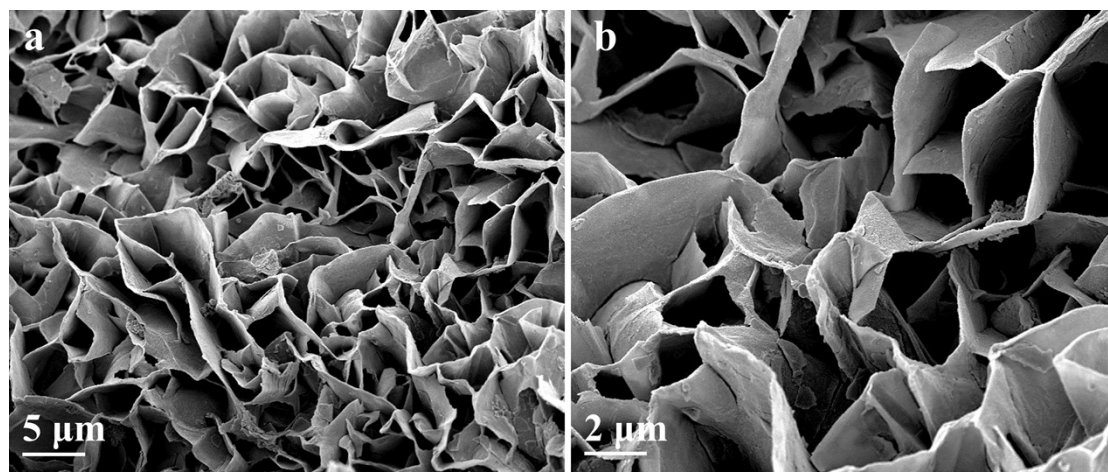


Fig. S1 SEM images of Co(OH)₂/CC nanosheets.

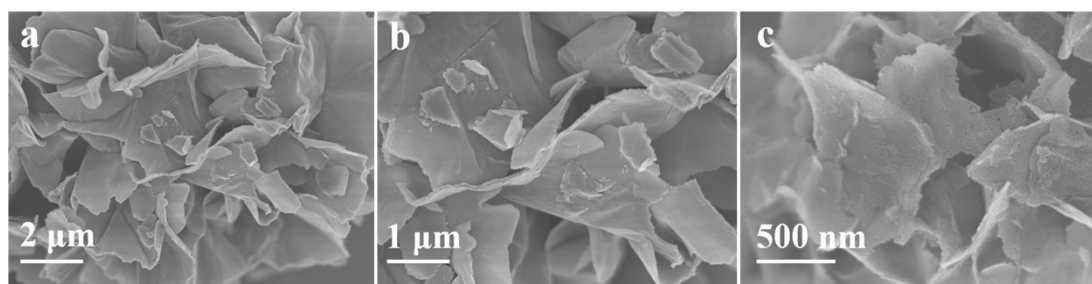


Fig. S2 SEM images of CoO nanosheets.

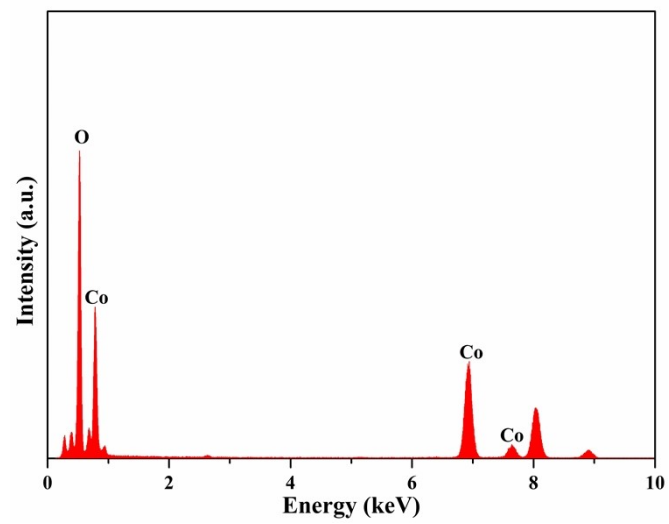


Fig. S3 EDS pattern of CoO/CC nanosheets.

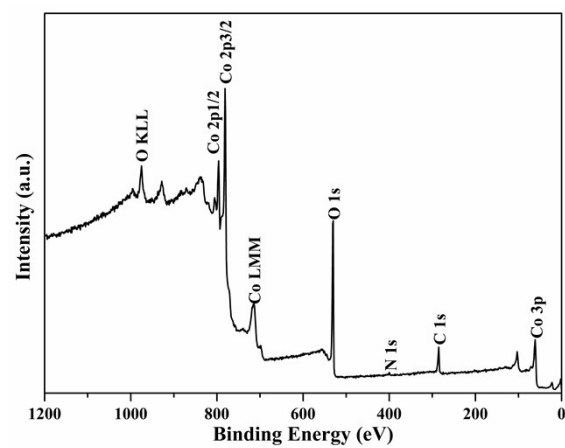


Fig. S4 XPS survey spectrum of the CoO nanosheets.

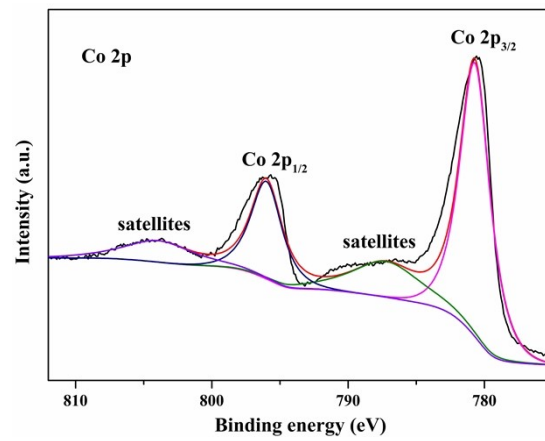


Fig. S5 High-resolution scans of CoO nanosheets.

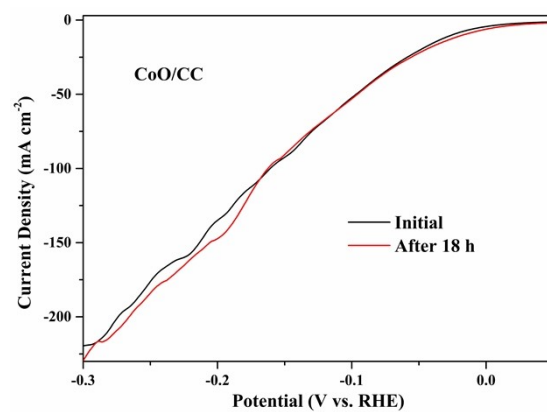


Fig. S6 LSV curves of CoO/CC nanosheets before and after durability testing.

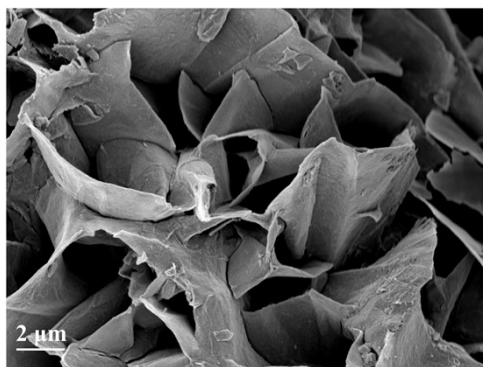


Fig. S7 SEM image of CoO/CC nanosheets after durability testing.

Table S1 XPS peak values of Co^{2+} $2p_{1/2}$ and $2p_{3/2}$ for CoO/CC and CoO nanosheets (aq.)

CoO ₂ ⁺	CoO/CC nanosheets (eV)	CoO nanosheets (aq.) (eV)
$2p_{1/2}$	795.8	796.0
$2p_{3/2}$	780.6	780.7

Table S2 Comparison of HER performances for CoO/CC nanosheets with other reported Co-based HER catalysts in 0.5 M H₂SO₄.

Electrocatalysts	Overpotential at 10 mA cm ⁻² (mV)	Tafel slop (mV dec ⁻¹)	Reference
CoO/CC nanosheets	22	37	This work
Co(OH) ₂ /Ag NWs	29	35.7	1
Co/CoP-5	178	73.8	2
CoNi@NC	224	104	3
N-Co@G	265	98	4
CuCo@NC	145	79	5
Pt ₃ Co@NCNT	42	27.2	6
B-CoP/CNT	39	50	7

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