

Boride-mediated and carbon nanotubes-scaffolded synthesis of cobalt-based electrocatalyst for efficient and stable alkaline hydrogen evolution at industrial-scale current density

Runze Wang^a, Yanmei Ren^a, He Wen^a, Zhengjun Chen^{b,*}, and Ping Wang^{a,*}

^a School of Materials Science and Engineering, South China University of Technology, Guangzhou 510641, P.R. China.

^b Guangxi Key Laboratory of Electrochemical Energy Materials, School of Chemistry and Chemical Engineering, Guangxi University, Nanning 530004, P.R. China.

Corresponding Authors

*E-mail addresses: mspwang@scut.edu.cn; zjchen@gxu.edu.cn

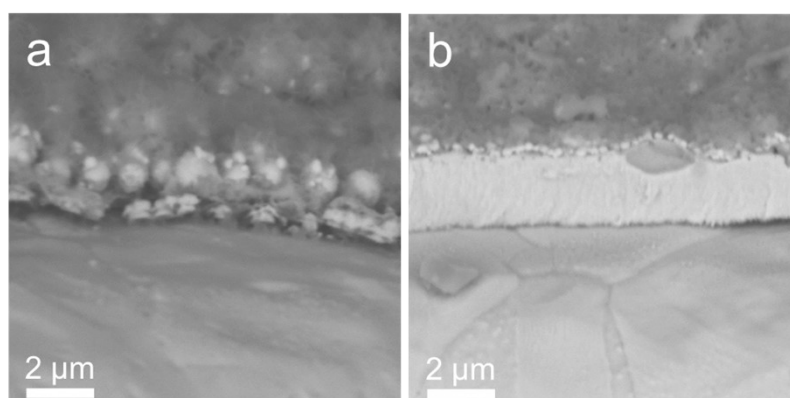


Figure S1. Cross-section catalyst layer SEM images of (a) the sample with CNT and (b) the sample without CNT.

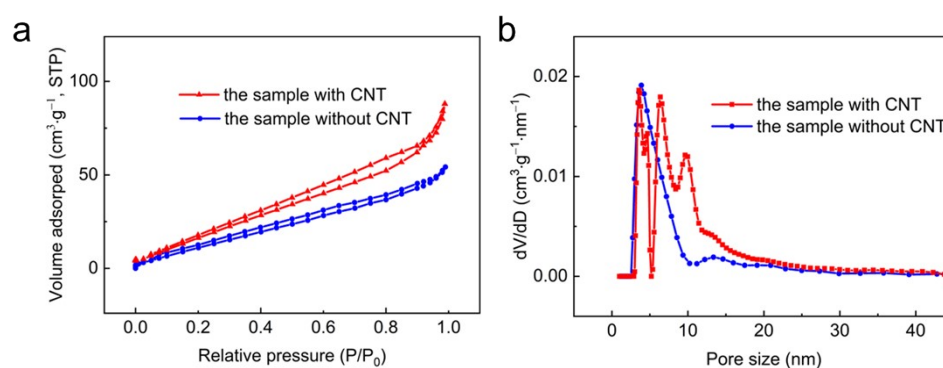


Figure S2. (a) N₂ adsorption-desorption isotherms and (b) the corresponding pore size distributions of the sample with CNT and the sample without CNT.

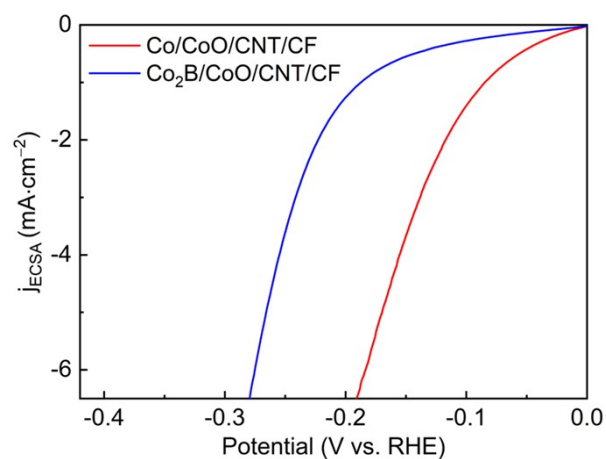


Figure S3. ECSA-normalized LSVs of Co/CoO/CNT/CF and Co₂B/CoO/CNT/CF.

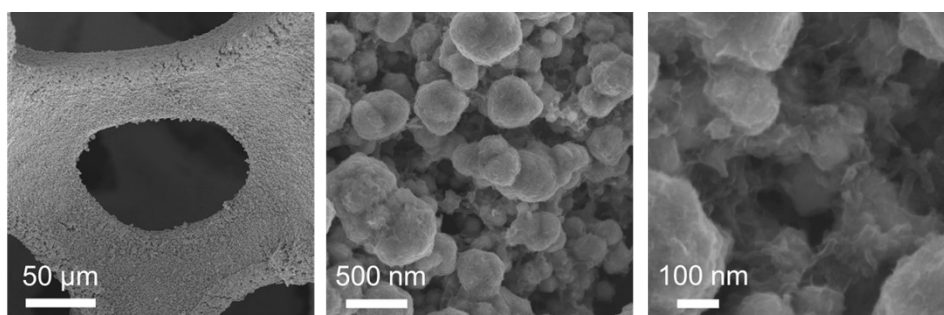


Figure S4. SEM images of the post-used Co/CoO/CNT/CF after 100-hour constant-current test at 1000 mA·cm⁻².

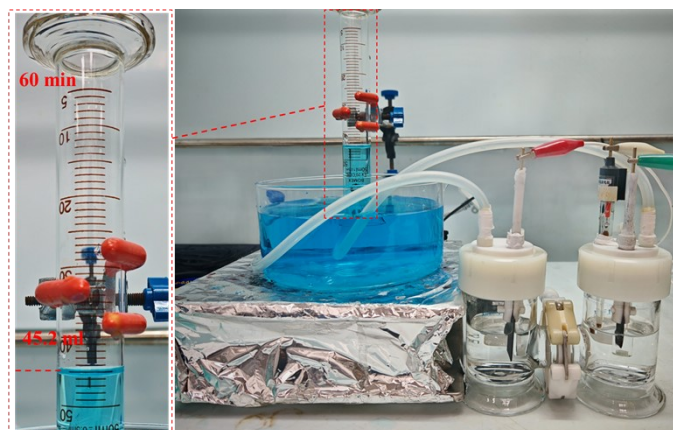


Figure S5. Photograph of the gas collection device used in FE test.

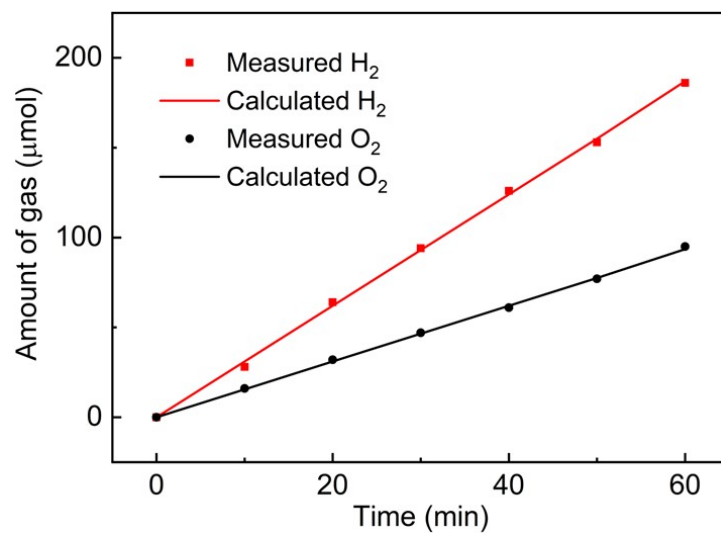


Figure S6. The measured H₂ and O₂ amounts *versus* the theoretical yields calculated from the Faraday's law at 10 mA·cm⁻².

Table S1. A comparison of the alkaline HER performance of representative non-precious metal catalysts in a 1.0 M aqueous KOH electrolyte.

Electrocatalyst	Overpotential (mV)@			Reference
	10 mA/cm ²	100 mA/cm ²	500 mA/cm ²	
Co ₂ N/CoN/Co ₂ Mo ₃ O ₈ /CF	25	93	–	1
Ni ₄ Mo/NF	35	136	–	2
Co/Co ₂ Mo ₃ O ₈ /NF	25	113	–	3
Co-B-P/NF	42	88	–	4
FeNiP/MoO _x /NiMoO ₄ /NF	–	97	–	5
Cu-FeOOH/Fe ₃ O ₄	–	129	285	6
Ni _x -Fe ₃ N@NCPs	38	125	274	7
Ni(OH) _x /Ni ₃ S ₂ /NF	54	126	193	8
Co-B@CoO/Ti	61	–	–	9
Co@CoO/NF	76	–	–	10
Co/Co ₃ O ₄ /NF	90	–	–	11
MoS ₂ /Mo ₂ C/Ti	–	–	191	12
Mo ₂ C/MoC/CNT	82	–	201	13
Co/CoO/CNT/CF	17	86	185	This work

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