Supporting Information (SI):

Etching-assisted synthesis of Ni/Ni single atoms anchored porous graphitic nanocarbons for improved hydrogen evolution reaction

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Number of pages: 7

Number of figures: 8

Number of tables: 1

Containing 5 pages, 6 Figures

Additional images and data:

Fig. S1 Single cycle CV curve of Hg/Hg_2Cl_2 electrode calibration in 1 M KOH at 25 ℃.

Fig. S2 Polarization curves of Ni/Ni_{-SA}-NC prepared with different Ni/Al ratio in alkaline environment.

Fig. S3 (a), (b), (c) SEM images of the Ni/Ni_{-SA}-NC and (d), (e), (f) SEM images of the Ni/C.

Fig. S4 (a) Survey XPS spectrum and (b) the comparative contents of different N species of Ni/Ni_{-SA}-NC and Ni/C.

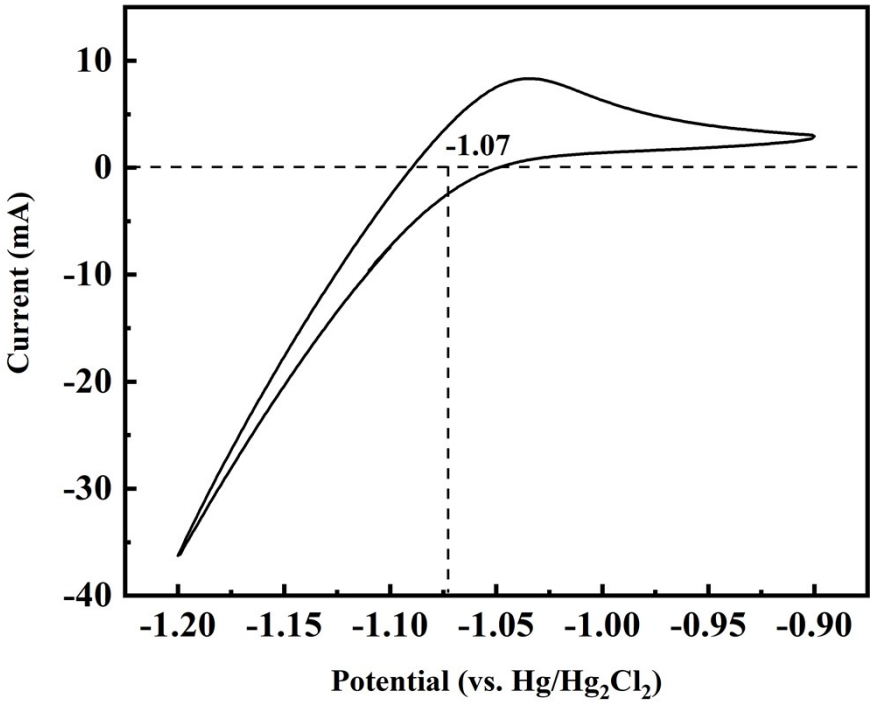
Fig. S5 (a) CVs of Ni/Ni_{-SA}-NC, (b) CVs of Ni/C.

Fig. S6 I-t curve obtained for HER with Ni/Ni_{-SA}-NC at the current density of 430 mA/cm^2 in alkaline media (pH 14).

Fig. S7 Polarization curves of Ni/Ni_{-SA}-NC before and after 5000 cycles.

Fig. S8 (a) N 1s XPS spectrum and (b) Ni 2p XPS spectrum of Ni/Ni_{-SA}-NC after stability test.

Table S1 Comparison of HER performance between the results from the present research with other recently-reported single-atom electrocatalysts in 1 M KOH.



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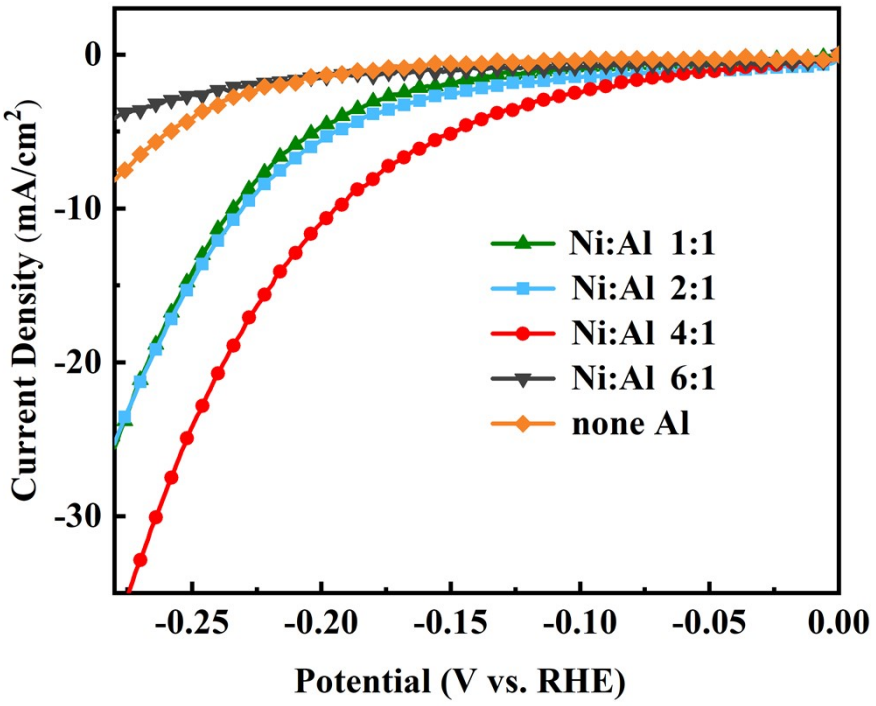

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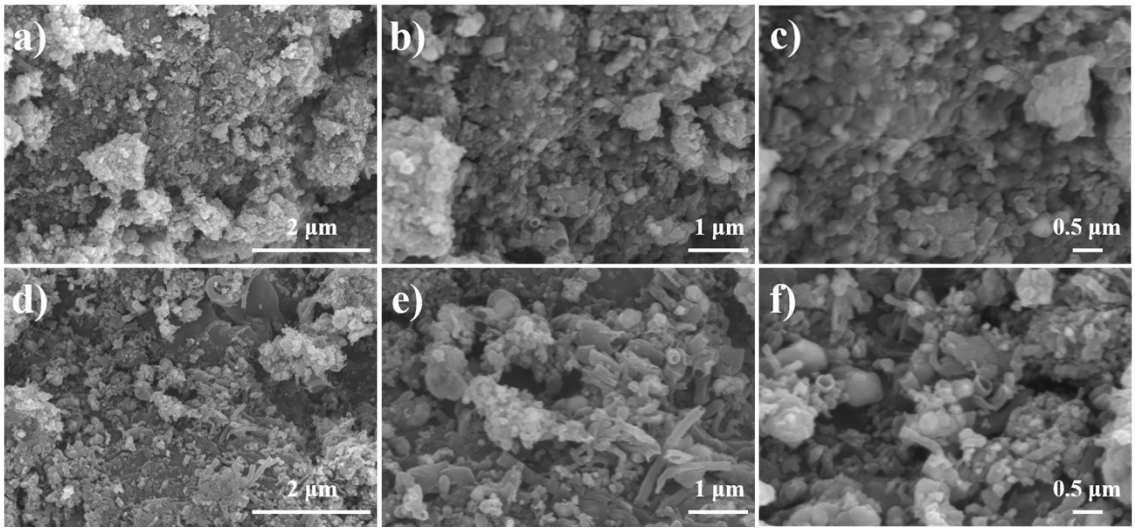

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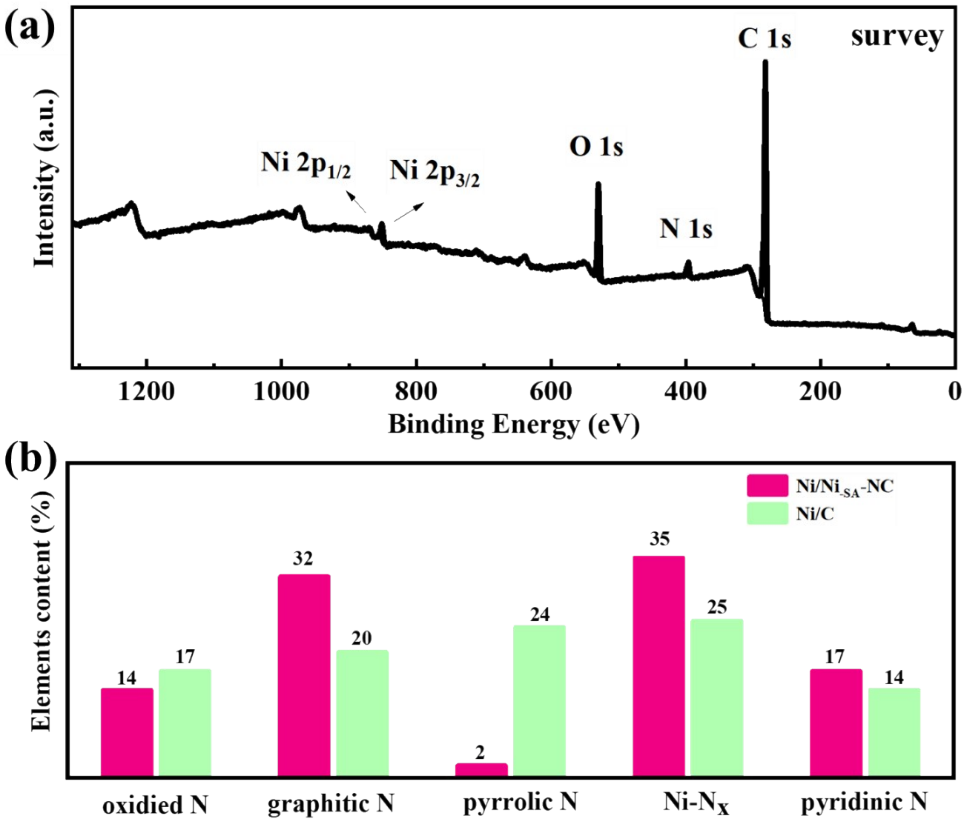

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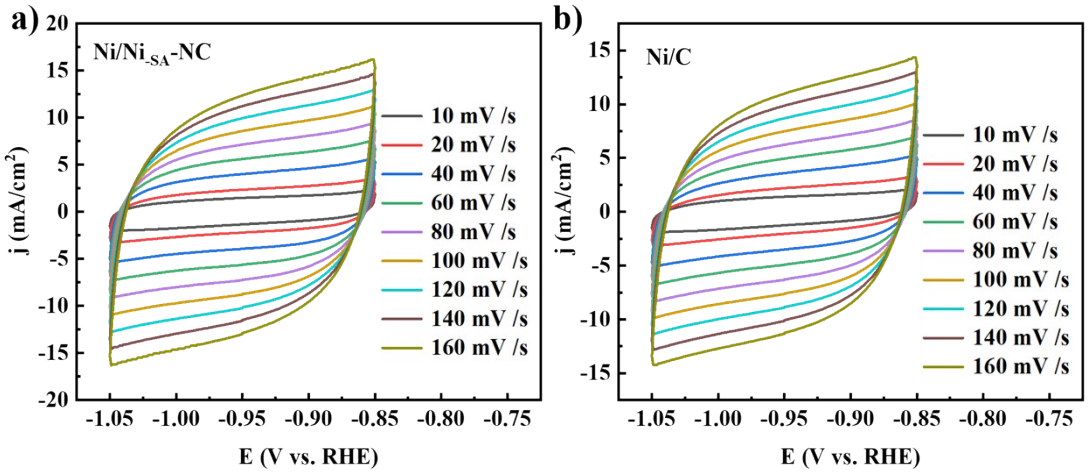

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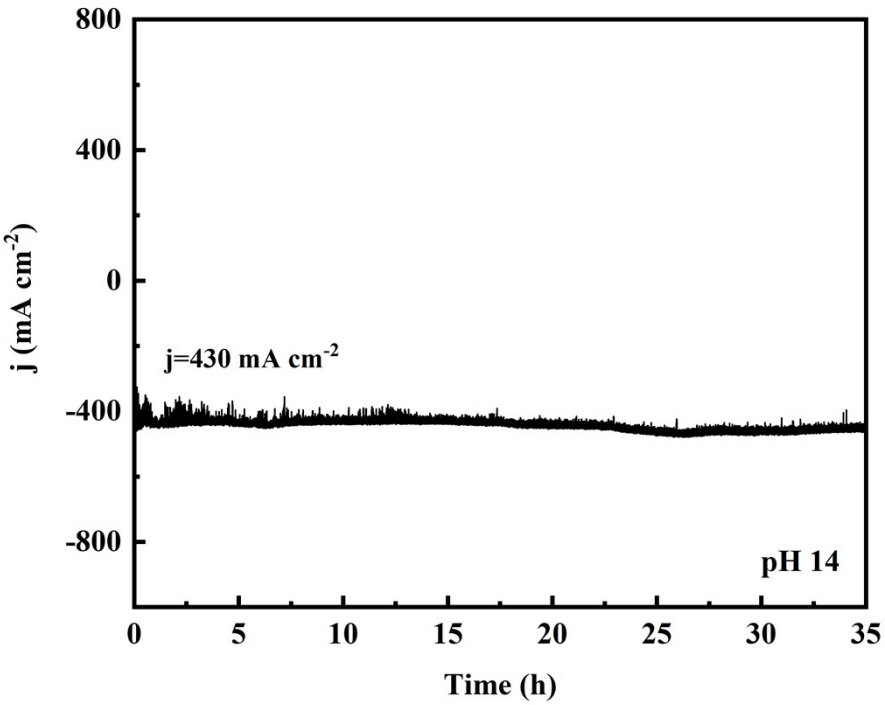

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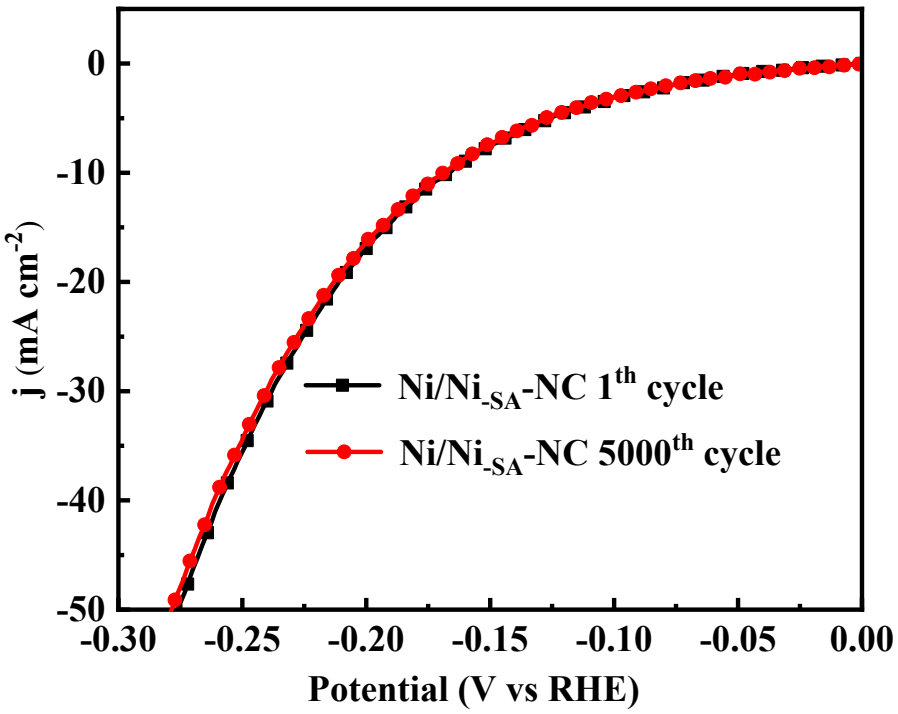

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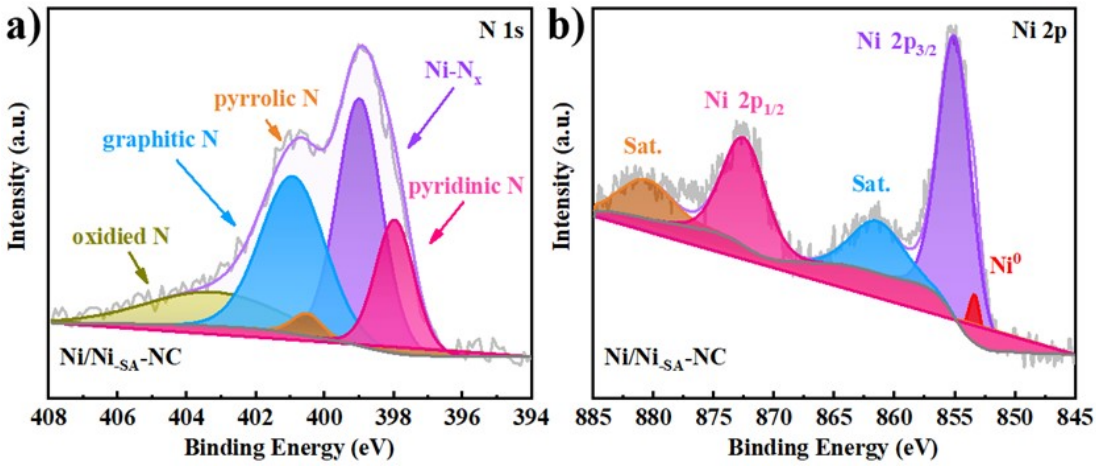

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	HER catalysts	Electrolyte	Overpotentials	Stability	References
1	Ni/Ni_{-SA}-NC	1 M KOH	159 mV@10 mA cm^{-2}	50 h	In this work
2	MOF-$Mo_{SA}W_{SA}$	1 M KOH	57 mV@10 mA cm^{-2}	-	Nano Energy **2023**, 112, 108450
3	Ni-N-C-250	1 M KOH	400 mV@10 mA cm^{-2}	1000 cycles	Nano Energy **2021**, 83, 105850.
4	Co_{SA} + Co_9S_8/HCNT	1 M KOH	250 mV@10 mA cm^{-2}	10 h	Small **2020**, 16, 1906735.
5	Ni@Co/N/C	1 M KOH	181 mV@10 mA cm^{-2}	-	Angew. Chem. Int. Ed. **2019**, 58, 11868.
6	SACo-N/C	1 M KOH	178 mV@10 mA cm^{-2}	35000 s	Sci. Bull. **2019**, 64, 1095.
7	Co-N/C	1 M KOH	219 mV@10 mA cm^{-2}	24h	ACS Catal. **2019**, 9, 83-97.
8	Ni NP/Ni-N-C	1 M KOH	147 mV@10 mA cm^{-2}	10 h	Energy Environ. Sci. **2019**,12, 149-156
9	Fe-N_4 SAs/NPC	1 M KOH	202 mV@10 mA cm^{-2}	70000 s	Angew. Chem. Int. Ed. **2018**, 57, 8614.