

Supporting Information

Nickel/Nickel Oxide-Nitrogen Self-Doped Carbon Nanosheets for Electrocatalytic Oxygen and Hydrogen Evolution Reactions

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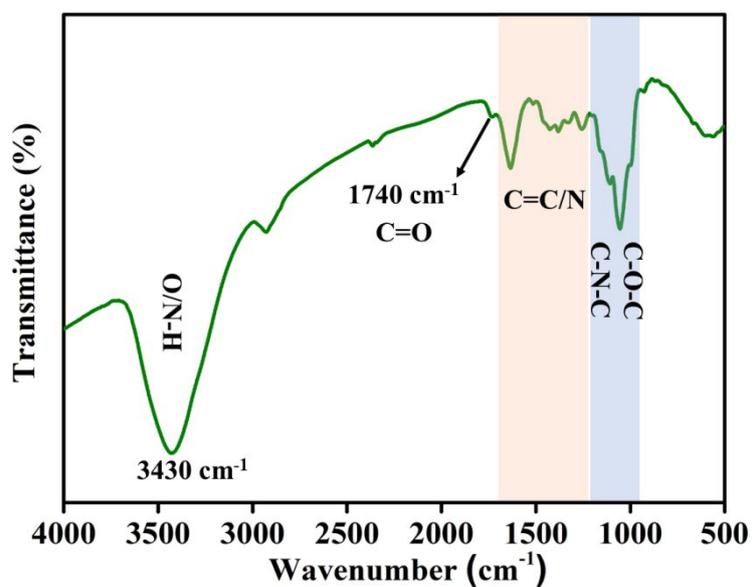


Figure S1. FT-IR spectrum of biomass CSs.

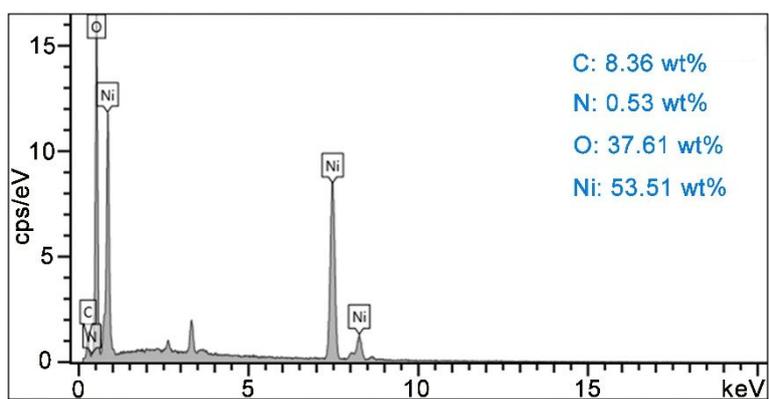


Figure S2. Energy dispersive x-ray spectroscopy (EDX) spectrum of Ni/NiO-NC-1.00 composite.

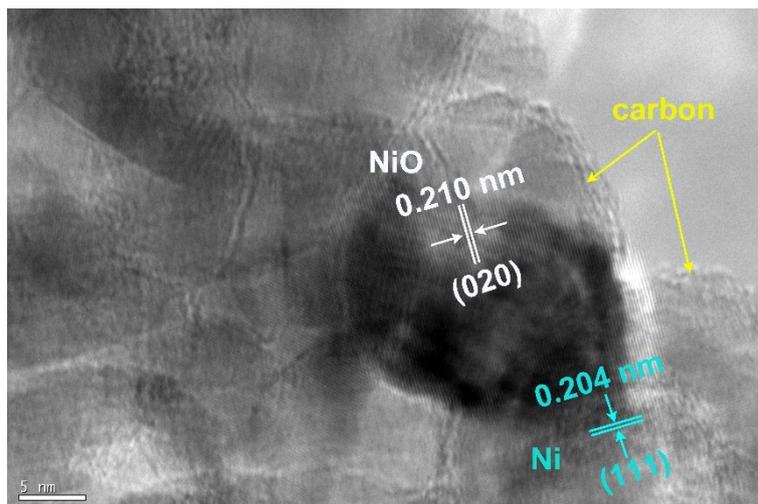


Figure S3. High-resolution TEM image of Ni/NiO-NC-1.00 composite.

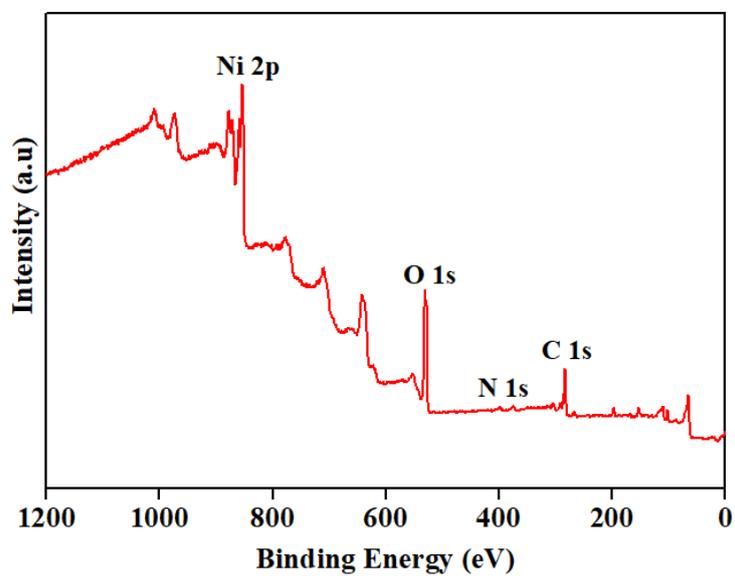


Figure S4. The full XPS spectrum of as-formed Ni/NiO-NC-1.00 composite.

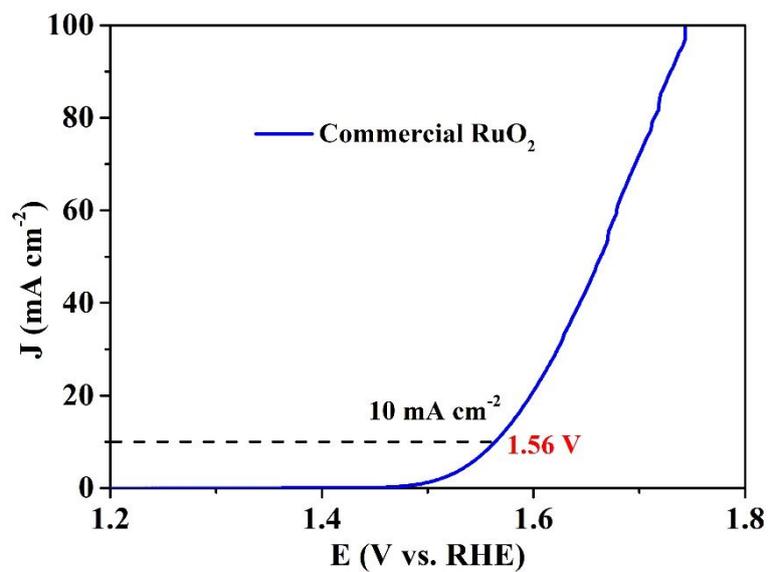


Figure S5. The LSV curve of commercial RuO_2 catalyst in 1.0 M KOH condition.

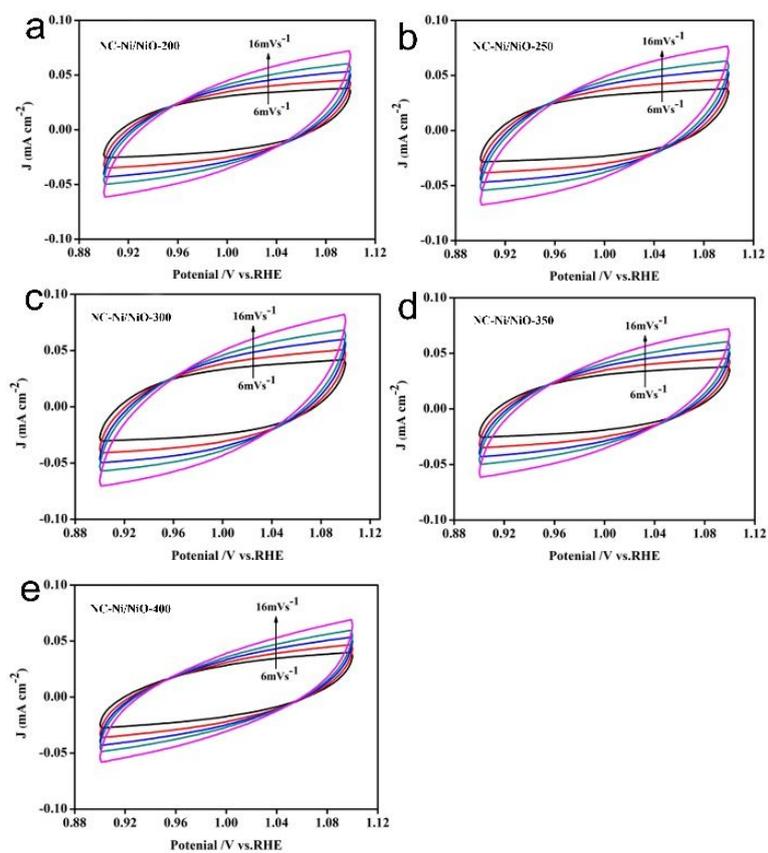


Figure S6. CV curves of samples Ni/NiO-NC-200~400 with increasing scan rates from 6 to 16 mV/s in 1.0 M KOH.

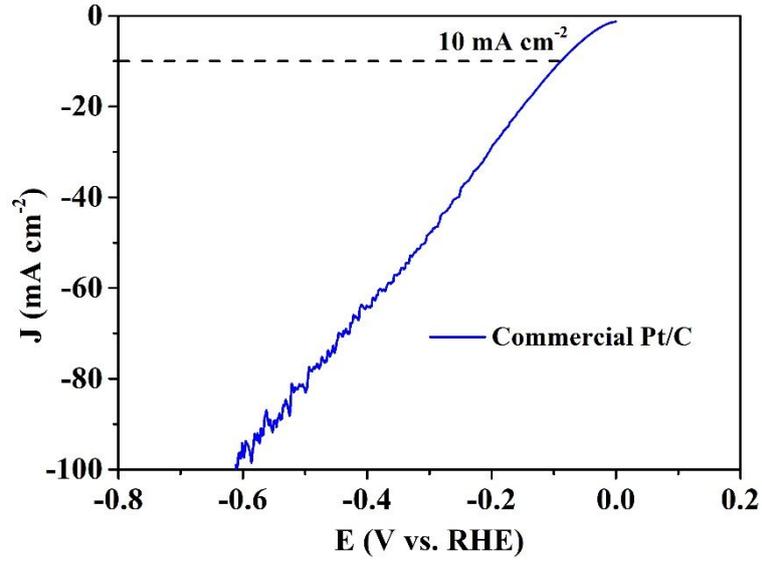


Figure S7. The LSV curve of commercial Pt/C catalyst in 1.0 M KOH condition.

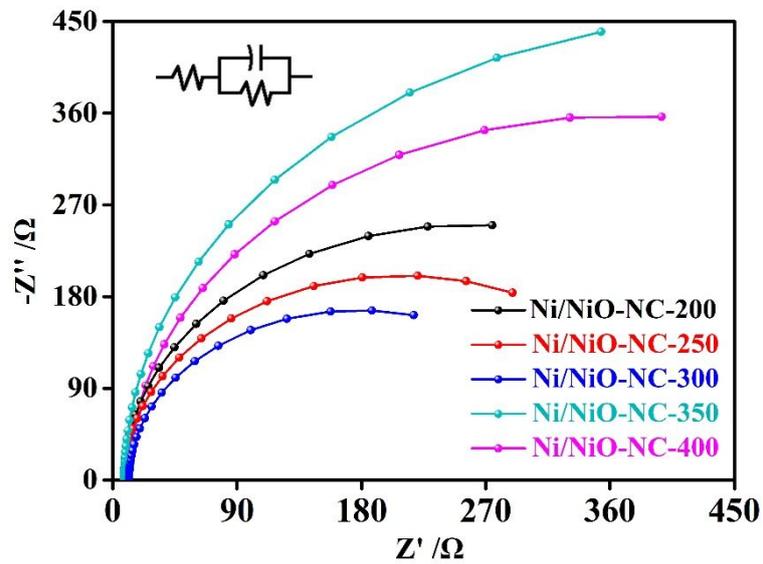


Figure S8. Nyquist plots of Ni/NiO-NC-200-400 composites for HER.

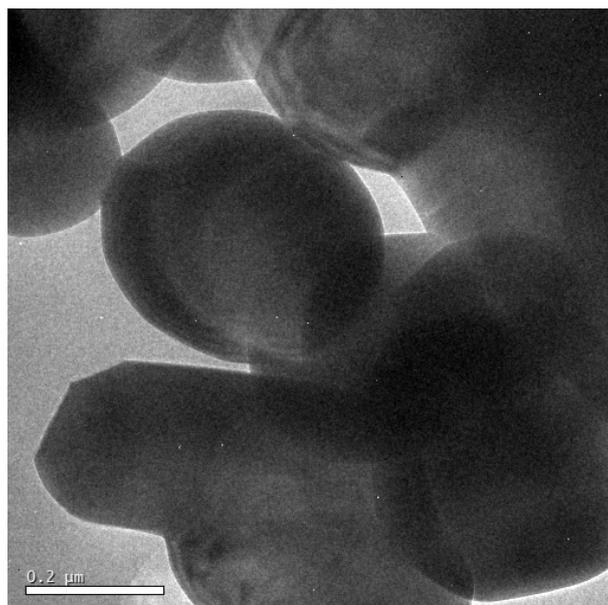


Figure S9. TEM image of Ni/NiO-NC-0.00 composite.

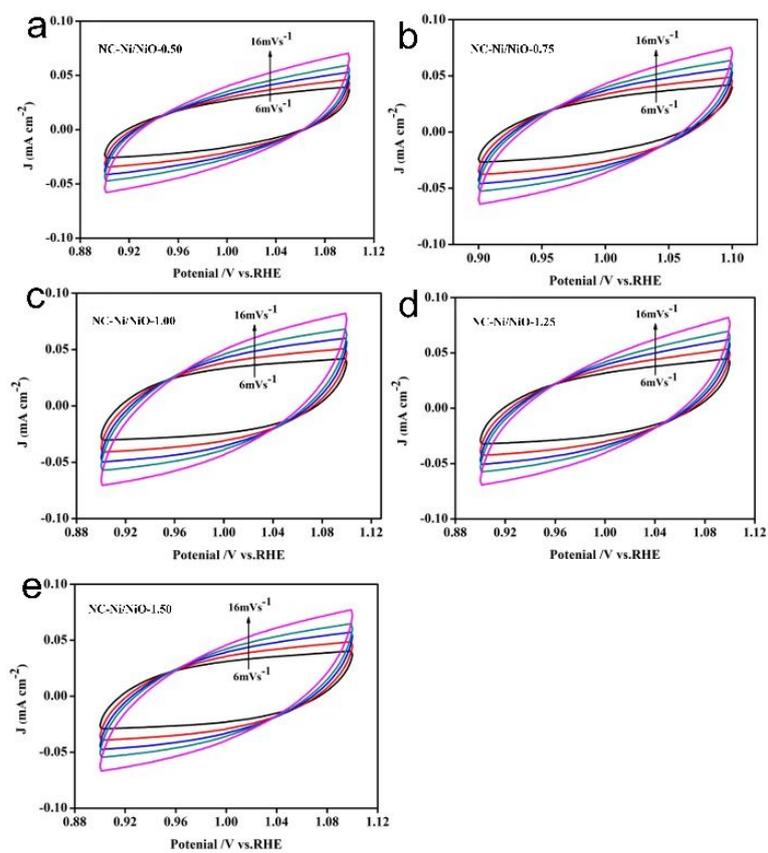


Figure S10. CV curves of Ni/NiO-NC-0.50~1.50 composites with increasing scan rates from 6 to 16 mV/s in 1.0 M KOH.

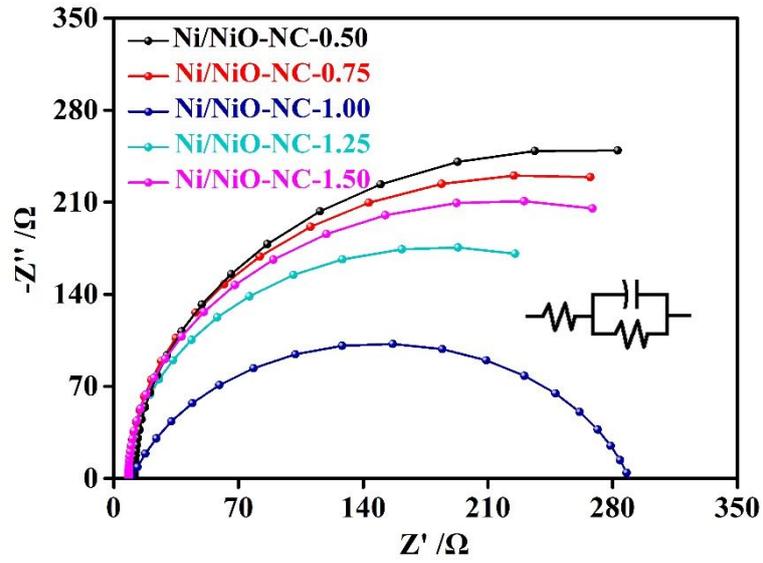


Figure S11. Nyquist plots of Ni/NiO-NC-0.50-1.50 composites for HER.

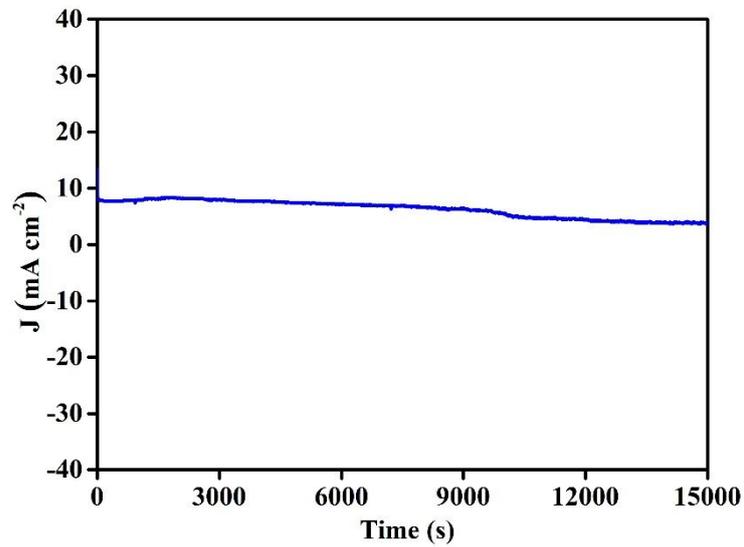


Figure S12. Stability test of optimal Ni/NiO-NC-1.00 for OER.

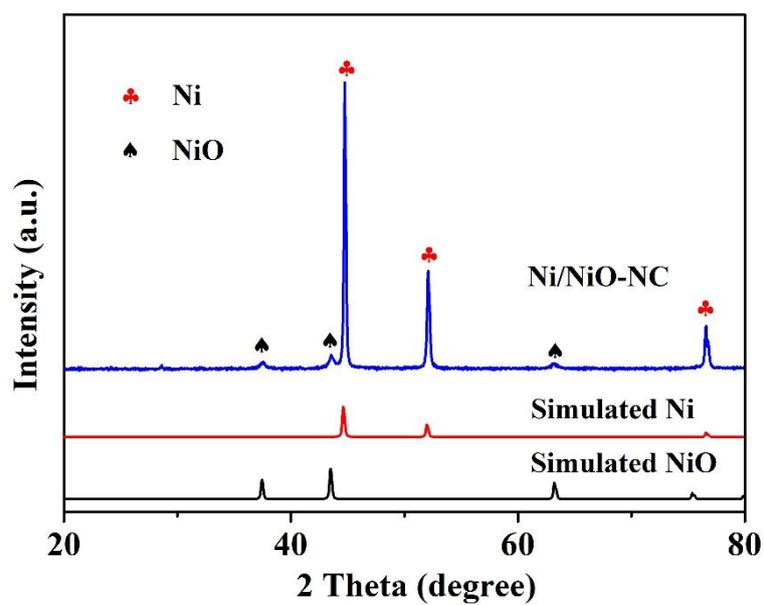


Figure S13. XRD pattern of Ni/NiO-NC-1.00 after OER stability test.

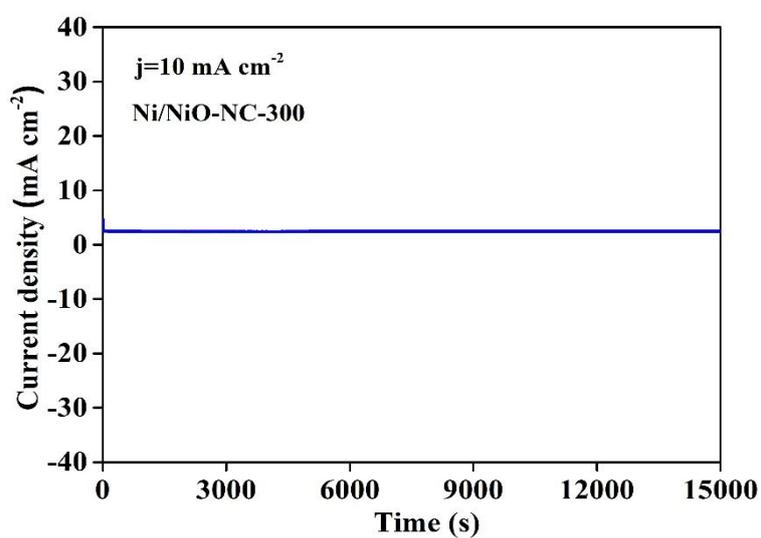


Figure S14. Stability test of optimal Ni/NiO-NC-300 for HER.

Table S1. Summary of OER and HER performances for our work and some reported non-precious metal compounds based electrocatalysts in alkaline condition.

Catalysts	Electrolyte	OER overpotential at 10 mV cm ⁻²	HER overpotential at 10 mV cm ⁻²	Ref.
NiCo-NiCoO ₂ @NC	1.0 M KOH	318 mV	94 mV	[1]
Ni@NiO/NDC-700	1.0 M KOH	370 mV	--	[2]
Ni@NiO Nanowires on Nickel Foam	1.0 M KOH	382 mV	146 mV	[3]
Ni@NiO@C	1.0 M KOH	380 mV	--	[4]
Ni/NiO supported on Ni foam	1.0 M KOH	290 mV	160 mV	[5]
NiO-Al ₉₀	1.0 M KOH	357 mV (20 mV cm ⁻²)	--	[6]
Ni/NiO loaded graphene aerogels	1.0 M KOH	320 mV	--	[7]
CNF-Ni/NiO-Pd	1.0 M KOH	370 mV	63 mV (0.5 M H ₂ SO ₄)	[8]
porous carbon coupled with Ni and NiO hybrid	1.0 M KOH	353 mV	--	[9]
Ni/NiO@rGO	0.5 M KOH	480 mV	582 mV (0.5 M H ₂ SO ₄)	[10]
Co-Ni ₃ S ₂ nanosheets	1.0 M KOH	310 mV	--	[11]
Ni/NiO-NC	1.0 M KOH	293 mV	179 mV	This work

References

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