

Electronic Supplementary Information

Ar plasma assisted enhanced oxygen evolution kinetics of MOG- derived multicomponent transition metal sulfides

Jia-Yang Luo,^{a,b} Ya-Meng Yin,^{*a,b} Gui-Zhi Guo,^a Xi-Wen Chang,^a Xue-Qian Wu,^{a,b} Ya-Pan
Wu,^{a,b} Shuang Li,^{a,b} Ru-An Chi,^b and Dong-Sheng Li^{*a,b}

^aCollege of Materials and Chemical Engineering, Key Laboratory of Inorganic Nonmetallic
Crystalline and Energy Conversion Materials, China Three Gorges University, Yichang,
Hubei 443002, P.R. China.

^bHubei Three Gorges Laboratory, Yichang, Hubei 443007, P. R. China

***Corresponding Author:** Ya-Meng Yin, Email: yameng.yin@ctgu.edu.cn

Dong-Sheng Li, Email: lidongsheng1@126.com

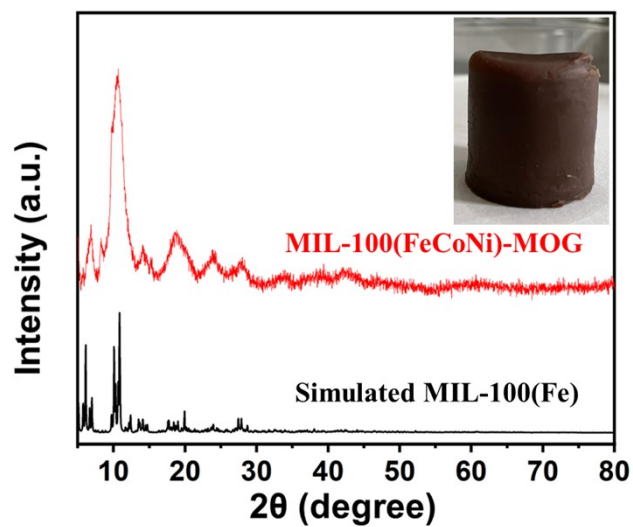


Fig. S1 XRD patterns for synthesized MIL-100(FeCoNi)-MOG and simulated MIL-100(Fe), the inset is a digital image of MIL-100(FeCoNi)-MOG product.

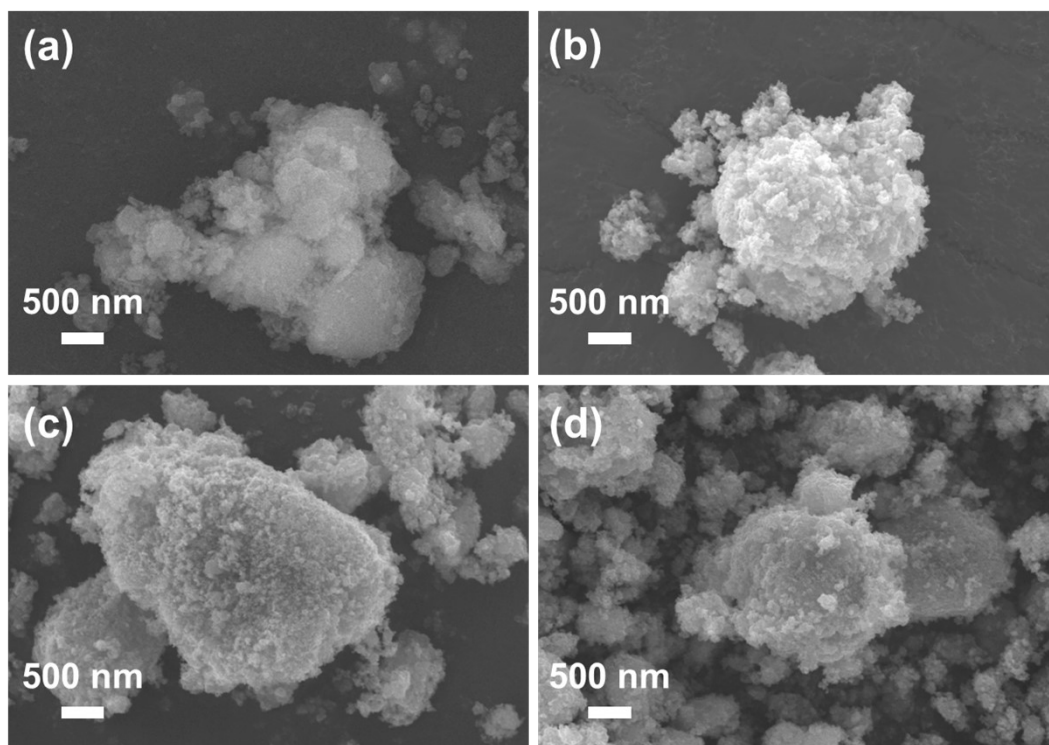


Fig. S2 SEM images of (a) FeCoNi-MOG, (b) Pristine, (c) Ar-300W and (d) Ar-500W.

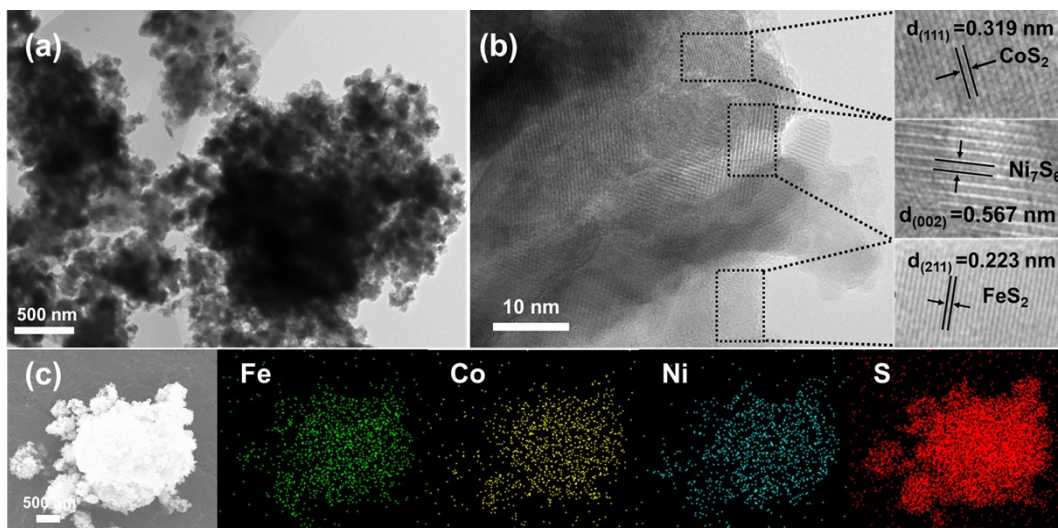


Fig. S3 (a) TEM, (b) HRTEM and (c) EDS elemental mapping images of Pristine.

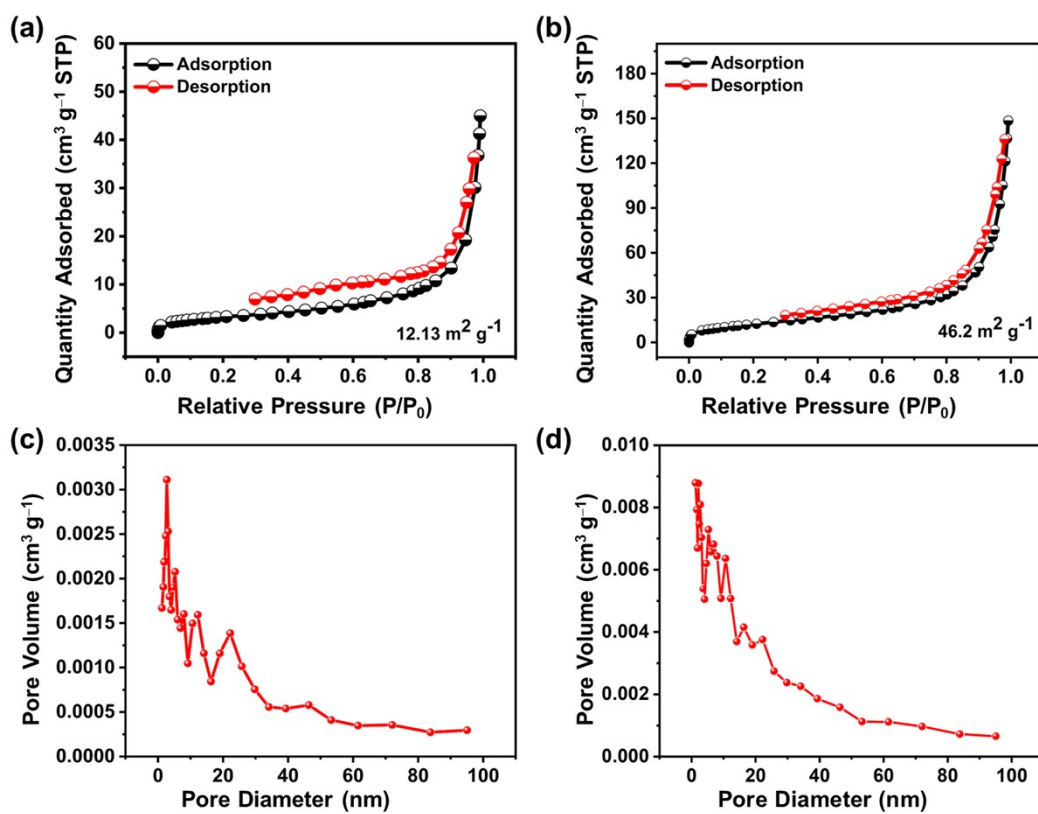


Fig. S4 N₂ adsorption-desorption curves and pore size distribution of (a, c) Pristine and (b, d) Ar-400 W.

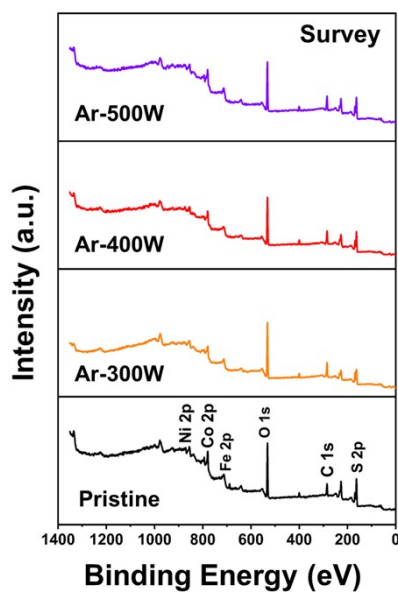


Fig. S5 XPS survey spectrum of the obtained FeCoNiS_x catalysts.

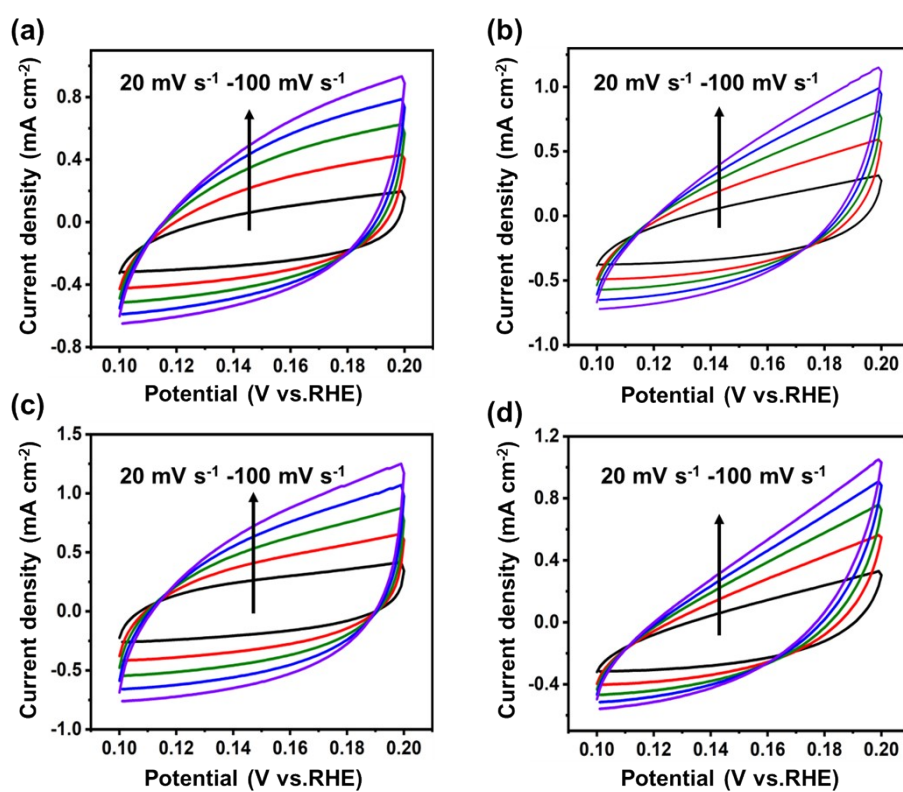


Fig. S6 CV curves of (a) Pristine, (b) Ar-300W, (c) Ar-400W and (d) Ar-500W with different scan rates from 20 to 100 mV·s⁻¹.

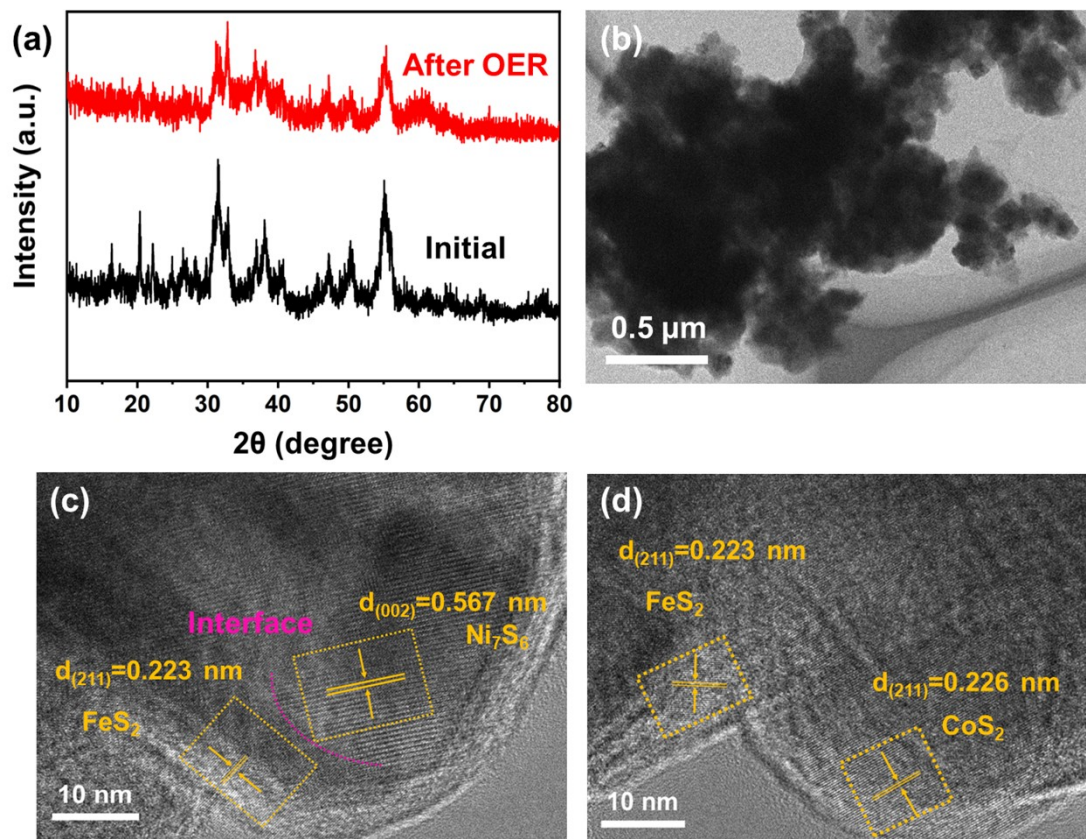


Fig. S7 (a) XRD patterns, (b) TEM image and (c, d) HRTEM images of Ar-400W after OER process.

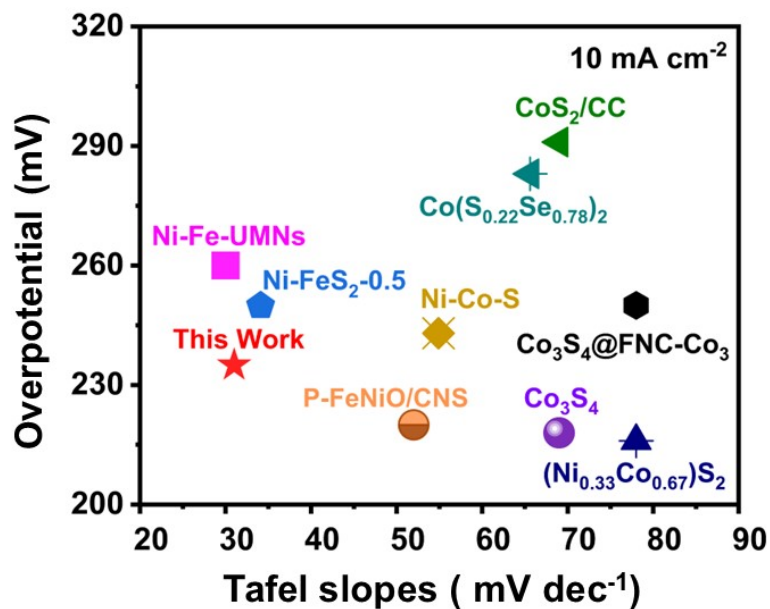


Fig. S8 This work compares Tafel slopes and overpotentials at 10 mA cm⁻² to other reported transition metal-based OER catalysts in basic media.

Table S1. Comparison of the OER performance between Ar-400 W with recently reported transition metal-based electrocatalysts.

Catalysts	Electrolyte	Overpotential (mV)	Tafel slope (mV dec ⁻¹)	References
Ni-Co-S	1.0 M KOH	243	54.9	S1
(Ni _{0.33} Co _{0.67})S ₂	1.0 M KOH	216	78	S2
Co ₃ S ₄ @FNC-Co ₃	1.0 M KOH	250	78	S3
Co(S _{0.22} Se _{0.78}) ₂	1.0 M KOH	283	65.6	S4
CoS ₂ /CC	1.0 M KOH	291	69	S5
Co ₃ S ₄	1.0 M KOH	218	69	S6
Ni-FeS ₂ -0.5	1.0 M KOH	250	34	S7
Ni-Fe-UMNs	1.0 M KOH	260	30	S8
P-FeNiO/CNS	1.0 M KOH	220	52	S9
FeCoNiS_x (Ar-400W)	1.0 M KOH	235	31	This Work

References

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