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Supplementary Information

Low-temperature Synthesis of High Entropy Amorphous Metal Oxides (HEOs) for Enhanced Oxygen Evolution Performances

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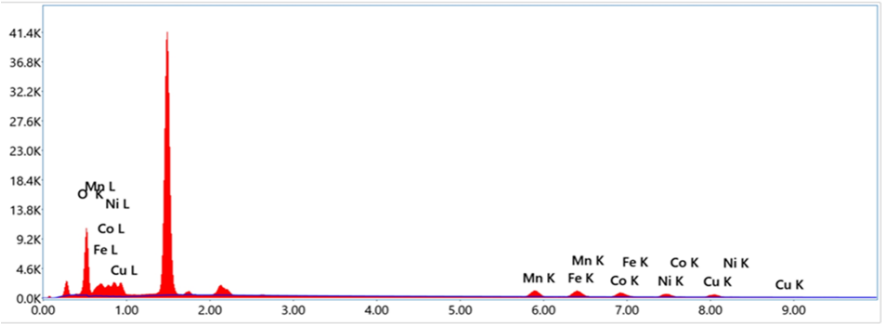

Element	Weight %	Atomic %
Mn K	12.1	7.3
Fe K	13.8	8.2
Co K	13.9	7.8
Ni K	14.3	8.1
Cu K	17.2	9.0
O K	28.7	59.6
Total	**100.00**	**100.00**

Fig. S1 EDS analysis and different elemental percentages of the as-prepared material.

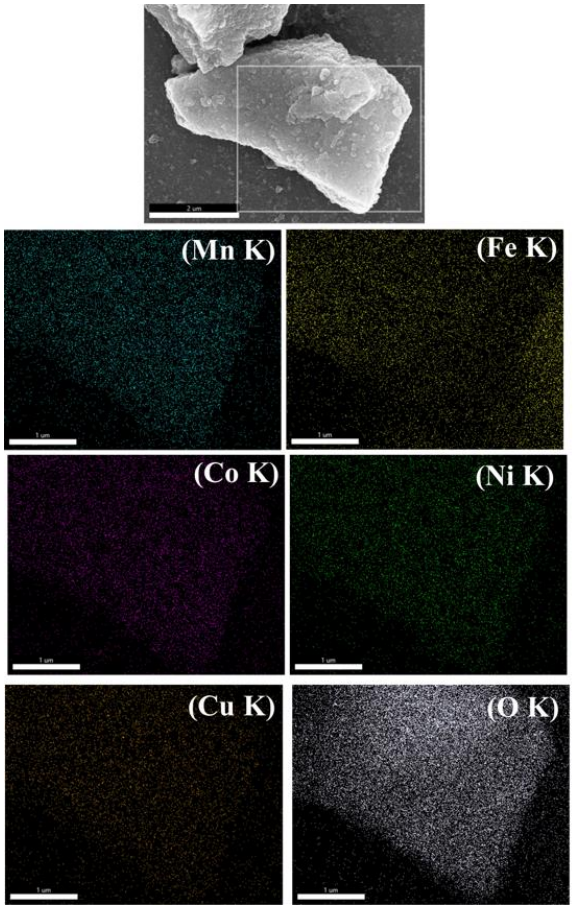

Fig. S2 Elemental mapping of HEO-110 shows the presence of Mn, Fe, Co, Ni, Cu, and O.

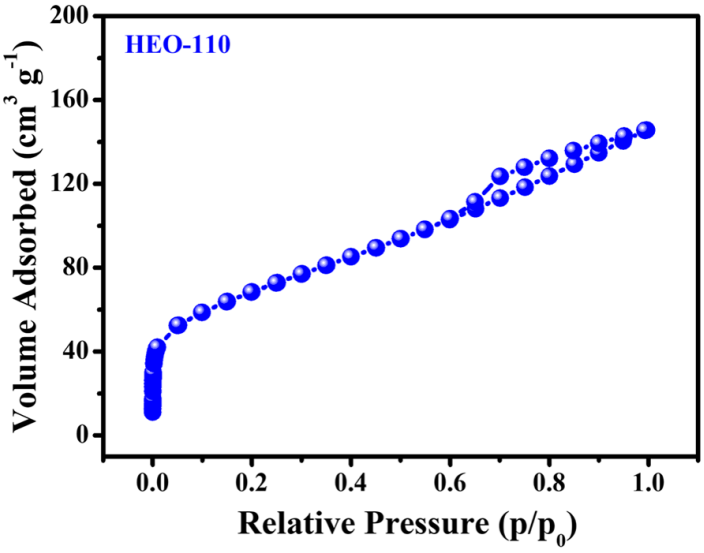

Fig. S3 BET study of high entropy amorphous material.

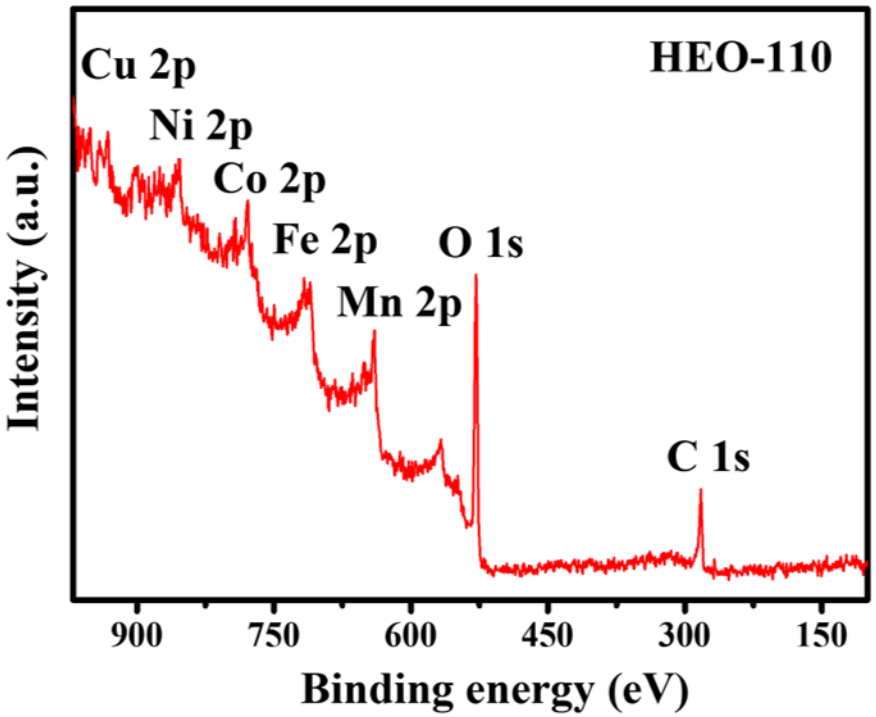

Fig. S4 Elemental survey analysis of amorphous HEO-110.

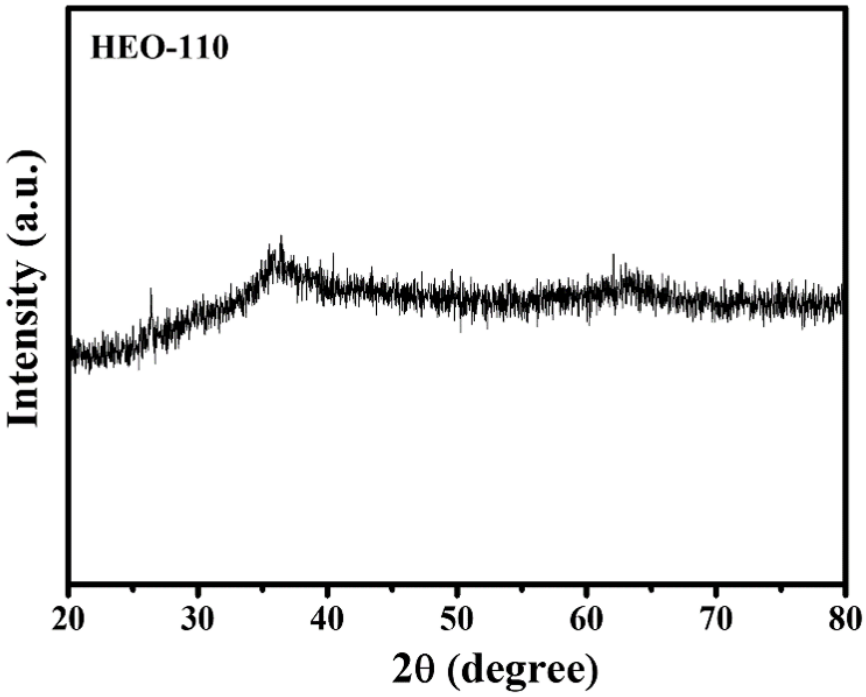

Fig. S5 Post stability PXRD of the synthesized electrode material.

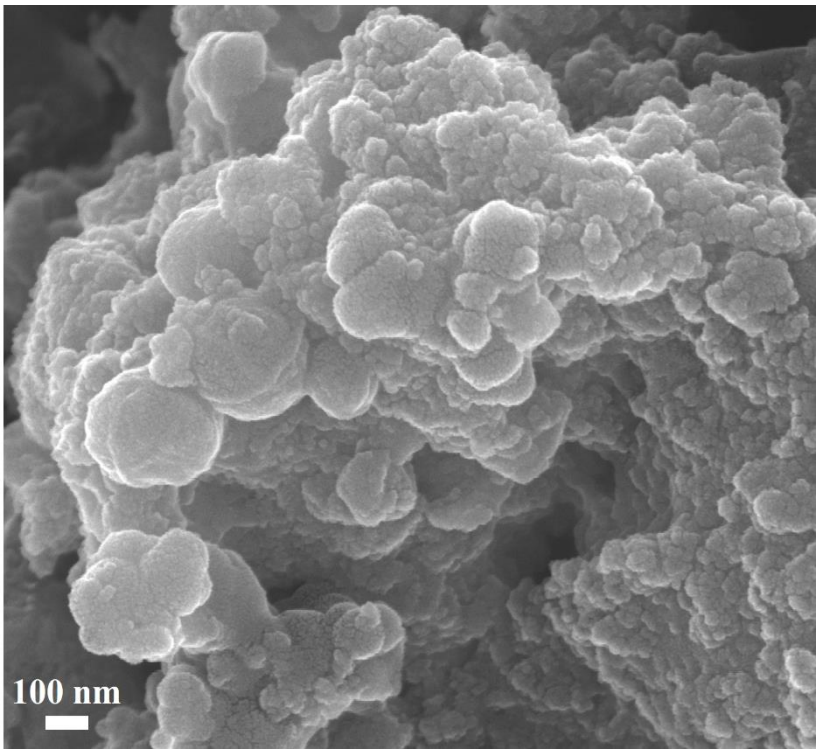

Fig. S6 FESEM image after 20 h of stability test in 1 M KOH.

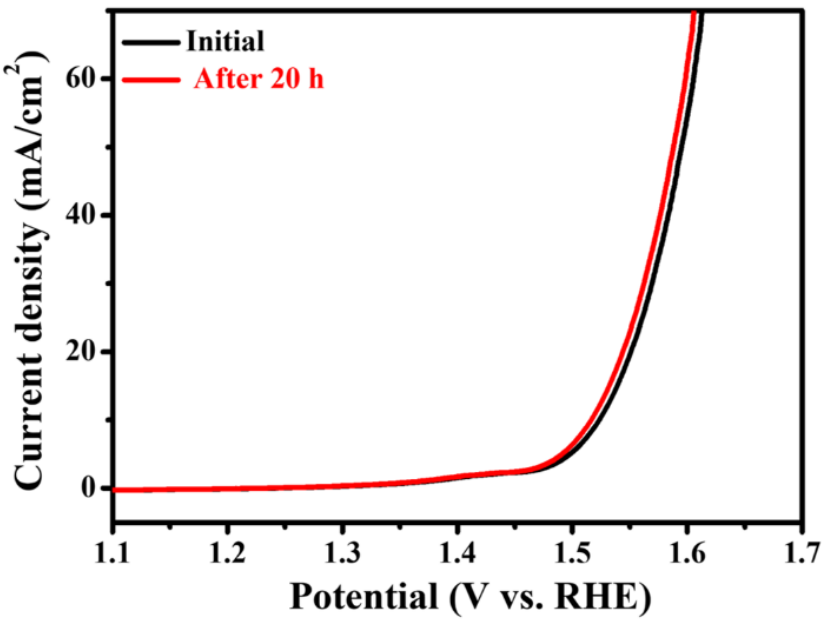

Fig. S7 LSV curves of HEO-110 before and after stability test.

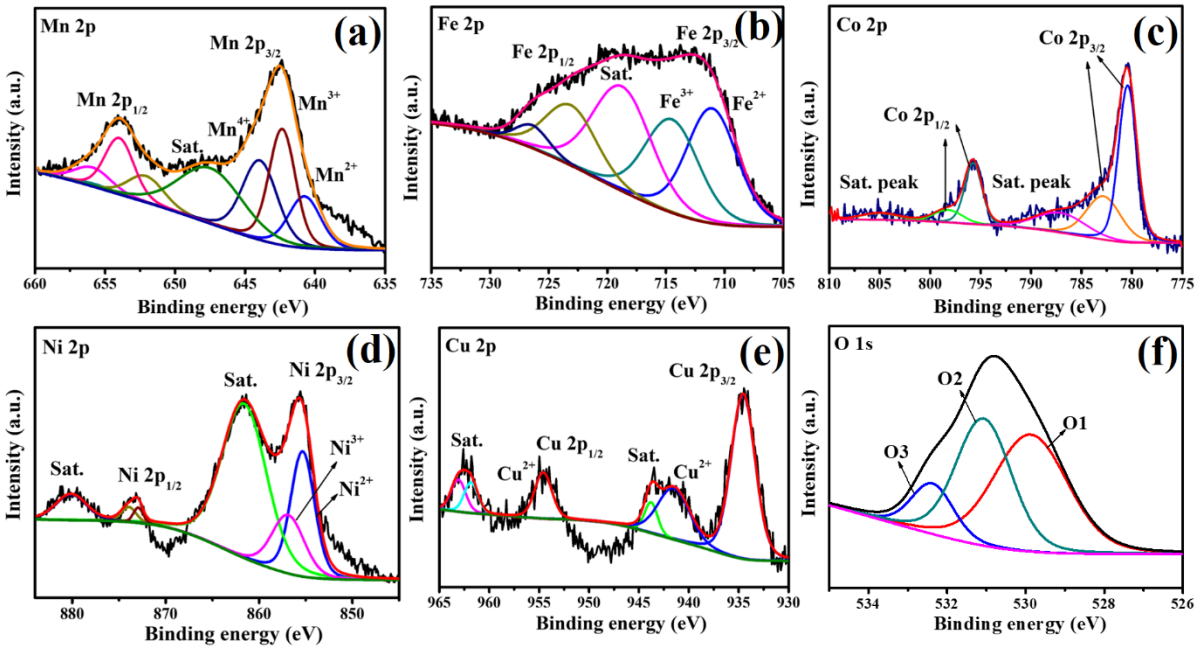

Fig. S8 Post-stability X-ray photoelectron spectra of high entropy amorphous metal oxides (HEO-110). Corresponding Mn 2p (a), Fe 2p (b), Co 2p (c), Ni 2p (d) Cu 2p (e), and O 1s (f), respectively.

Table S1 A brief literature study of high entropy electrode material for OER.

SL No.	Electrocatalyst	Electrolyte	Overpotential at 10 mA/cm^2 (mV)	Tafel slope (mV/dec)	References
1	$(Cr_{0.2}\ Mn_{0.2}\ Fe_{0.2}\ Co_{0.2}\ Ni_{0.2})_3O_4$	1 M KOH	332	54.5	Chemical Engineering Journal, 2022, 431, 133448
2	$(CoNiMnZnFe)_3O_4$	1 M KOH	336	47.5	Journal of Alloys and Compounds, 2021. 868, 159064
3	$(Fe_{0.2}Co_{0.2}Ni_{0.2}Cr_{0.2}Mn_{0.2})_3O_4$	1 M KOH	275	50.27	Chemical Engineering Journal, 2023. 460, 141675
4	$(CoCuFeMnNi)_3O_4$	1 M KOH	400	76.7	Journal of Materials Chemistry A, 2019, 7(42), 24211-24216.
5	$(Co_{0.2}Mn_{0.2}Ni_{0.2}Fe_{0.2}Zn_{0.2})Fe_2O_4$	1 M KOH	326	53.6	ACS applied materials & interfaces, 2020, 12(29), 32548-32555.
6	$(FeCrCoNiAl_{0.1})O_x$	1 M KOH	381	60.9	Journal of Alloys and Compounds, 2021, 868,159108.

7	$La(CrMnFeCo_2Ni)O_3$	1 M KOH	325	51.2	Advanced Functional Materials, 2021, 31(27), 2101632.
8	**$(MnFeCoNiCu)_3O_4$**	**1 M KOH**	**290**	**85**	**Our Work**