# Supplementary Information

## High-Entropy FeCoNiCrCe Layered Double Hydroxides by Facile Pulse Current Electrodeposition as High Performance Electrocatalyst for Oxygen Evolution Reaction

Xinyu Yang, Qianqiao Chen*

School of chemistry and chemical engineering of Nanjing University of Science and Technology,

Nanjing, 210094, China

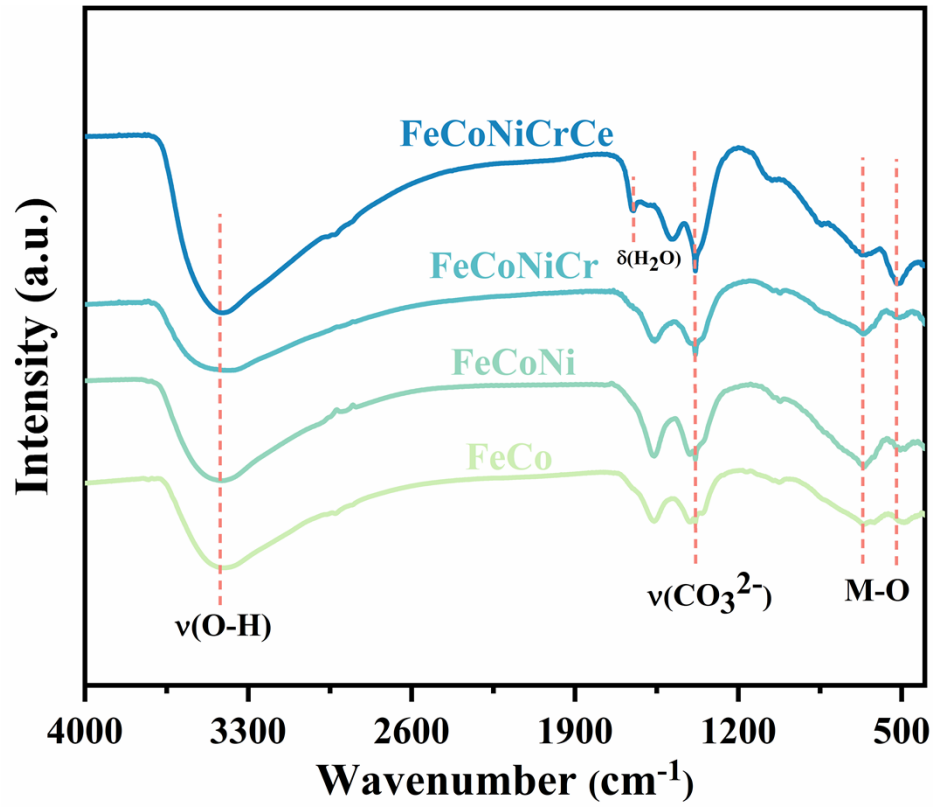


Fig. S1 FTIR spectra of samples prepared by the PC electrodeposition.

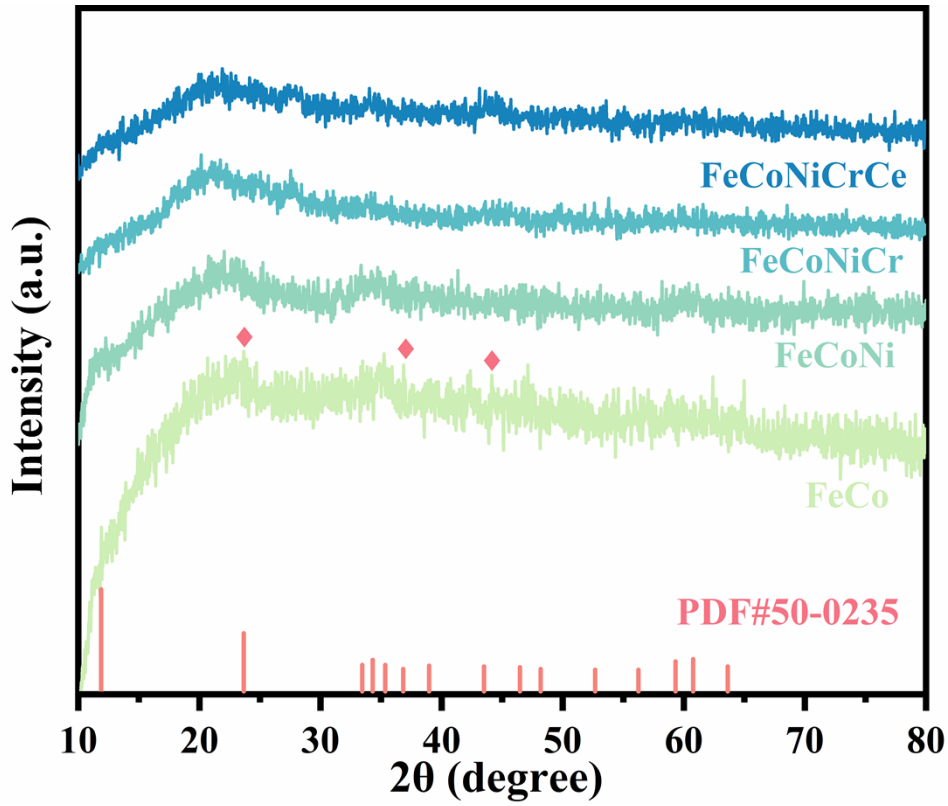


Fig. S2 XRD patterns of samples prepared by the PC electrodeposition.

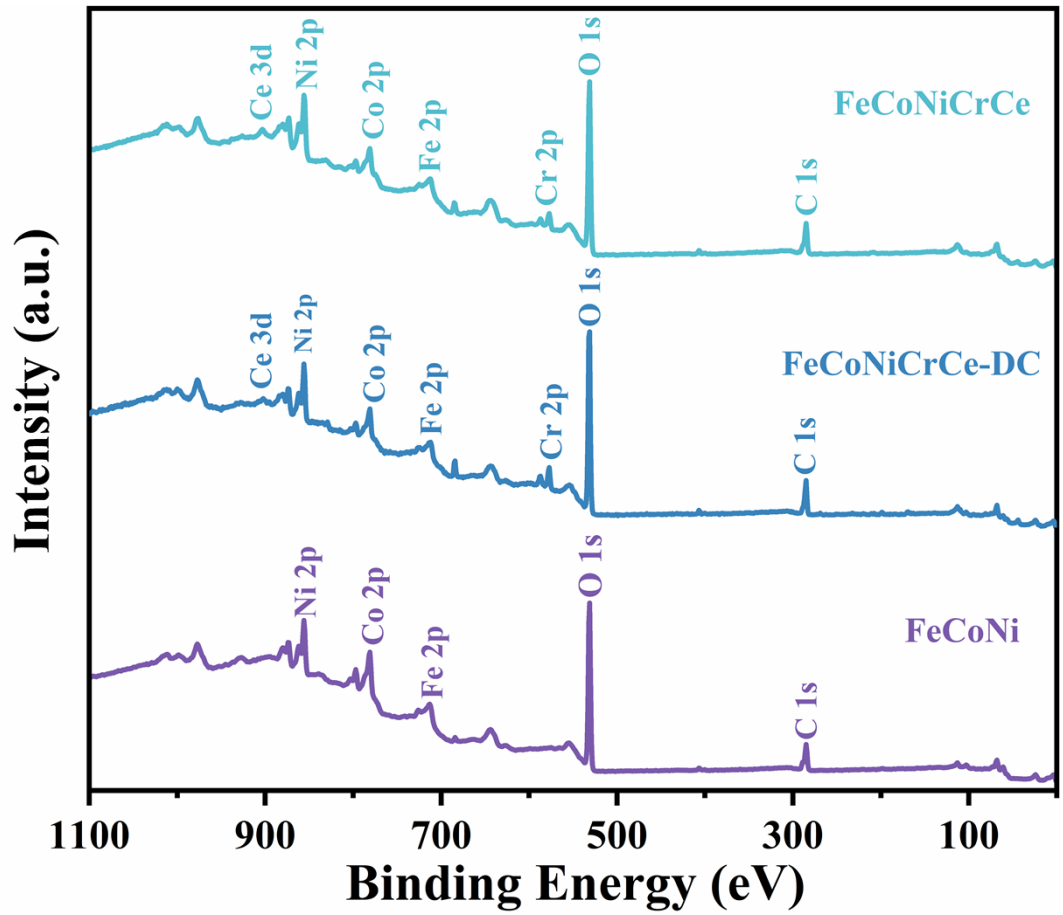


Fig. S3 XPS survey spectra of the FeCoNiCrCe, FeCoNiCrCe-DC and FeCoNi.

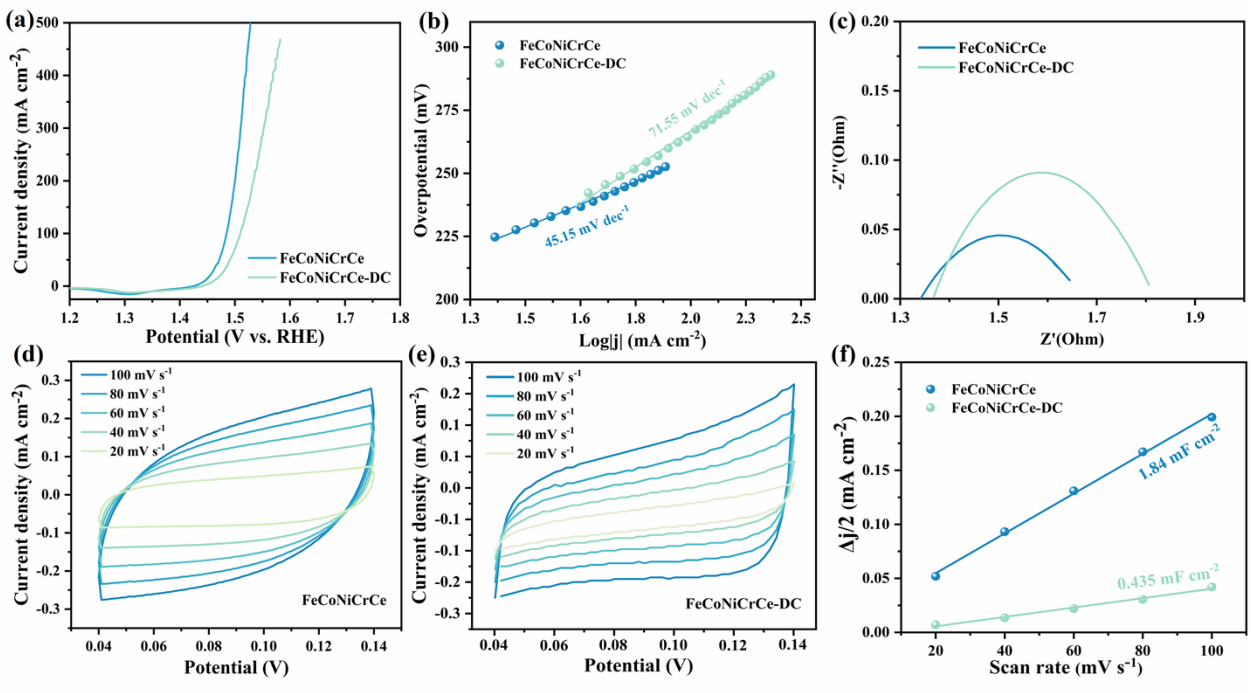


Fig. S4 Comparison of the electrocatalytic OER activity of the FeCoNiCrCe with FeCoNiCrCe-DC. (a) LSV curves. (b) Tafel slopes. (c) EIS spectra. CV curves at different scan rates of (d) FeCoNiCrCe and (e) FeCoNiCrCe-DC. (f) The corresponding double-layer capacitance. The potentials for CV tests have been converted to RHE.

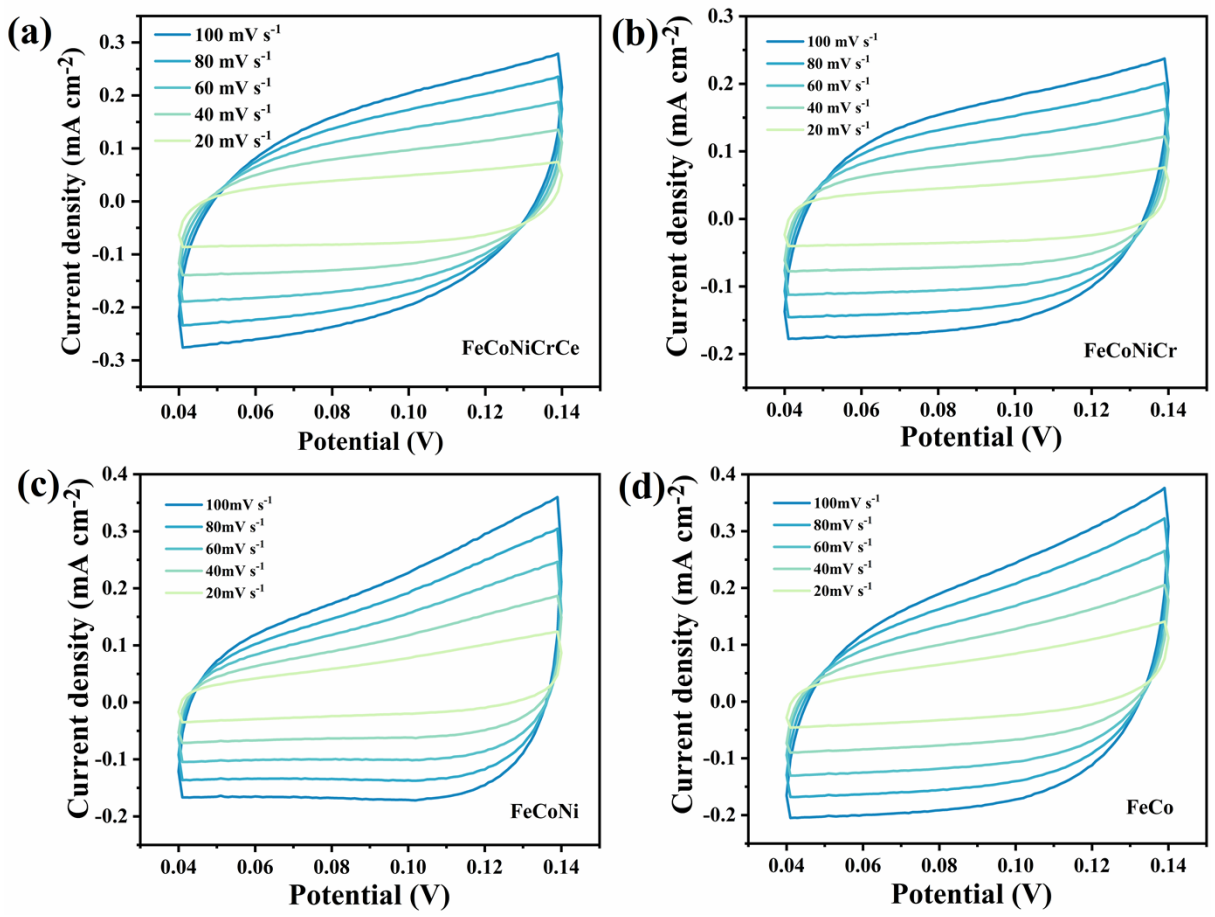


Fig. S5 CV curves at different scan rates of samples prepared by the PC electrodeposition. (a) FeCoNiCrCe, (b) FeCoNiCr, (c) FeCoNi, and (d) FeCo. The potentials for CV tests have been converted to RHE.

**Table S1. Summary table of electrochemical parameters.**

| Catalyst | $\eta_{10}$ (mV) | Tafel slope (mV $dec^{-1}$) | $R_{ct}$ (Ω) | $C_{dl}$ (mF $cm^{-2}$) | ECSA ($cm^2$) | $R_f$ |
|---|---|---|---|---|---|---|
| FeCoNiCrCe | 215 | 45.15 | 0.35 | 1.84 | 46.00 | 46.00 |
| FeCoNiCrCe-DC | 218 | 71.55 | 0.45 | 0.44 | 11.00 | 11.00 |
| FeCoNiCr | 221 | 55.91 | 0.72 | 1.75 | 43.75 | 43.75 |
| FeCoNi | 230 | 68.42 | 0.84 | 1.73 | 43.25 | 43.25 |
| FeCo | 245 | 88.30 | 1.10 | 1.54 | 38.50 | 38.50 |

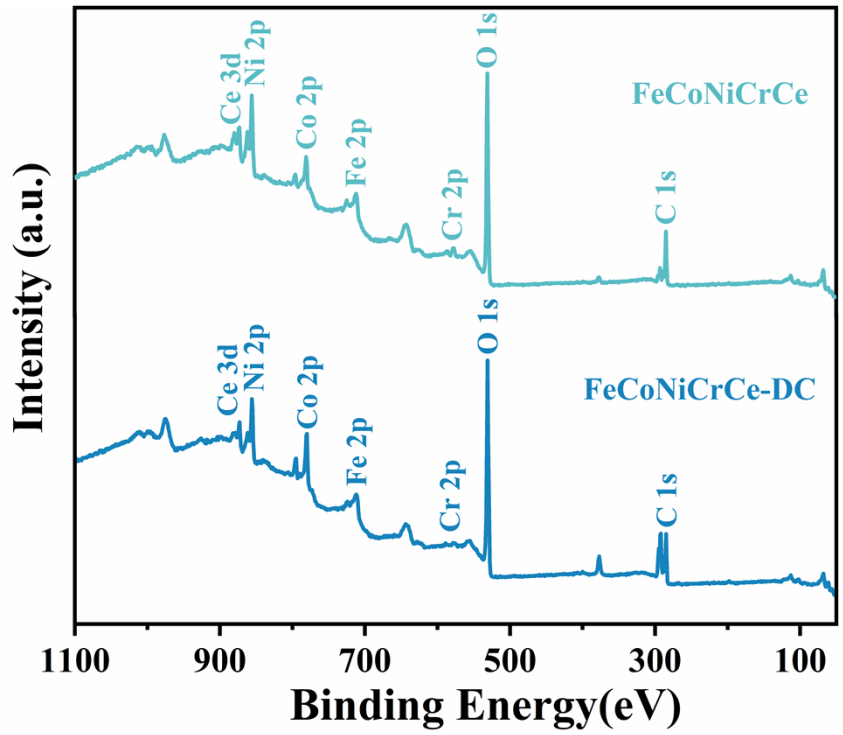


Fig. S6 XPS survey spectra of the FeCoNiCrCe and FeCoNiCrCe-DC after the OER process.

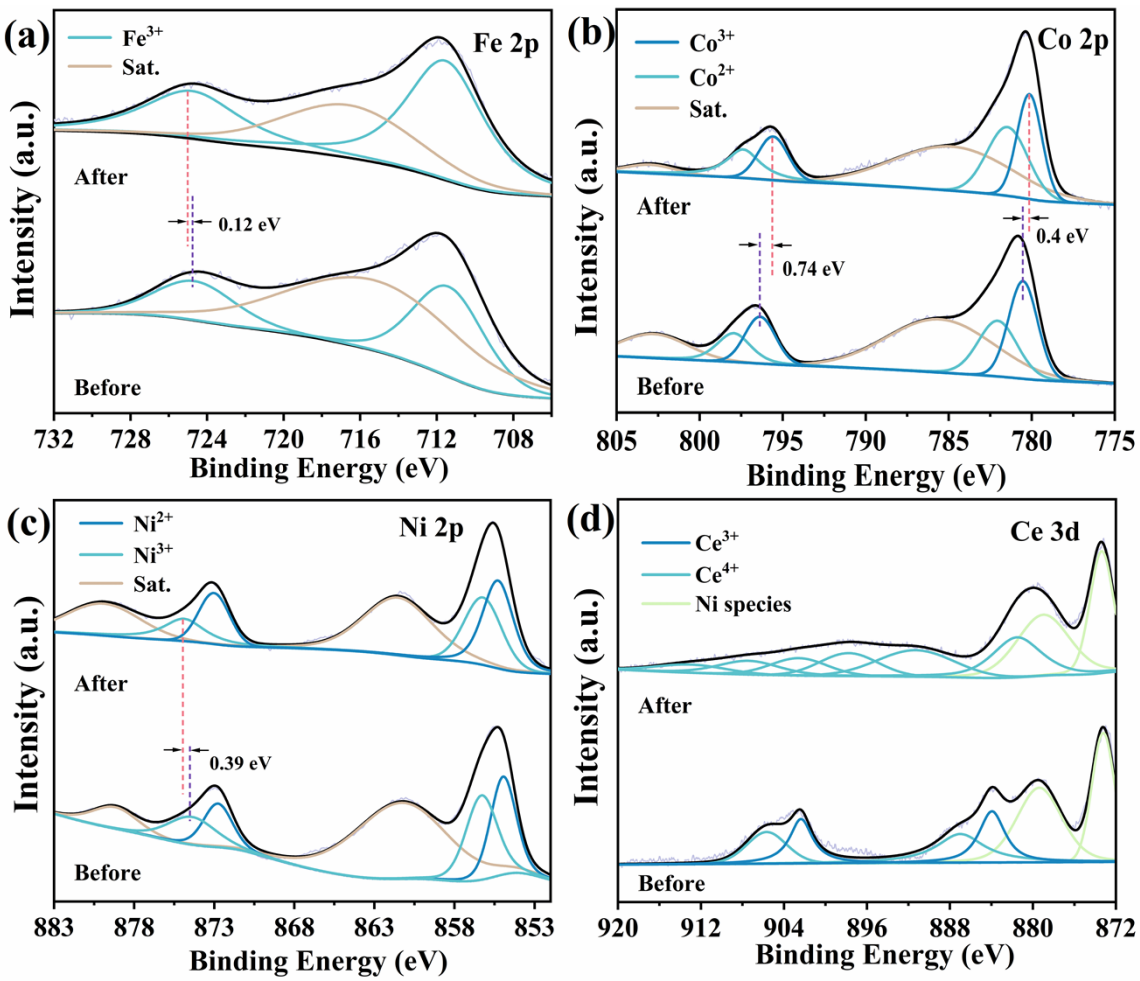


Fig. S7 High-resolution XPS spectra of (a) Fe 2p, (b) Co 2p, (c) Ni 2p and (d) Ce 3d of the FeCoNiCrCe after the OER test.