Supporting Information

Phosphorus doping in high-entropy carbides promotes the selectivity in electrooxidation of ethylene glycol to formic acid

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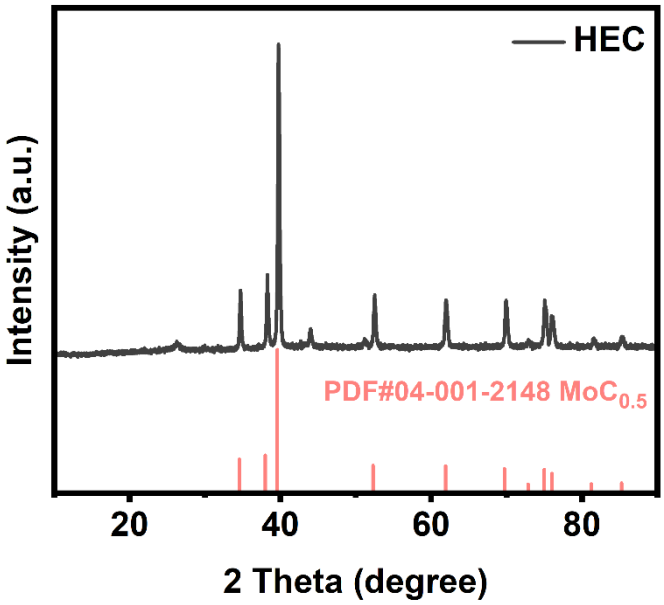

Figure S1. XRD pattern of HEC/CNFs.

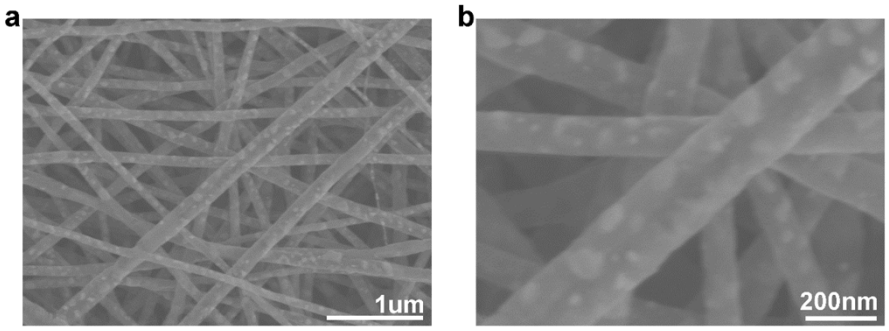

Figure S2. (a, b) FE-SEM images of HEC/CNFs.

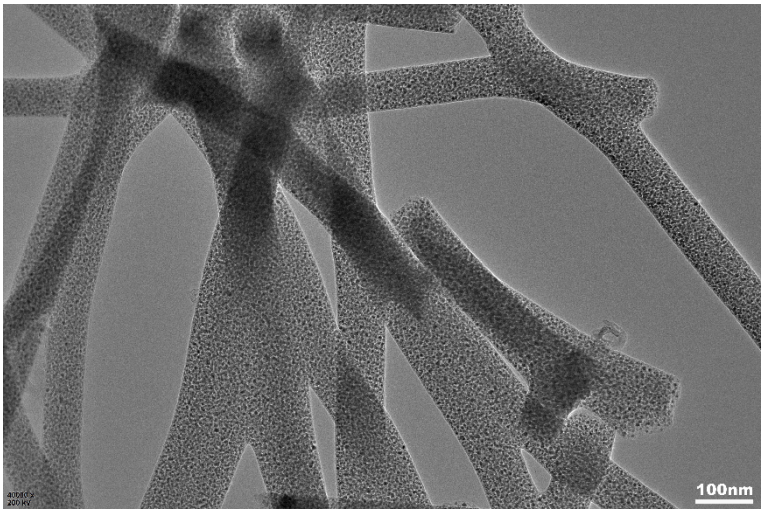

Figure S3. TEM image of P-HEC/CNFs.

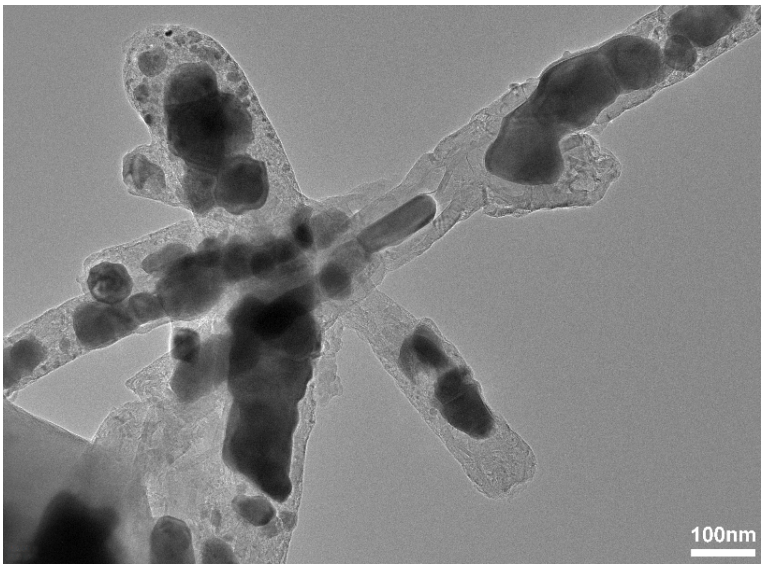

Figure S4. TEM image of HEC/CNFs.

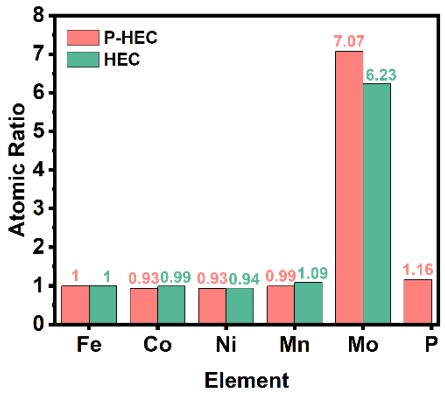

Figure S5. The atomic ratio of elements in the P-HEC/CNFs and HEC/CNFs as determined by ICP-OES.

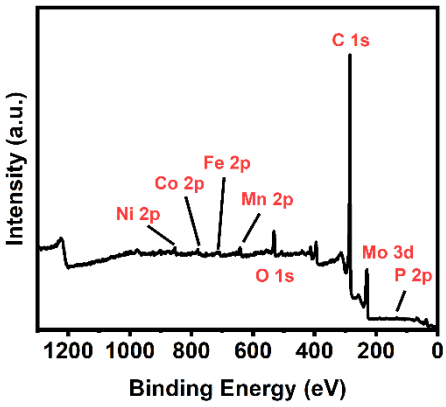

Figure S6. XPS survey spectrum of the as-prepared P-HEC CNFs.

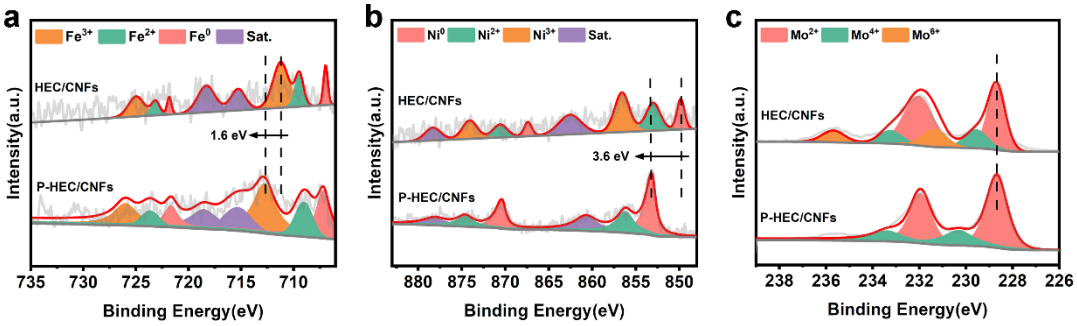

Figure S7. (a) Fe 2p, (c) Ni 2p and (c) Mo 3d XPS spectra of the P-HEC/CNFs and HEC/CNFs.

Figure S8. Picture of isolated TPA after hydrolysis.

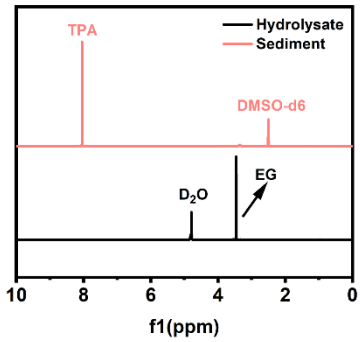

Figure S9. ^{1}H NMR spectra of the obtained products after PET hydrolysis.

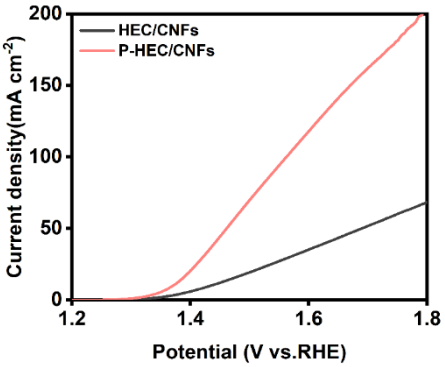

Figure S10. LSV curves of HEC/CNFs and P-HEC/CNFs for EGOR.

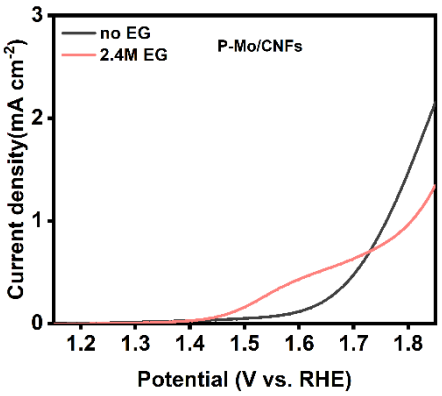

Figure S11. LSV curves of P-Mo/CNFs for OER and EGOR.

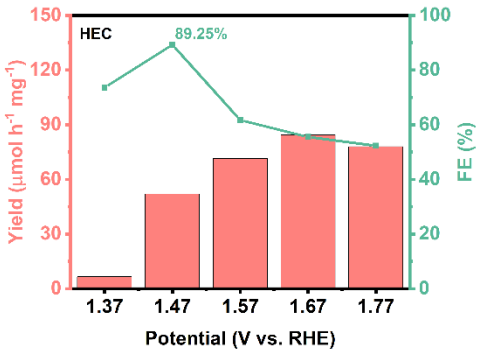

Figure S12. The FE and productivity of FA for HEC/CNFs toward EGOR.

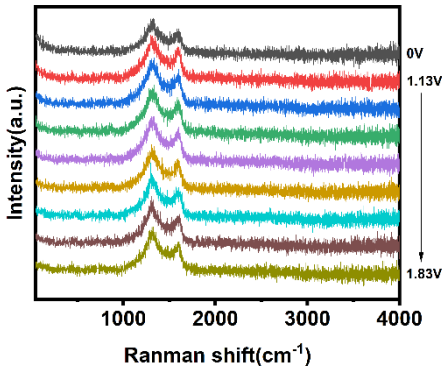

Figure S13. In-situ Raman spectra of P-Mo/CNFs with 2.4 M EG.

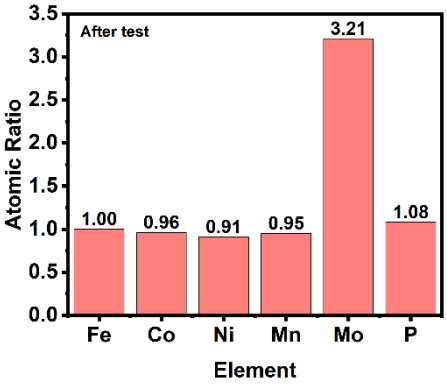

Figure S14. The atomic ratio of metals in the CNFs after long-term stability measurement as determined by ICP-OES.

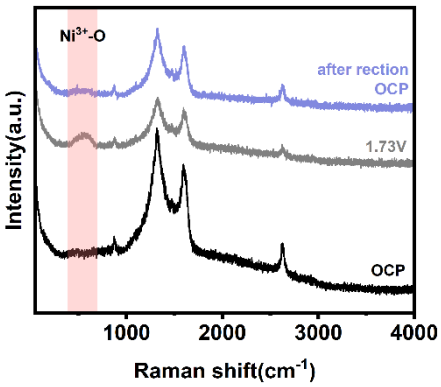

Figure S15. Raman spectra of P-HEC/CNFs in 1 M KOH with 2.4 M EG electrolyte.

Supplementary Table 1. Comparison of the catalytic performances of this work and known catalysts.

Catalyst	EGOR potential (V vs.RHE) @50 mA cm^{-2}	FE_{FA} (%)
This work	**1.46**	**89.23**
Pt/C	0.68	59
RuO_2	1.56	35
$NiCo_2O_4$/CFP	1.64	90
$Ni(OH)_2$-V_0	1.41	86
CuO NWs/CF	1.48	88
$CoNi_{0.25}P$/NF	1.31	91.3
NiFe-LDH/NF	1.46	88