Supporting Information

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High-performance Ammonium Cobalt Phosphate Nanosheet Electrocatalyst for Alkaline Saline Water Oxidation

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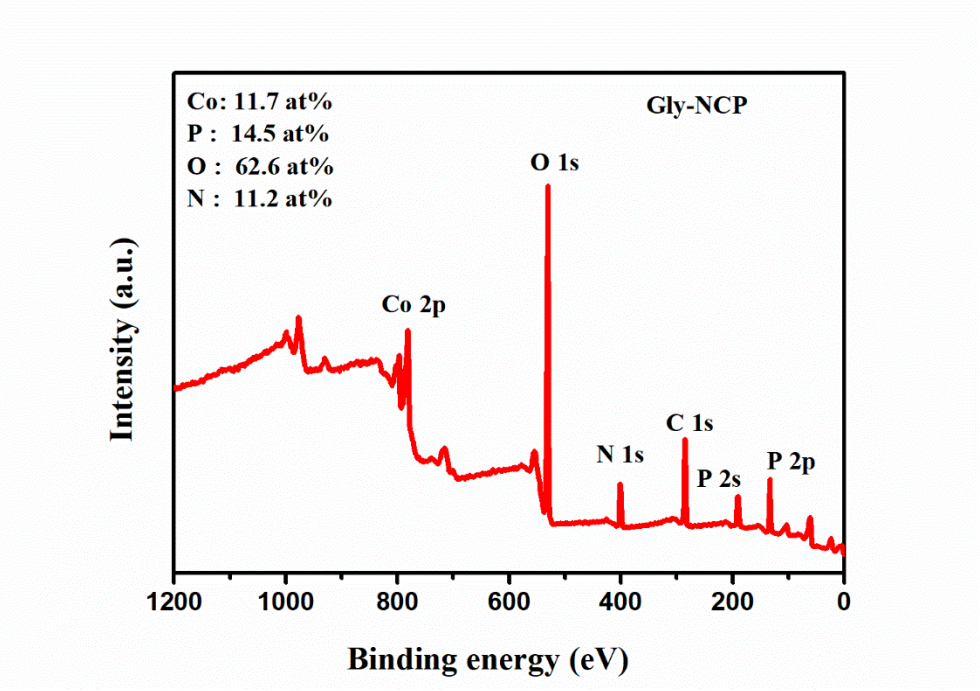

Figure S1. The XPS spectrum and element composition of as-prepared Gly-NCP.

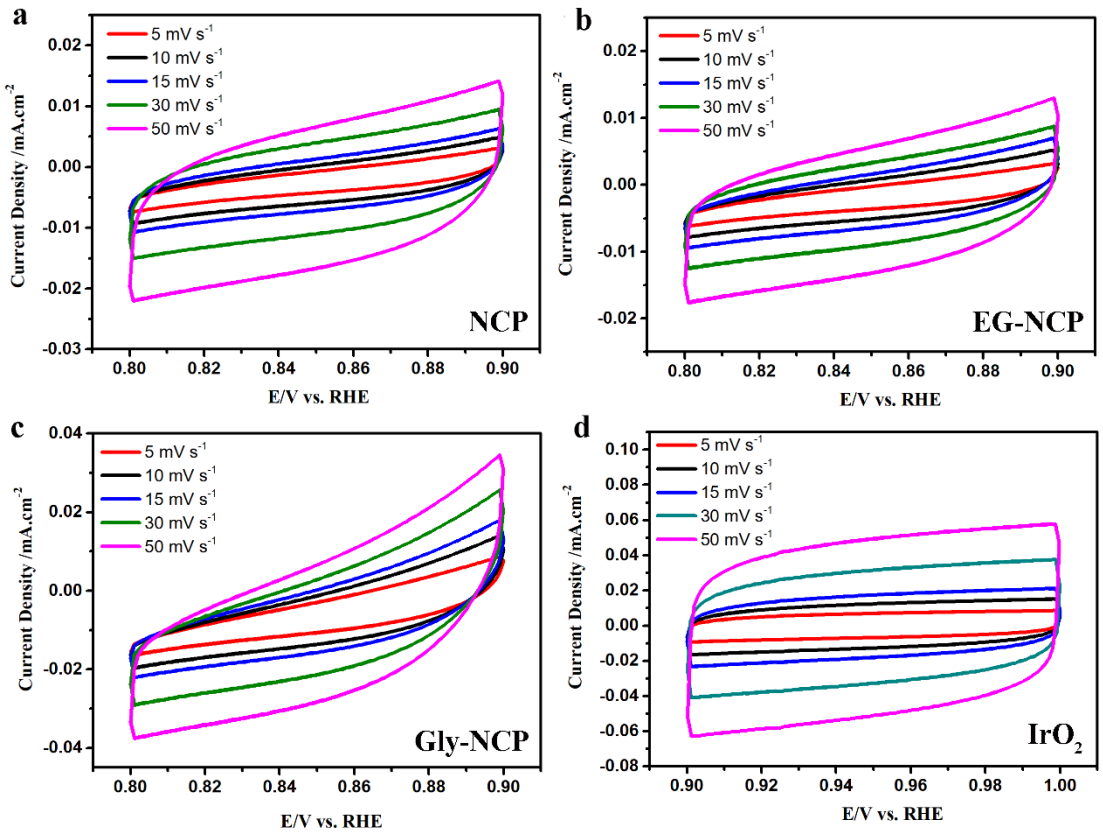

Figure S2. The CV curves at different scan rates for NCP, EG-NCP, Gly-NCP nanosheets and the reference of IrO_2.

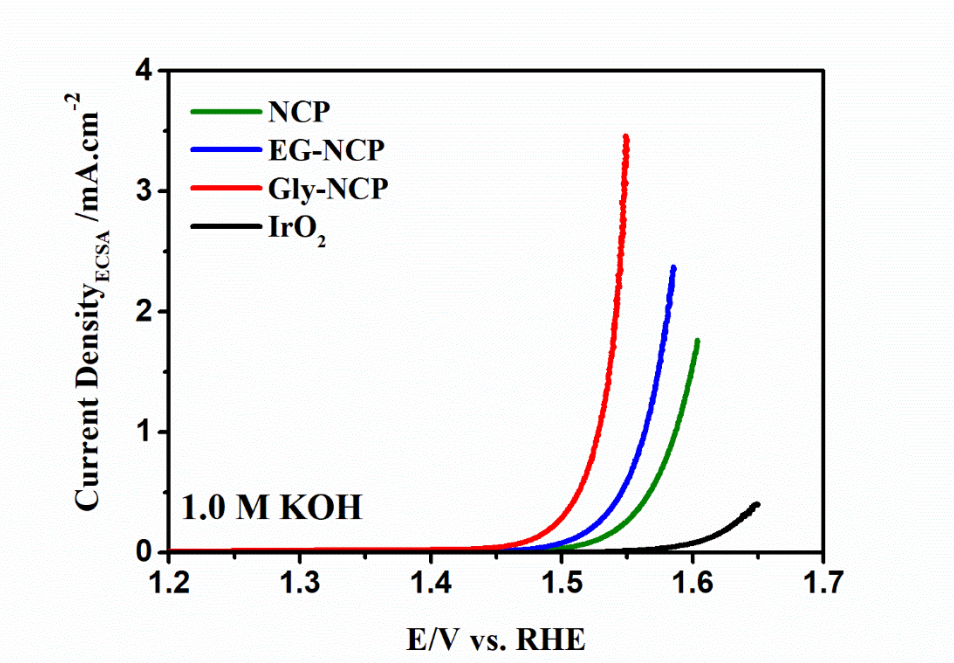

Figure S3. The ECSA normalized LSV curves for NCP, EG-NCP, Gly-NCP nanosheets (scan rate: 10 mVs^{-1})

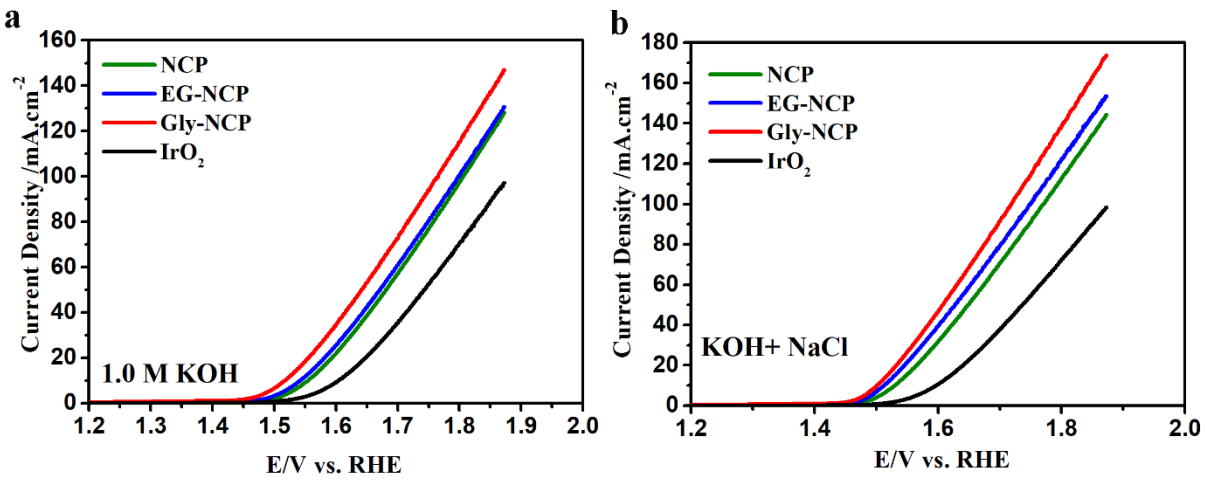

Figure S4. The LSV curves for NCP, EG-NCP, Gly-NCP nanosheets in (a) 1.0 M KOH and (b) 1.0 M KOH+0.5 M NaCl before *j*R correction (scan rate: 10 mV s^{-1}).

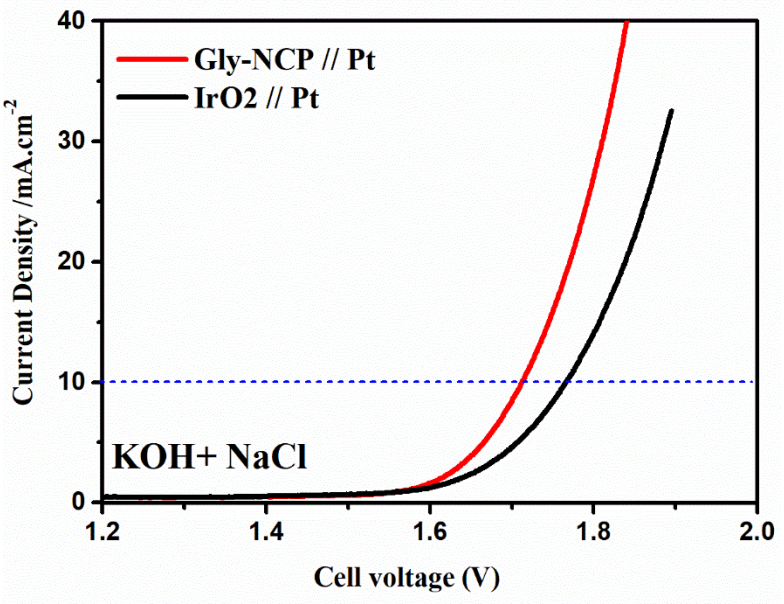

Figure S5. The LSV curve for overall alkaline saline water electrolysis of Gly-NCP//Pt and IrO_2//Pt under two electrode system (scan rate: 10 mVs^{-1}).

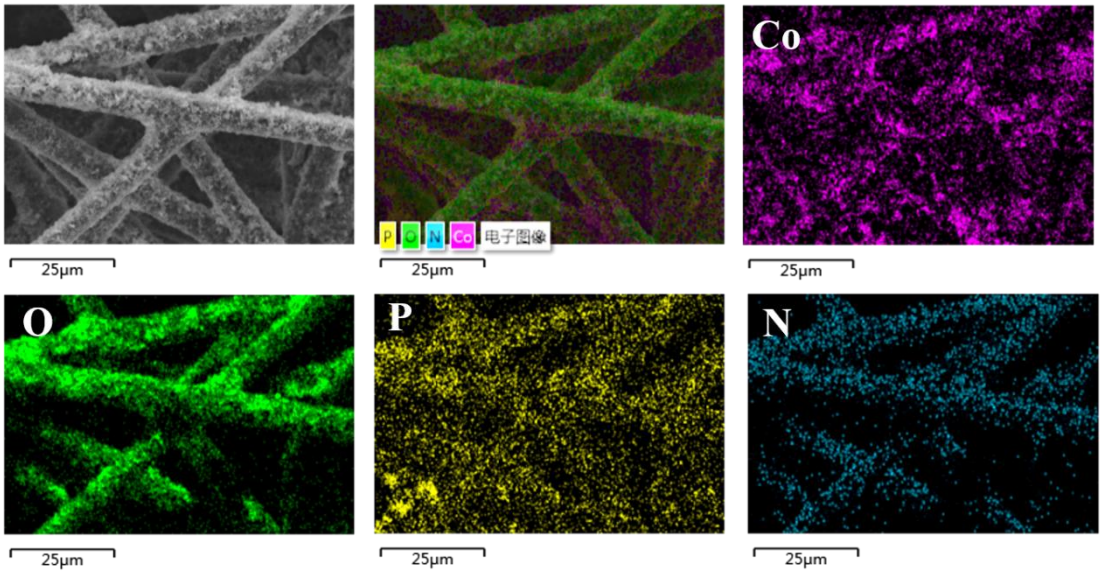

Figure S6. The SEM image and EDS maps of Gly-NCP electrode after 20 hours of stability test in 1.0 M KOH+0.5 M NaCl.

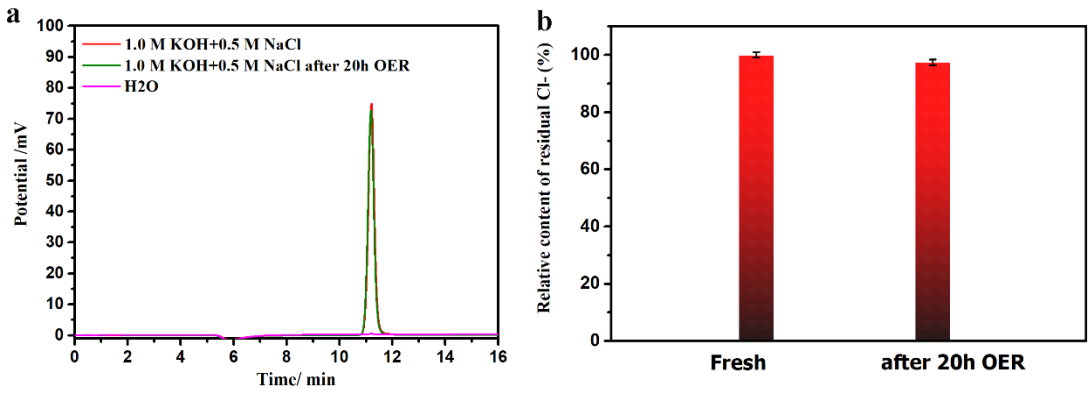

Figure S7. The Ion-Chromatography traces of diluted electrolyte (a) and relative content of residual Cl^- in KOH+NaCl electrolyte (b) before and after 20 h OER test catalyzed by Gly-NCP at 10 mA cm^{-2}.

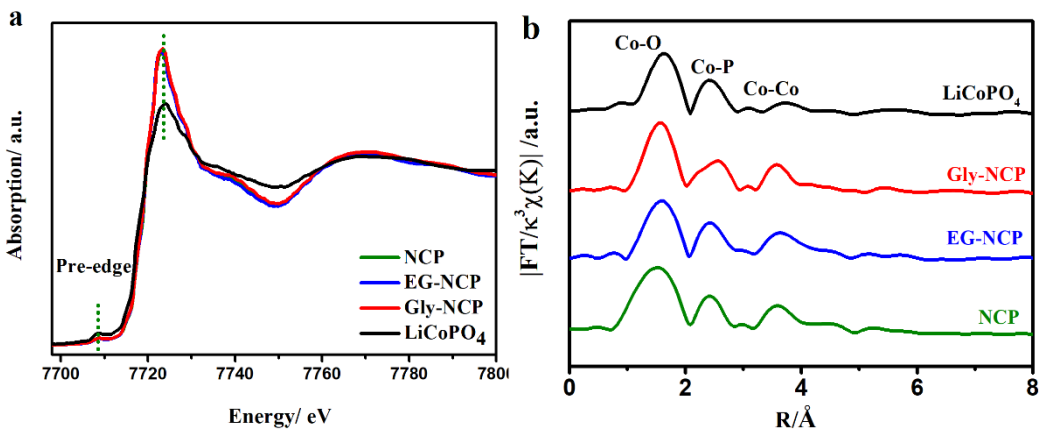

Figure S8. (a) XANES spectra and (b) FT-EXAFS spectra of as-prepared NCP, EG-NCP, Gly-NCP nanosheets and the reference of $LiCoPO_4$.

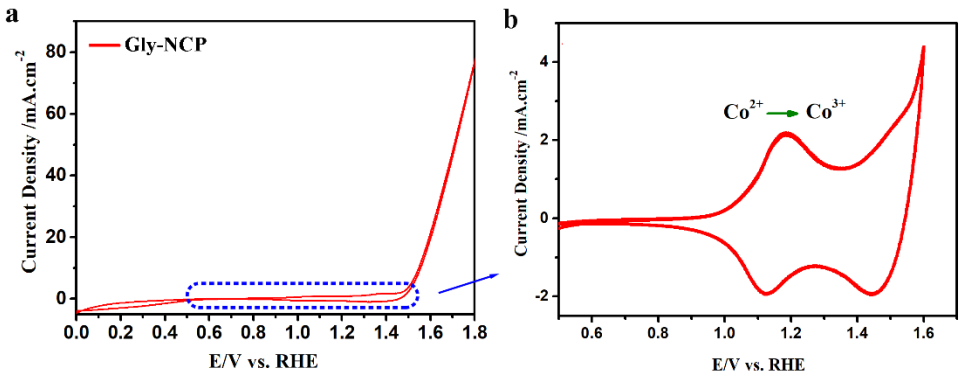

Figure S9. The CV curve of Gly-NCP electrode in 1.0 M KOH+0.5 M NaCl (scan rate: 50 mVs^{-1}).

Table S1. Comparison of electrocatalytic activity towards seawater oxidation for recently reported electrocatalysts

Electrocatalysts	Electrolyte	Overpotential	Tafel slope $mVdec^{-1}$	Stability	Reference
3D core-shell NiMoN@NiFeN	1.0 M KOH + 0.5 M NaCl	286 mV@ 100 mA cm^{-2}	-	Current increase <10% after 100 h	[1]
$Na_2Co_{1-x}Fe_xP_2O_7$	0.5 M NaCl + 0.1 M KOH	285 mV @ 100 mA cm^{-2}	56	40 mV increase after 100 h	[2]
Ni_2P-Fe_2P	1 M KOH seawater	305 mV @ 100 mA cm^{-2}	-	36 h stable at 100 mA cm^{-2}	[3]
NiFe/NiS_x-Ni foam	1 M KOH+ 0.5 M NaCl	380 mV @ 1500 mA cm^{-2}	-	500 h stable at 400-1000 mA cm^{-2}	[4]
S-(Ni,Fe)OOH	1 M KOH+ 0.5 M NaCl	278 mV @ 100 mA cm^{-2}	48.9	100 h stable at 100 mA cm^{-2}	[5]
NiFe-LDH	0.1 M KOH+0.5m NaCl	359 mV @ 10 mA cm^{-2}	50	480 mV increase after 2h operation	[6]
NiCo-DEA	seawater	Onset potential of 1.31 V	51	Keep 96% current after 8h at 1.5 V	[7]
NiNS	Overall seawater splitting	48.3 mA cm^{-2} at 1.8 V	112	Stable during 12 h operation	[8]
Gly-NCP	1.0 M KOH + 0.5 M NaCl	268 mV @ 100 mA cm^{-2}	39	13 mV increase after 20h operation	This work

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