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Supporting Information

3D nano-porous NiCoP as a highly efficient electrocatalyst for hydrogen evolution reaction in alkaline electrolyte

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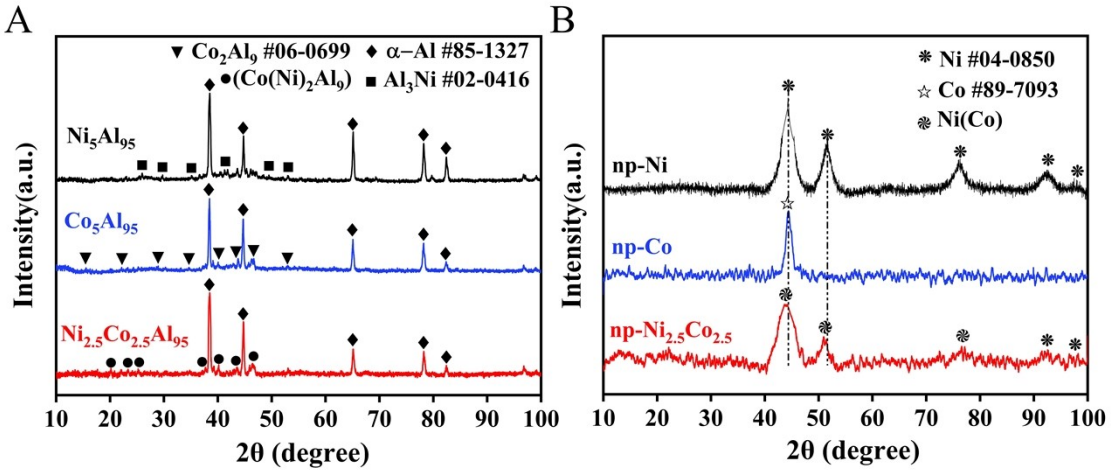

Figure S1. (A) XRD patterns of $Ni_xCo_{5-x}Al_{95}$ (x=5, 2.5, 0) precursor strips. (B) XRD patterns of np-Ni_xCo_{5-x} (x=5, 2.5, 0) dealloyed powder

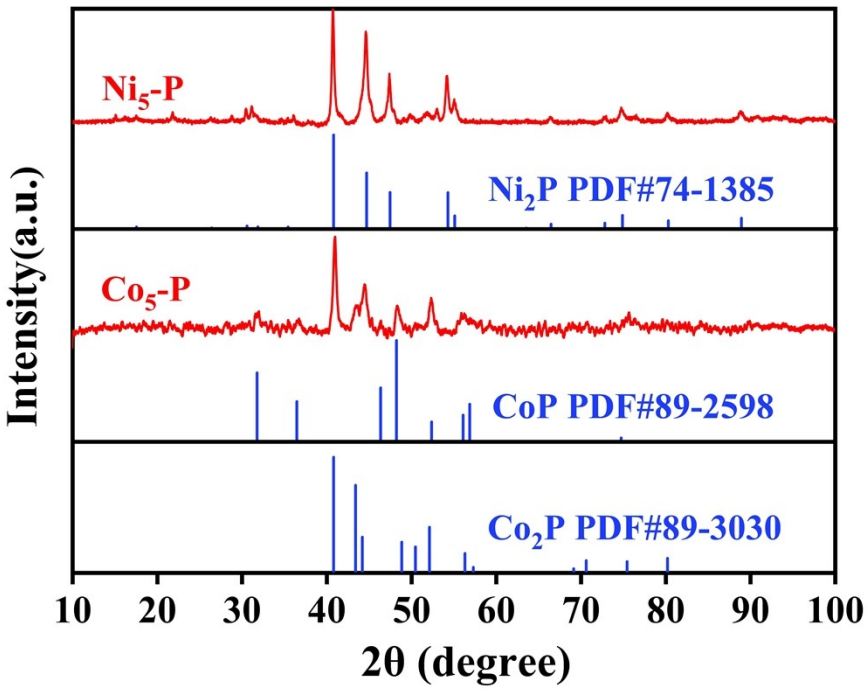

Figure S2. XRD patterns of Ni_5-P and Co_5-P.

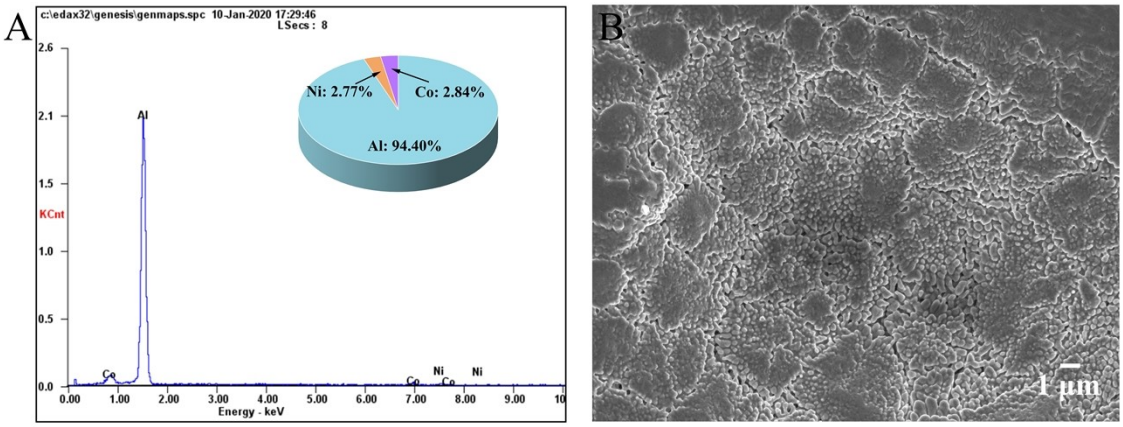

Figure S3. (A) EDX of $Ni_{2.5}Co_{2.5}Al_{95}$ precursor strips. The inset image corresponds to elemental content.

(B) SEM of $Ni_{2.5}Co_{2.5}Al_{95}$ precursor strips.

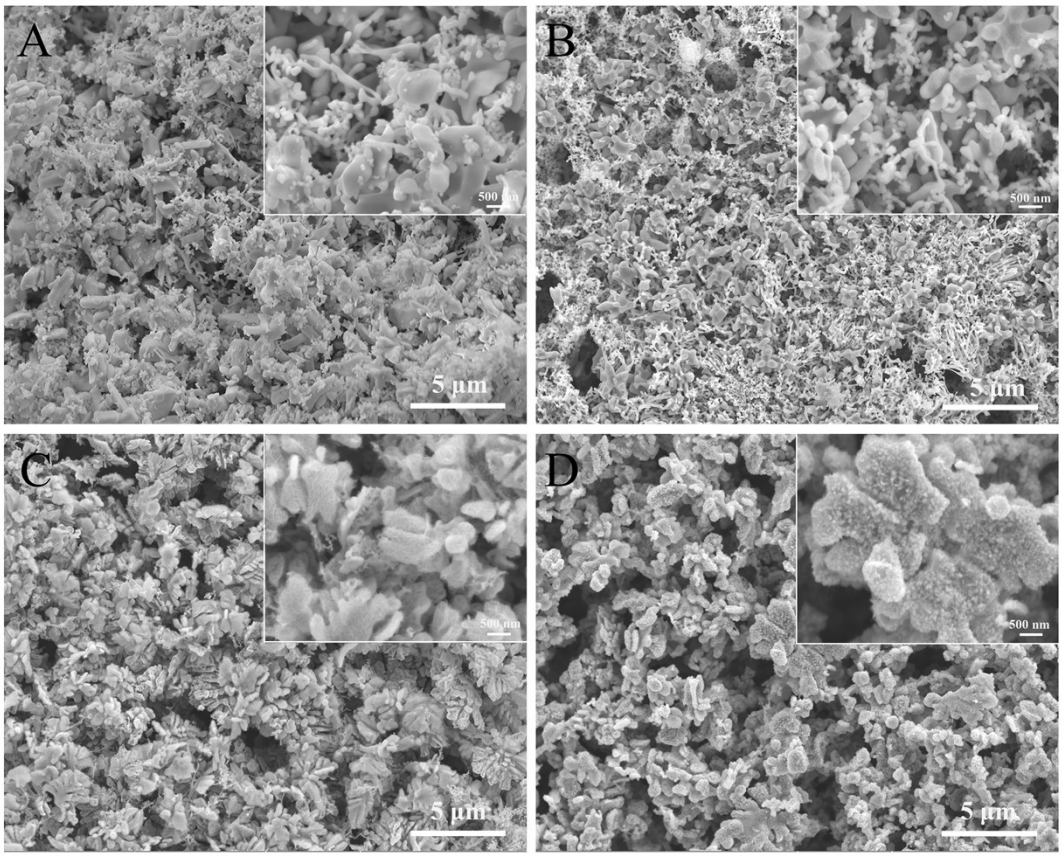

Figure S4. SEM images of (a) np-Ni5, (b) Ni5-P, (c) np-Co5, (d) Co5-P

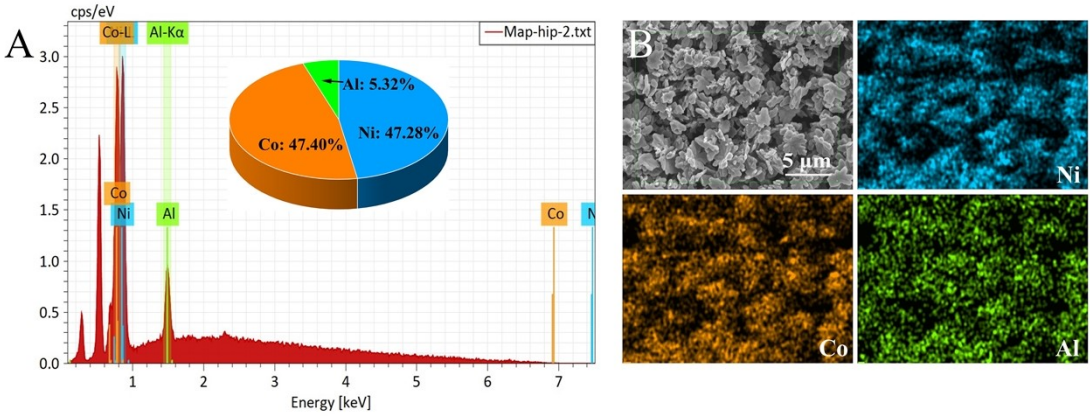

Figure S5. (A) EDX spectrum of np-$Ni_{2.5}Co_{2.5}$. The inset image corresponds to elemental content.

(B)Elemental mapping images of np-$Ni_{2.5}Co_{2.5}$

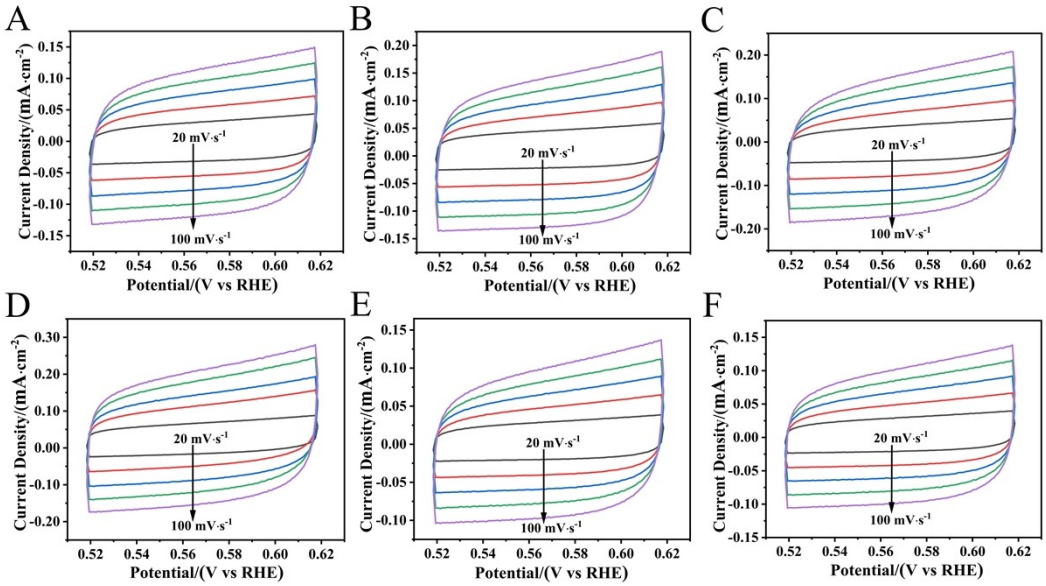

Figure S6. Cyclic voltammograms of (a) np-Ni_5, (b) Ni_5-P, (c) np-$Ni_{2.5}Co_{2.5}$, (d) $Ni_{2.5}Co_{2.5}$-P (e) np-Co_5, (f) Co_5-P

Table S1. Fitting data of each component in the equivalent circuit of each electrode

Electrodes	$R_s/\Omega \cdot cm^{-2}$	CPE/F	$R_{ct}/\Omega \cdot cm^{-2}$
np-Ni_5	1.212	1.531×10^{-3}	15.93
Ni_5-P	1.048	2.222×10^{-3}	17.45
np-$Ni_{2.5}Co_{2.5}$	1.216	5.238×10^{-3}	11.04
$Ni_{2.5}Co_{2.5}$-P	1.083	3.253×10^{-2}	10.93
np-Co_5	1.140	6.468×10^{-3}	55.35
Co_5-P	1.085	3.438×10^{-2}	13.01

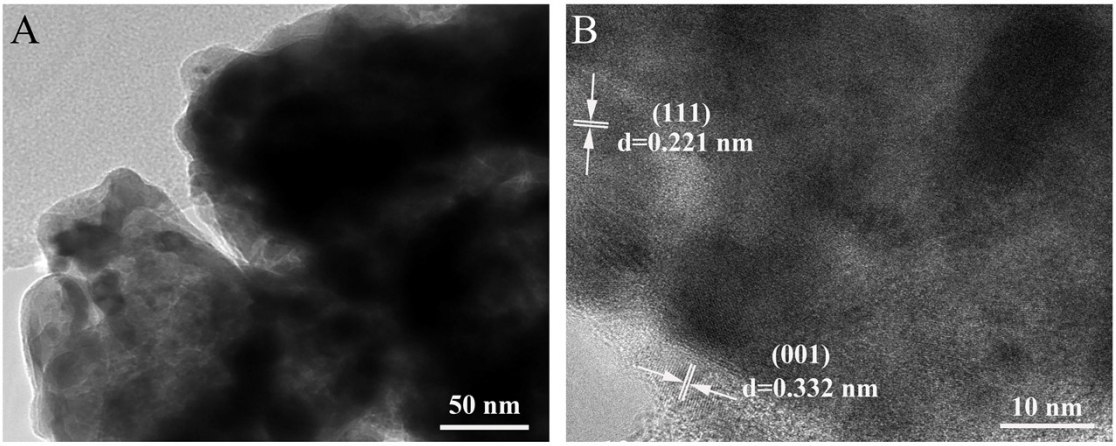

Figure S7. (A) TEM image of $Ni_{2.5}Co_{2.5}$-P after electrochemical HER test. (B) HRTEM image of $Ni_{2.5}Co_{2.5}$-P after electrochemical HER test.