Supporting Information for

Formamide-soluble solid-state ZnO as Zn source for synthesizing FeCo-NC with ultrahigh oxygen reduction reaction activity

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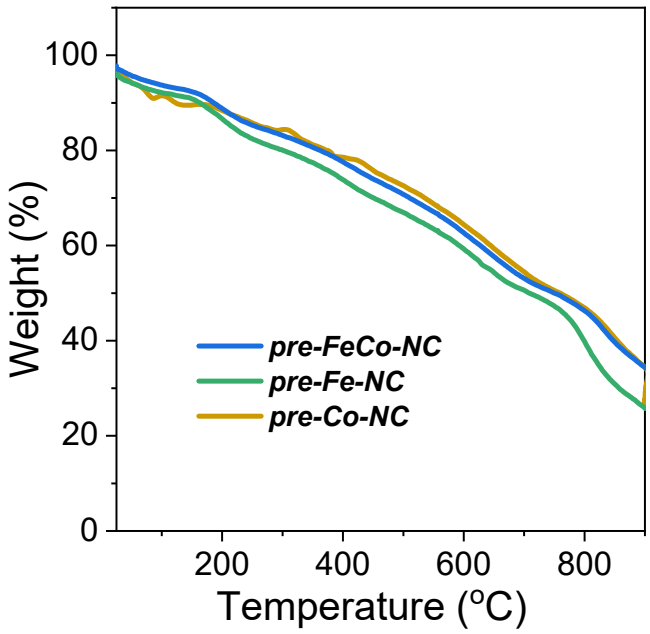

Figure S1. TGA of pre-FeCo-NC with comparison to pre-Fe-NC and pre-Co-NC, performed in N_2 protection.

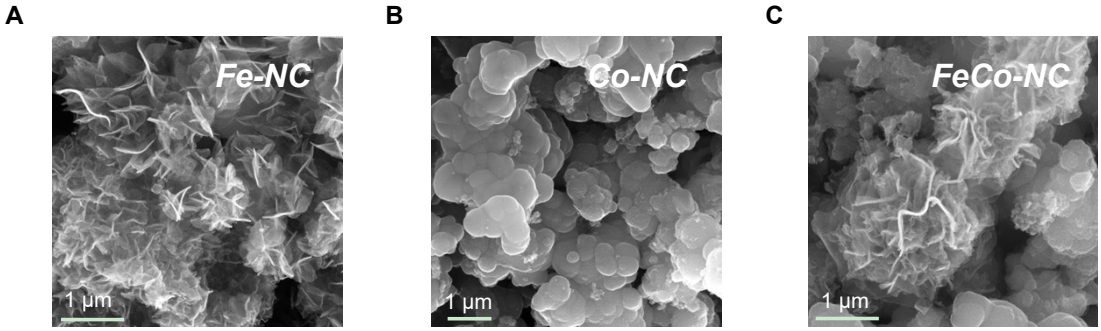

Figure S2. SEM images of (A) Fe-NC, (B) Co-NC, and (C) FeCo-NC.

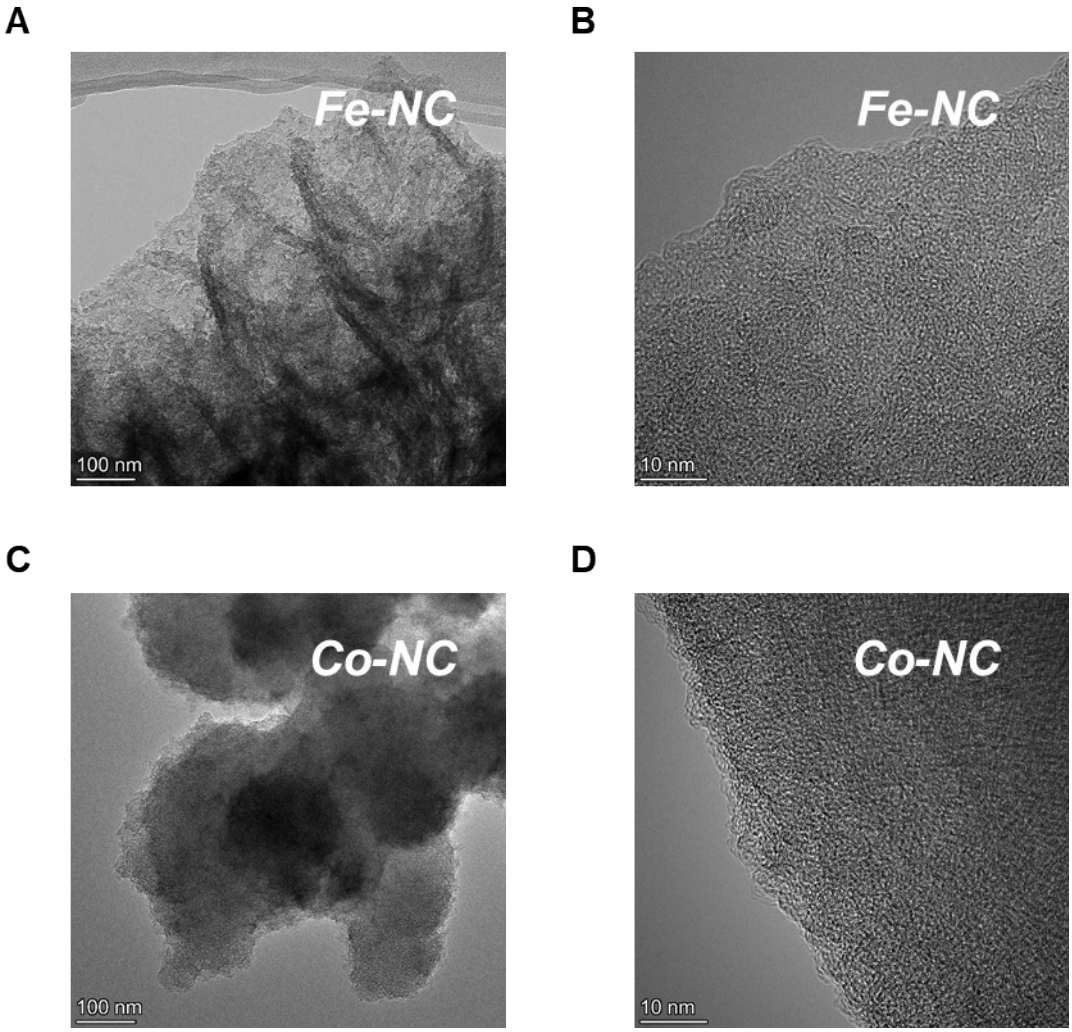

Figure S3. (A) TEM image and (B) HRTEM image of Fe-NC. (C) TEM image and (D) HRTEM image of Co-NC.

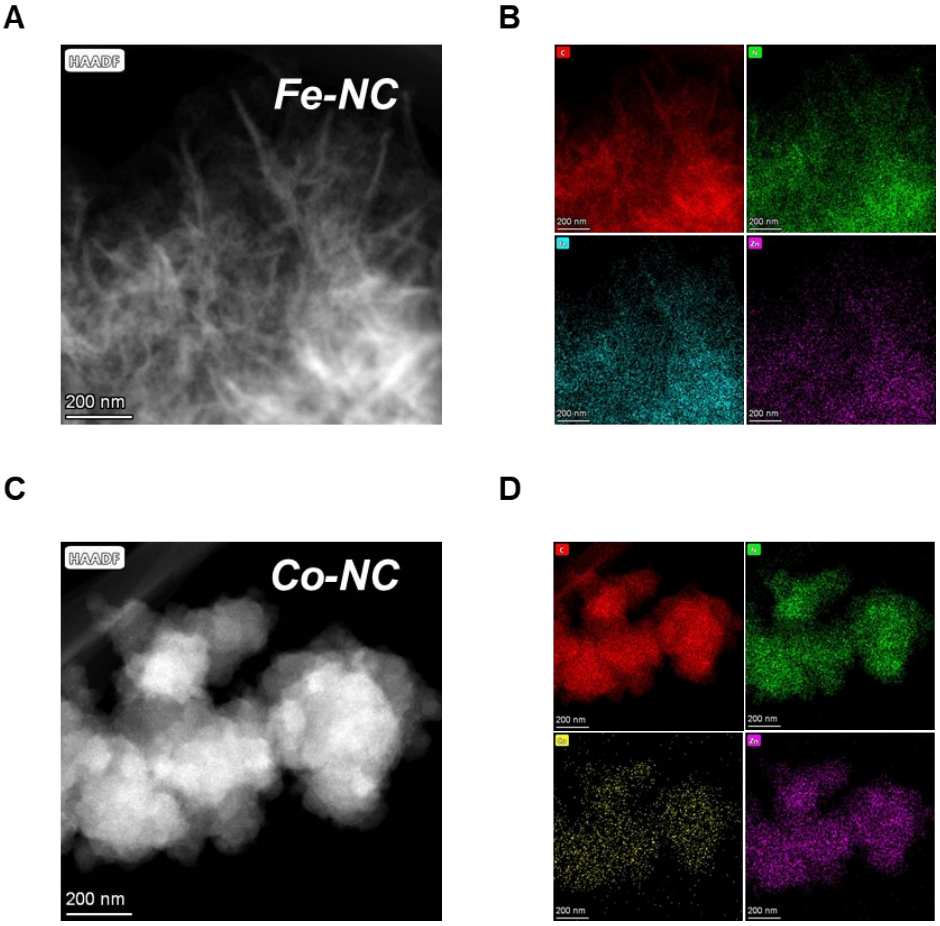

Figure S4. (A) HRTEM-HAADF image and (B) EDS mapping images of Fe-NC. (C) HRTEM-HAADF image and (D) EDS mapping images of Co-NC.

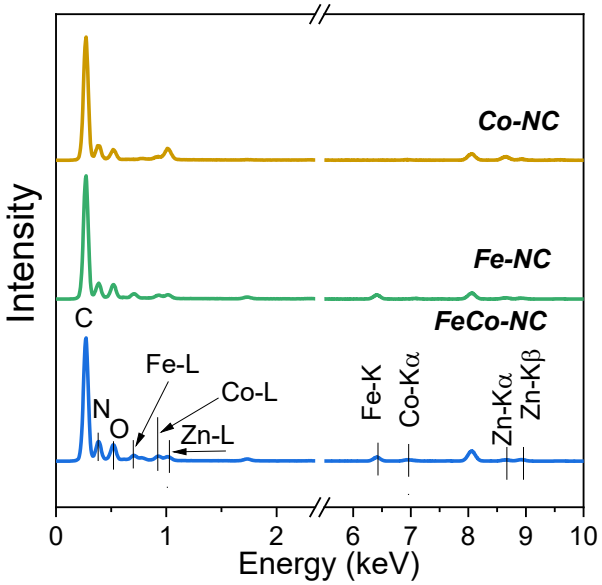

Figure S5. EDS spectra of Fe-NC, Co-NC, and FeCo-NC.

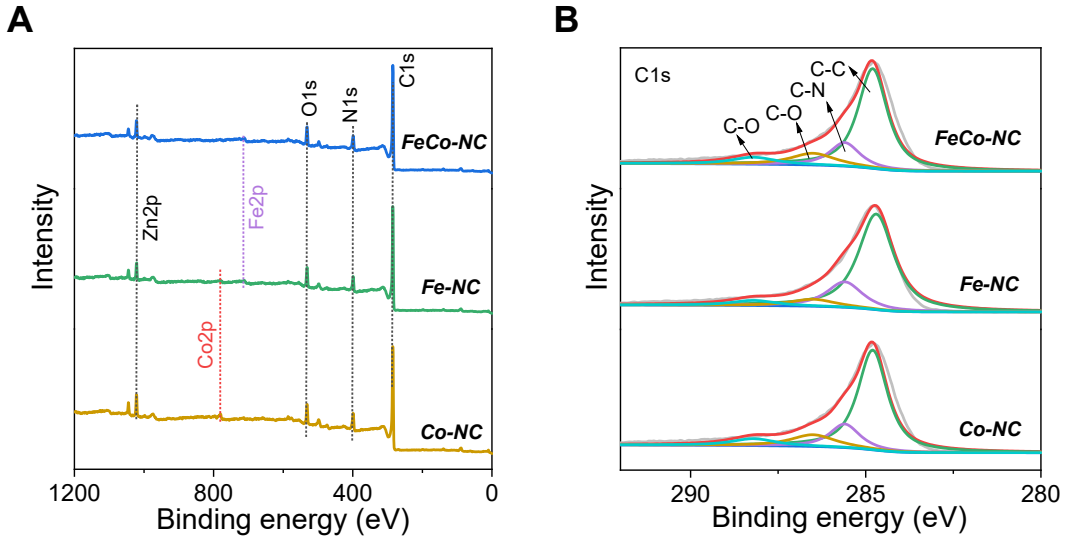

Figure S6. (A) XPS survey spectra and (B) C1s spectra of FeCo-NC with comparison to Fe-NC, Co-NC.

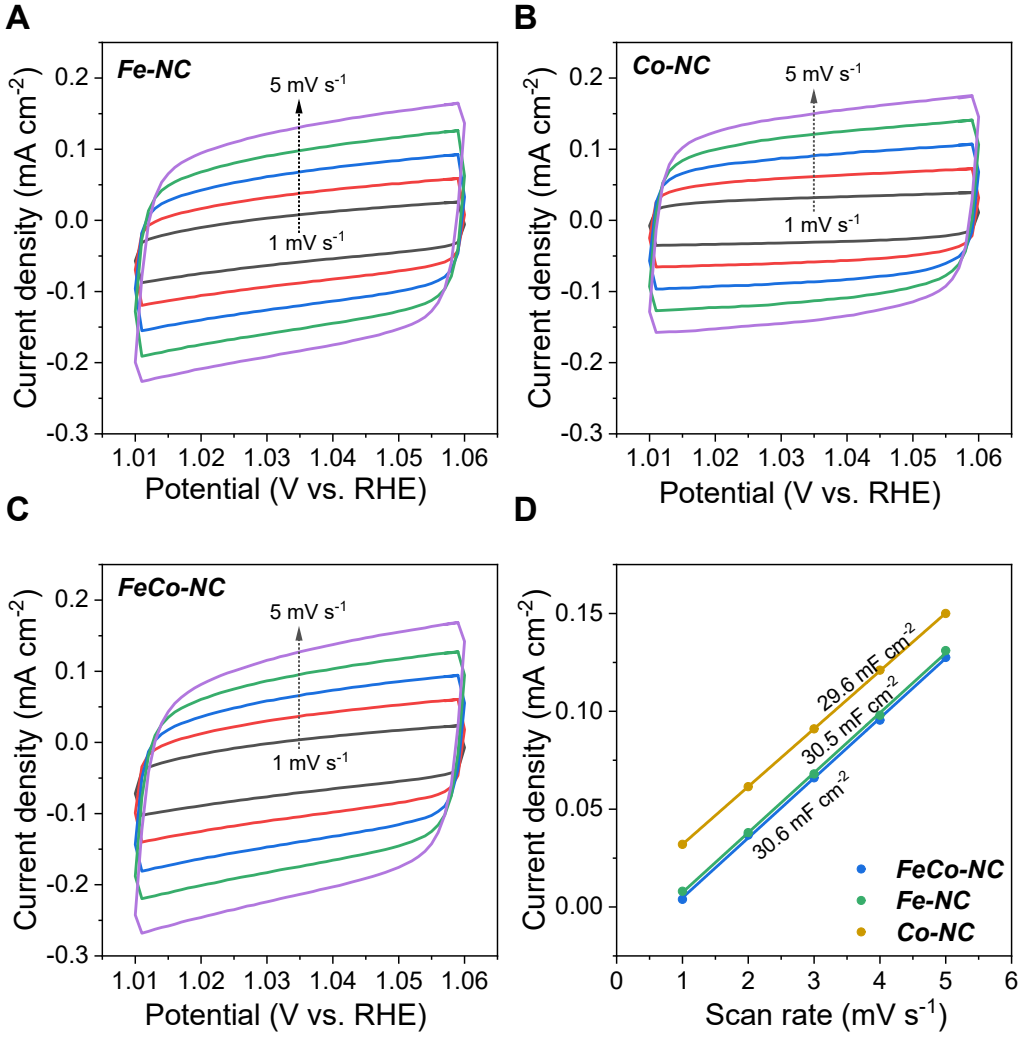

Figure S7. Cyclic voltammograms of (A) Fe-NC, (B) Co-NC, and (C) FeCo-NC at different rates ranging from 1−5 mV s^{-1} in the potential region from 1.01 to 1.06 V vs. RHE. (D) Plots of capacitive current density at 1.035 V versus scan rate, corresponding slope can be used for determining the electrochemically accessible surface area.

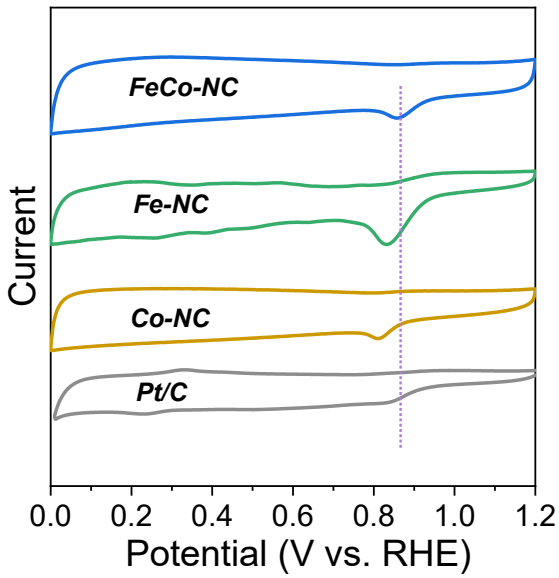

Figure S8. CV profiles of FeCo-NC with comparison to Fe-NC, Co-NC, and Pt/C, scan rate = 20 mV s^{-1}.

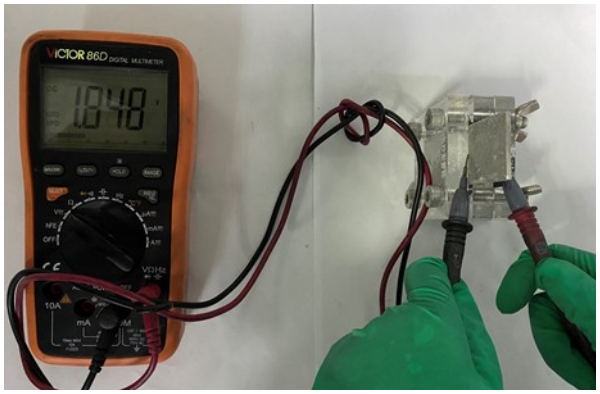

Figure S9. Picture of open-circuit voltage measurement of FeCo-NC-assembled Al-air battery.

Table S1. XPS element contents of FeCo-NC with comparison to Fe-NC and Co-NC

Sample	C (at.%)	N (at.%)	O (at.%)	Fe (at.%)	Co (at.%)	Zn (at.%)
FeCo-NC	80.75	9.54	7.26	0.75	0.47	1.23
Fe-NC	81.64	8.99	7.16	0.98	-	1.22
Co-NC	79.76	10.59	7.23	-	0.83	1.59

Table S2. ICP elemental contents of Fe-NC, Co-NC, and FeCo-NC.

Sample	Fe (wt.%)	Co (wt.%)
Fe-NC	5.06	-
Co-NC	-	1.82
FeCo-NC	3.12	1.05