

## Supporting Information

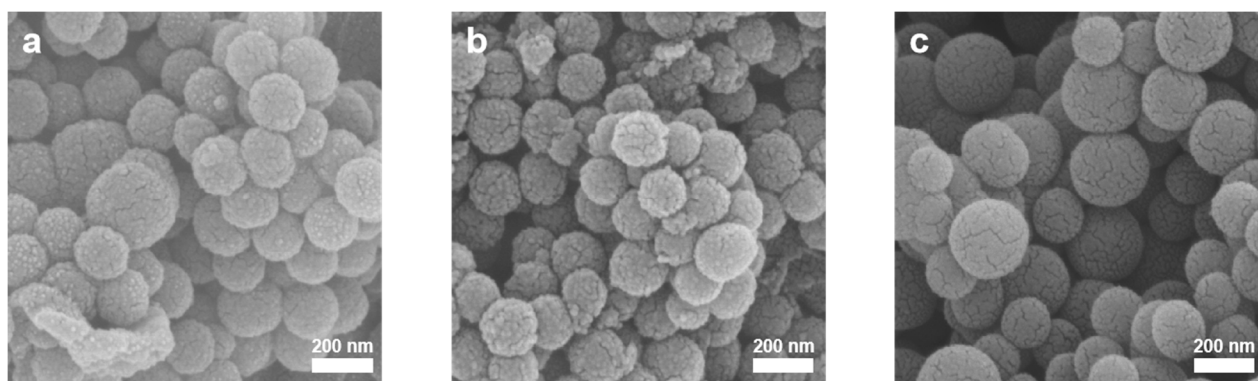
### Pt-Fe-Co ternary metal atoms doping catalyst for toward high efficiency alkaline oxygen reduction reaction

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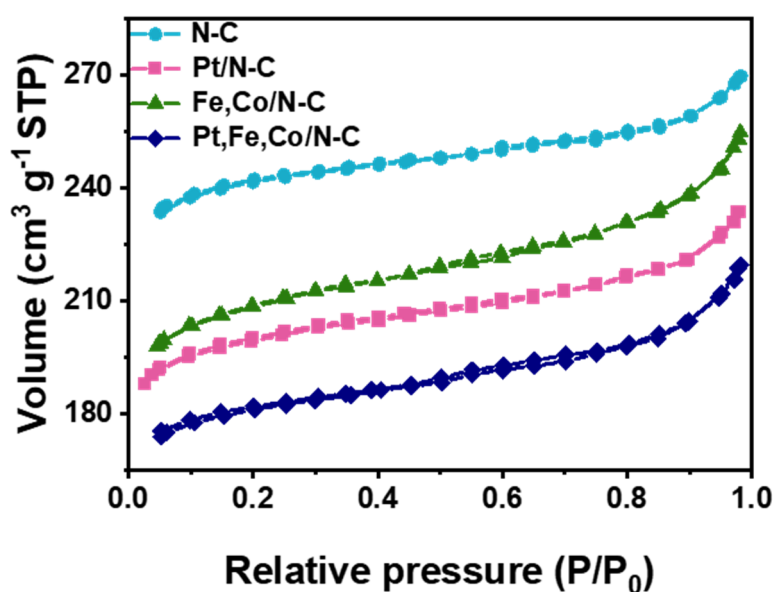
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**Figure S1.** The SEM images of comparison samples. (a) Pt/N-C, N-C, (b) Fe, Co/N-C, (c) N-C



**Figure S2.** Nitrogen adsorption-desorption isotherms of Pt, Fe, Co/N-C and Fe, Co/N-C, Pt/N-C, N-C

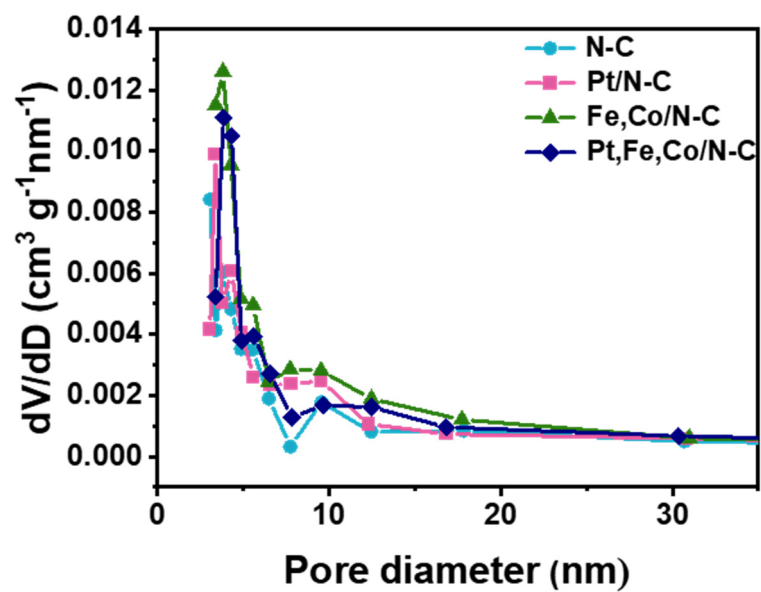


Figure S3. Pore size distributions of Pt, Fe, Co/N-C and Fe, Co/N-C, Pt/N-C, N-C.

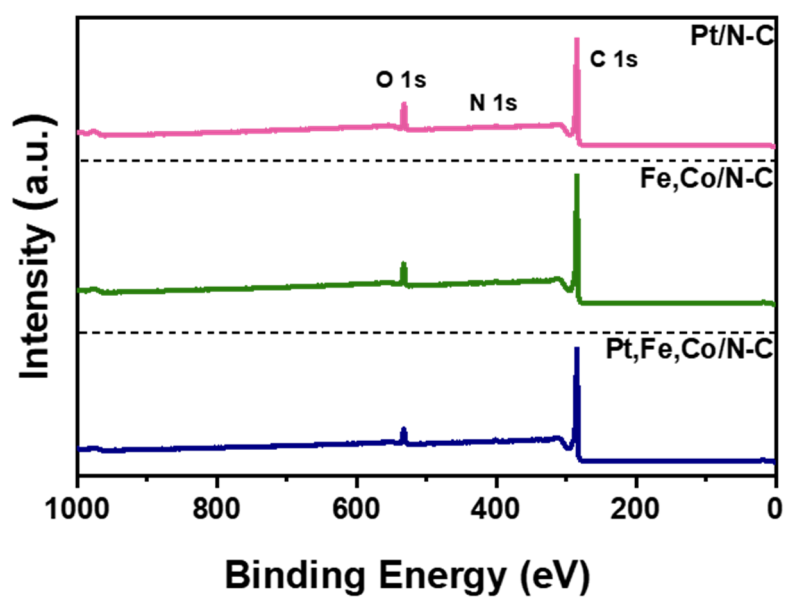


Figure S4. XPS survey spectrum of Pt, Fe, Co/N-C and Fe, Co/N-C, Pt/N-C.

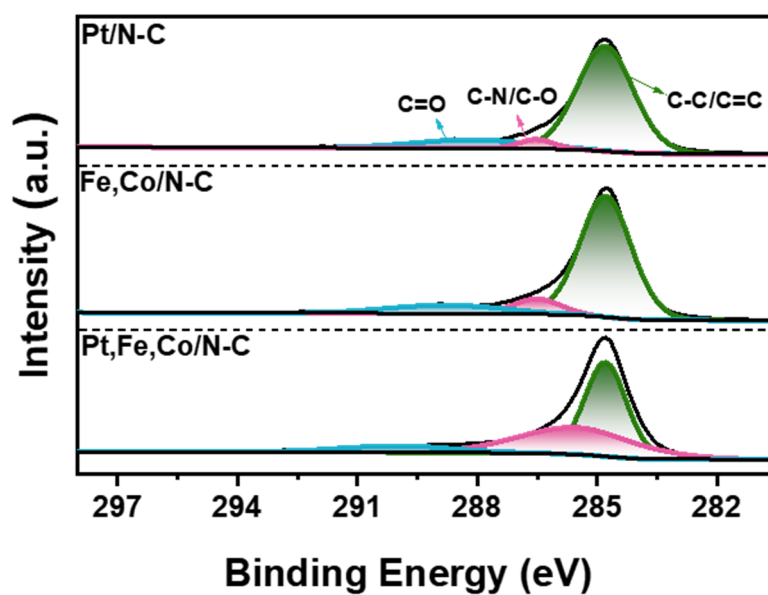


Figure S5. XPS C 1s spectra of Pt, Fe, Co/N-C and Fe, Co/N-C, Pt/N-C.

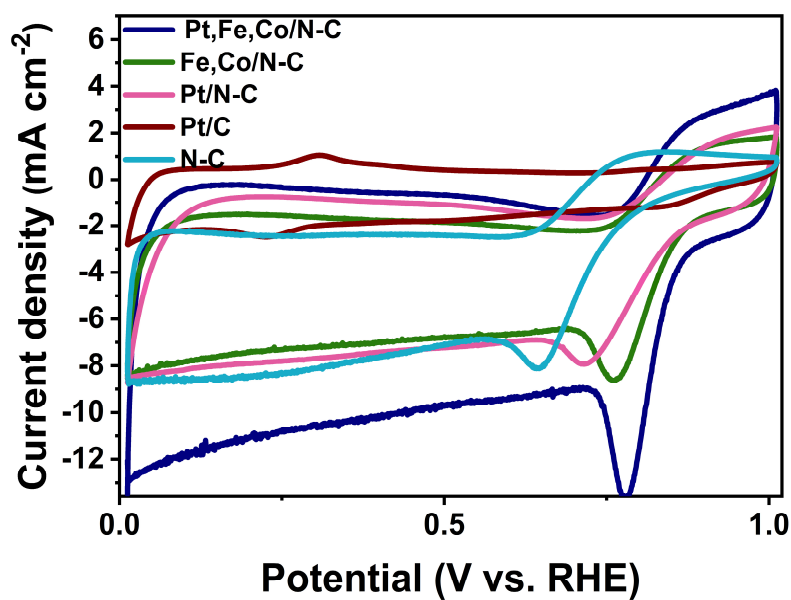


Figure S6. CV curves of Pt,Fe, Co/N-C , Fe, Co/N-C, Pt/N-C, N-C and Pt/C in an O<sub>2</sub>-saturated 0.1 M KOH solution

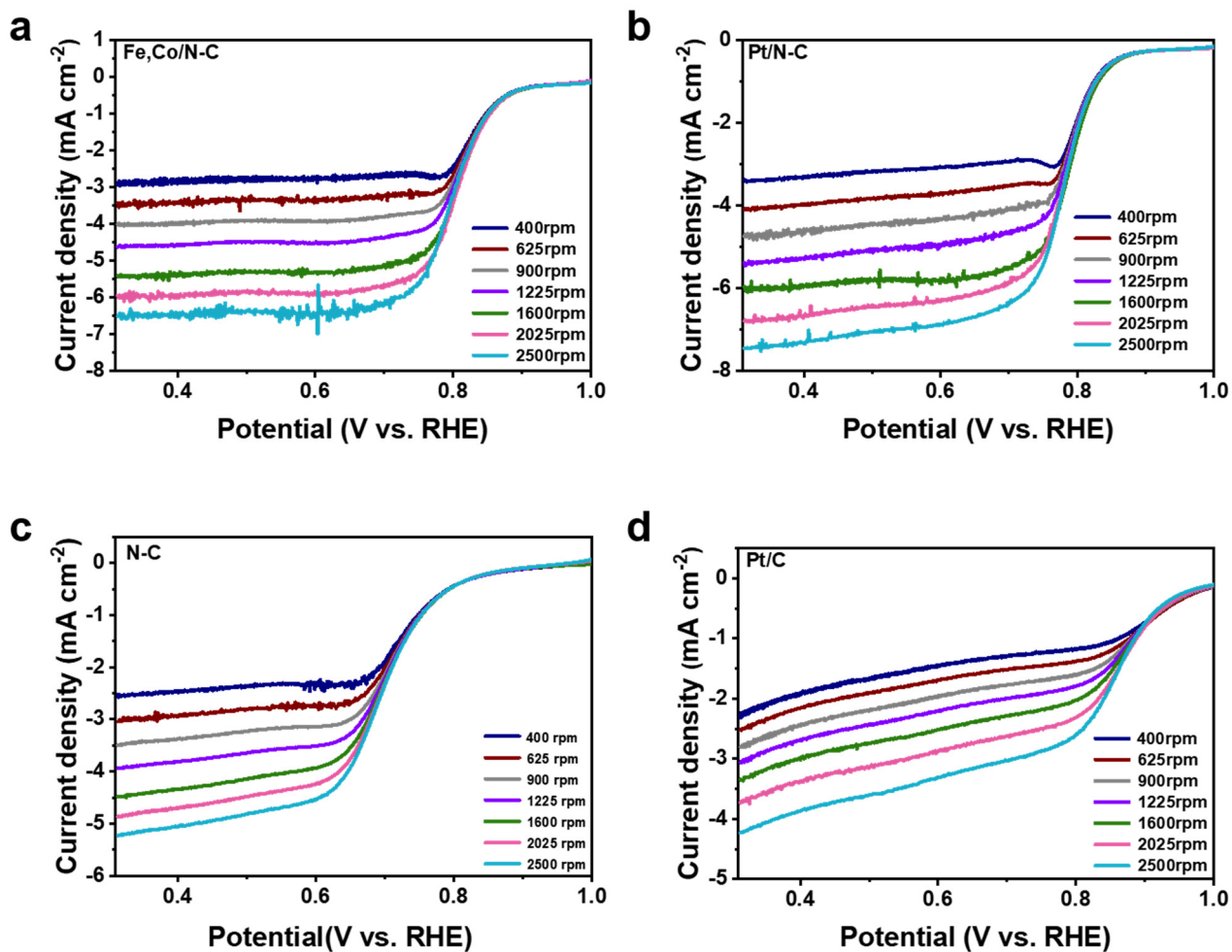


Figure S7. ORR polarization curves at different rotating rates of comparison samples. (a) Fe, Co/N-C, (b) Pt/N-C (c) N-C and (d) Pt/C

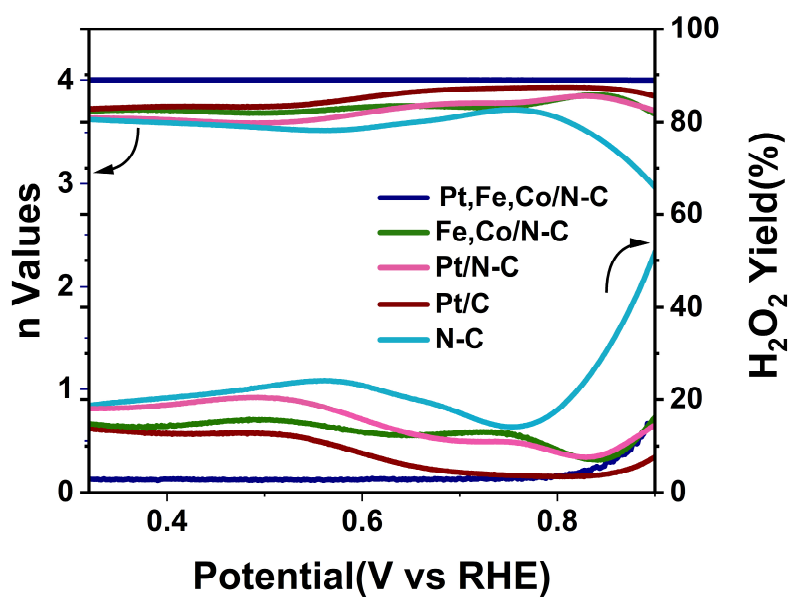


Figure S8. The number of transferred electrons and H<sub>2</sub>O<sub>2</sub> yield of Pt, Fe, Co/N-C, Fe, Co/N-C, Pt/N-C, Pt/C and N-C

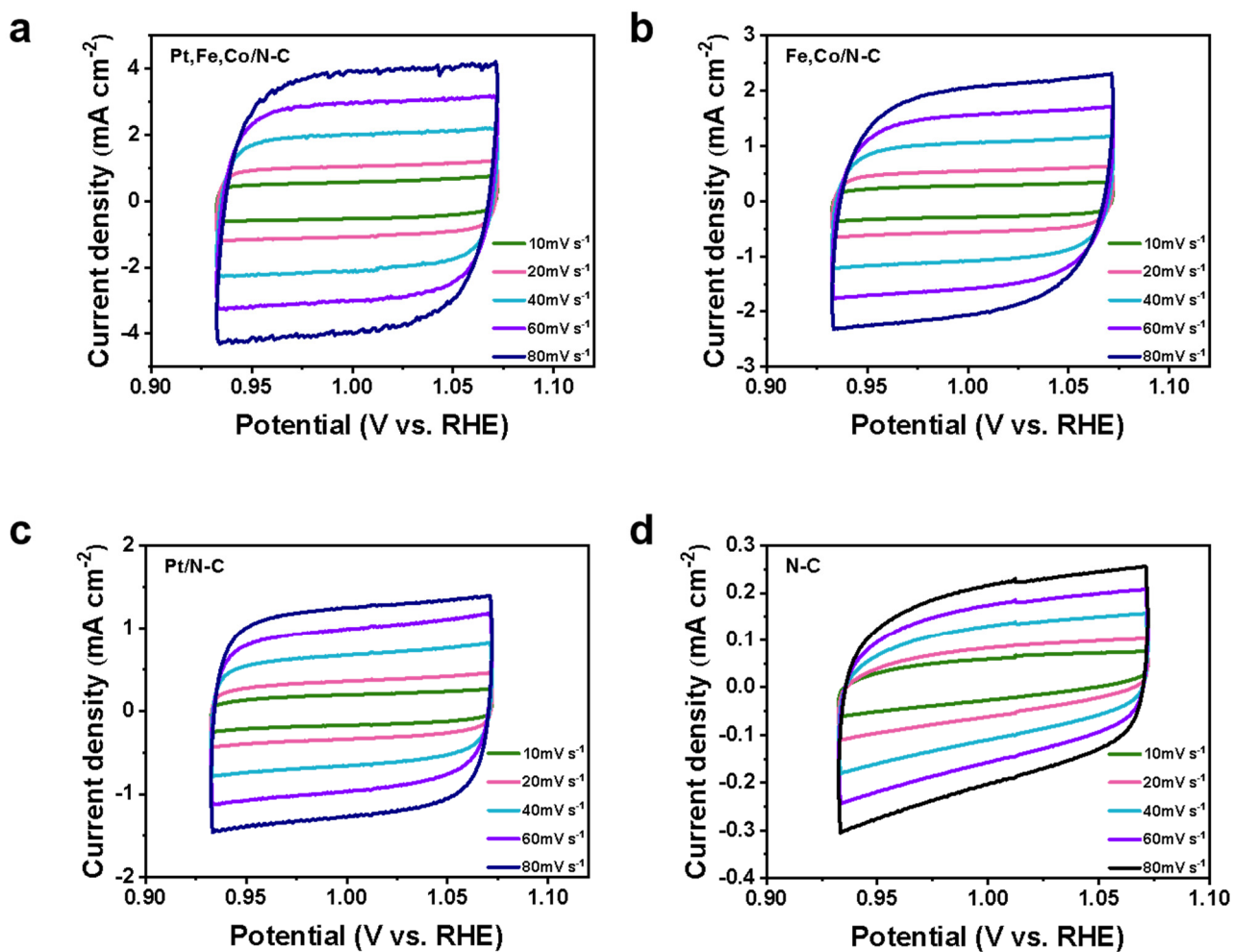


Figure S9. Scan rate dependence of current densities in CV curves for different samples. (a) Pt, Fe, Co/N-C, (b) Fe, Co/N-C, (c) Pt/N-C and (d) N-C.

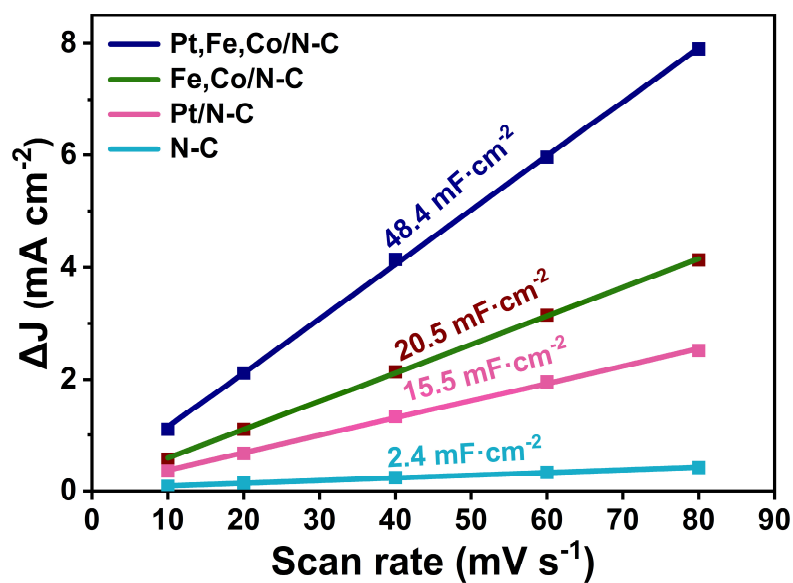
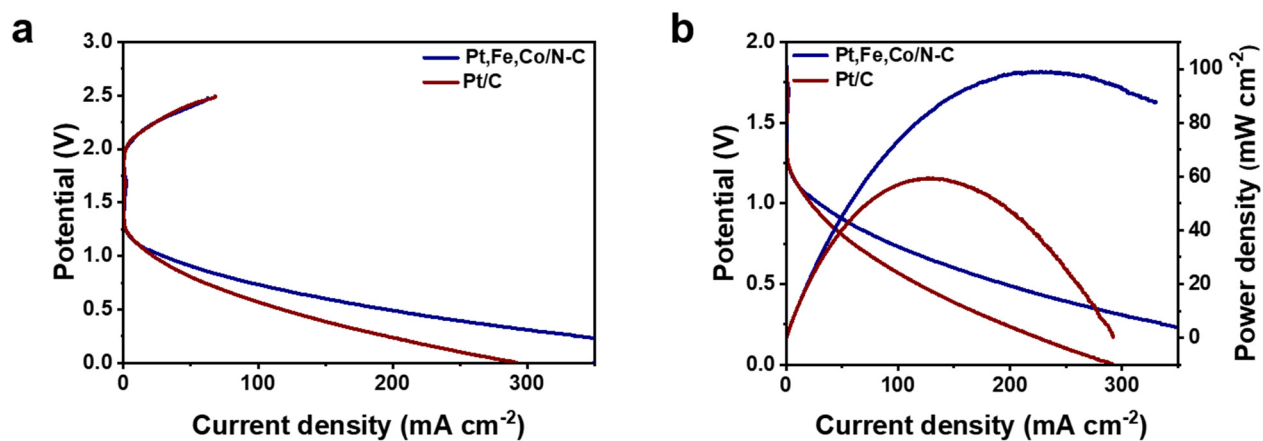


Figure S10. The  $C_{dl}$  curves of Pt, Fe, Co/N-C, Fe, Co/N-C, Pt/N-C, and N-C



**Figure S11.** (a) Charge-discharge curves of Pt, Fe, Co/N-C and 20wt% Pt/C; (b) Discharge polarization and power density curves of Pt, Fe, Co/N-C and 20wt% Pt/C

**Table S1.** Materials elemental composition

Sample	C (at.%)	N (at.%)	Pt (at.%)	Fe (at.%)	Co (at.%)
Pt/N-C	98.37	1.17	0.07	0.24	0.15
Fe, Co/N-C	98.54	1.05	0	0.22	0.19
Pt, Fe, Co/N-C	98.06	1.48	0.04	0.21	0.21