Supporting Information

Efficient FeCo nanoalloy catalysts derived from F127-assisted metal-organic frameworks for oxygen reduction reaction

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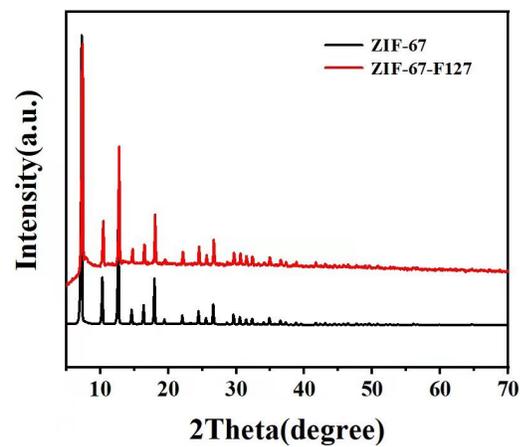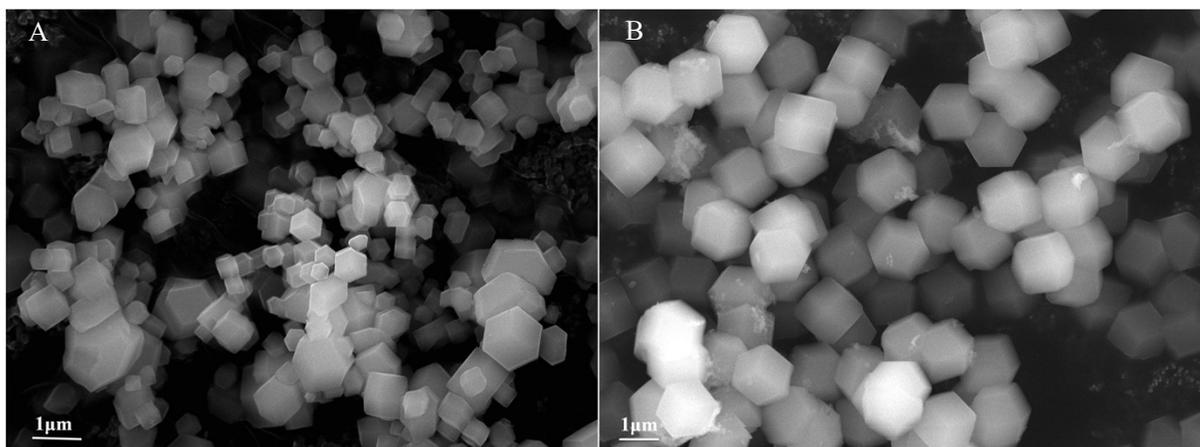
Fig.S1 XRD pattern of ZIF-67 and ZIF-67-F
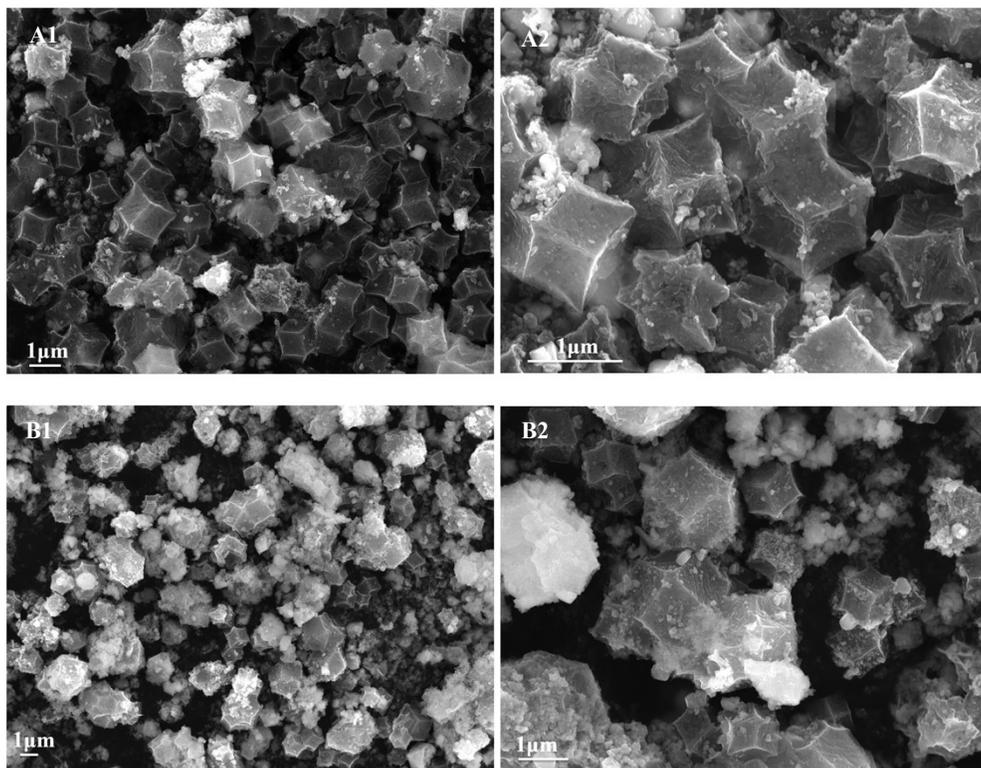127

Fig.S2 SEM images of （A）ZIF-67 and（B）ZIF-67-F
127

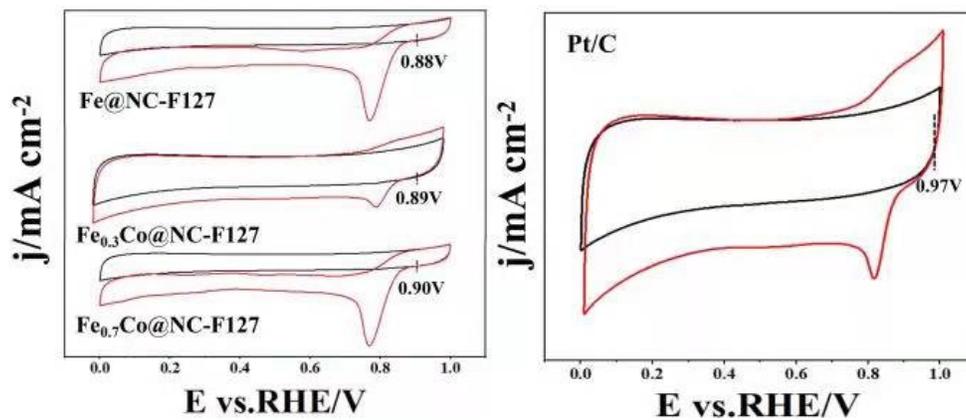Fig.S3 SEM images: (A1-A2) $Fe_{0.3}Co@NC-F127$ and (B1-B2) $Fe_{0.7}Co@NC-F$ 127

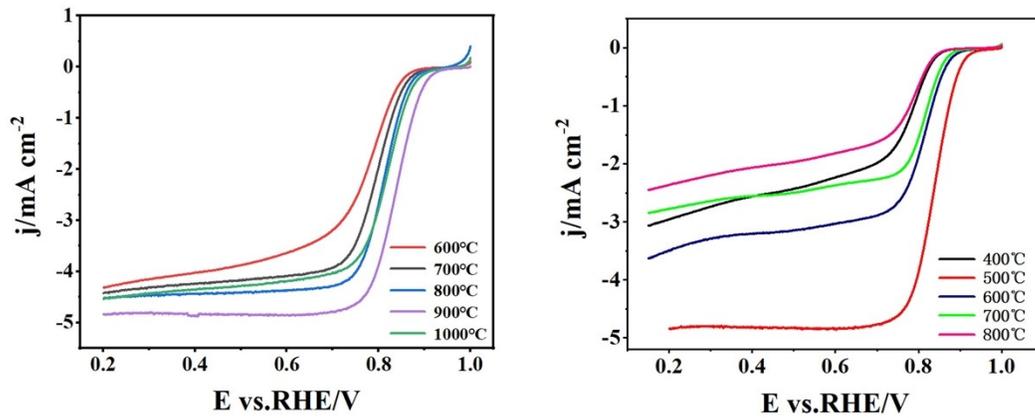Fig.S4 Comparative CV curves of samples at 1600 rpm in O_2-saturated 0.1 M KOH

Fig.S5 LSV curves of $Fe_{0.5}Co@NC-F127$ catalysts (A) prepared at different temperatures of the first pyrolysis when the second pyrolysis temperature was fixed at 500 °C; (B) prepared at different temperatures of the second pyrolysis when the first pyrolysis temperature was fixed at 900°C.

Table 1S Relative percentages of atoms of samples based on the XPS results

Sample	Fe	Co	N	C	O	Cl
$Fe_{0.5}Co@NC-F127$	5.15	9.25	3.78	48.63	24.39	8.80
Co@NC-F127	---	3.71	9.39	72.96	13.94	---
Fe@NC-F127	14.48	---	7.25	42.72	33.59	1.96

Table S2 The ORR performance values of previously reported non-precious catalysts

| Samples	Onset potential(V)	Half-wave potential (V)	Limiting current Density(mAcm^{-2})	Ref.
MnFn$_2$O$_4$/NiCo$_2$O$_4$	0.88	0.76	5.01	Appl.Catal. B. 2018, 236, 413-419
Fe$_3$/Co$_1$-NC	0.87	0.82	5.50	Inorg.Chem.Front 2021, 8, 109-121
Fe$_{1.2}$Co@NC/NCNTs	0.84	0.82	5.60	ACS.Sustainable Chem.Eng. 2019, 7, 8530-8541.
Co$_4$N@NC	0.90	0.82	4.36	Appli. Catal. B Environm 2020, 275, 119104
FeCo-NC-850	0.99	0.86	5.80	Appli.Surf.Sci.2019, 487, 496-502.
Co-Fe BMOF		0.89	5.40	J. Am. Chem. Soc 2019, 141, 10744-10750.
CoFe/NH-C NS		0.84	4.60	ACS Sustainable Chem.Eng 2019, 7, 15278-15288.
Fe$_{0.5}$Co@NC-F127	0.91	0.84	4.95	This work
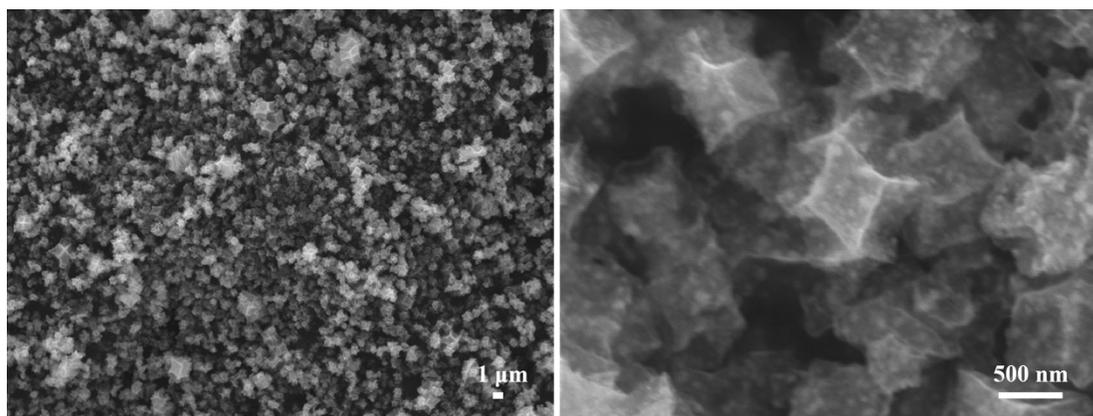
Fig.S6 SEM of Fe$_{0.5}$Co@NC-F127 after recycling for ORR.