Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Informationtion

A Novel Fe/N/C Electrocatalyst Prepared from Carbon-Supported Iron(Ⅱ) Comlex of Macrocyclic Ligands for Oxygen Reduction Reaction

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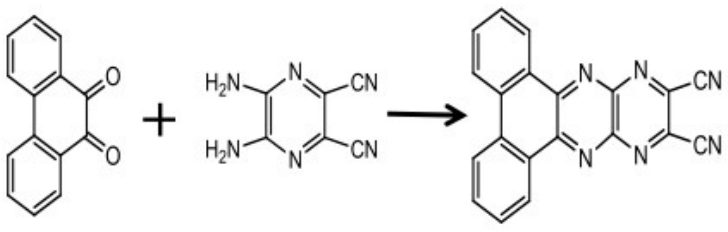

Figure S1 Synthetic procedure of 2,3-DCTBT

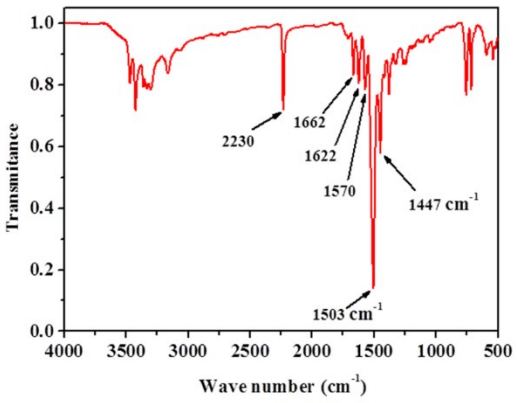

Figure S2. The IR spectrum of 2, 3-DCTBT.

Figure. S2 shows the FTIR of 2,3 - DCTBT. There are two absorption peaks at 1503 cm^{-1} and 1622 cm^{-1}, which are the two characteristic absorption peaks of benzene ring. Three obvious peaks at 1662cm^{-1},1570cm^{-1} and 1447cm^{-1} are the absorption peaks of C = N. There is a strong absorption peak at 2230cm^{-1}, which is absorption peak of -CN. Generally, strong absorption peaks appear at 1700 cm^{-1} for carbonyl group, and obvious double peaks appear at 3300 cm^{-1} – 3600 cm^{-1} for amino group. These characteristic absorption peaks do not appear in Figure S1, indicating that there is no carbonyl and amino group in organic matter, which is consistent with the literature report, indicating that 2,3 - DCTBT is successfully synthesized.

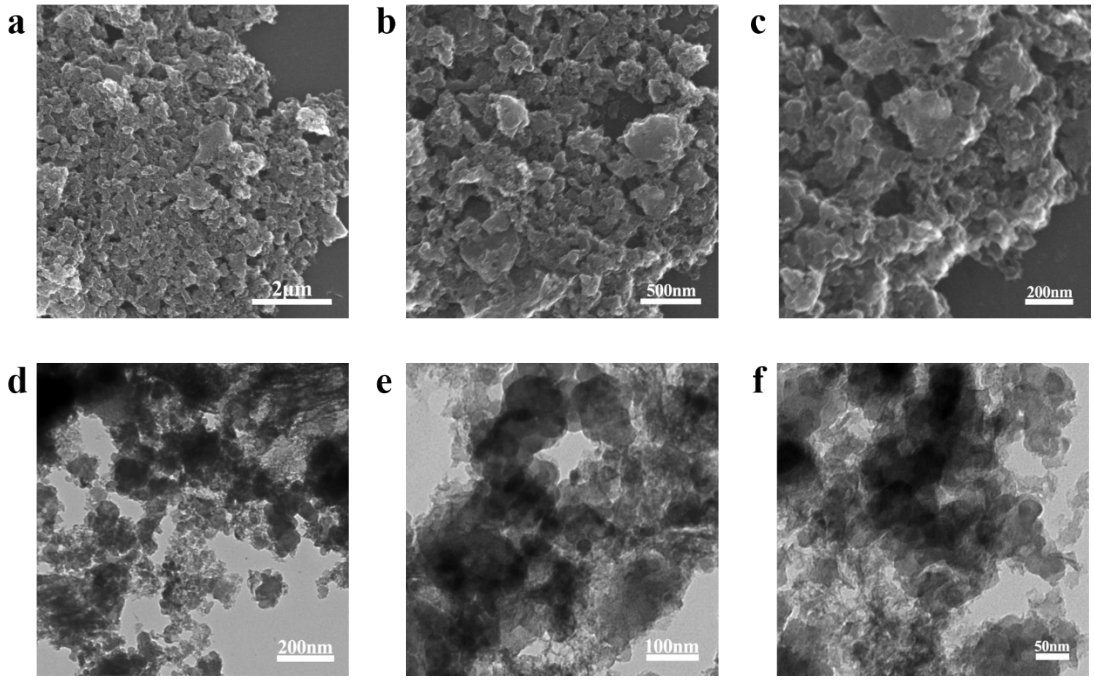

Figure S3. a), b) and c)SEM images of Fe/N/C-800. d), e) and f) TEM images of Fe/N/C-800.

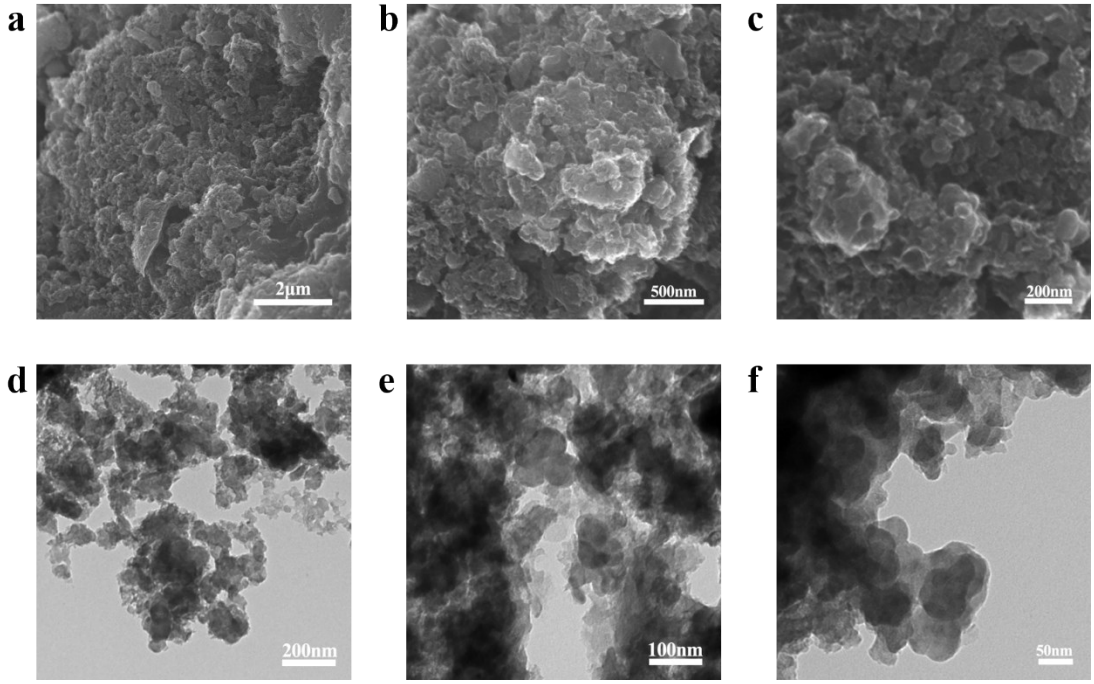

Figure S4. a), b) and c)SEM images of Fe/N/C-900. d), e) and f) TEM images of Fe/N/C-900.

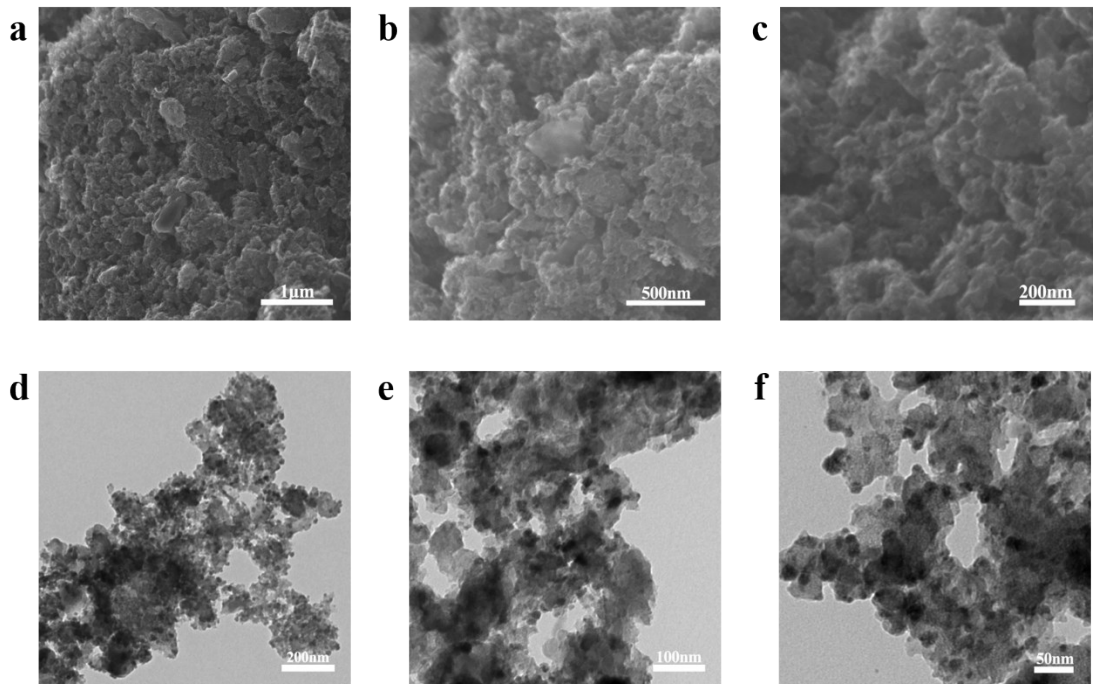

Figure S5. a), b) and c)SEM images of Fe/N/C-1000. d), e) and f) TEM images of Fe/N/C-1000.

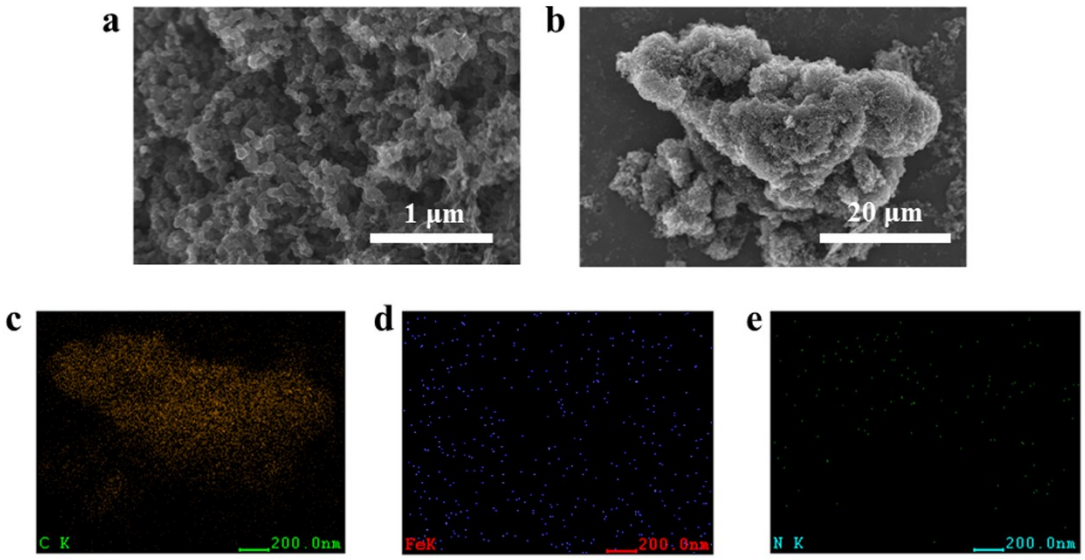

Figure S6. a) and b) SEM images of Fe/N/C-900. c), d) and e) Elemental mapping image of Fe/N/C-900.

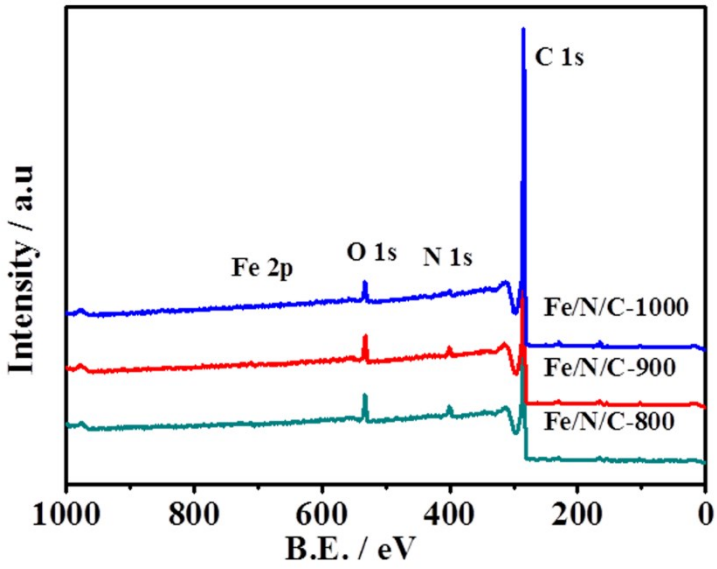

Figure S7. Full XPS spectra of Fe/N/C-800, Fe/N/C-900 and Fe/N/C-1000.

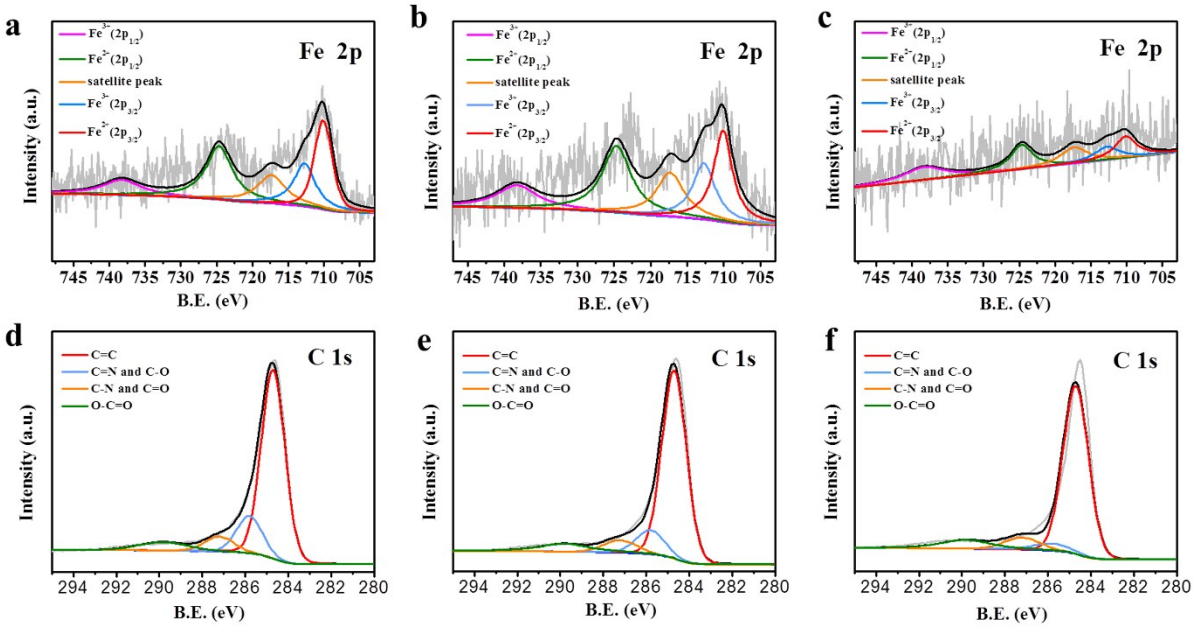

Figure S8. The high-resolution Fe 2p spectra of d) Fe/N/C-800, e) Fe/N/C-900 and f) Fe/N/C-1000. The high-resolution C 1s spectra of a) Fe/N/C-800, b) Fe/N/C-900 and c) Fe/N/C-1000.

Sample	BET surface area (m^2g^{-1})	Micropore volume (cm^3g^{-1})
Fe/N/C-800	219.996	0.058
Fe/N/C-900	267.018	0.139
Fe/N/C-1000	177.154	0.067

Table S1 The BET surface area and pore volume of Fe/N/C-800,900,1000

Table S2 Summary of performance for ORR in 0.1 M KOH.

Catalysts	E_{onset} (V vs. RHE)	$E_{1/2}$ (Vs. RHE)	Reference
Fe/N/C-900	**0.98**	**0.82**	**This work**
SA-Fe/NG	/	0.8	1
Fe/OES	1.0	0.85	2
Fe–N/C–700	0.956	0.84	3
Fe–N/C catalyst	0.923	0.81	4
p-CNT@Fe1.5@GL	0.91	0.81	5
Fe-N x /C catalyst	0.94	0.82	6
Fe-ISAs/CN	0.9	/	7
FeN_4 -GN	1.05	0.86	8
Fe-N-SCCFs	1.03	0.883	9
p–Fe–N–CNFs	0.85	0.74	10
Fe–SA/PC–700–5	/	0.91	11

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