Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Self-template Synthesis of Highly Efficient Hollow Structure Fe/N/C Electrocatalysts for Oxygen Reduction Reaction

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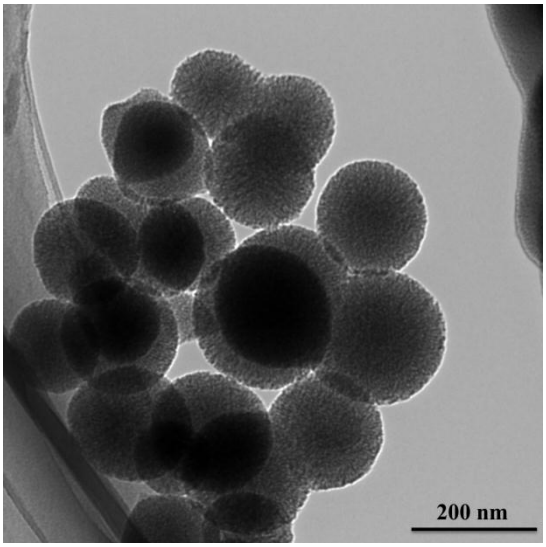

Figure S1. TEM images of MF

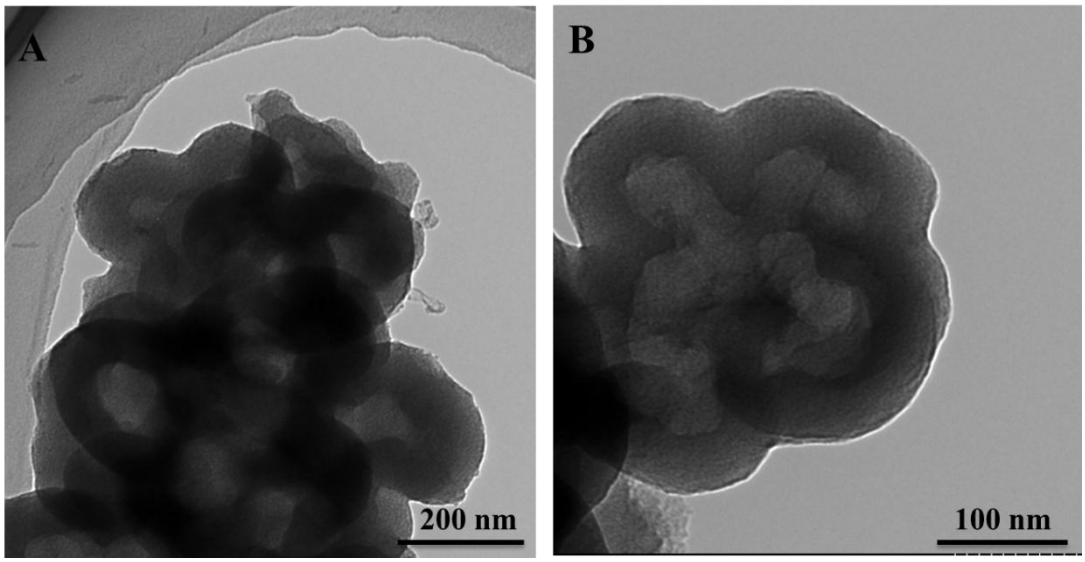

Figure S2. TEM images of PDA@MF-Fe-800

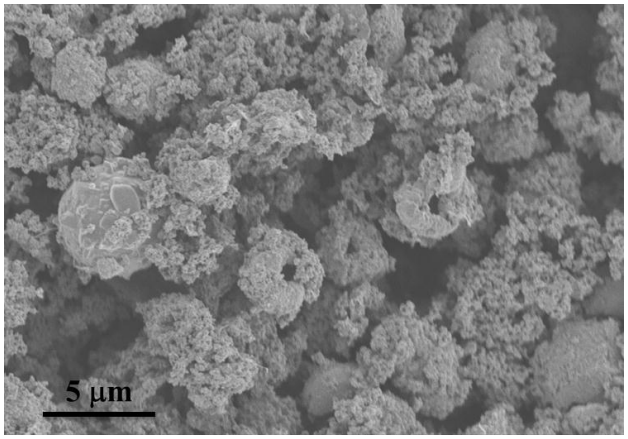

Figure S3. SEM images of Fe/N/C

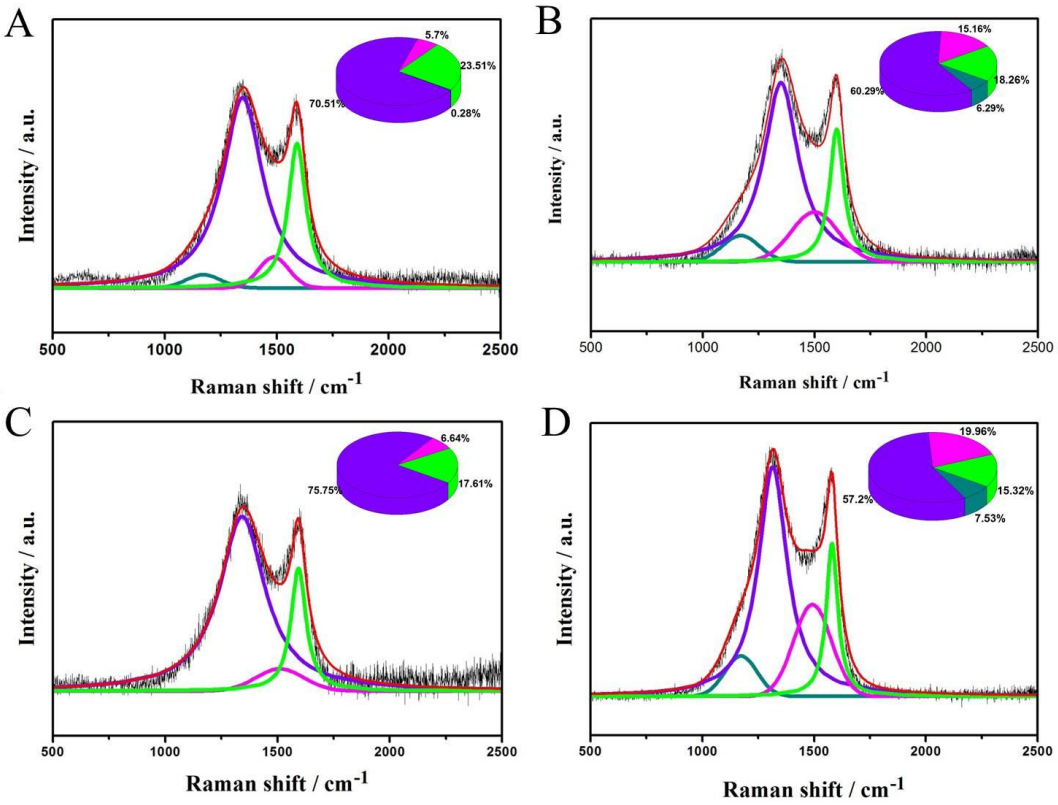

Figure S4. Raman spectra recorded with (A) Fe/N/C; (B) PDA@MF-Fe-800; (C) PDA@MF-800; (D) MF-800.

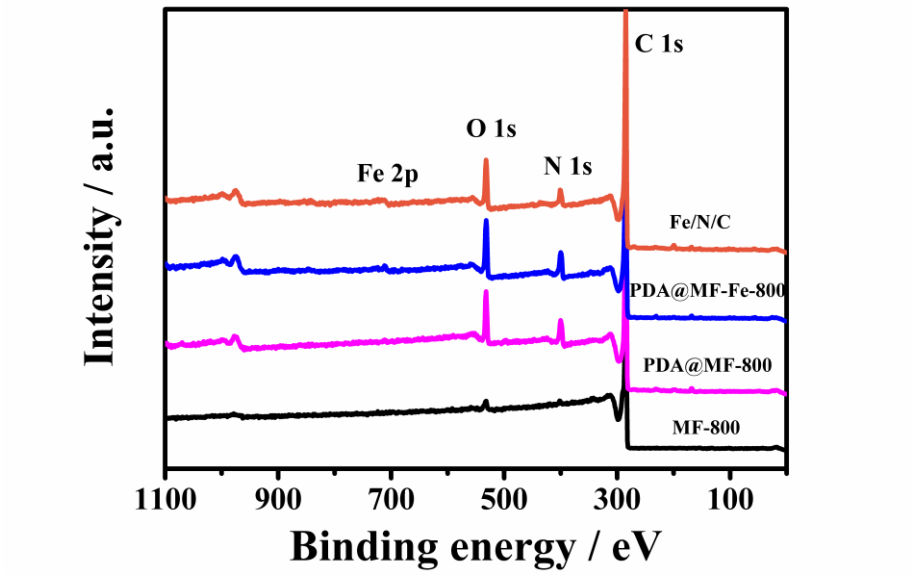

Figure S5. XPS spectra of Fe/N/C, PDA@MF-Fe-800, PDA@MF-800 and MF-800

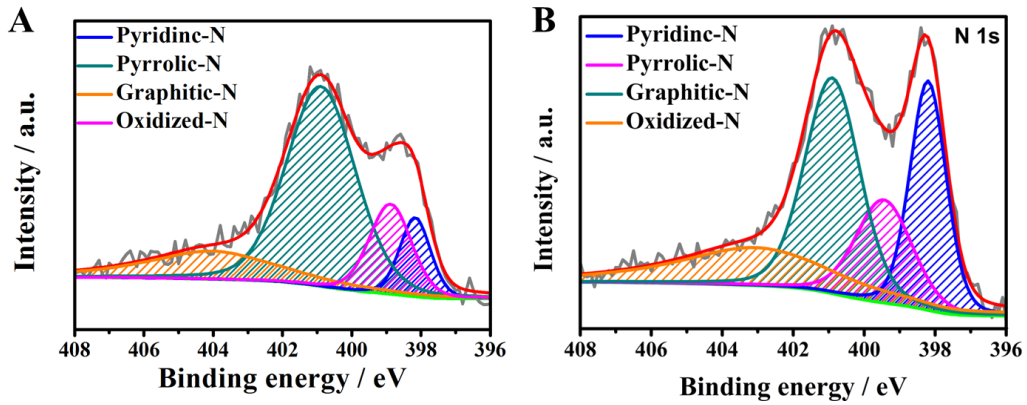

Figure S6. XPS spectra in the N 1s of (A) MF-800; (B) PDA@MF-800

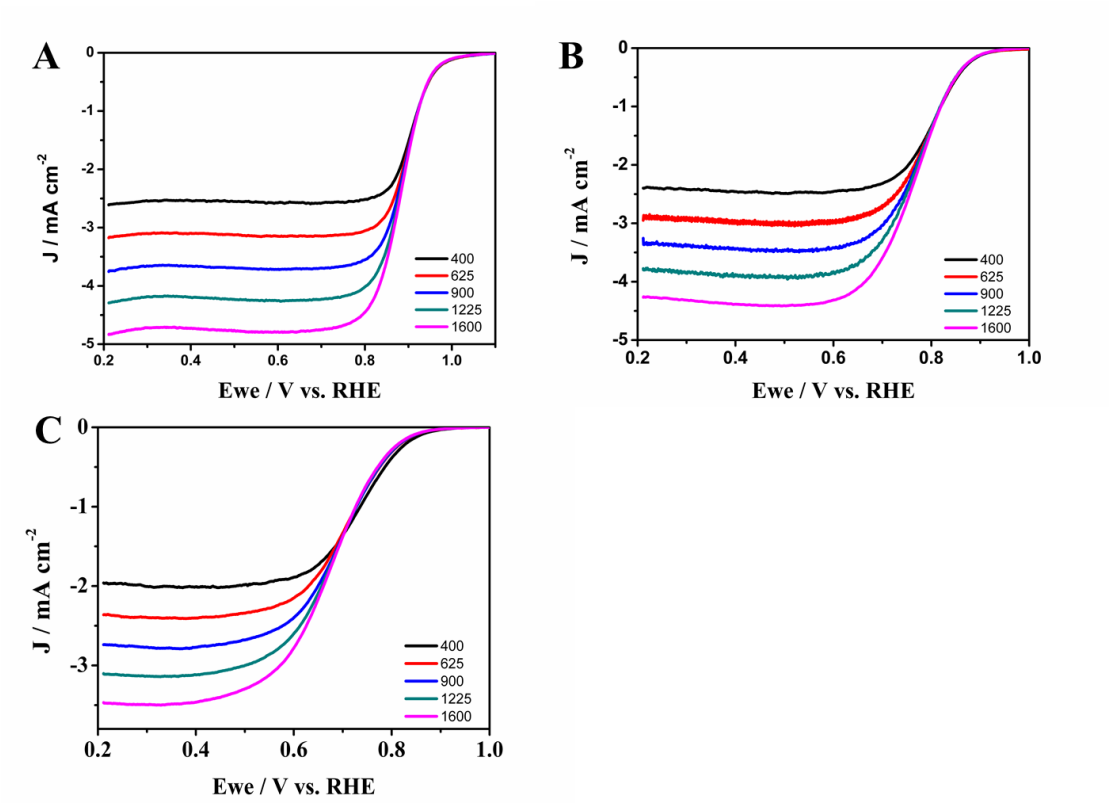

Figure S7. LSV curves of (A)PDA@MF-Fe-800; (B) PDA@MF-800; (C) MF-800 in O_2 saturated 0.1 M KOH aqueous solution at a rotation rate from 400-1600 rpm

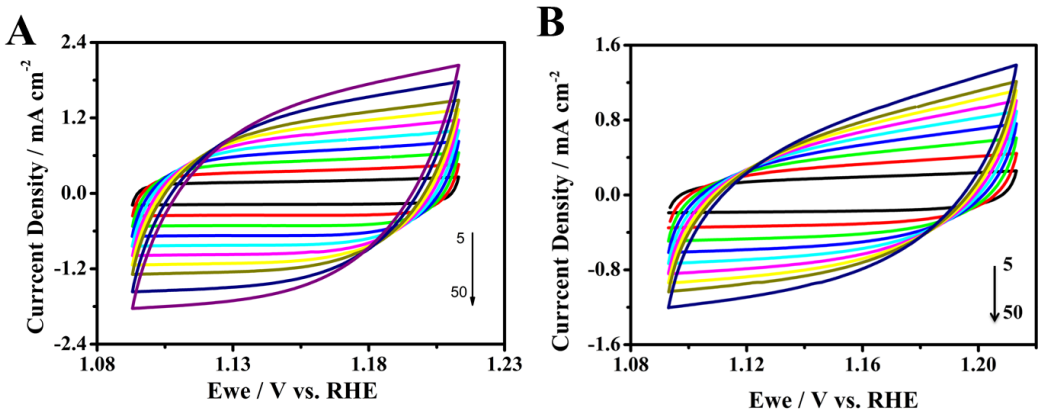

Figure S8. Cyclic voltammograms in the region without faradaic processes of (A) Fe/N/C; (B) PDA@MF-Fe-800.

Table S1. The BET surface the catalysts

	MF-800	MF@PDA-800	PDA@MF-Fe-800	Fe/N/C
BET surface (m^2 g^{-1})	620.61	671.96	858.03	1146.75

Table S2. The atomic contents of different elements measured by XPS.

Sample	C 1s (%)	N 1s (%)	O 1s (%)	Fe 2p (%)
MF-800	89.27	4.25	6.45	0
PDA@MF-800	86.41	6.5	7.09	0
PDA@MF-Fe-800	85.92	6.13	7.58	0.37
Fe/N/C	85.02	6.71	7.34	0.52

Table S3. The ORR performance of the catalysts.

Sample	Onset potential (V vs RHE)	Half-wave potential (V vs RHE)	Diffusion-limiting current density (mA cm^{-2})	Electron transfer numbers(n)
Pt/C	0.97	0.82	5.47	4
Fe/N/C	0.94	0.84	4.92	3.96
PDA@MF-Fe-800	0.95	0.82	4.73	3.69
PDA@MF-800	0.92	0.76	4.25	3.41
MF-800	0.86	0.67	3.47	3.51

Table S4. Comparison of ORR performance for Fe/N/C with the other Fe and N doped catalysts.

Catalysts	Onset potential (V vs RHE)	Half-wave potential (V vs RHE)	Reference
Fe-N/C-800	0.92	0.81	[1]
(N-Fe-co-doped carbon black)	0.94	0.81	[2]
NPCA-900	0.93	0.80	[3]
Fe−g-C_3N_4@C	0.88	0.75	[4]
FeNP-C	0.90	0.72	[5]
Fe/N/C	0.94	0.84	This work

References

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