Electronic Supplementary Material (ESI) for Inorganic Chemistry Frontiers.

Electronic Supplementary Information

Shrimp-shell derived carbon nanodots as precursor to fabricate Fe, N-doped porous graphitic carbon electrocatalyst for efficient oxygen reduction and zinc-air battery

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Table S1 The chemical compositions of Fe-N-PGC-600, Fe-N-PGC-700, Fe-N-PGC-800 and Fe-N-PGC-900 obtained by XPS.

Samples	C (at.%)	N (at.%)	O (at.%)	Fe (at.%)
Fe-N-PGC-600	83.2	8.15	7.98	0.17
Fe-N-PGC-700	85.63	6.33	6.34	0.32
Fe-N-PGC-800	87.73	4.95	6.96	0.36
Fe-N-PGC-900	89.74	2.59	6.34	1.33

Table S2 Surface area and total pore volume data of Fe-N-PGC-600, Fe-N-PGC-700, Fe-N-PGC-800 and Fe-N-PGC-900 obtained by N_2 adsorption-desorption isotherms.

Samples	BET surface area ($m^2\ g^{-1}$)	Pore volume ($cm^3\ g^{-1}$)
Fe-N-PGC-600	677.3	0.198
Fe-N-PGC-700	786.8	0.203
Fe-N-PGC-800	806.7	0.205
Fe-N-PGC-900	837.7	0.242

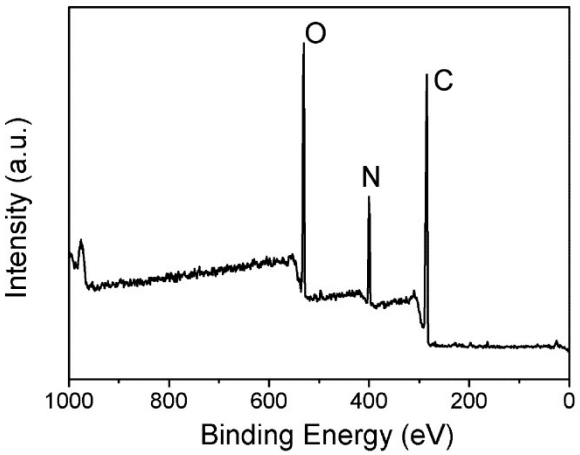

Fig. S1 Surface survey XPS spectra of shrimp-shell derived N-doped carbon nanodots.

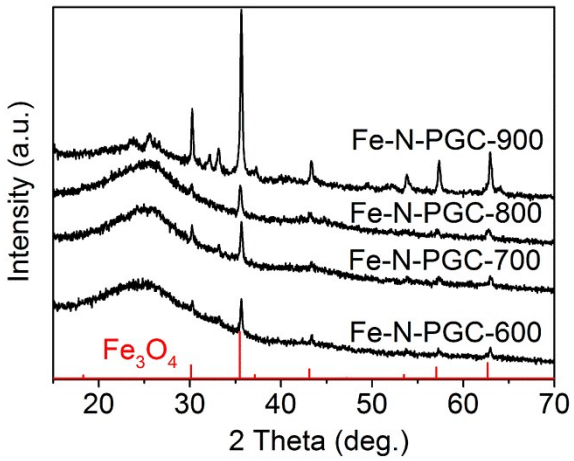

Fig. S2 XRD patterns of Fe-N-PGC samples fabricated at different pyrolysis temperatures without acid leaching process.

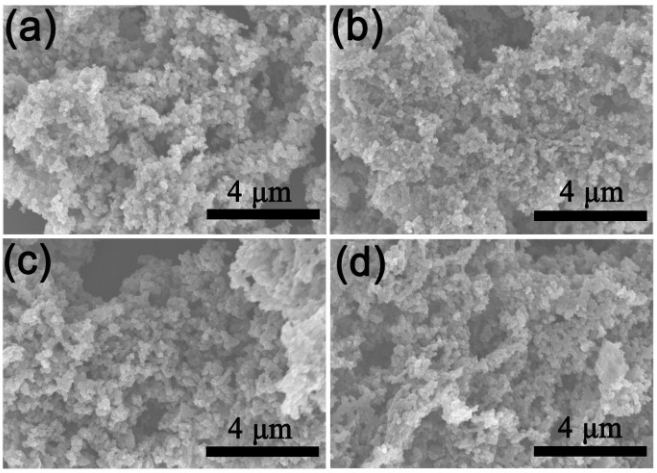

Fig. S3 SEM images of (a) Fe-N-PGC-600, (b) Fe-N-PGC-700, (c) Fe-N-PGC-800 and (d) Fe-N-PGC-900.

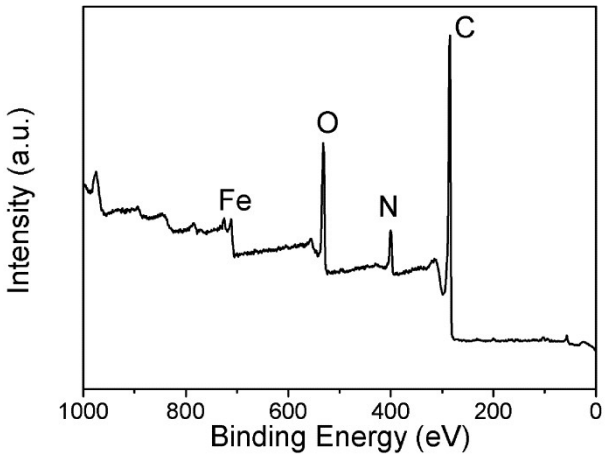

Fig. S4 Surface survey XPS spectra of Fe-N-PGC-800.

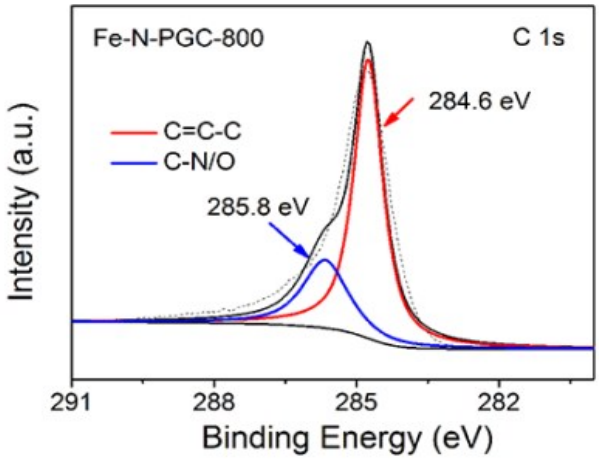

Fig. S5 High resolution C 1s XPS spectrum of Fe-N-PGC-800.

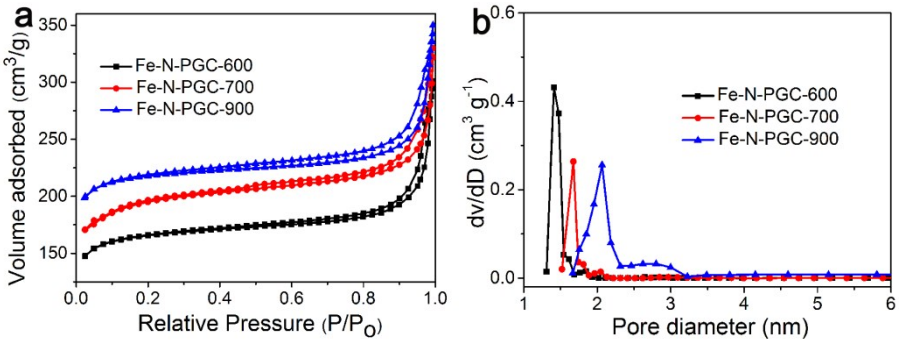

Fig. S6 (a) N_2 adsorption-desorption isotherms of Fe-N-PGC-600, Fe-N-PGC-700 and Fe-N-PGC-900, and (b) corresponding pore size distribution curves.

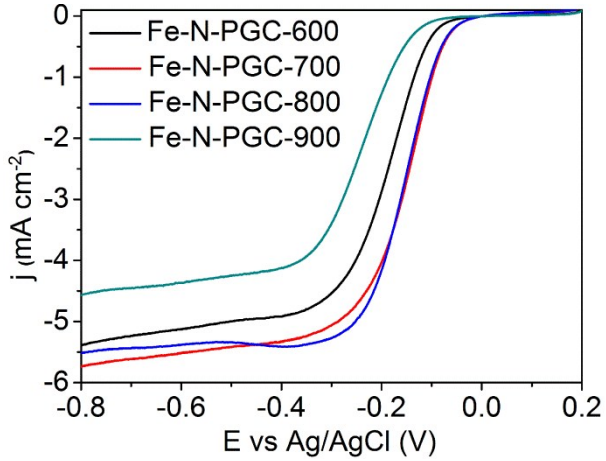

Fig. S7 Linear sweep voltammogram (LSV) curves of Fe-N-PGC-600, Fe-N-PGC-700, Fe-N-PGC-800 and Fe-N-PGC-900 in O_2-saturated 0.1 M KOH solution at a scan rate of 10 mV s^{-1} and a rotation rate of 1600 rpm.

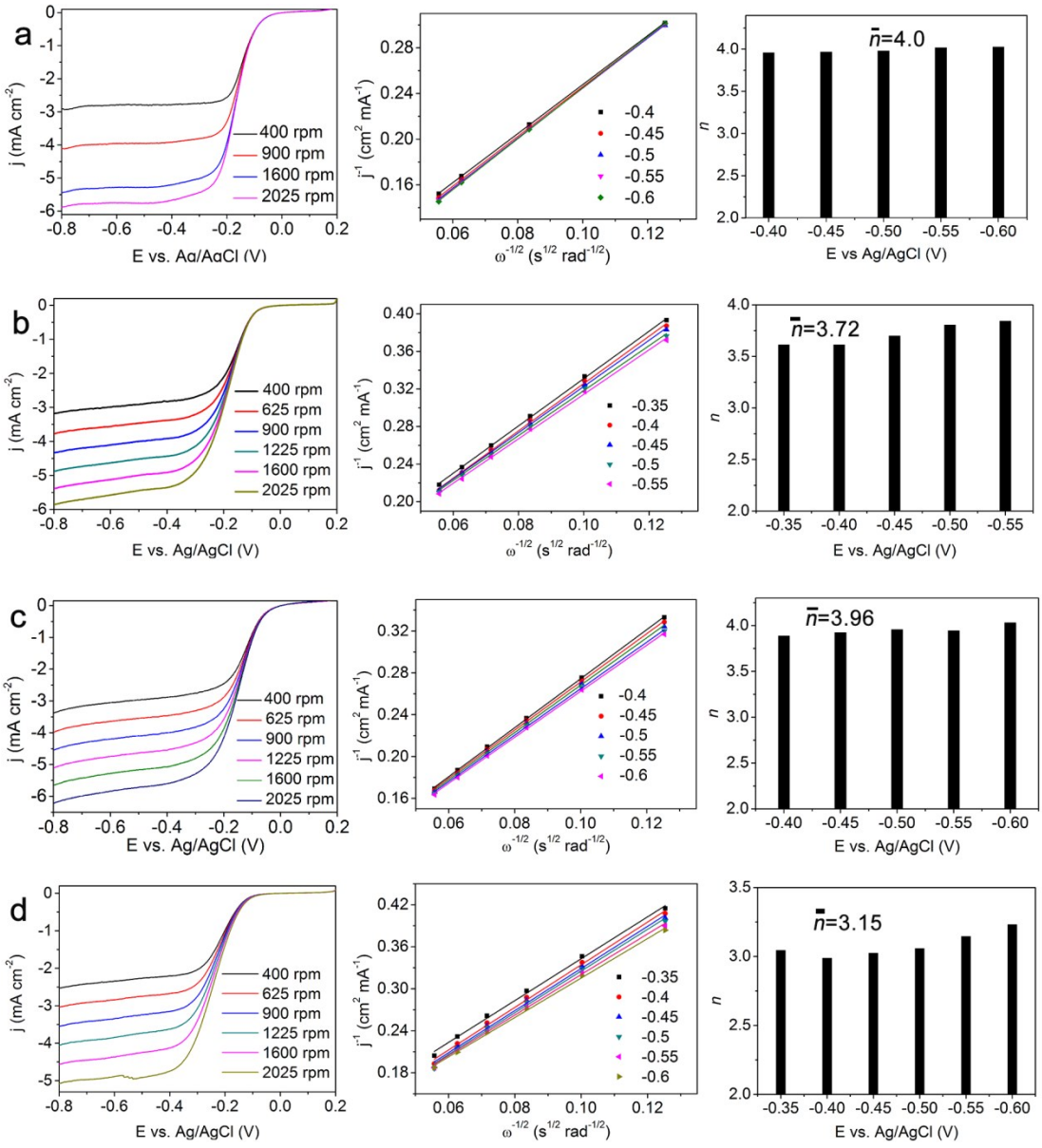

Fig. S8 Linear sweep voltammogram (LSV) curves at different rotation rates, corresponding *K–L* plots and electron transfer numbers (*n*) of (a) commercial Pt/C, (b) Fe-N-PGC-600, (c) Fe-N-PGC-700 and (d) Fe-N-PGC-900. The electrolyte is O_2-saturated 0.1 M KOH solution and the scan rate is 10 mV s^{-1}.