Supporting information

Effect of pyrolysis gas

From the nitrogen sorption measurement, the BET surface area of the PNCEs-900-NH_3 (719.4 m^2/g) is significantly higher than that of the PNCEs-900-N_2 (104.08 m^2/g). Figure S1 displays the pore distribution of the PNCEs-900-NH_3 and PNCEs-900-N_2.The ratio of macropore and the mesoporous is significantly increased for the PNCE-N_2. Moreover, the micropores are significantly increased. This proves that the reactions between carbon and NH_3 involve the replacement of oxygen-bearing species by nitrogen-containing groups and the etching of carbon fragments by the radicals generated by the decomposition of NH_3 at high temperatures, which forms more pores in carbon framework.[1,2]

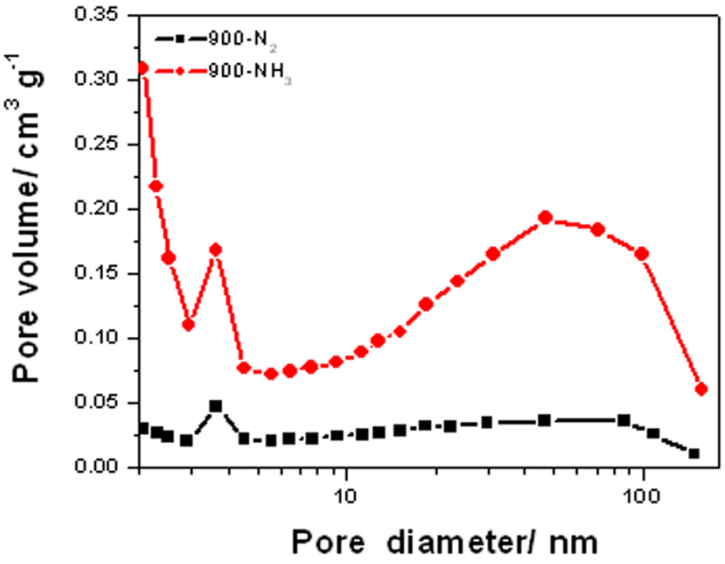

Figure S1. N_2 sorption isotherms of the resultant PNCEs carbon catalysts prepared under different atmosphere;

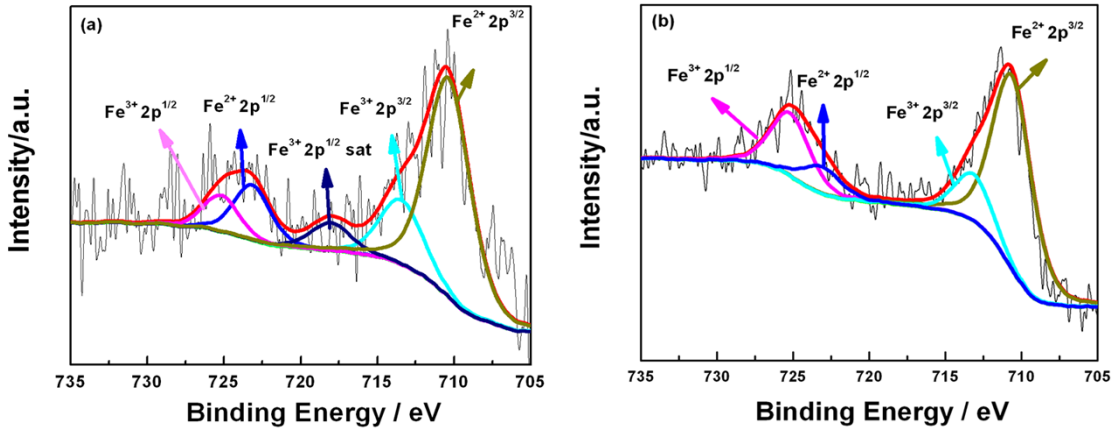

Figure S2. High resolution XPS spectra of Fe 2p N1s (a) PNCEs -1000 (b) NNCEs-1000

Table S1. Physical characteristic of the PNCEs synthesized at different temperature

Samples	S_{BET} ($m^2 g^{-1}$)	S_{micro} ($m^2 g^{-1}$)	S_{ext} ($m^2 g^{-1}$)	V_{micro} (cm^3/g)	V_t (cm^3/g)
PNCEs-700	**432.7**	**334.08**	**98.6**	**0.154**	**0.329**
PNCEs-800	**528.2**	**378.4**	**149.9**	**0.173**	**0.412**
PNCEs-900	**719.4**	**497.4**	**222**	**0.228**	**0.553**
PNCEs-1000	**924.6**	**502.2**	**502.17**	**0.227**	**0.715**
PNCEs-1100	**756.6**	**263.8**	**492.7**	**0.117**	**0.518**
NNCEs-1000	**523**	**329.1**	**194.03**	**0.151**	**0.547**

S_{BET}: Surface area calculated by the Brunauer-Emmet-Teller(BET) method, S_{micro}: micropore surface area calculated by t-plot method ; S_{ext}: External surface area calculated by t-plot analysis ;V_{micro}=micropore volume calculated by t-plot analysis and V_{tot}=total pore volume at P/P_0=0.995 ;

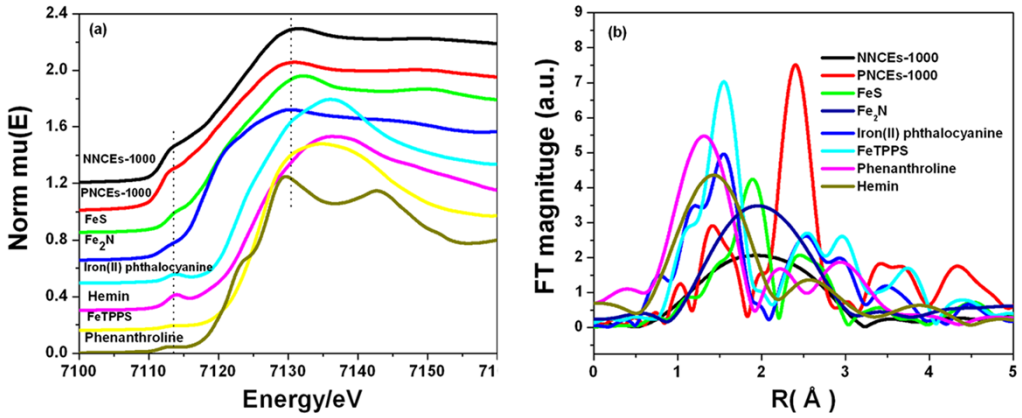

Figure S3. (a) Normalized XANES of NNCEs-1000 and PNCEs-1000 with reference compounds at the Fe K-edge. (b) Magnitudes of k3-weighted Fourier-transformed (phase-uncorrected) EXAFS data for NNCE-1000 and PNCEs-1000 with some reference compounds.

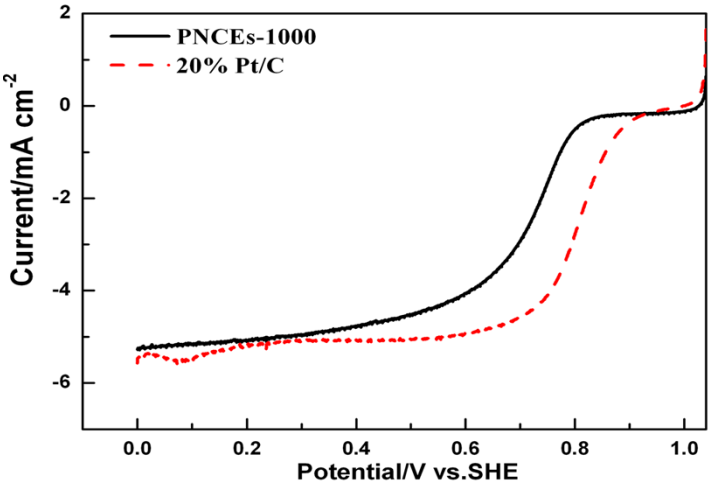

Figure S4. Oxygen reduction polarization curves for the catalysts PNCEs-1000 and 20%Pt/C in O_2-purged 0.5 M H_2SO_4; rotating rate is 1600 rpm. Scan rate=5 mV s -

Reference

[1] Wang, X. Q.; Lee, J. S.; Zhu, Q.; Liu, J.; Wang, Y.; Dai, S., Ammonia-Treated Ordered Mesoporous Carbons as Catalytic Materials for Oxygen Reduction Reaction. Chemistry of Materials 22 (7), 2178-2180.

[2] Zhong, H. X.; Zhang, H. M.; Liu, S. S.; Deng, C. W.; Wang, M. R., Nitrogen-Enriched Carbon from Melamine Resins with Superior Oxygen Reduction Reaction Activity. *Chemsuschem* **2013,** *6* (5), 807-812.