Supplementary information

A Self-template and KOH Activation Co-coupling Strategy to Synthesize Ultrahigh Surface Area Nitrogen-doped Porous graphene for Oxygen Reduction

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Koutecky-Levich (K-L) equations:

The kinetic parameters can be calculated based on the Koutecky-Levich (K-L) equations as follows:

$$\frac{1}{J} = \frac{1}{J_L} + \frac{1}{J_K} = \frac{1}{Bw^{1/2}} + \frac{1}{J_K} \quad (1)$$

$$B = 0.2nFC_0(D_0)^{-1/6} \quad (2)$$

where J denotes the measured current density, J_K is the kinetic current density of the ORR, J_L is the diffusion-limited current density; F is the Faraday constant (96, 485 C mol^{-1}); C_o is the bulk concentration of O_2 (1.2×10^{-3} mol L^{-1}); D_o is the O_2 diffusion coefficient in 0.1 mol L^{-1} KOH; v is the kinetic viscosity of the solution (0.01 cm^2 s^{-1}); and ω is the electrode rotation rate (rpm).

List of figure captions

Figure S1 The FESEM images (a-c) at different magnifications and the HR-TEM image of NDPG (d).

Figure S2 The FESEM image of NDC.

Figure S3 (a) XPS spectra of surface chemical composition and N1 spectra (inset), and (b) the Nitrogen adsorption-desorption isotherm of NDC.

Figure S4 (a) LSV curves of NDC at different rotation rates, inset: the corresponding K-L plots, and (b) the stability of Pt/C is symbolized by $\Delta E_{1/2}$ before and after i-t test. Data (a, b) was recorded in 0.1M KOH solution.

Figure S1

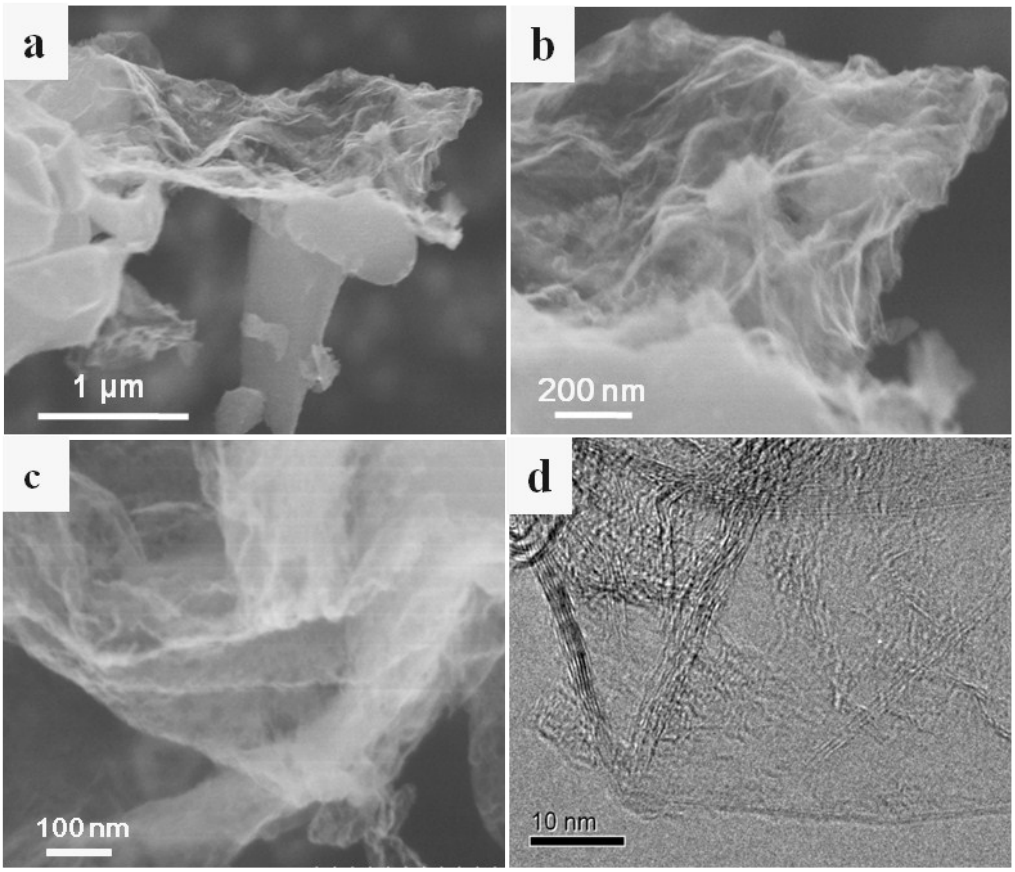

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Figure S2

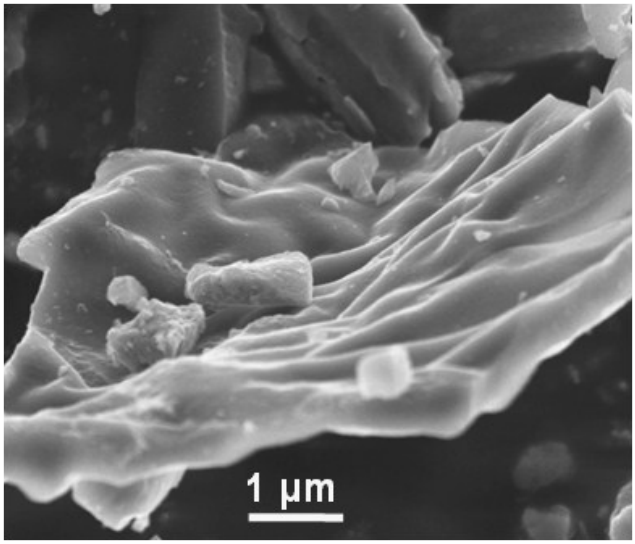


Figure S2 The FESEM image of NDC.

Figure S3

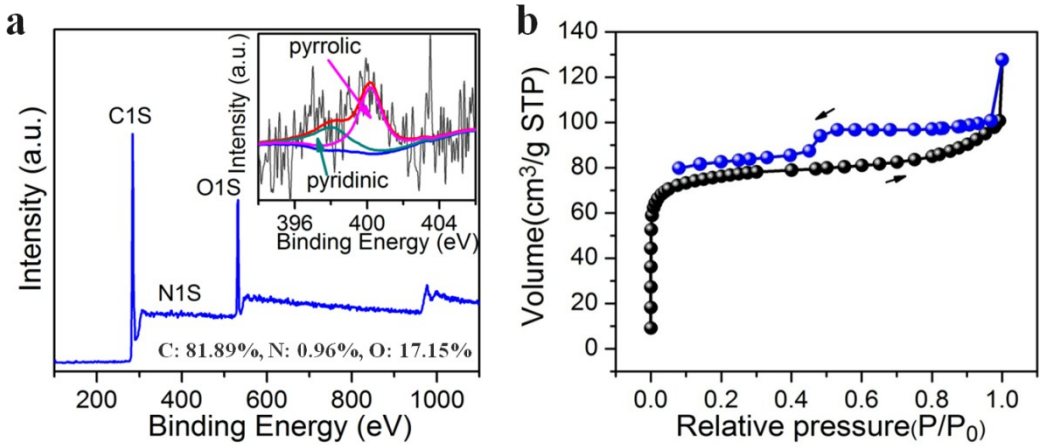
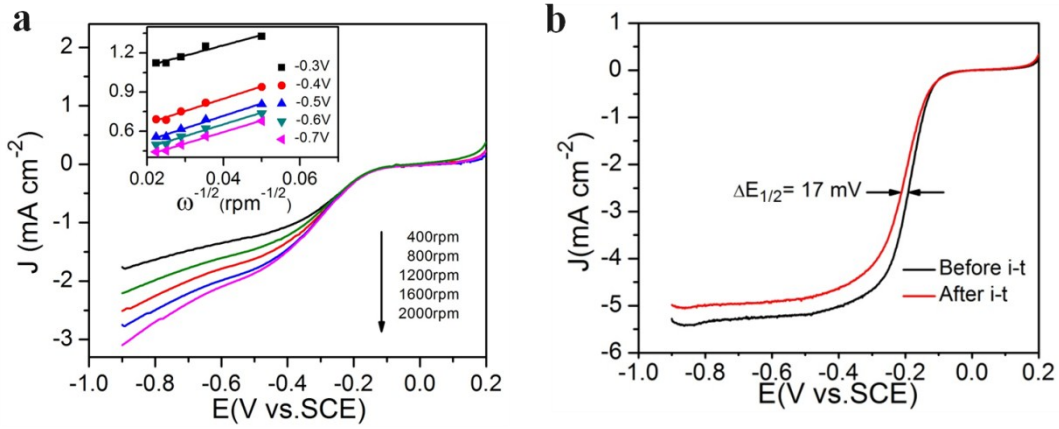


Figure S3 (a) XPS spectra of surface chemical composition and N1 spectra (inset), and (b) the Nitrogen adsorption-desorption isotherm of NDC.

Figure S4



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