

Supporting Information

One-step synthesis of boron and nitrogen-dual-self-doped graphene sheets as non-metal catalysts for oxygen reduction reaction

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Additional data:

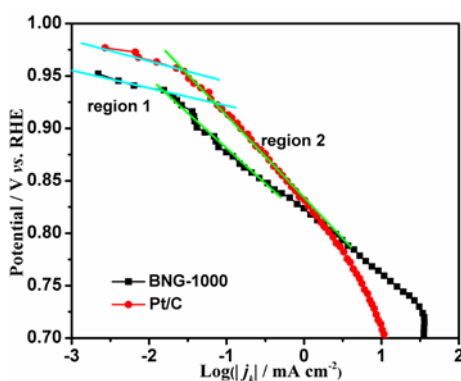


Figure S1 The corrected Tafel plots for ORR on BNG-1000 and Pt/C.

The Tafel plots for ORR on BNG-1000 and Pt/C derive from the conversion of the measured oxygen reduction currents density in Figure 5a in the manuscript to the corresponding kinetic currents density according equation^[S1-S3]:

$$j_k = \frac{j j_D}{j_D - j}$$

where j_k is the kinetic current density, j the measured current density and j_D the limiting current density. The Tafel slope of BNG-1000 and Pt/C in the region 2 is -70.1 and -81 mV/decade, respectively.

We also evaluated the ORR performance of BNG samples, Pt/C and carbon (Vulcan XC-72) in acid solution, and the results are shown in the Figure S2.

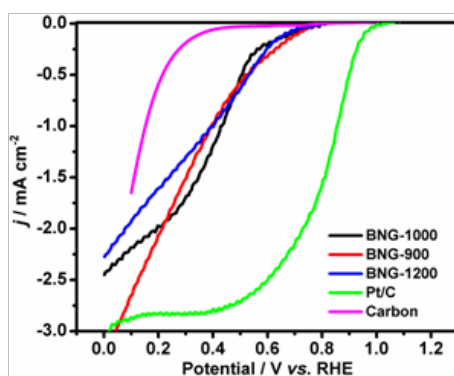


Figure S2 Polarization curves for ORR on BNG samples, Pt/C and carbon (Vulcan XC-72) at 1600 rpm in oxygen-saturated 0.1 mol/L HClO₄ solution at 25 °C with a sweep rate of 5 mV/s.

References

- [S1] J. Chlistunoff, *J. Phys. Chem. C* 2011, **115**, 6496.
- [S2] J. Jiang, A. Kucernak, *J Solid State Electr.* 2012, **16**, 2571.
- [S3] S. Wang, E. Iyyamperumal, A. Roy, Y. Xue, D. Yu, L. Dai, *Angew. Chem. Int. Edit.* 2011, **50**, 11756.