

Supporting Information

Phosphorus-doped graphene nanosheets as efficient metal-free oxygen reduction electrocatalysts

Rong Li,^{a,b} Zidong Wei,^{*a} Xinglong Gou^{*b} and Wei Xu^c

^a State Key Laboratory of Power Transmission Equipment & System Security and New Technology, College of Chemistry and Chemical Engineering, Chongqing University, Chongqing 400044, China. E-mail: zdwei@cqu.edu.cn

^b Chemical Synthesis and Pollution Control Key Laboratory of Sichuan Province, College of Chemistry and Chemical Engineering, China West Normal University, Nanchong 637000, China. E-mail: gouxl@126.com

^c Ningbo Institute of Material Technology & Engineering, Chinese Academy of Science, Ningbo 315201, China.

Fig. S1 FTIR spectrum of the P-TRG sample

Fig. S2 Pore size distribution of the TRG sample

Fig. S3 The fine deconvolution of the P2p spectrum.

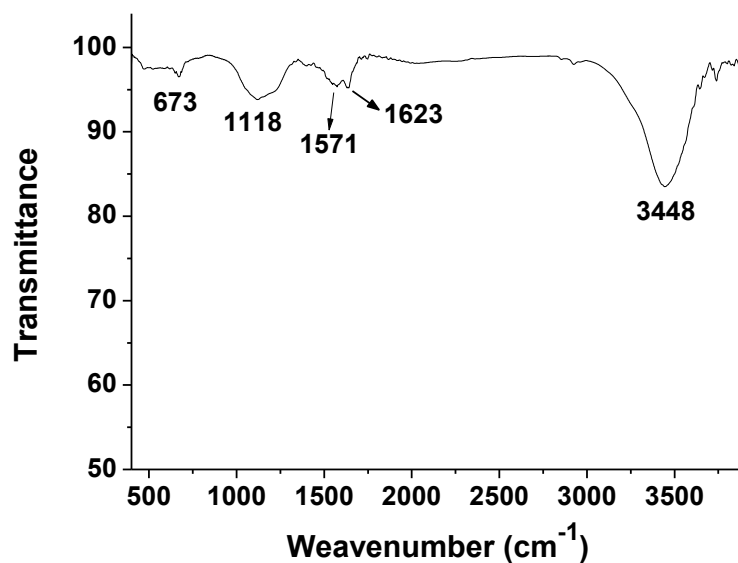


Fig. S1 FTIR spectrum of the P-TRG sample

The FTIR spectrum exhibits five pronounced bands at 3448, 1623, 1571, 1118, and 673 cm⁻¹, respectively. The peak at 3448 cm⁻¹ can be assigned to O-H stretching vibration of the water molecules chemisorbed on the material surface. The peaks around 1571 and 1623 cm⁻¹ were caused by the skeletal vibrations from the graphitic domains of graphene,¹ while the peaks at 1118 and 673 can be attributed to P-O and P-C stretch, respectively.²

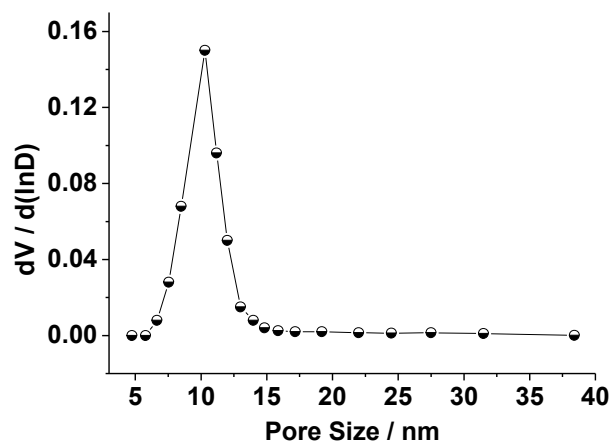


Fig. S2 Pore size distribution of the TRG sample

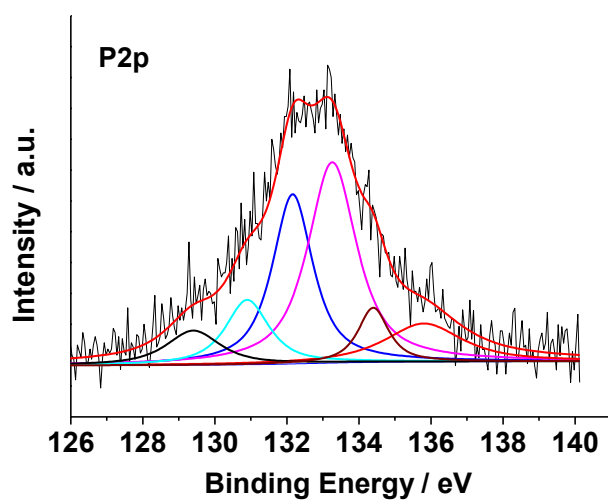


Fig. S3 The fine deconvolution of the P2p spectrum

Reference

1. E. Choi, T. H. Han, J. Hong, J. E. Kim, S. H. Lee, H. W. Kim and S. O. Kim, *J. Mater. Chem.*, 2010, **20**, 1907.
2. NIST Chemistry WebBook. Available at <http://webbook.nist.gov>.