

Supporting information:

**Methanol electrocatalytic oxidation on highly dispersed
platinum-ruthenium/graphene catalysts prepared in supercritical
carbon dioxide-methanol solution**

Jian Zhao*, Lin Zhang, Hao Xue, Zhaobo Wang, Haiqing Hu*

Key laboratory of Rubber-Plastics Ministry of Education/Shandong Provincial Key Laboratory of Rubber-Plastics, Qingdao University of Science & Technology, China, 266042; Key Laboratory of Organosilicon Chemistry and Material Technology of Ministry of Education, Hangzhou Normal University, Hangzhou, China, 31001 and Chongqing Key Laboratory of Micro/Nano Materials Engineering and Technology, Chongqing, China, 402168

* Corresponding author. Fax: +86 0532 84022725

E-mail address: zhaojian@gmail.com (J. Zhao).

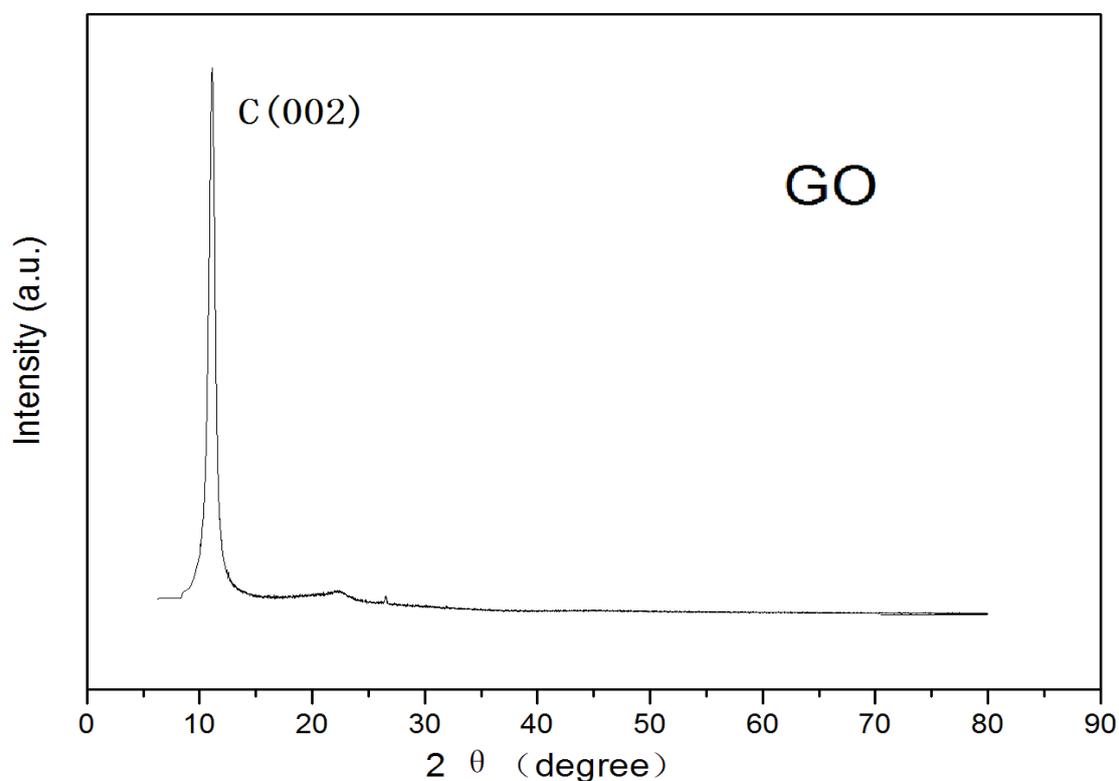


Fig.S1 XRD patterns of GO

Fig.S1. The characteristic diffraction peak (0 0 2) of GO at $2\theta = 11.1^\circ$ (corresponding to a d-spacing of 0.80 nm) is ascribed to the introduction of oxygenated functional groups such as epoxy (–O–), hydroxyl (–OH), carboxyl (–COOH) and carbonyl (–C=O) groups on both sides and edges of GO sheets.

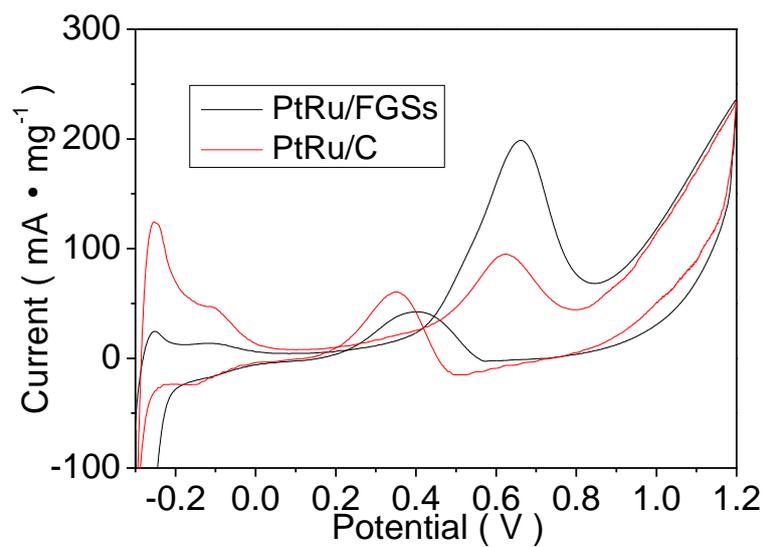


Fig.S2. CVs (mass specific activity vs. potential) of the PtRu/FGSs and PtRu/C electrodes for the 25th cycle in the mix solution of 1M CH₃OH and 0.5M H₂SO₄ at a scan rate of 50 mV/s.

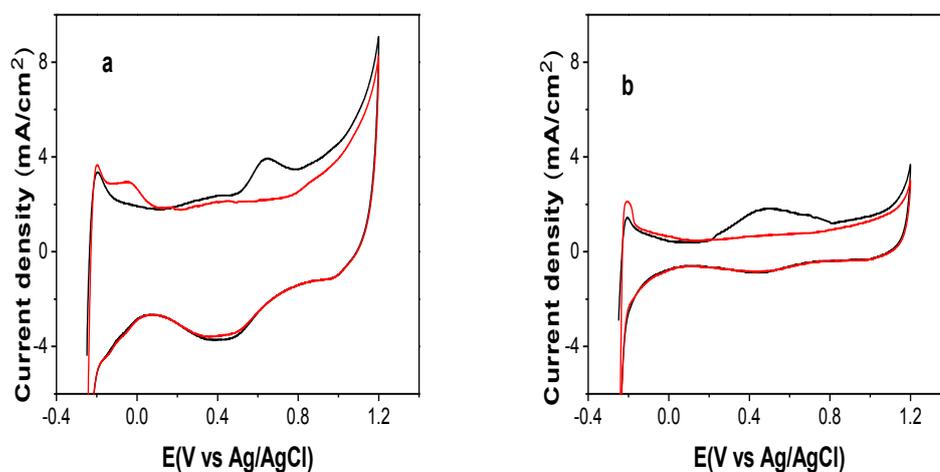


Fig. S3. CO stripping voltammogram and the subsequent CV curves of (a) PtRu/FGSs, (b) PtRu/C in 0.5 M H₂SO₄ solution. The measured ECSA values for PtRu/FGSs and PtRu/C are 40.46 m²/g and 29.85 m²/g, respectively.¹⁻³

1. J. Prabhuram, T. S. Zhao, Z. K. Tang, R. Chen and Z. X. Liang, *The Journal of Physical Chemistry B*, 2006, 110, 5245-5252.
2. T. Vidaković, M. Christov and K. Sundmacher, *Electrochimica Acta*, 2007, 52, 5606-5613.
3. T. Vidaković, M. Christov, K. Sundmacher, K. S. Nagabhushana, W. Fei, S. Kinge and H. Bönemann, *Electrochimica Acta*, 2007, 52, 2277-2284.