Supporting material

Highly electrocatalytic performance of platinum and manganese dioxide nanoparticles decorated reduced graphene oxide sheets for methanol electro-oxidation

A.T. Ezhil Vilian\(^a\), Muniyandi Rajkumar \(^b\), Shen-Ming Chen\(^*\) Chi-Chang Hu \(^b\), Karunakara Mloorthy Boopathi \(^{c,d}\), and Chih-Wei Chu \(^{c,d}\),

\(^a\) Department of Chemical Engineering and Biotechnology, National Taipei University of Technology, No.1, Section 3, Chung-Hsiao East Road, Taipei 106, Taiwan (R.O.C).

\(^b\) Laboratory of Electrochemistry & Advanced Materials, Department of Chemical Engineering, National Tsing Hua University, Hsinchu 30013, Taiwan (R.O.C).

\(^c\) Nanoscience and Technology Program, Taiwan International Graduate Program, Academia Sinica, Taipei 115, Taiwan(R.O.C).

\(^d\) Research Center for Applied Science, Academia Sinica, Taipei115, Taiwan(R.O.C).

*Corresponding author. Fax: +886 2270 25238; Tel: +886 2270 17147,

E-mail: smchen78@ms15.hinet.net
Fig S1. Electrochemical reduction of GO for 30 cycles in PBS (pH 5) Scan rate = 50 mV s\(^{-1}\).
**Fig S2.** Repeated cyclic voltammogram of nano Pt film electrodeposited on GCE from 0.5 M H₂SO₄ containing 1 mM of K₂PtCl₆ and potential scan between -0.25 to 1.0 V for 10 cycles (Scan rate of 0.05 V s⁻¹).
**Fig S3.** Cell polarization and power density curves obtained using Pt/MnO$_2$/ERGO modified electrodes as a anode and an Pt/C black catalyzed cathode in electrolyte 0.1 M H$_2$SO$_4$ + 1M CH$_3$OH aqueous solutions; Nafion 112; cell temperature 30°C.