Supporting online materials for

A high-performance platinum electrocatalyst loaded on graphene hydrogel for high-rate methanol oxidation

Xiluan Wang, Chun Li & Gaoquan Shi*

Department of Chemistry, Tsinghua University, Beijing 100084, People’s Republic of China. *e-mail: gshi@tsinghua.edu.cn

Fig. S1 The photograph and cross-sectional SEM image of a neat NF.
**Fig. S2** EDX spectrum of the Pt/G-Gel composite sheets released from Pt/G-Gel/NF-4.

**Fig. S3** Raman spectrum of GO and Pt/G-Gel/NF-4 sample.
**Fig. S4** EIS curves of G-Gel/NF (black), Pt/G-Gel /NF-1 (blue), Pt/G-Gel/NF-4 (red) electrodes in 1 M CH$_3$OH + 0.5 M KOH solution.

**Fig. S5** CV of Pt/G-Gel/NF-6 film in 1 M CH$_3$OH + 0.5 M KOH solution at scan rate of 50 mV s$^{-1}$. 
**Fig. S6** (a-c) HRTEM images of the Pt/G-Gel sheets released from Pt/G-Gel/NF-4 (a) before, (b) after 1h or (c) 3h of methanol oxidation at $-0.3$ V.

**Fig. S7** CVs of neat NF, G-Gel/NF and Pt/G-Gel/NF-4 films in 1 M CH$_3$OH + 0.5 M KOH solution at a scan rate of 50 mV s$^{-1}$. 
**Fig. S8** CO stripping CVs of Pt/G-Gel/NF-4 and Pt/rGO electrodes in a CO saturated 0.5 M KOH solution. The scan rate was 20 mV s$^{-1}$. 