Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information for

Three-dimensional porous graphene/polyaniline composites for high-rate electrochemical capacitors

Qinqin Zhou, Yingru Li, Liang Huang, Chun Li, Gaoquan Shi*

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

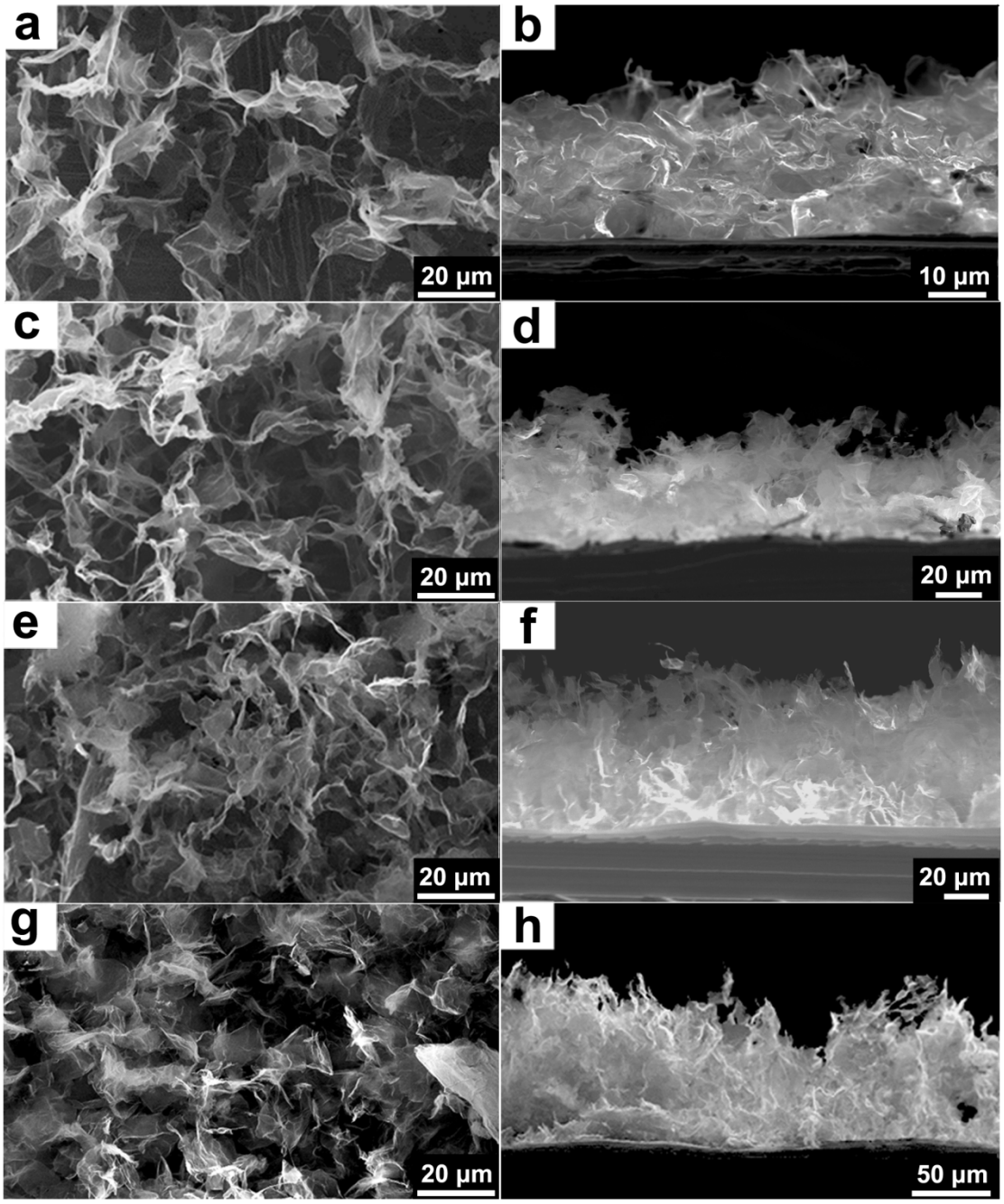

Fig. S1 (a-h)Top view and cross-section SEM images of GP_1 (a, b), GP_3 (c, d), GP_6 (e, f) and GP_{10} (g, h).

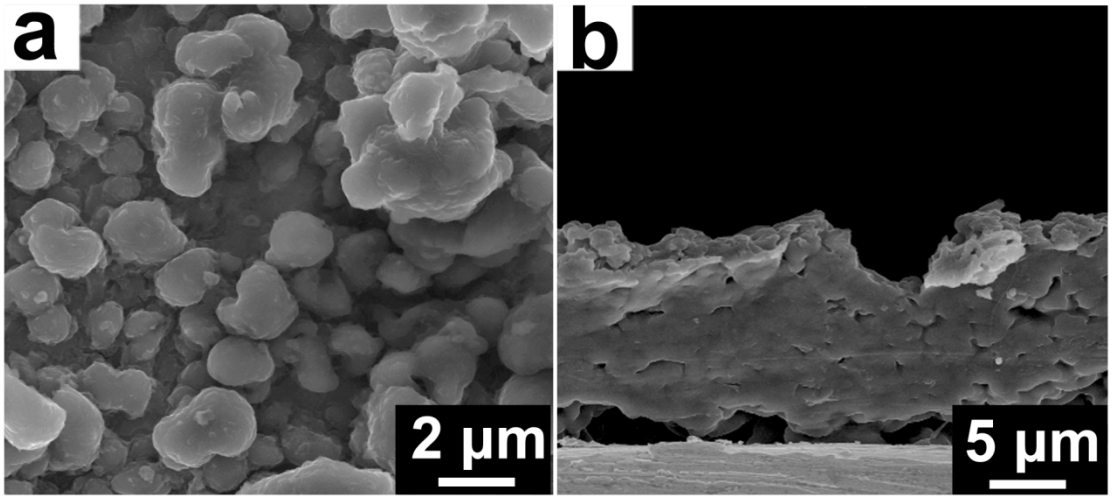

Fig. S2 (a)Top view and (b)cross-section SEM images of pristine $PANI_{100}$.

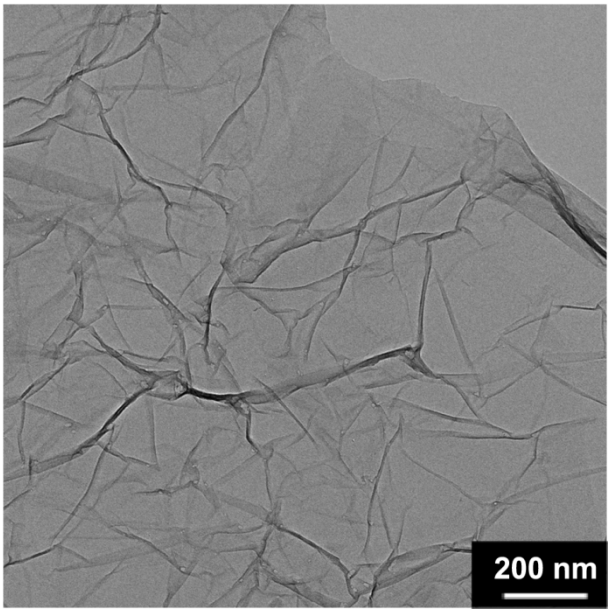

Fig. S3 TEM images of rGO.

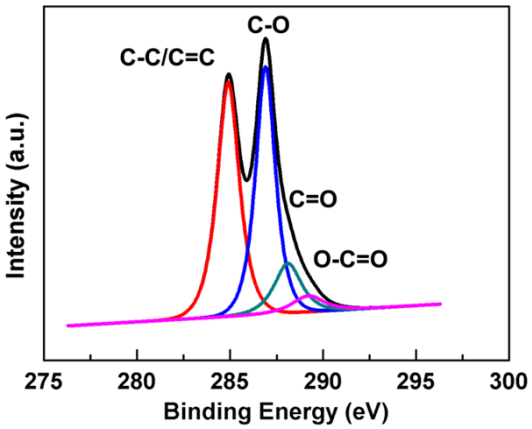

Fig. S4 C 1s XPS spectrum of GO.

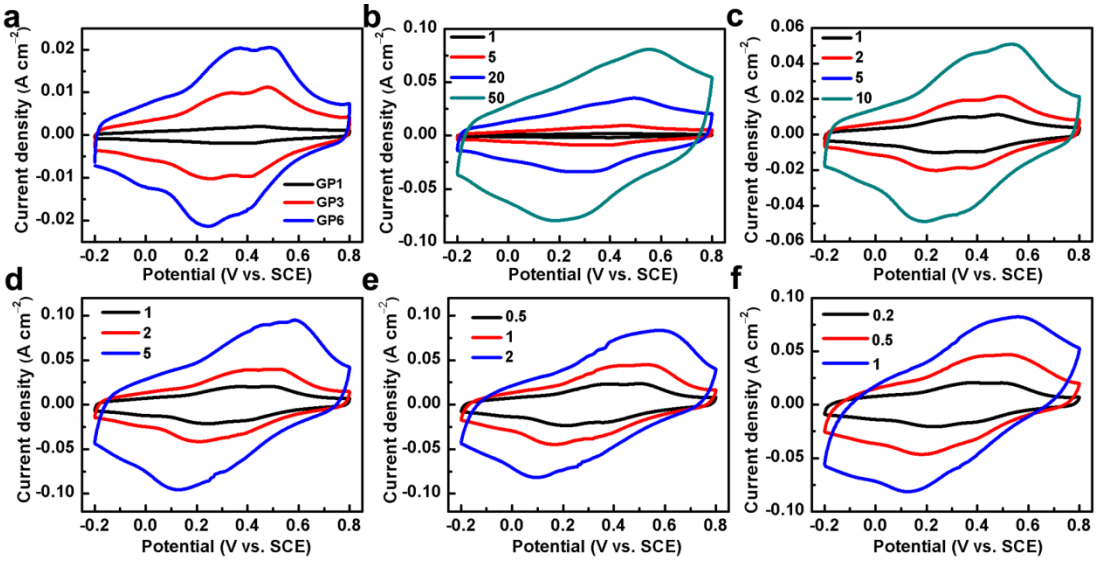

Fig. S5 (a) CV curves of GP_1, GP_3 and GP_6 electrodes at a scan rate of 1 V s^{-1}; (b-f) CV curves of (b) GP_1 , (c) GP_3, (d) GP_6, (e) GP10 and (f) GP20 at different scan rates (V s^{-1}).

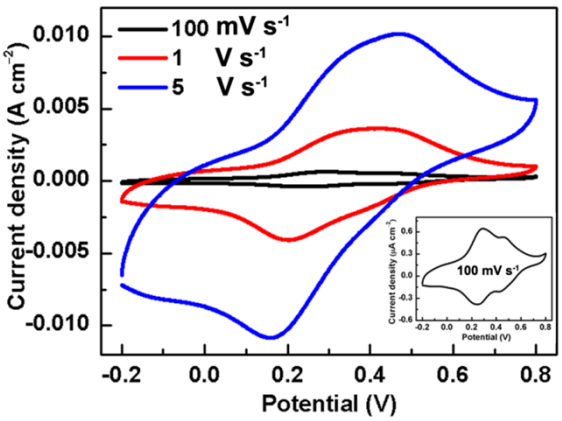

Fig. S6 (a) CV curves of pure $PANI_{20}$ electrode at different scan rates; inset is a magnified CV curve recorded at 100 mV s^{-1}.

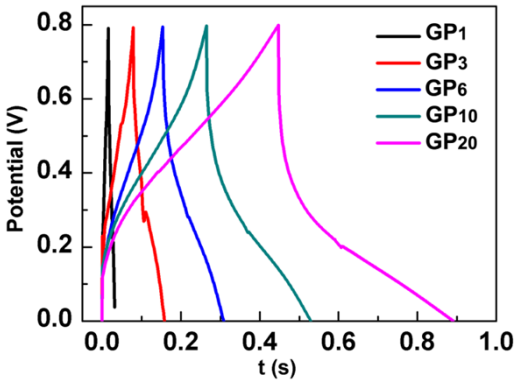

Fig. S7 Galvanostatic charge–discharge curves of GP_1, GP_3, GP_6, GP_{10} and GP_{20} electrodes at an i_d of 50 mA cm^{-2}.

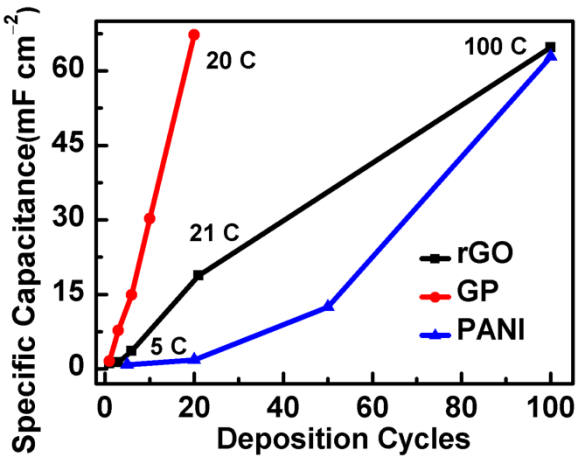

Fig. S8 Areal specific capacitances of rGO, GP and PANI electrodes with different deposition cycles at a discharge current of 50 μA cm^{-2}.

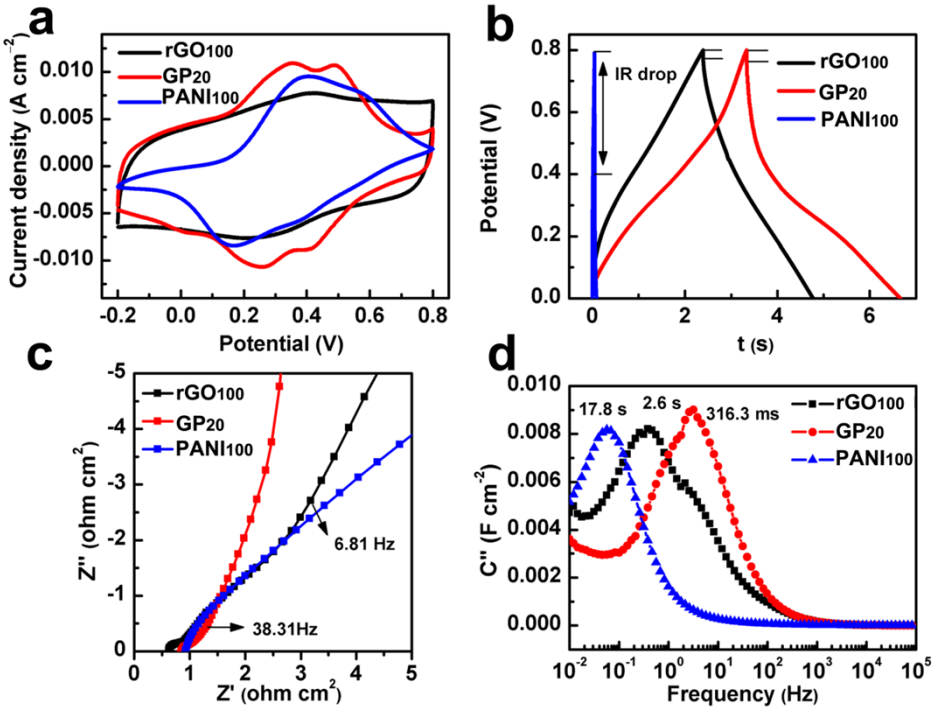

Fig. S9 (a) CV curves of rGO_{100}, GP_{20} and $PANI_{100}$ electrodes at a scan rate of 100 mV s^{-1}; (b) Galvanostatic charge–discharge curves of rGO_{100}, GP_{20} and $PANI_{100}$ electrodes at an i_d of 10 mA cm^{-2}; (c) The magnified Nyquist plots of rGO_{100} and GP_{20} electrodes; (d) Bode plots of the imaginary areal specific capacitances versus frequencies of rGO_{100}, GP_{20} and $PANI_{100}$ electrodes.

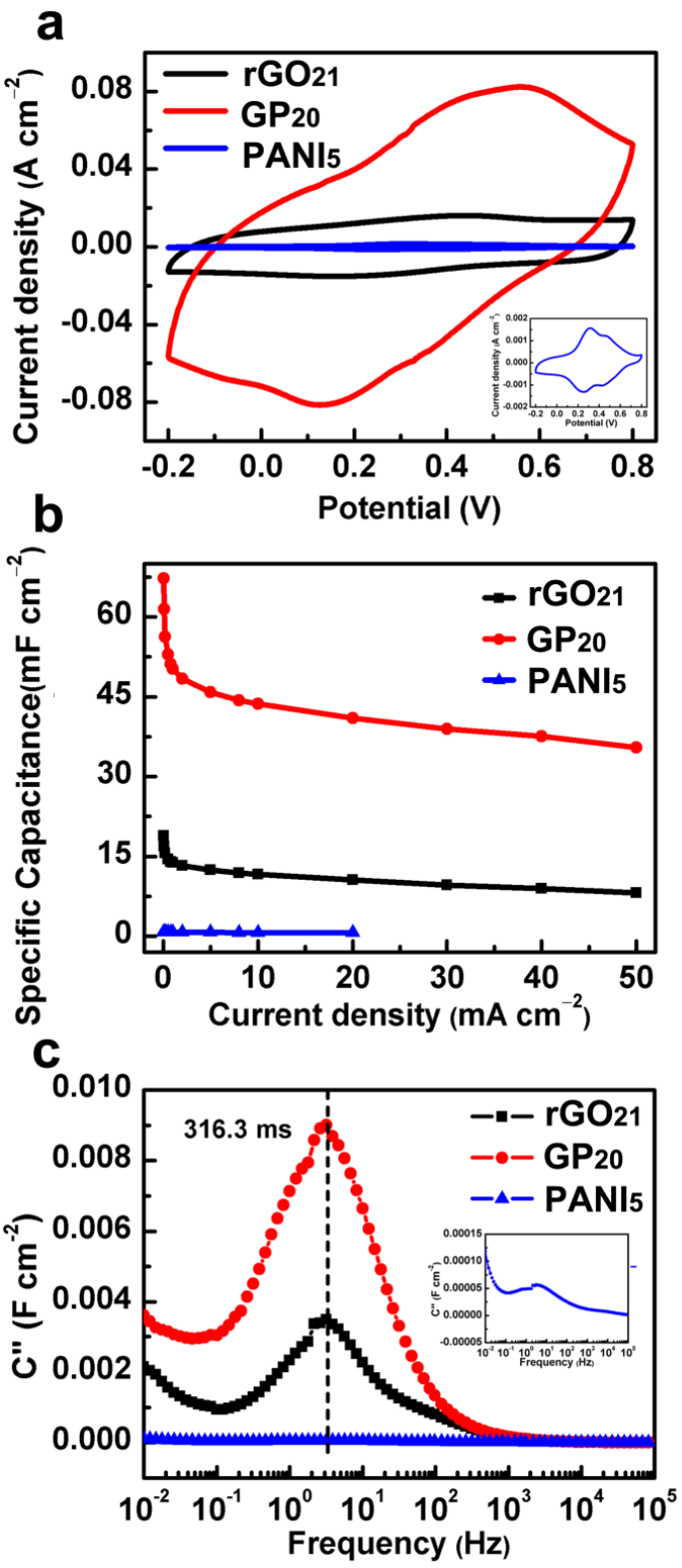

Fig. S10 (a) CV curves of rGO_{21}, GP_{20} and $PANI_5$ electrodes at a scan rate of 1 V s^{-1} (inset is the magnified CV of $PANI_5$); (b) Areal specific capacitances calculated from the charge-discharge curves of rGO_{21}, GP_{20} and $PANI_5$ electrodes at different i_ds; (c) Bode plots of the imaginary area specific capacitances versus frequencies of rGO_{21}, GP_{20} and $PANI_5$ electrodes (inset is the magnified curve of $PANI_5$).