Electronic Supplementary Material (ESI) for Dalton Transactions.

Supplementary Information

Neatly arranged mesoporous MnO_2 nanotubes with oxygen vacancies for electrochemical energy storage

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Calculation equations

Single Electrode

The specific capacitance (C_m) of the electrode was calculated from their charge-discharge curves by the following equations

$$C_m = \frac{I\Delta T}{m\Delta V}$$

where m, I, ΔT and ΔV are the weight (g) of the electroactive materials, discharge current (A), the discharging time (s), and the discharging potential range (V), respectively.

ASC device

The total capacitance (C), was calculated from their charge-discharge curves according to the following equation

$$C = \frac{I\Delta T}{M\Delta V}$$

where I, ΔT and ΔV is discharge current (A), the discharging time (s), and the discharging potential range (V), respectively, M is the sum of the masses of MnO_2 and AG.

Energy density (E) and average power density (P) was calculated by the following equations

$$E = \frac{0.5C\Delta V^2}{3.6}$$

$$P = \frac{E}{\Delta t}$$

Δt (s) is discharge time, I (A) is discharge current, and ΔV is voltage window.

Fig. S1 CV curves at different scan rates and CC curves at different current densities. **(a)-(b)** MnO_2, **(c)-(d)** ov-MnO_2-200, **(e)-(f)** ov-MnO_2-300, **(g)-(h)** ov-MnO_2-400.

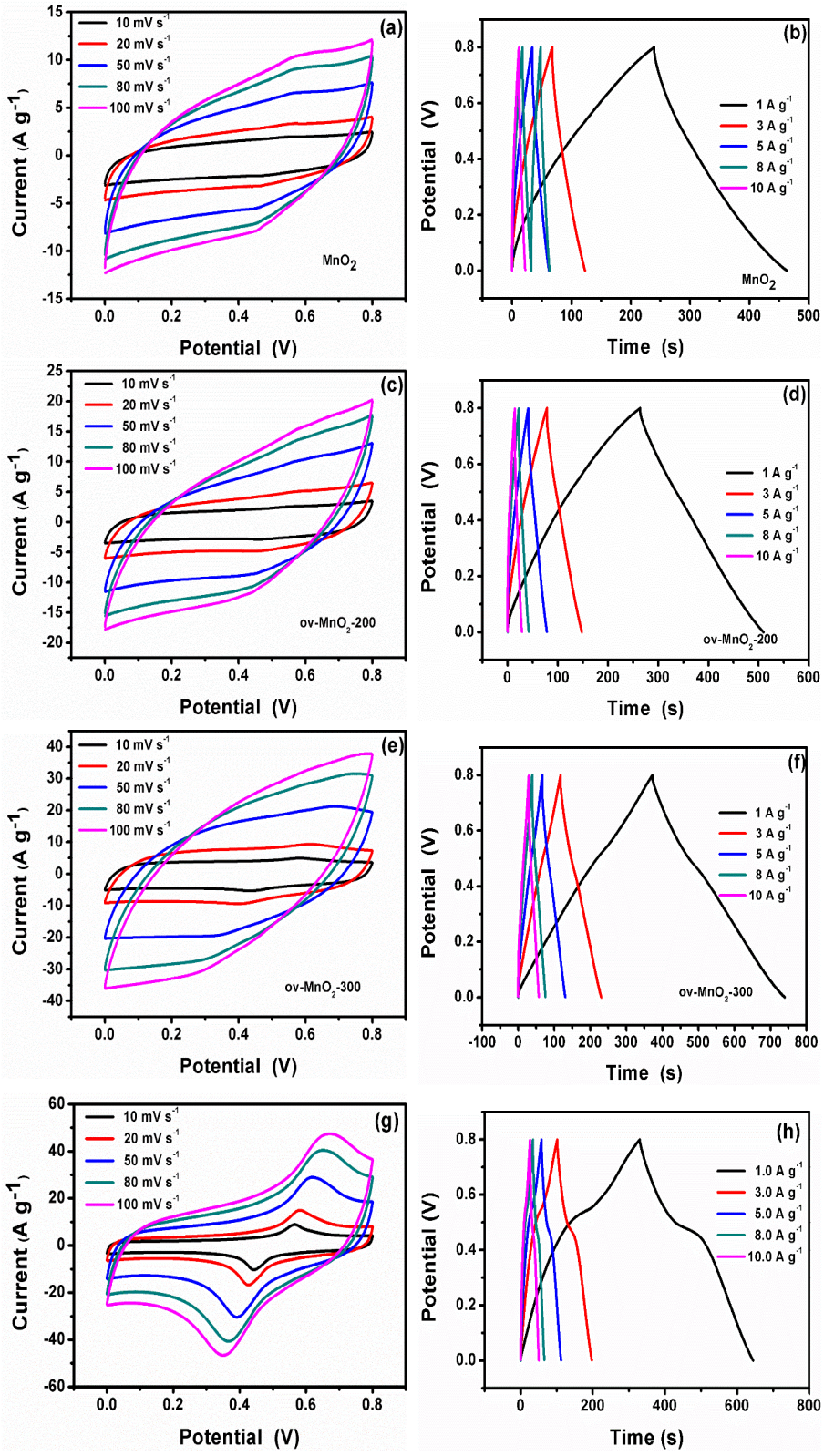

Fig. S2 The electrochemical performance of the Graphene@MoS_2. **(a)** CV curves, **(b)** CC curves, **(c)** The cycling performance at the current density of 8 A g^{-1}, **(d)** EIS curves before and after 3000 cycles.

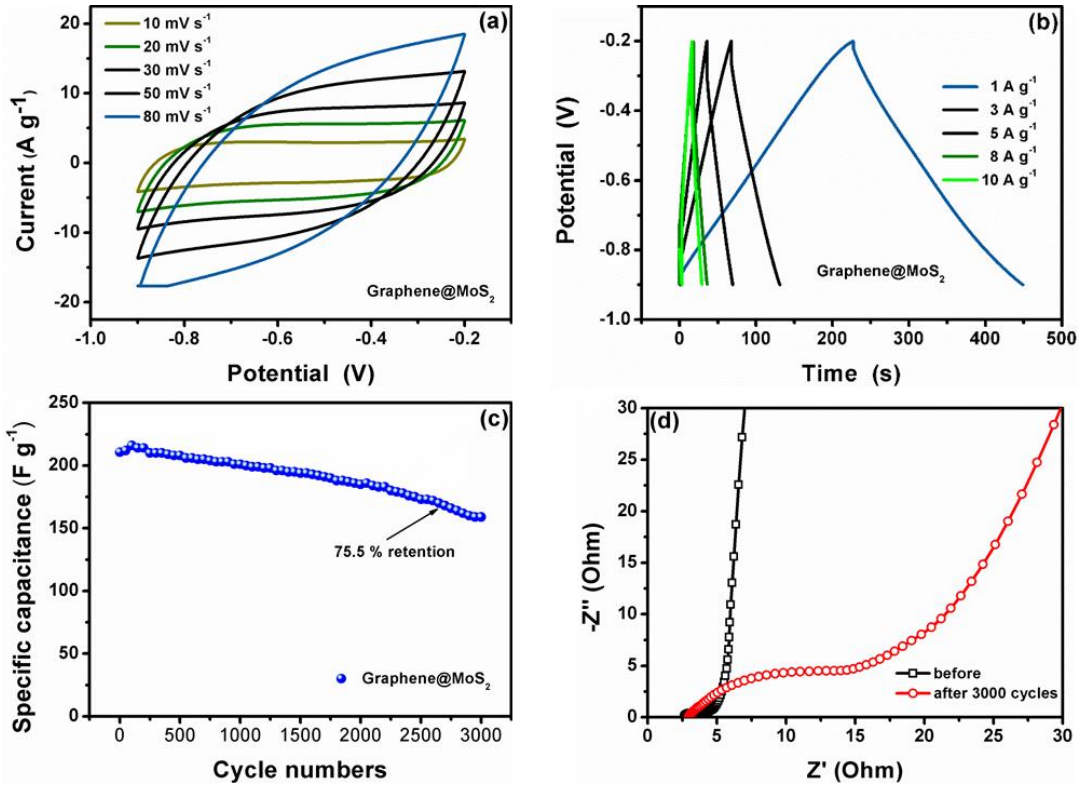

Fig. S3 (a) Specific capacitance under different current densities. **(b)** The cycling performance at the current density of 8 A g^{-1}. **(c)** EIS curves before and after 3000 cycles.