Electronic Supporting Information

Improved Cycling Stability of MoS_2-coated Carbon Nanotubes on Graphene Foam as a Flexible Anode for Lithium-ion Batteries

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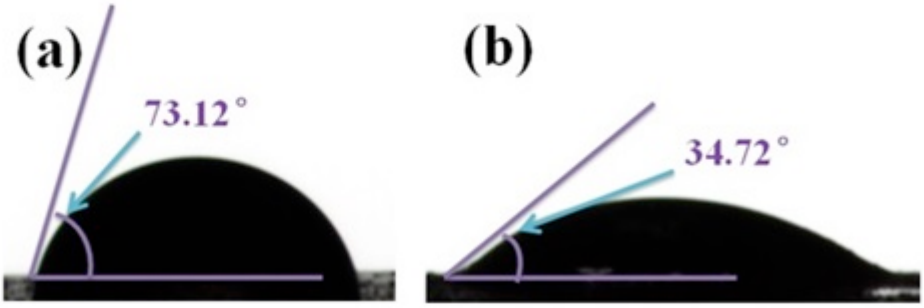

Fig. S1. The change of Water contact angles on surfaces of (a) GCN and (b) GCNM

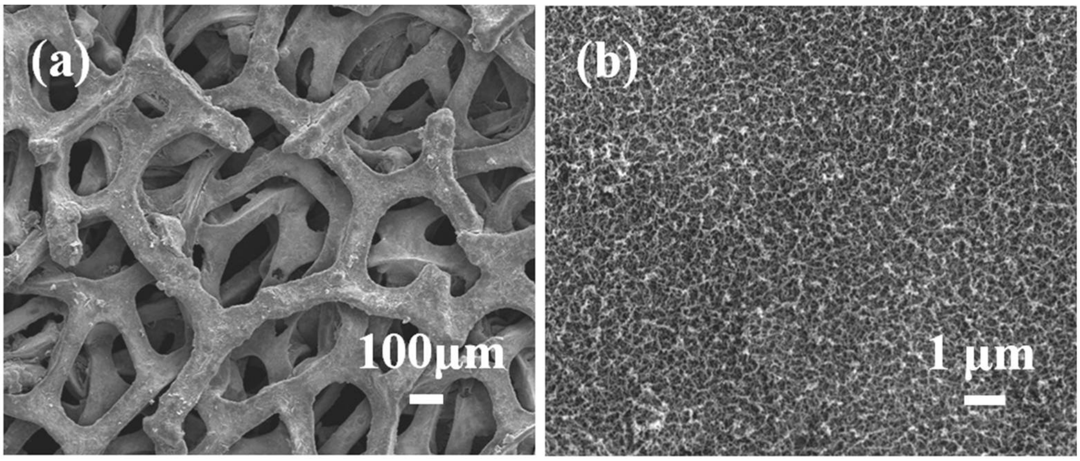

Fig. S2. SEM images of (a) low-magnification of GCN; (b) high-magnification of GCN

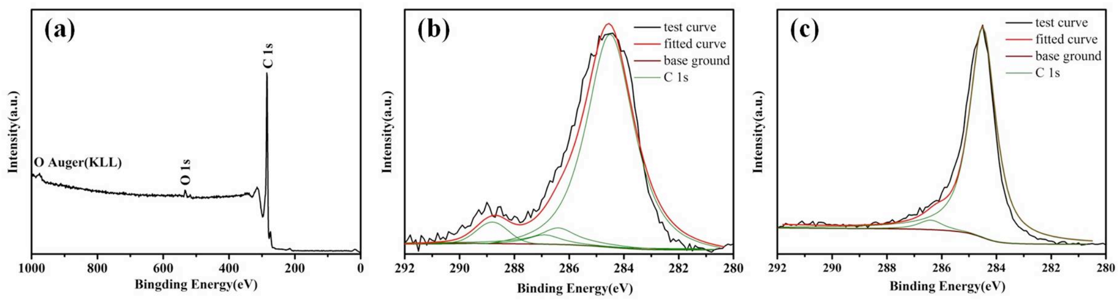

Fig. S3.(a) XPS survey spectra obtained for GCN; (b) C1s deconvolution spectra of GCNM; (c) C1s deconvolution spectra of GCN, respectively.

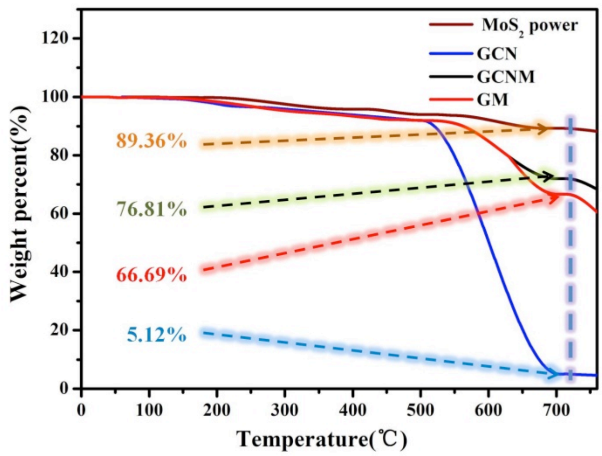

Fig. S4. The TGA curves of MoS_2 power, GCN,GM and GCNM under air atmosphere.

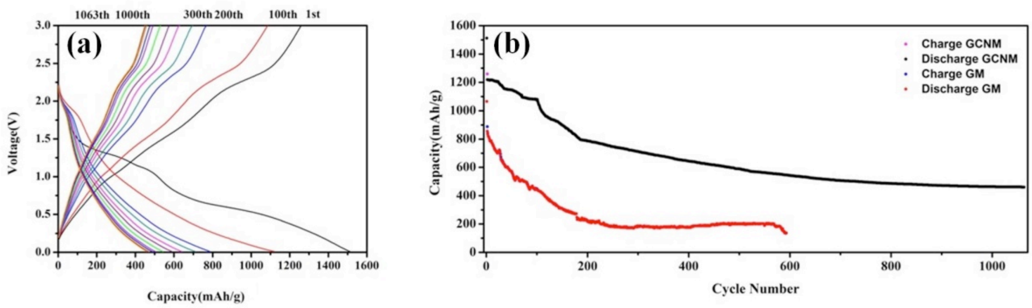

Fig. S5. The galvanostatic charge-discharge profiles of the GCNM electrode at a current density of 0.1A g^{-1} in the voltage range of 0.01–3.0 V vs. Li^{+}/Li. (b) Cycling performance of GCNM and GM electrodes at a current density of 0.1 Ag^{-1}.

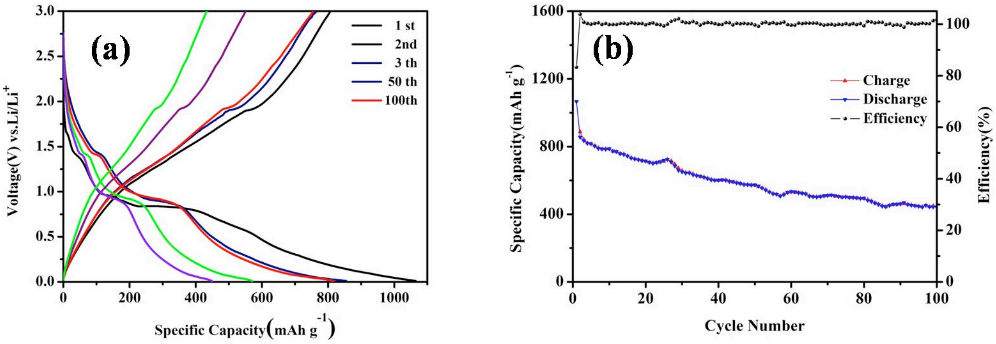

Fig. S6. (a) Galvanostatic charge and discharge profiles for the GM electrode of the initial three,50th and 100thcycles; (b) The cycling performanceof the GM electrode.

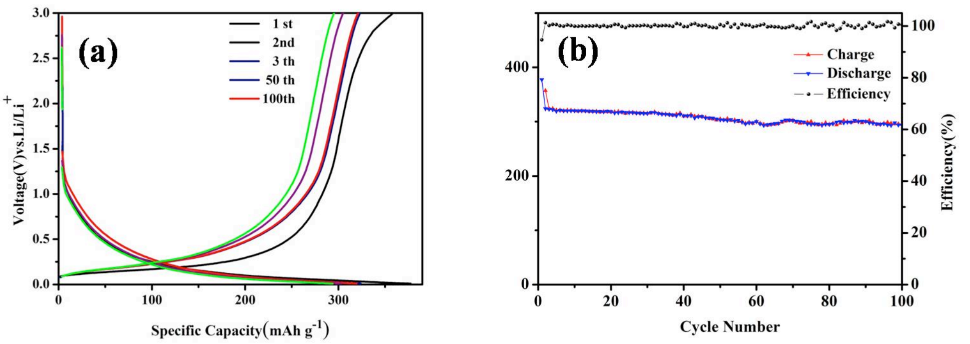

Fig. S7. (a) Galvanostatic charge and discharge profiles for the GCN electrode of the initial three,50th and 100thcycles; (b) The cycling performanceof the GCNelectrode.

Table S1. A comparison of the electrochemical performance of MoS_2 and its composites with this work.

Electrode description	First cycle discharge capacity,mAhg^{-1}/ current density, A g^{-1}	First coulombic Efficiency (%)	Cycling stability: reversible capacity, mAh g^{-1} /current desity Ag^{-1} /after(X)cycles	Rate performance: current desity A g^{-1}/ reversible capacity, mAh g^{-1}
Our work	*1511.6/0.1*	*83.27*	*1112 / 0.1/ 100*	*0.1,0.2,0.5,1,50.1/1218.0,975.0,769.3,576.5,410.4,1178.2*
MoS_2@carbon Spheres[1]	*1020 /0.1*	73.50	*750 /0.1/50*	*1.0/500*
MoS_2/CNT network[2]	*1715 /0.2*	*76.10*	*1456 /0.2/50*	*0.4, 0.6,0.8,1/1431, 1367, 1302,1224*
MoS_2/graphene Nanosheet[3]	*2200 /0.1*	*59.10*	*1290/0.1/50*	*1.0/1040*
3D MoS_2 flowers[4]	*869 /0.1*	*65.90*	*633/0.1/50*	*0.1,0.4,/848 ,740*
MoS_2-graphene Composites[5]	*1367/0.1*	*66.70*	*808/0.1/100*	*1.0/571*
MoS_2@CMK-3[6]	*1056 /0.1*	*78.03*	*602 /0.25/100*	*0.25,0.5,2/832, 774, 666,564*
Graphene-MoS_2 composited network[7]	*1200 /0.6*	*68.00*	*1200/0.6/30*	*7.2,8.4/620,270*
CNT@MoS_2[8]	*1434/0.1*	*60.01*	*698/0.1/ 60*	*0.03,0.05,1/653, 459 , 369*
MoS_x/CNT[9]	*1549 /0.5*	*74.80*	*≥10000/0.05/40*	*0.05, 0.2, 0.5,1/1119, 904, 659, 358,197*
MoS_2-CNT film[10]	*1117/0.1*	*73.40*	*960 /0.01/100*	*3.2/670*

Reference

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