Supporting Information

Highly Conductive Freestanding Graphene Films as Anode Current Collectors for Flexible Lithium-ion Batteries

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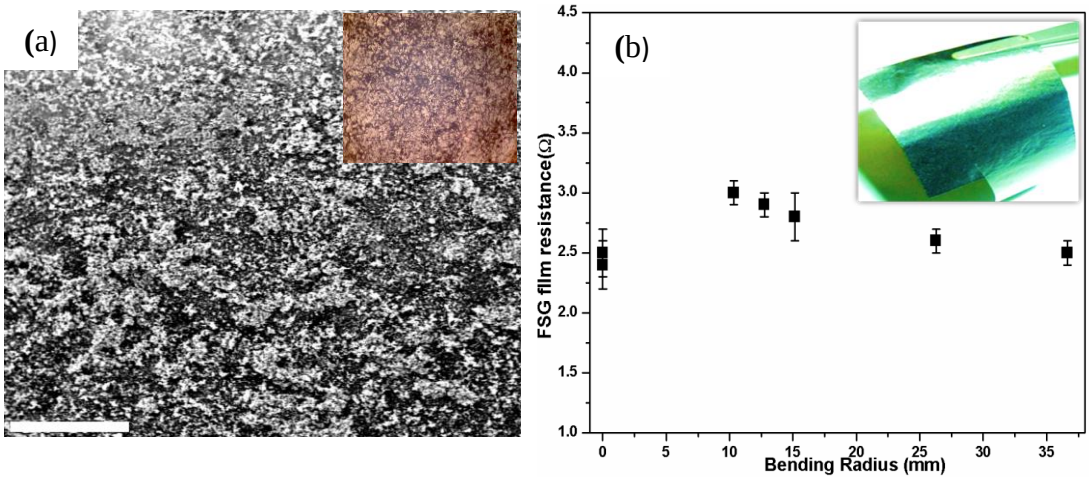
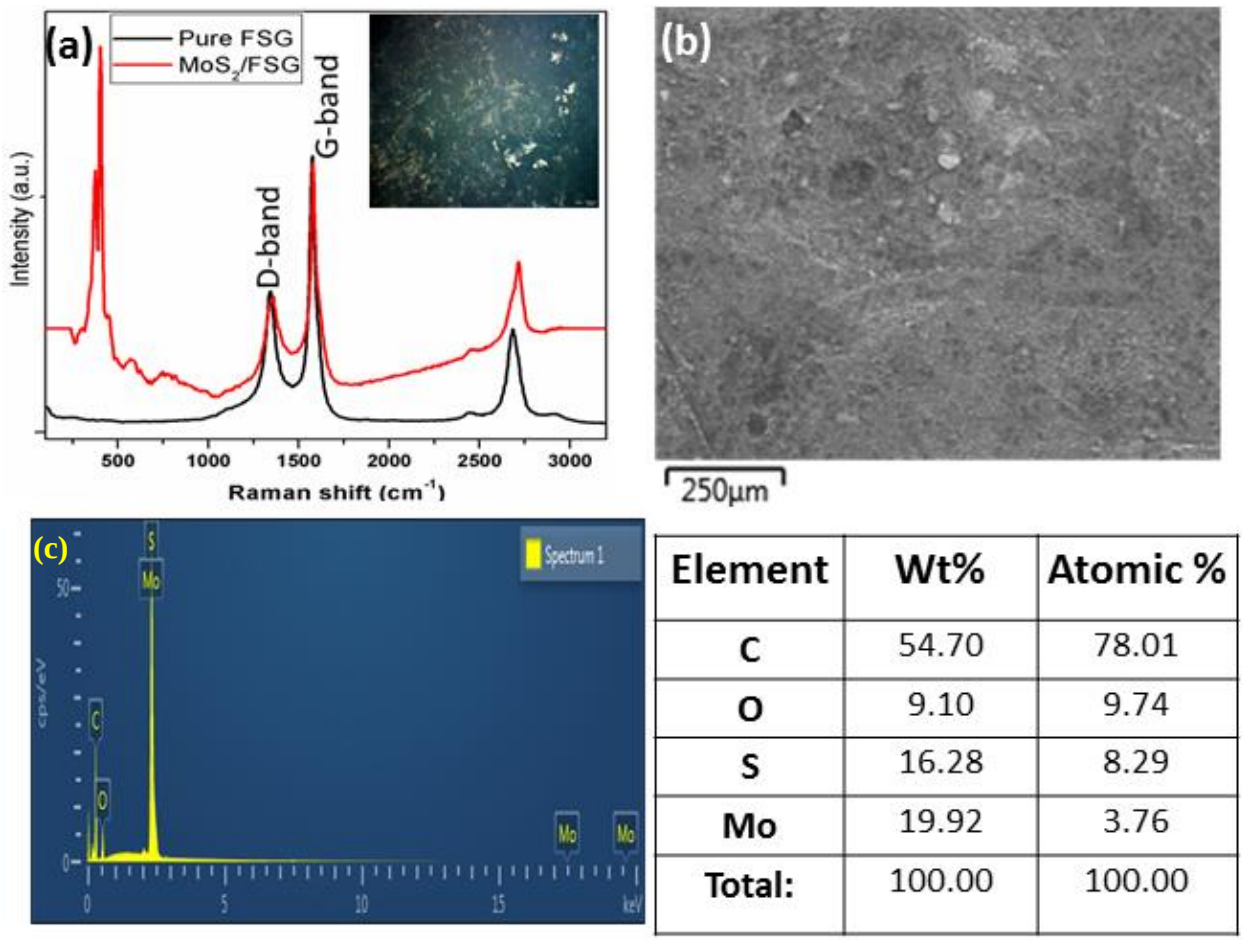


Figure S1 (a) FESEM image of FSG after MoS2 growth and inset show the OM image of the same.(b) mechanical bending of FSG vs resistance change with bending radius and inset show the photograph during.



Element	Wt%	Atomic %
C	54.70	78.01
O	9.10	9.74
S	16.28	8.29
Mo	19.92	3.76
Total:	100.00	100.00

Figure S2. (a) Comparision of Raman spectra of pure FSG before and after MoS_2 growth using hydrothermal method and the inset shows the optical image of FSG/MoS_2) (b)The surface image of FSG after MoS_2 growth, corresponding EDAX shows the presence of MoS_2 on the surface of FSG in (c) and table show the wt. and atomic % of Mo, S, C and O.

Figure S2c shows the EDAX spectrum taken from the whole area of Fig. S2b and the element's presence in the sample are shown in the table indicating that Mo and S are in the ratio of 1:2.2. Oxygen is also detected on the surface which might be due to heating the sample at 70 ^{o}C.

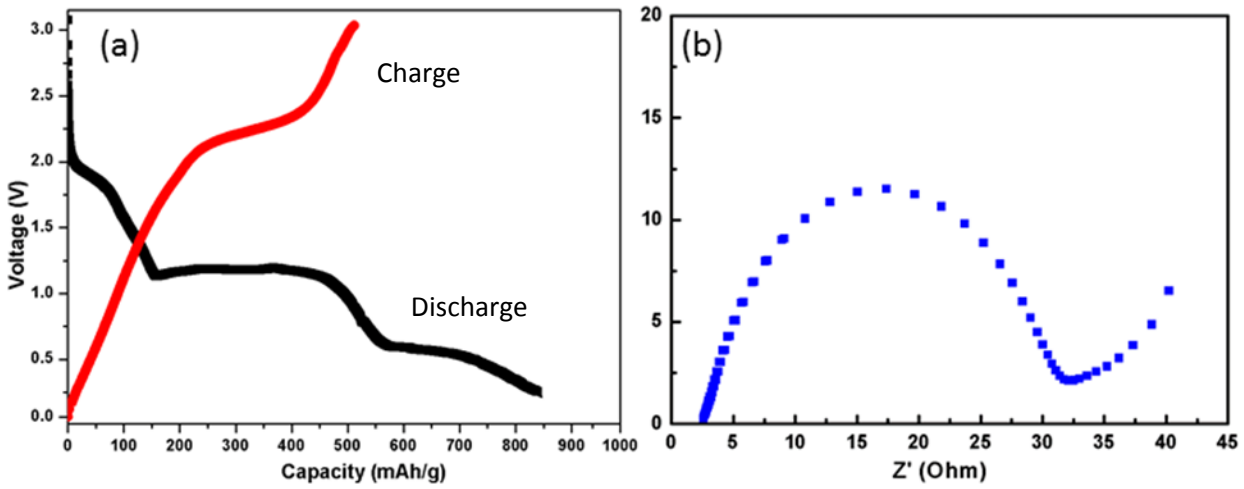


Figure S3. (a) First charge/discharge profile of MoS_2 powder synthesized by hydrothermal process and the electrode fabricated on copper foil using binder and carbon black as conducting agent (b) Impedance spectrum of similar electrode by appying amlitude of 5.0 mV over the frequency 100 kHz to 0.01 Hz and inset shows the equivalent circuit model of studied system