Supporting Information

Flexible Energy Storage Devices Based on Graphene Paper

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Supporting figures

Figure S1. The XRD spectra of (a) pristine graphite, (b) graphene paper, and (c) V_2O_5/graphene paper. The broad peak labeled with an asterisk (*) comes from the sample holder tape.

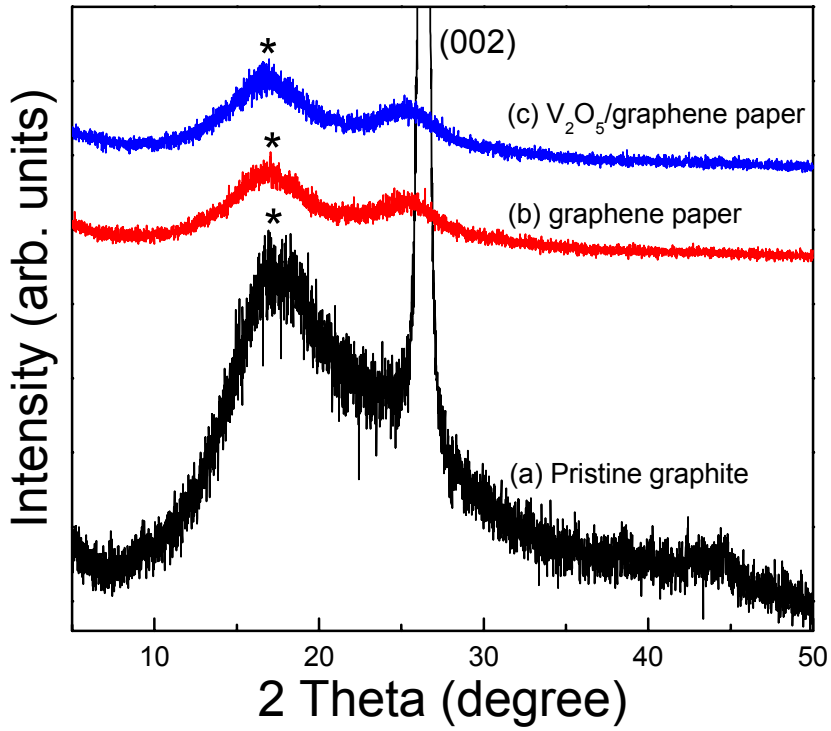


Figure S2-1. The Raman spectra of (a) pristine graphite, (b) graphene powder, (c) graphene paper (as-fabricated), and (d) graphene paper (after 150 cycles).

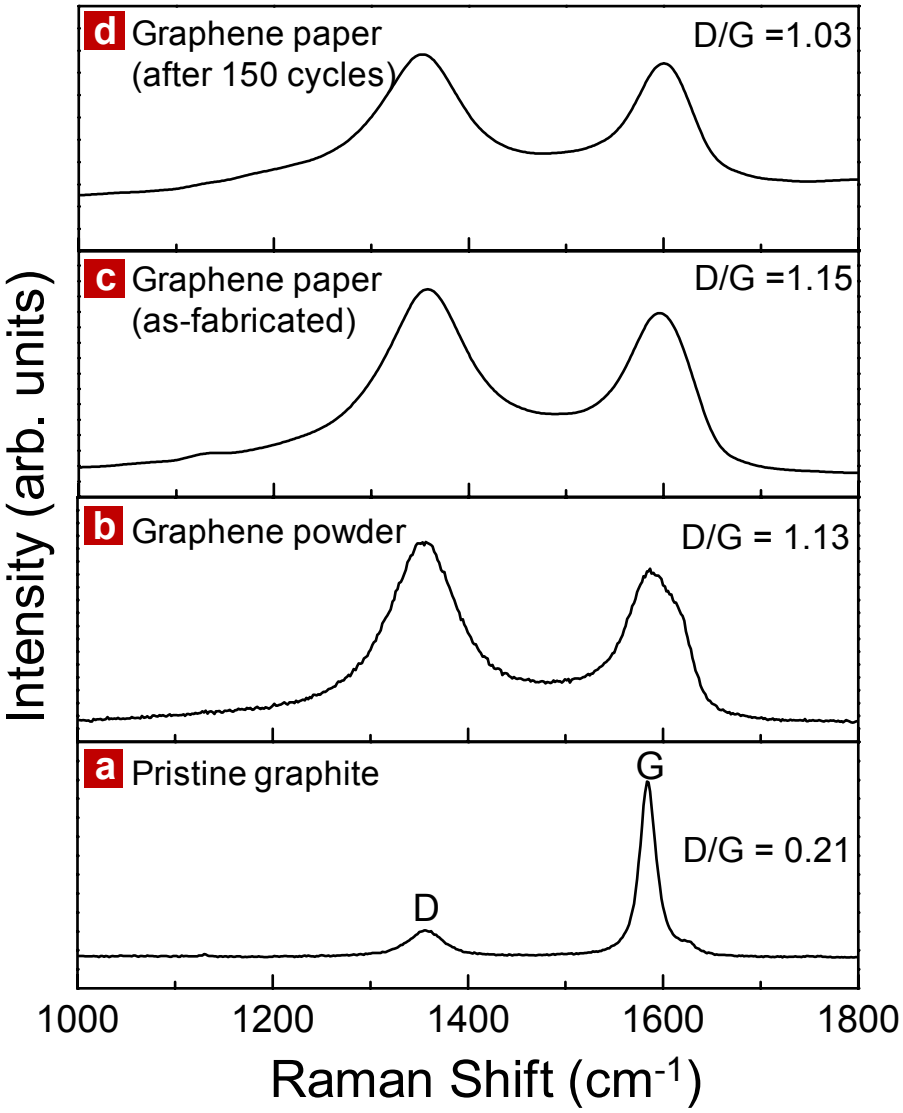


Figure S2-2. The Raman spectroscopy of V_2O_5/graphene paper.

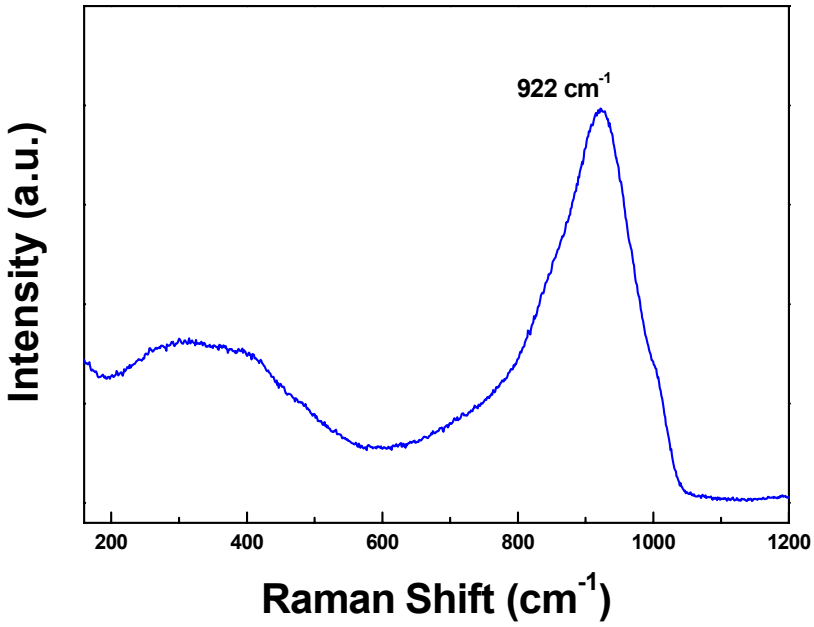


Figure S3. AFM images of (a) graphene paper and (b) V_2O_5 film grown on graphene paper.

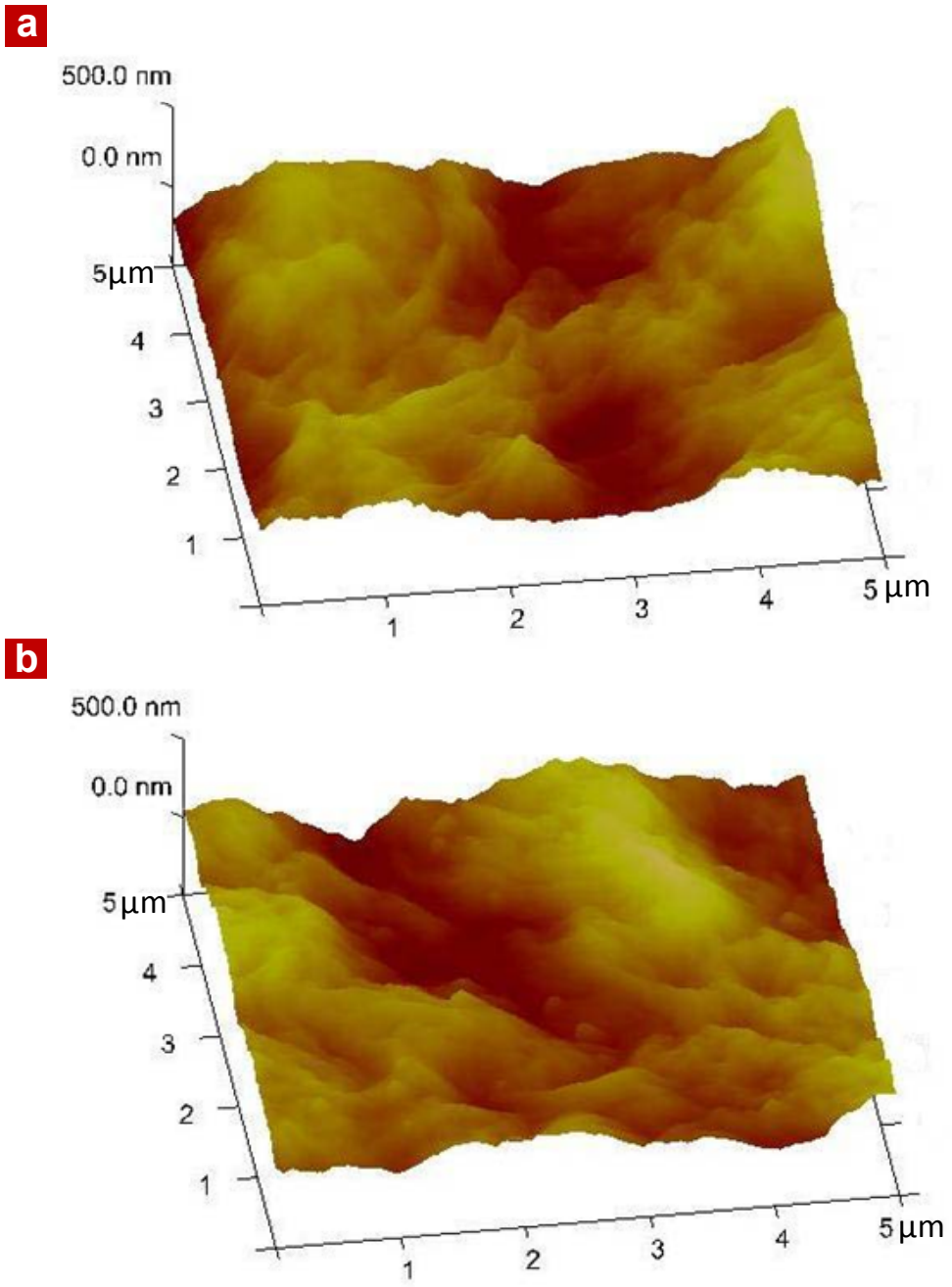


Figure S4. The top left panel represents the plan-view SEM image of V_2O_5 film, grown on graphene paper. Other panels show the elemental mapping for vanadium, oxygen, and carbon in the scanned region.

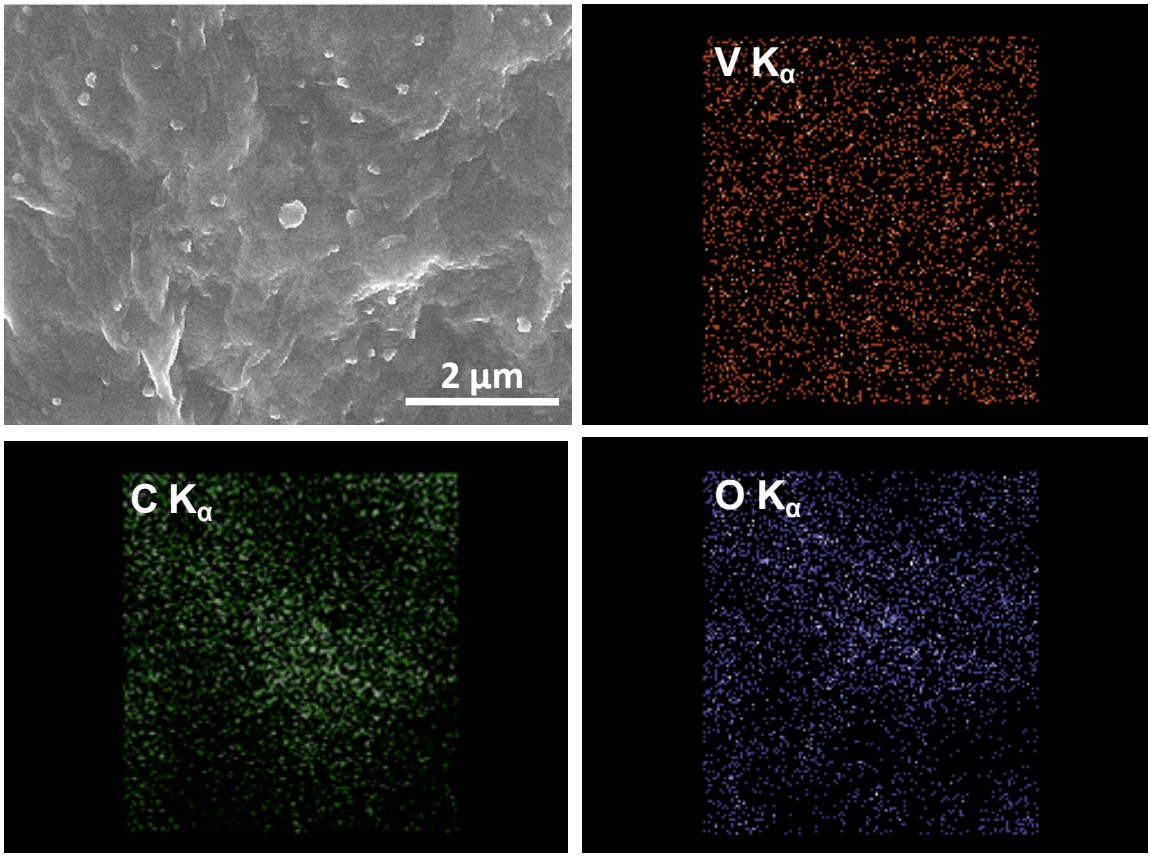


Figure S5. Nitrogen adsorption and desorption isotherms for reduced graphene powder. The shape of the isotherms shows that the reduced graphene has both micro and mesoporous structures.

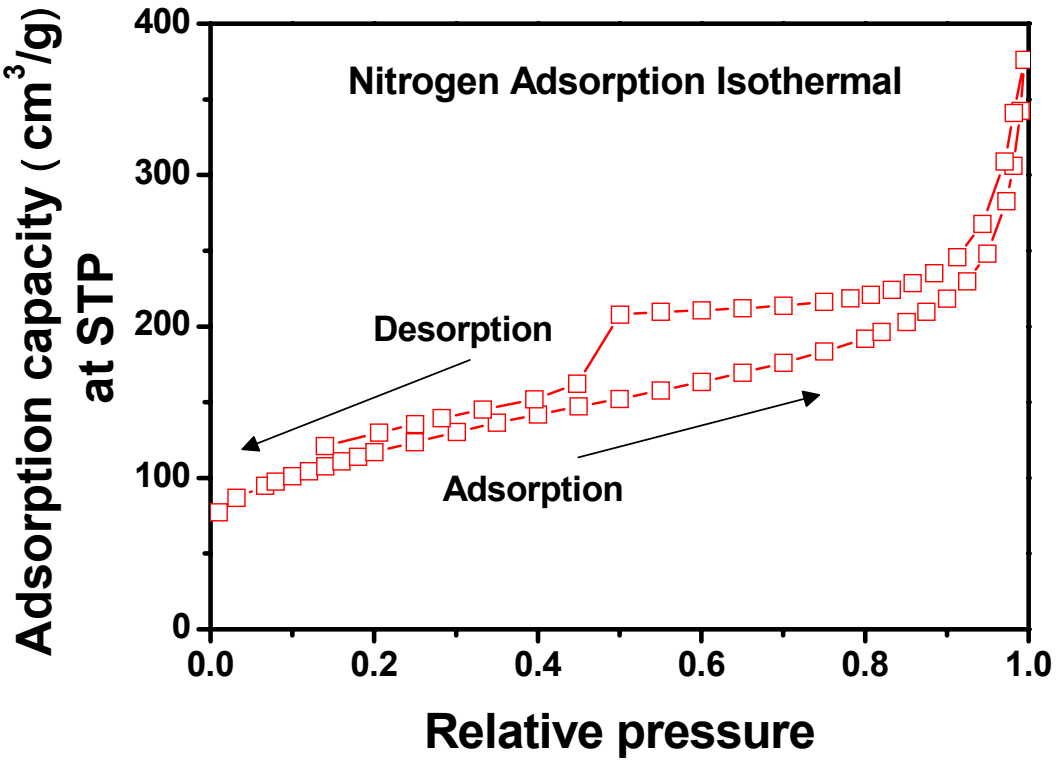
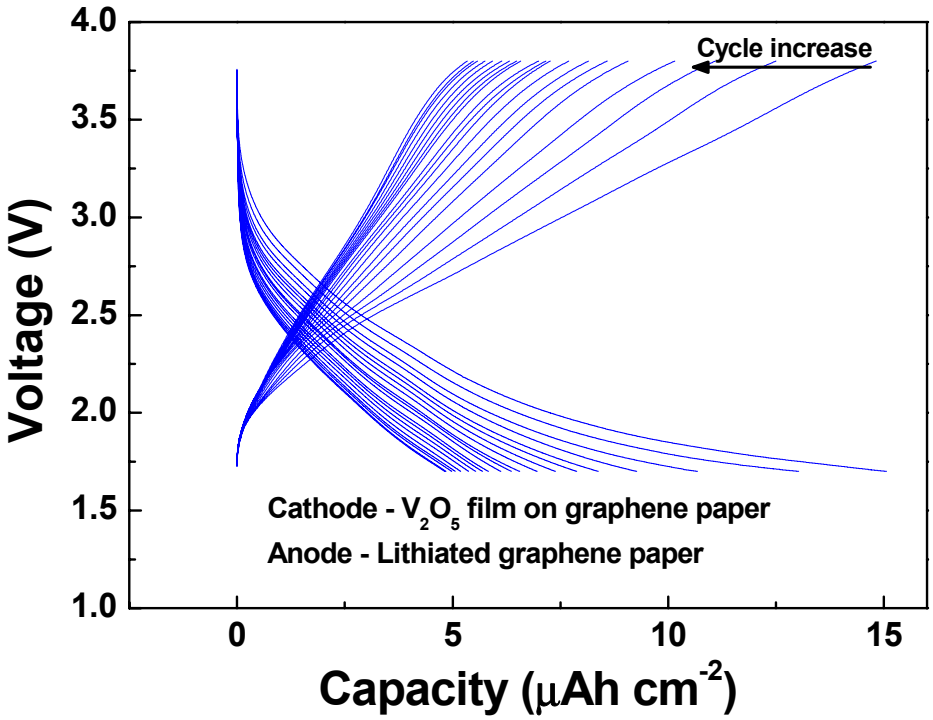


Figure S6. Specific capacity of the battery device cycled between 3.8 and 1.7 V at a constant current of 10 μA/cm^2.



Supporting Information

The percentage of V_2O_5 in the V_2O_5/graphene composite

The weight of V_2O_5/graphene paper before and after deposition was measured. (Sartorius, Model ME5; resolution 1 μg). The mass of graphene paper substrate (0.6 mm by 0.6 mm) was ~100 μg and that of V_2O_5/graphene paper was ~120 μg. From these two values, we could confirm the percentage of V_2O_5 in the V_2O_5-graphene composite. (~20%)