

# Supporting Information

## Extremely stable cycling of ultra-thin V<sub>2</sub>O<sub>5</sub> nanowire-graphene composite paper for lithium rechargeable battery cathodes

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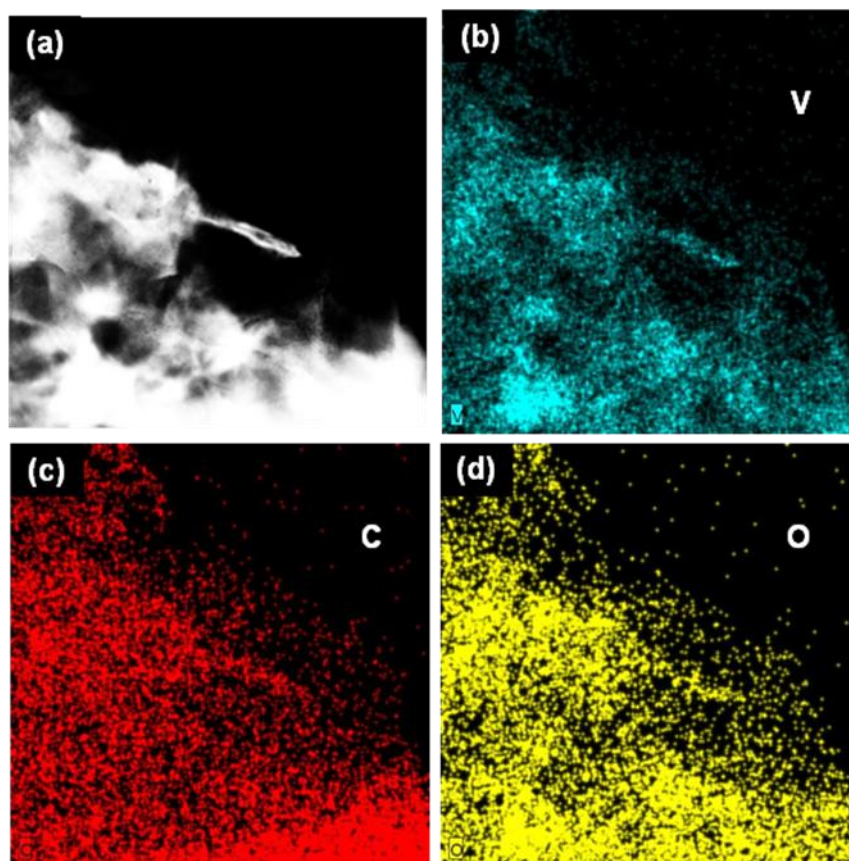
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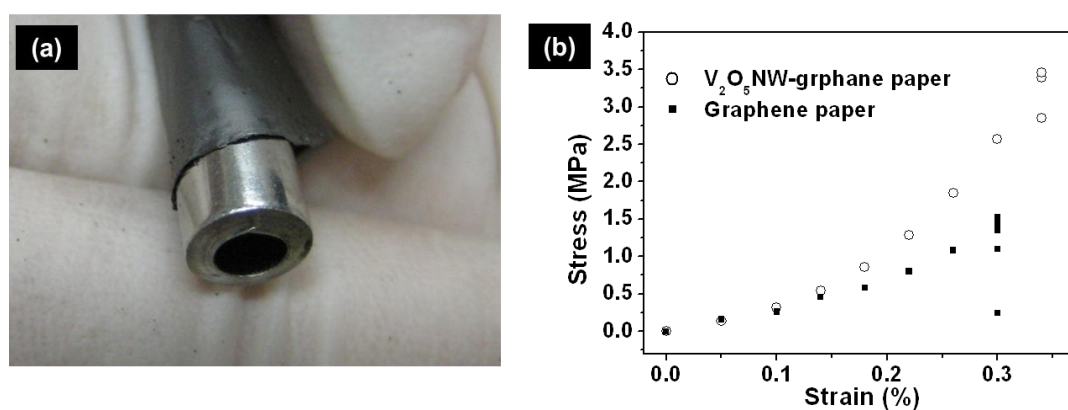
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This work was supported by the National Research Foundation of Korea Grant funded by the Korean Government (MEST) (NRF-2010-0029031, NRF-2011-0031407, NRF-2011-28737) and the World Class University Program (R-31-2008-000-10055-0).

Keywords: ((V<sub>2</sub>O<sub>5</sub> nanowire, Lithium Ion Battery, Cycle Life, Cathode, Graphene))

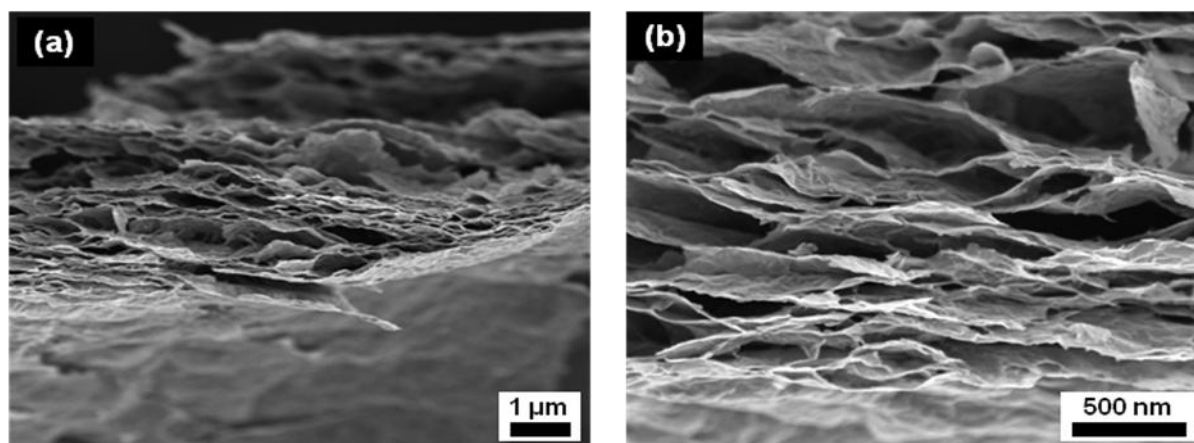


**Fig. S1.** (a) An HAADF STEM image and (b-d) EDS mappings of the  $V_2O_5$  NW-graphene composite paper. b-d corresponds to elements of vanadium, carbon, and oxygen, respectively.

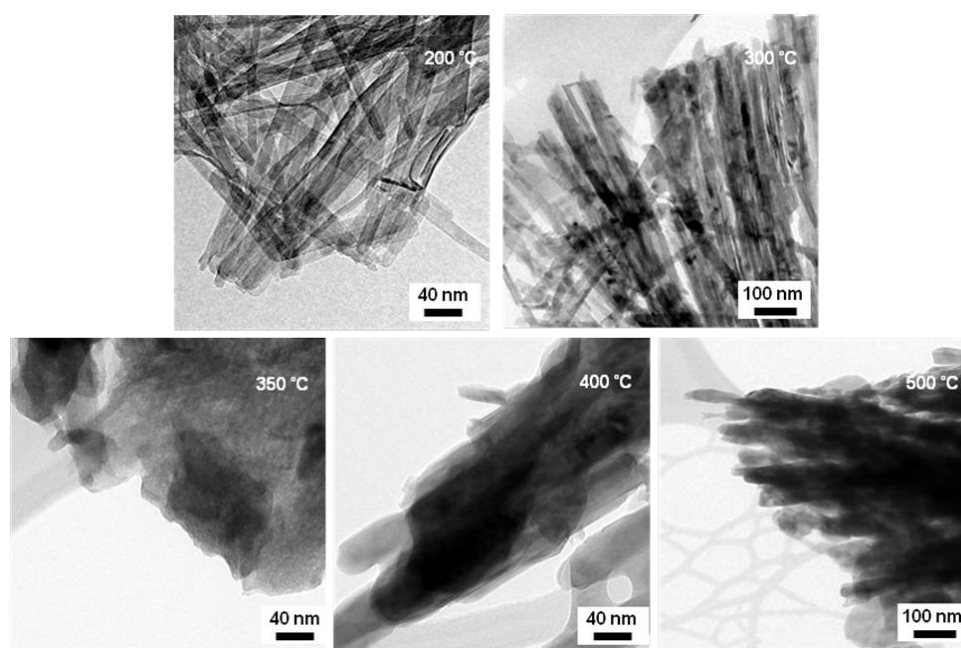


**Fig. S2.** (a) The bending test of the composite paper over a SUS tube (dia. = 6.5 mm). (b)

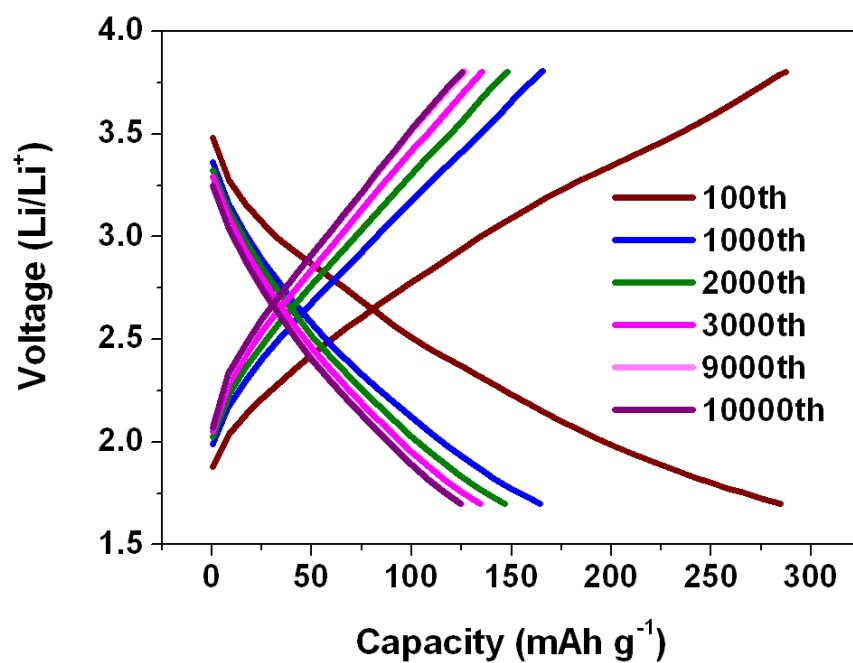
The stress-strain curve of the composite paper (15 wt%  $V_2O_5$ ) and bare graphene paper.



**Fig. S3.** Angled SEM images of the V<sub>2</sub>O<sub>5</sub> NW-graphene composite paper after thermal annealing.



**Fig. S4.** TEM images of V<sub>2</sub>O<sub>5</sub> NWs alone after annealing at various temperatures.



**Fig. S5.** The voltage profiles of the composite paper (15 wt% V<sub>2</sub>O<sub>5</sub>) at different cycling points. The current density was 10000 mA g<sup>-1</sup>.