

## Electronic Supplementary Information

### Graphene-Wrapped Silver/Porous Silicon Composite with Enhanced Electrochemical Performance for Lithium-Ion Batteries

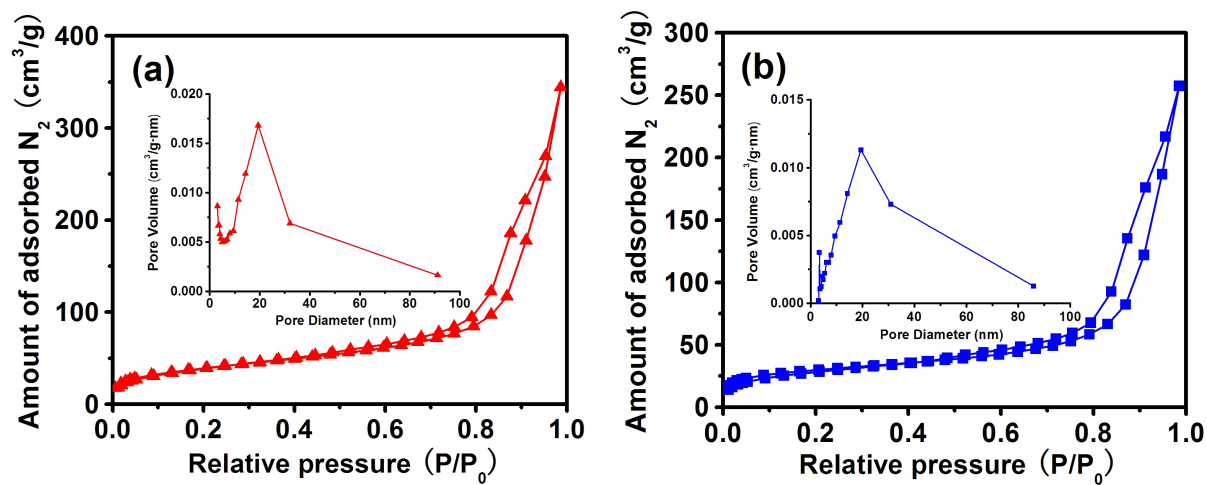
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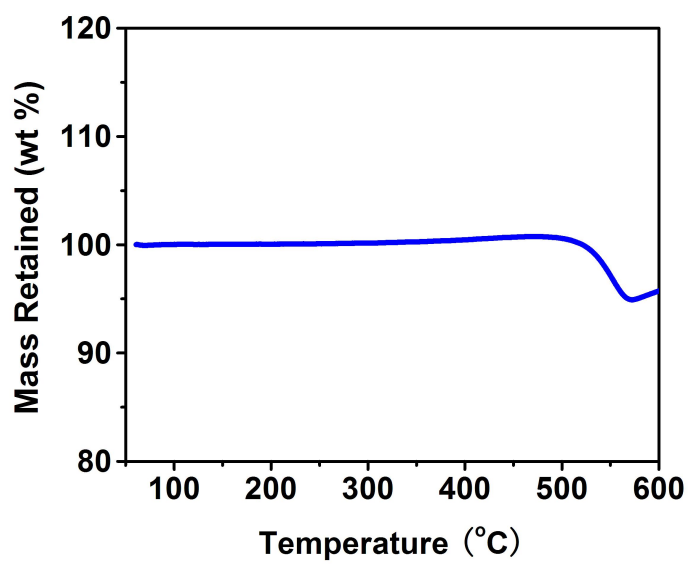
*Fax: (+86)-21-54741297; Tel: (+86)-21-34201273; E-mail: [k.wang@sjtu.edu.cn](mailto:k.wang@sjtu.edu.cn) (KXW), [chemcj@sjtu.edu.cn](mailto:chemcj@sjtu.edu.cn) (JSC)*



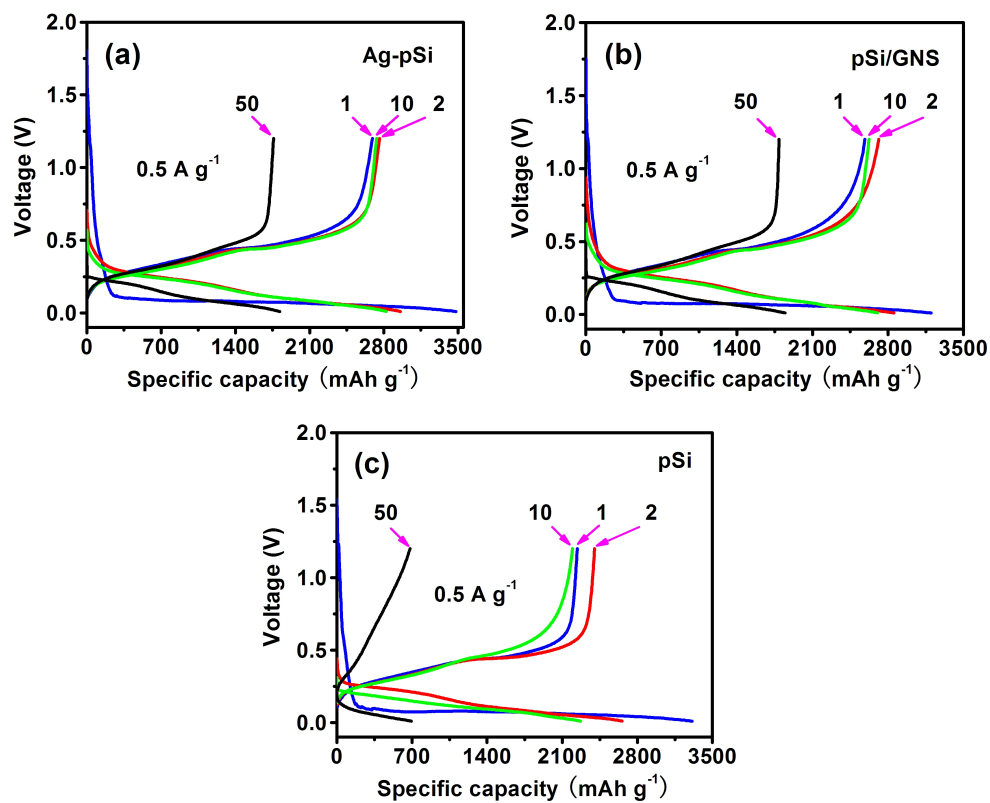
**Fig. S1** Photograph of the pSi in ethanol (left) and water (right).



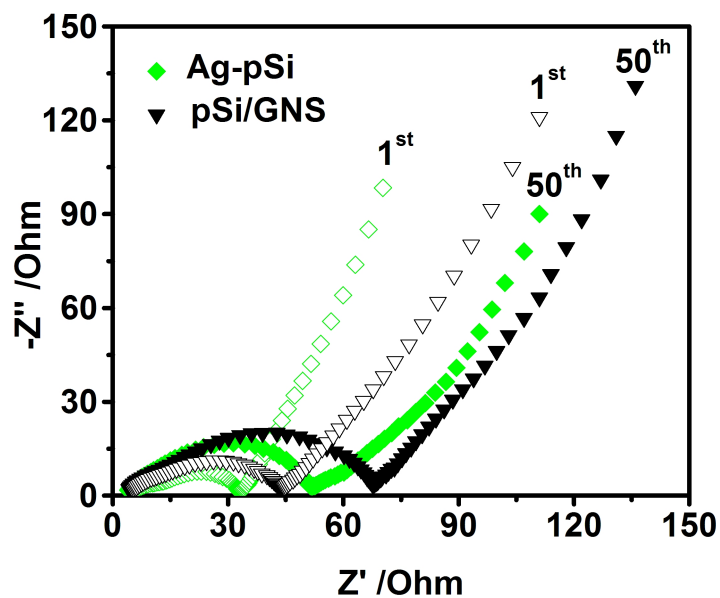
**Fig. S2** (a) Nitrogen adsorption-desorption isotherms and Barrett-Joyner-Halenda (BJH) pore size distribution of (a) pSi and (b) Ag-pSi/GNS composite.



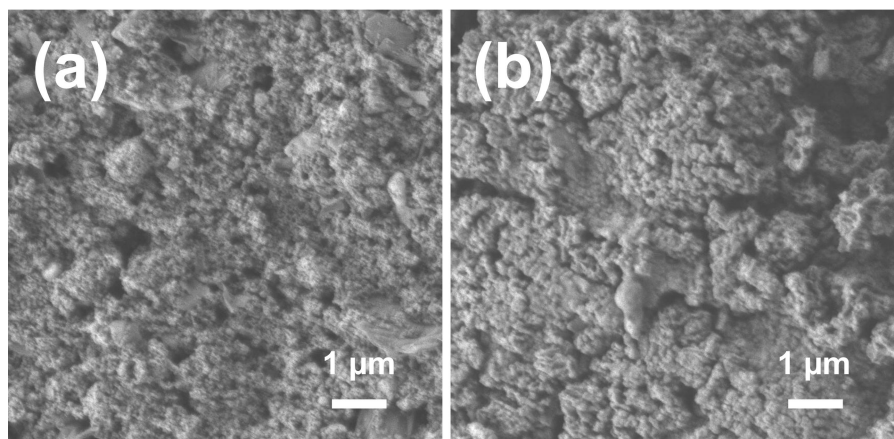
**Fig. S3** TG analysis curve of the Ag-pSi/GNS composite in air at a heating rate of 20 °C min<sup>-1</sup>.



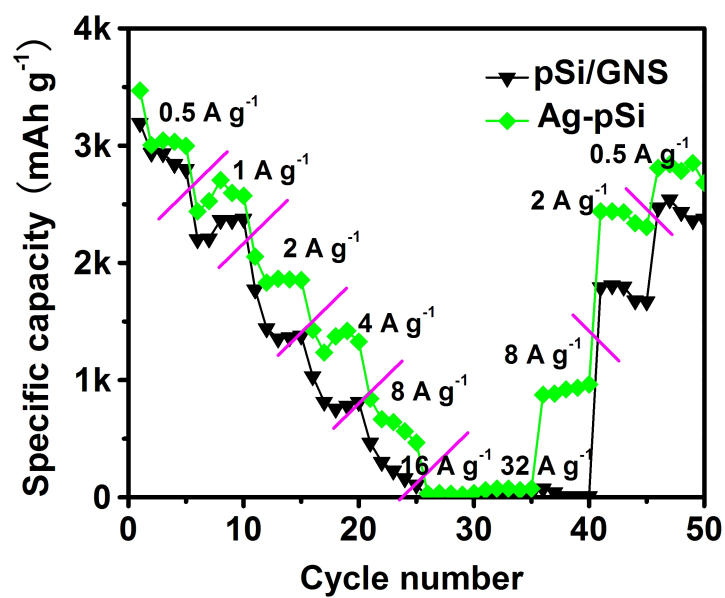
**Fig. S4** Galvanostatic charge-discharge profiles of the pSi, pSi/GNS and Ag-pSi composites.



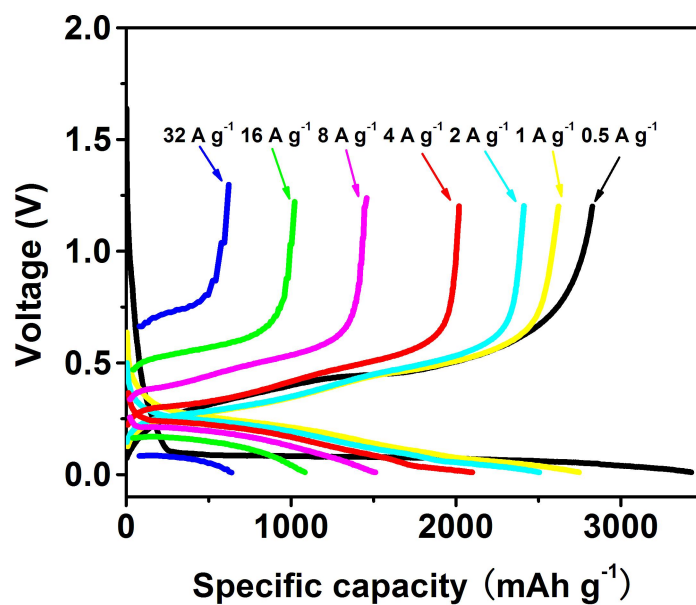
**Fig. S5** Nyquist plots of the Ag-pSi and pSi/GNS composites after the first and 50<sup>th</sup> cycle at a current density of 0.5 A g<sup>-1</sup>.



**Fig. S6** SEM images of the Ag-pSi/GNS electrodes (a) before and (b) after 200 cycles at a current density of 0.5 A g<sup>-1</sup>.



**Fig. S7** Rate capability of the Ag-pSi and pSi/GNS composites.



**Fig. S8** Charge-discharge profiles of the Ag-pSi/GNS composite at various current densities from 0.5 to 32 A g<sup>-1</sup>.