

## Electronic supplementary information

### Nickel sulfide anchored carbon nanotubes for all-solid-state lithium batteries with enhanced rate capability and cycling stability

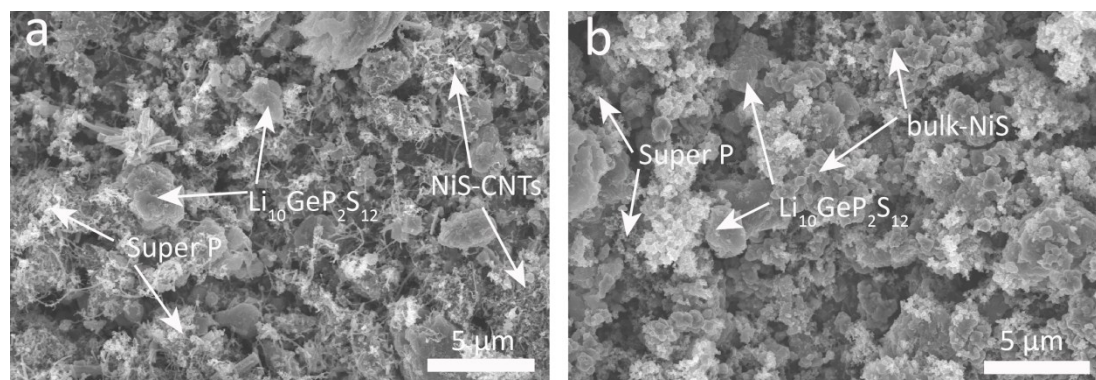
Qiang Zhang<sup>ab</sup>, Gang Peng<sup>a</sup>, Jean Pierre Mwizerwa<sup>ab</sup>, Hongli Wan<sup>ab</sup>, Liangting Cai<sup>a</sup>, Xiaoxiong Xu<sup>a</sup>

and Xiayin Yao<sup>\*a</sup>

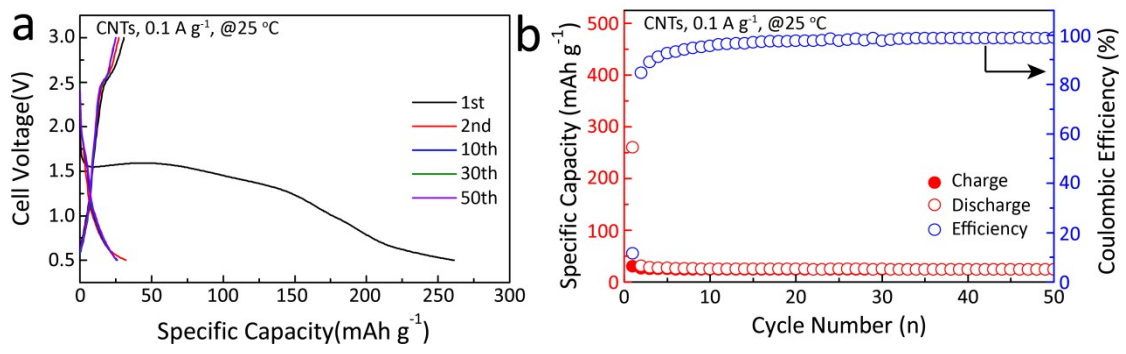
<sup>a</sup> Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences, Ningbo, 315201, P. R. China.

<sup>b</sup> University of Chinese Academy of Sciences, 100049, Beijing, P.R.China

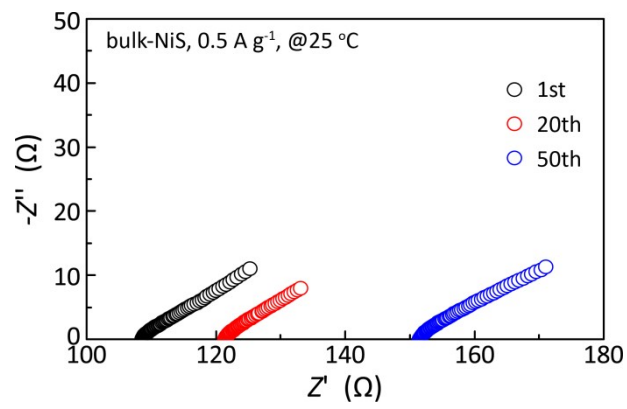
\* Corresponding author: yaoxy@nimte.ac.cn (X.Y. Yao)



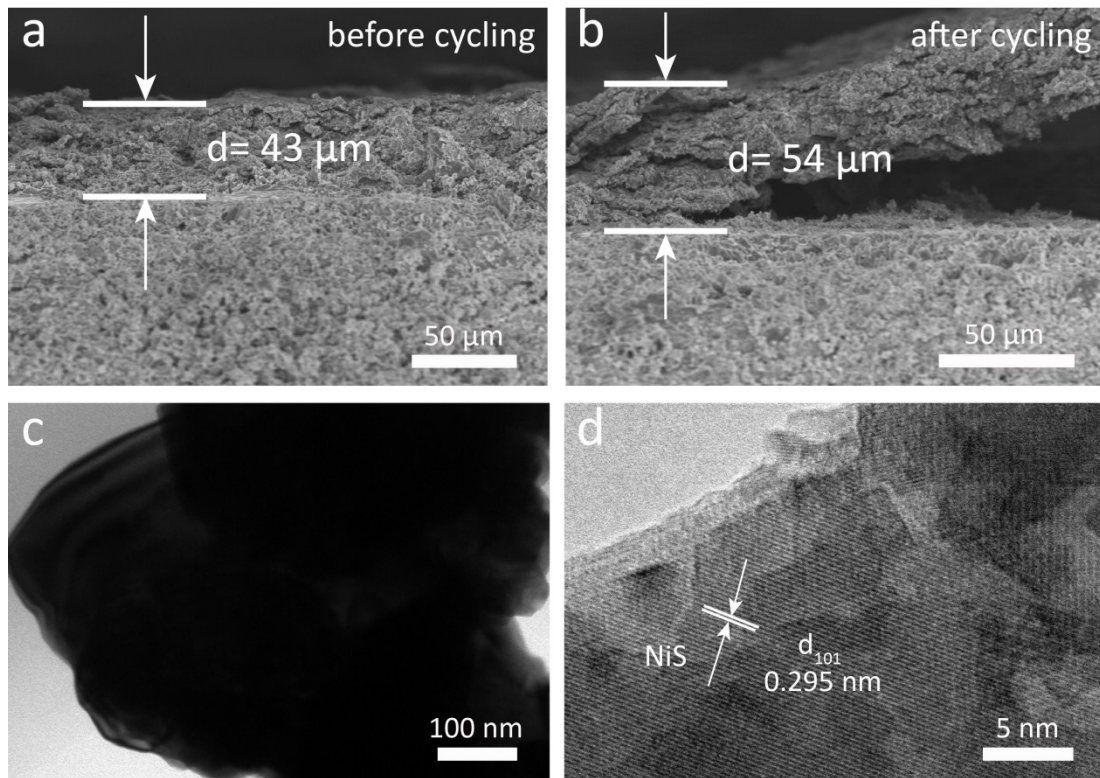
**Fig. S1** SEM images of (a) NiS-CNTs and (b) bulk-NiS composite electrodes.



**Fig. S2** (a) Galvanostatic charge/discharge profiles and (b) cycle performances of CNTs electrode at current density of 0.1 A g<sup>-1</sup>.



**Fig. S3** Nyquist plots for Li/75%Li<sub>2</sub>S-24%P<sub>2</sub>S<sub>5</sub>-1%P<sub>2</sub>O<sub>5</sub>/Li<sub>10</sub>GeP<sub>2</sub>S<sub>12</sub>/bulk-NiS cells after 1<sup>st</sup>, 20<sup>th</sup> and 50<sup>th</sup> cycles.



**Fig. S4** SEM images of cross-section of bulk-NiS composite electrodes (a) before cycling and (b) after 150 cycles; (c)TEM and (d) HRTEM images of the bulk-NiS electrode after 150 cycles.