

Supplementary Information

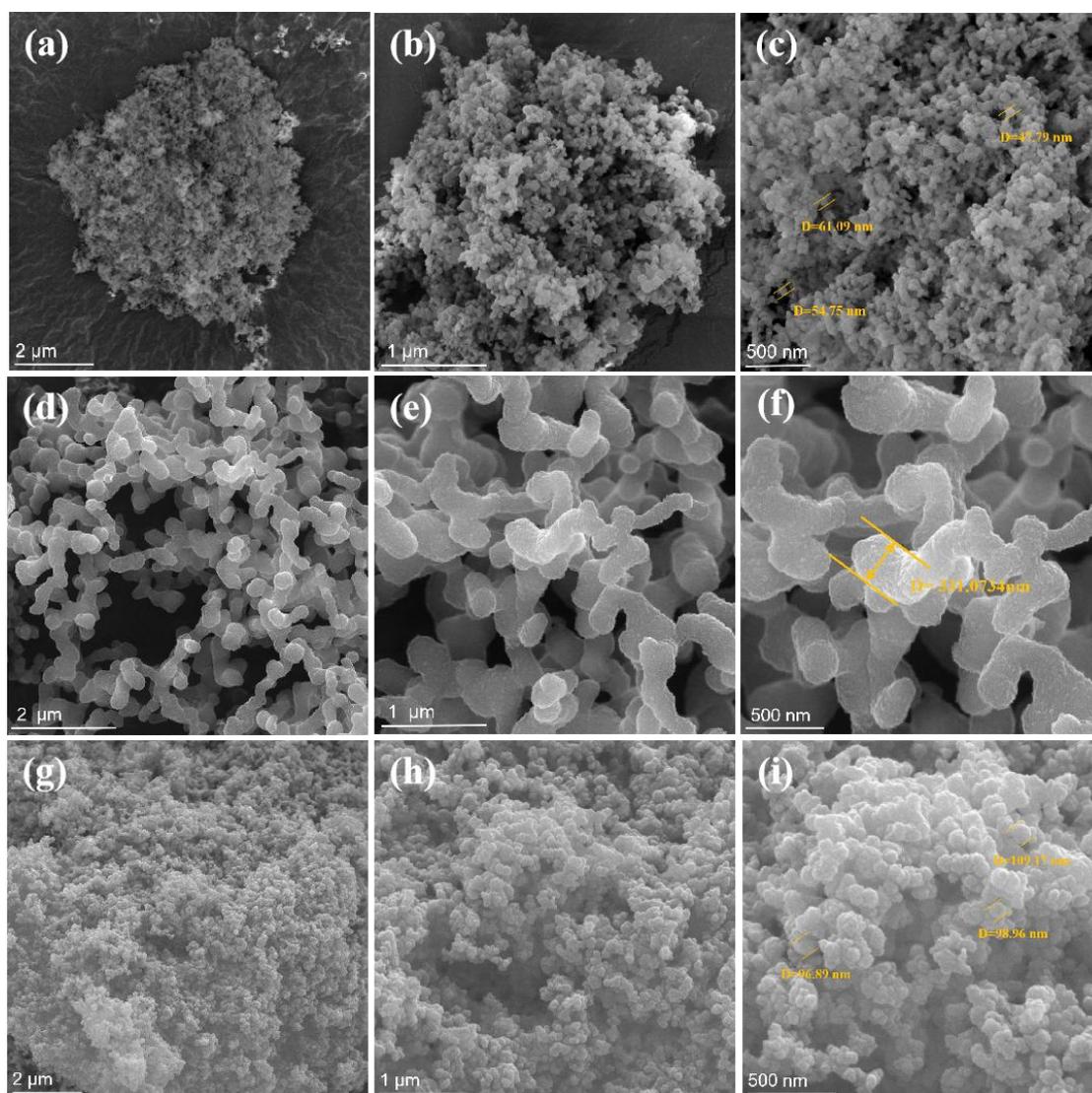


Fig. S1 (a)~(c) SEM images of pristine Si nanoparticles. (d)~(f) SEM images of SC-3. (g)~(i) SEM images of carbon-coated silicon particles.

Materials	Content of Si	Cycling	Rate capacity		Electrode	
		performance (mAh g ⁻¹)	(mAh g ⁻¹)	ICE (%)	thickness swelling	Refs
Si NWs	11.5%	1587 after 140 cycles at 0.1 C (1C=3579 mA g ⁻¹)	760 at 1 C	81	-	18
Gt-SiNW	32%	664 after 200 cycles at 2 C	327 at 5 C	72	20%	26
SiO/Si NWs	80 wt% of active materials	~960 after 100 cycles at 0.1 C	1084 at 3 C	54.3	~40%	11
nf-Si@C	60 wt% of active materials	1141 over 100 cycles at 0.2 C (1C=1350 mA g ⁻¹)	414 at 5 C	58	-	40
SiO _x /SNWs @C	(C = 13.6 wt%)	~760 after 200 cycles at 0.2 C (1C=1500 mA g ⁻¹)	617.5 at 1 C	74.6	-	24
Si NWs@C	32.34%	~600 after 200 cycles at 5 C (1C=100 mA g ⁻¹)	570.5 at 10 C	76.36	30.7%	

Fig. S2 The electrochemical performance of the Si NWs@C and other reported Si-based materials as anodes for LIBs

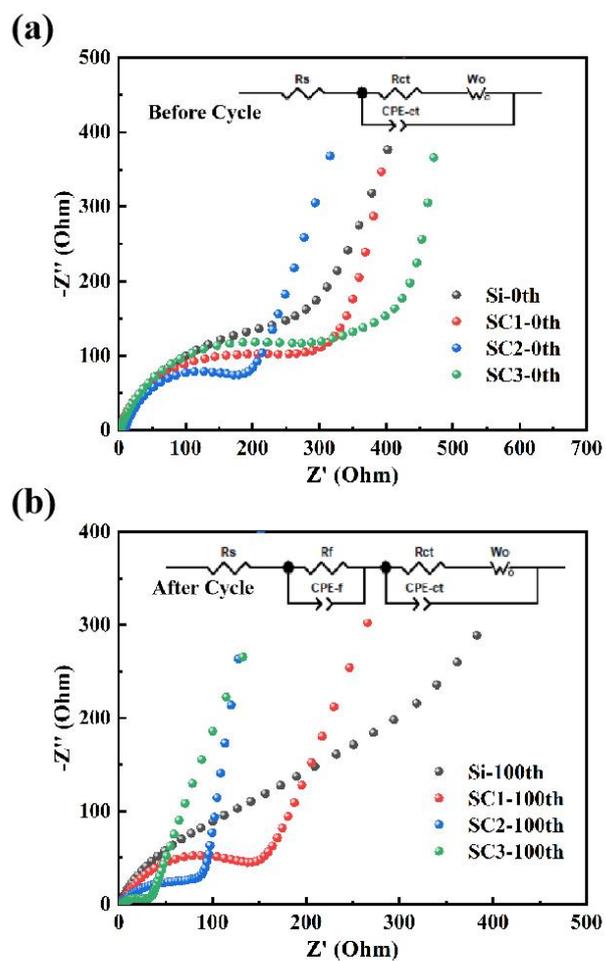


Fig. S3 (a) Nyquist plots of Si NPs, SC-1, SC-2 and SC-3 electrodes before cycling. (b) Nyquist plots of Si NPs, SC-1, SC-2 and SC-3 electrodes after cycling.