Supporting Information

Toward Mechanically Stable Silicon-based Anodes using Si/SiO_x@C Hierarchical Structures with Well-controlled Internal Buffer Voids

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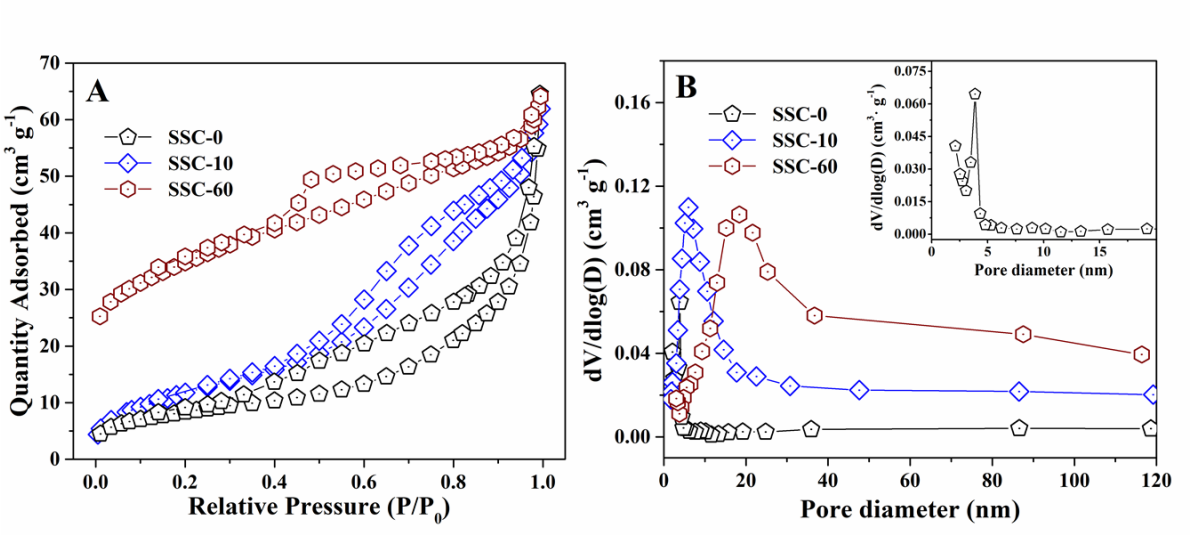

Figure S1 (A) N_2 sorption isotherms and (B) pore size distributions of the SSC-0, SSC-10 and SSC-60 composites.

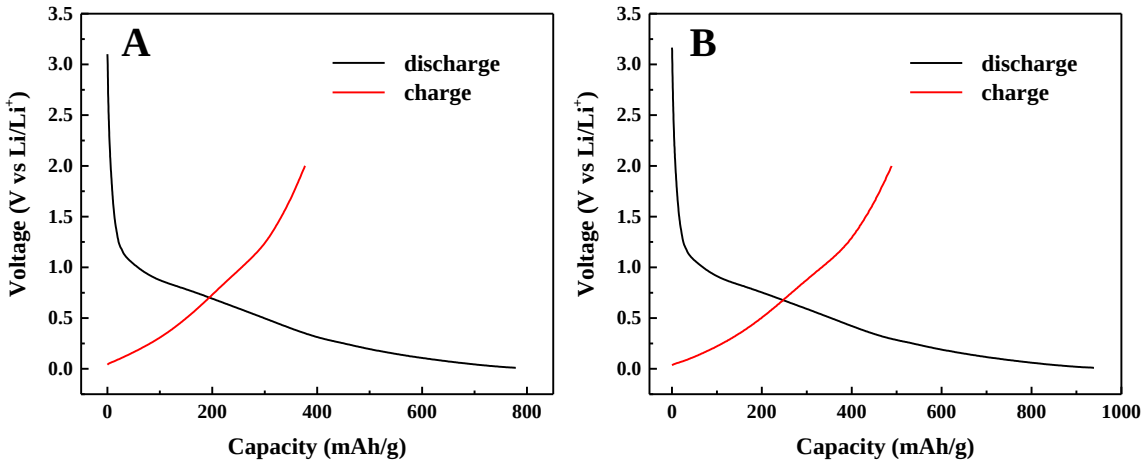

Figure S2 Voltage profiles of pure sucrose-derived carbon electrode (A) and carbon-based electrode (B) obtained by etching the Si/SiO_x@C material (sintering the mixture of 20 wt% SiO and 80 wt% sucrose at 1100 ^oC for 5h under argon atmosphere).

Table S1 The conductivity values of different composites measured by 4-point probe method and the capacity contribution of different components

Samples	*Conductivity (S cm^{-1})*	*Si/SiO$_x$ weigth ratio(%)*	*Capactiy contriubtion (mAh g^{-1})*	
			C	*Si/SiO$_x$*
Baseline SiO	*3.69×10^{-4}*	*100*	*0*	*2305*
SSC-0	*6.99×10^{-3}*	*61.7*	*304*	*978*
SSC-10	*1.14×10^{-2}*	*37.4*	*498*	*1120*
SSC-60	*3.23×10^{-2}*	*20.3*	*558*	*176*
BSSC-10	*5.29×10^{-3}*	*61.3*	*308*	*1199*

Table S2 The comparison of intial charge-discharge capacity and capacity loss, energy density against graphite

Samples	*Initial discharge capacity (mAh g^{-1})*	*Initial charge capacity (mAh g^{-1})*	*Initial irreversible capacity (mAh g^{-1})*	*Energy density (Wh kg^{-1})*
Graphite	*370*	*340*	*30*	*37.6 (100th)*
SSC-0	*1282.1*	*828.5*	*453.6*	*50.3(100th)*
SSC-10	*1618.6*	*1209.1*	*409.5*	*191.2(100th)*
SSC-60	*734.6*	*430.7*	*303.9*	*95.6(100th)*
BSSC-10	*1507.2*	*1058.3*	*448.9*	*162(100th)*