Confined self-assembly of SiOC nanospheres in graphene film to achieve cycle stability of lithium-ion batteries

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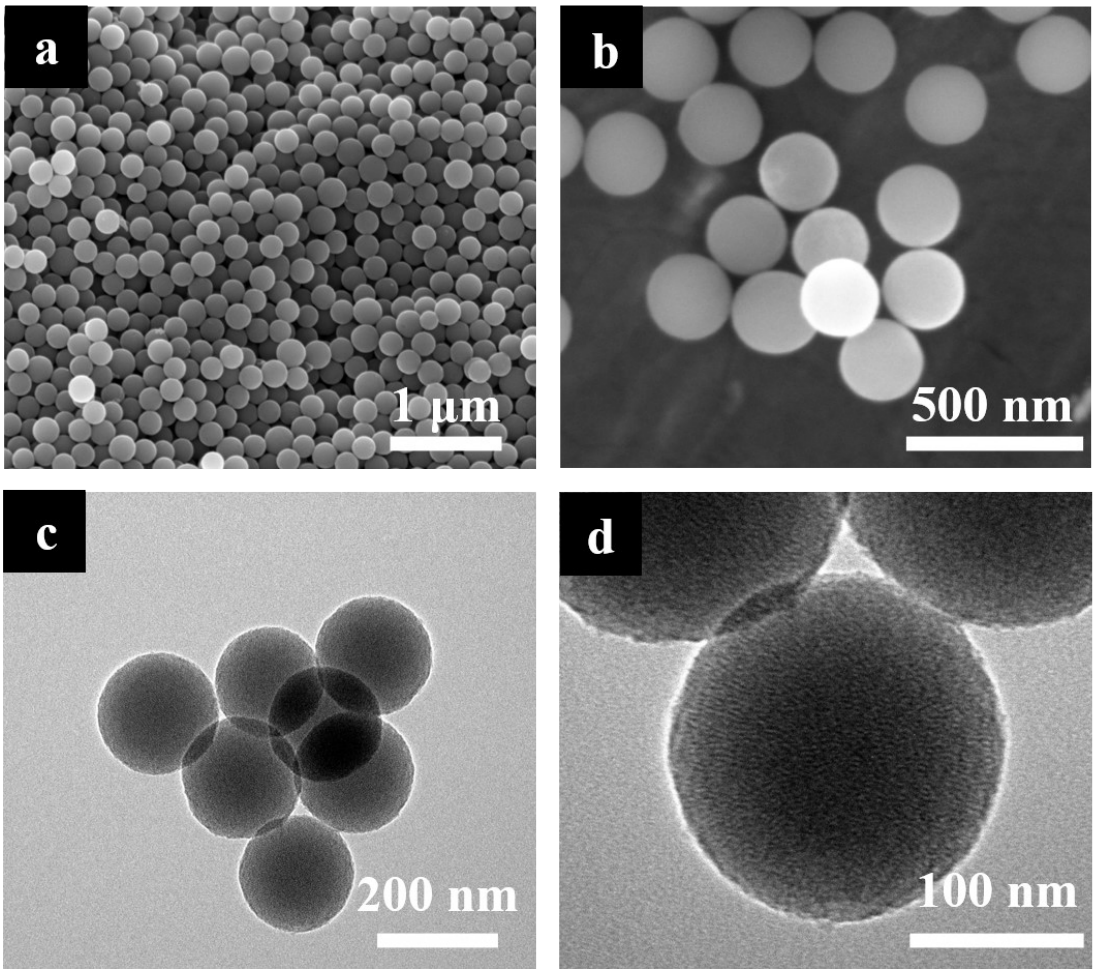

Figure S1. (a, b) FESEM images and (c, d) TEM images of SiOC nanospheres.

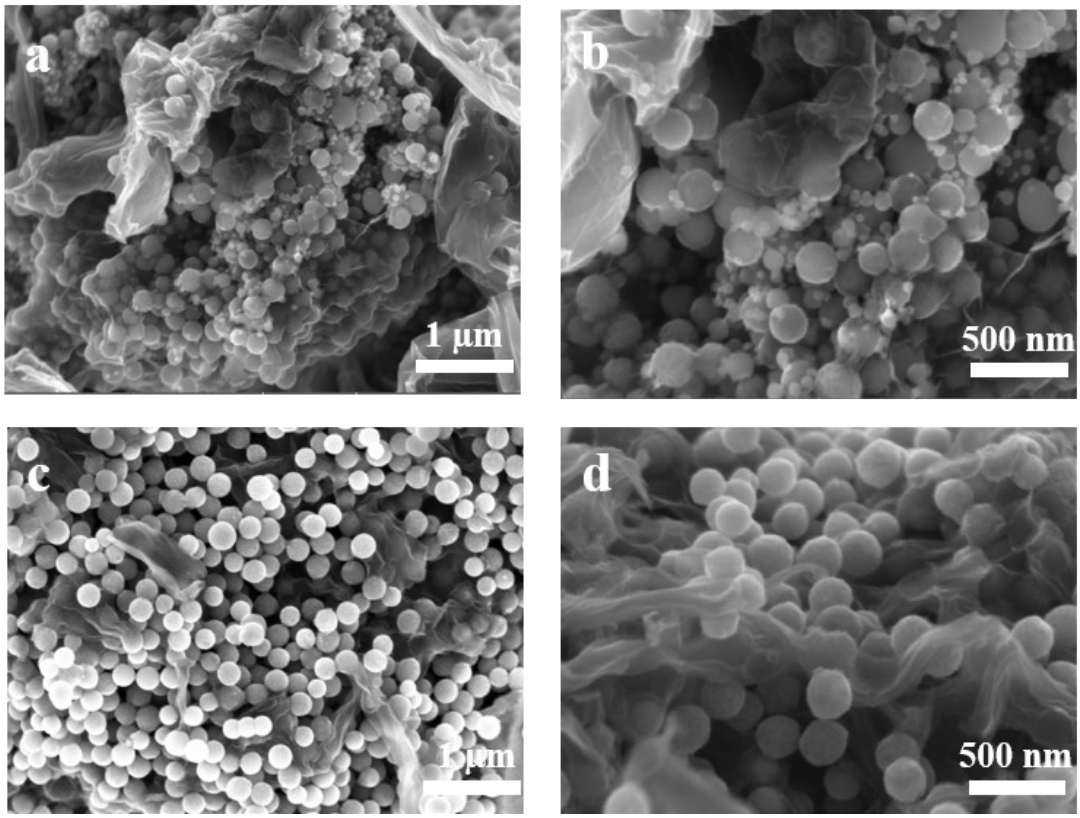

Figure S2. (a, b) FESEM images of the CA-SiOC@G hierarchical structure and (c, d) VC-SiOC@G hierarchical structure.

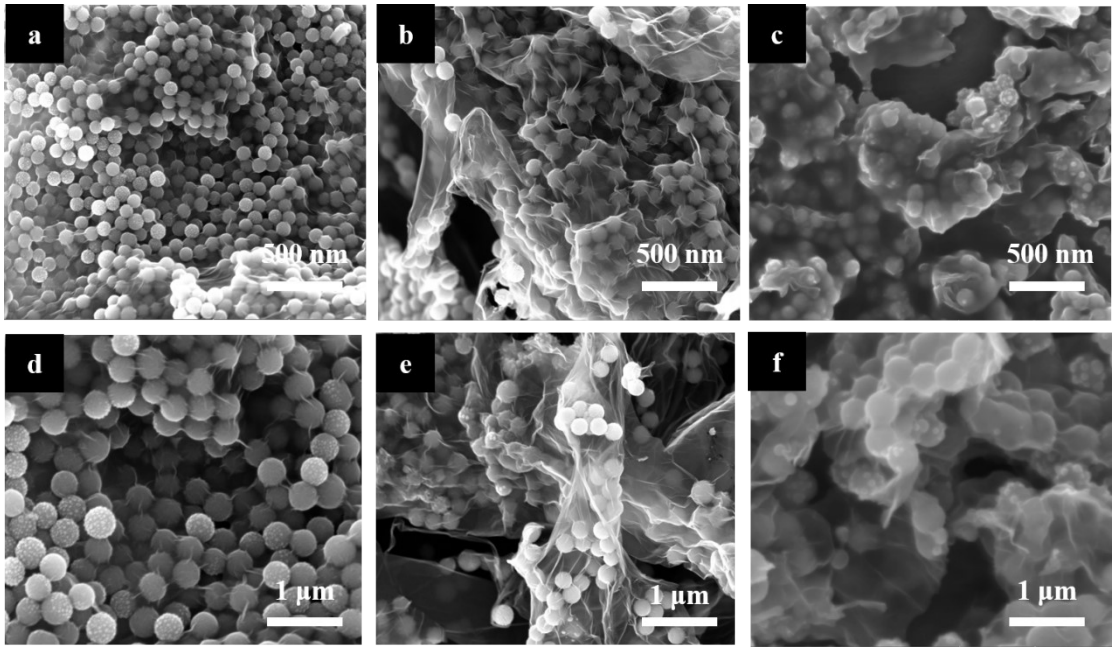

Figure S3. FESEM image of B-SiOC@G hierarchical structure prepared with different SiOC and GO mass ratios, (a, d) graphene: SiOC=1: 10, (b, e) graphene: SiOC=2: 10, (c, f) graphene: SiOC=4: 10.

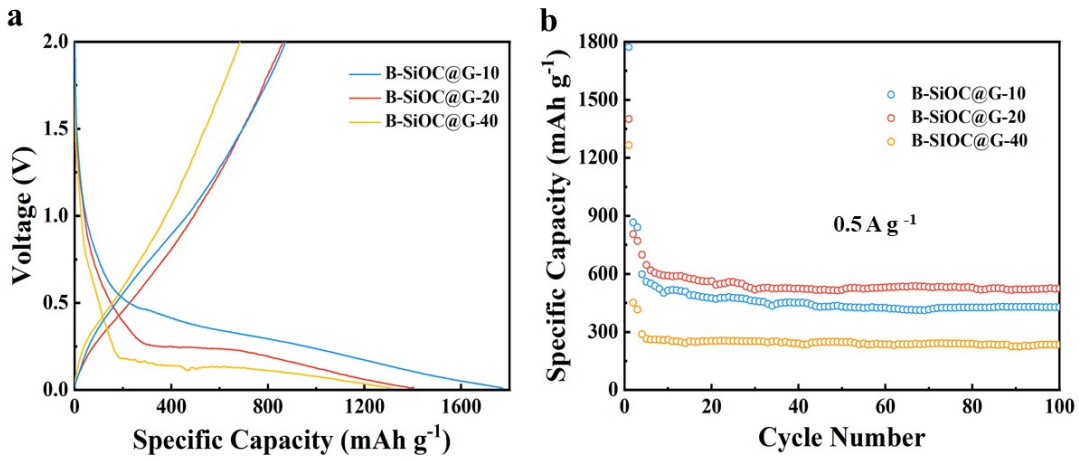

Figure S4. (a) First discharge/charge curves of B-SiOC@G prepared by different SiOC and graphene mass ratios, (b) cycle performance at 0.5 A g^{-1} current density. With the ratio of graphene and SiOC changes to 1:10, 2:10, 5:10, named as B-SiOC@G-10, B-SiOC@G-20, B-SiOC@G-40, respectively.

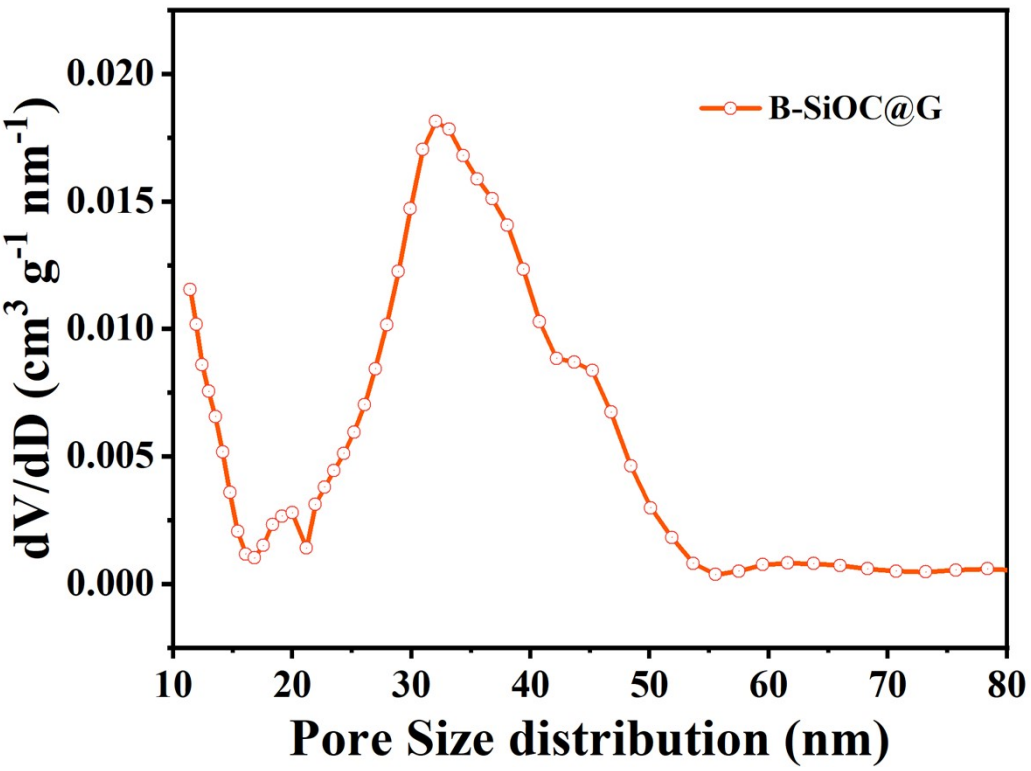

Figure S5. The pore size distribution of B-SiOC@G.

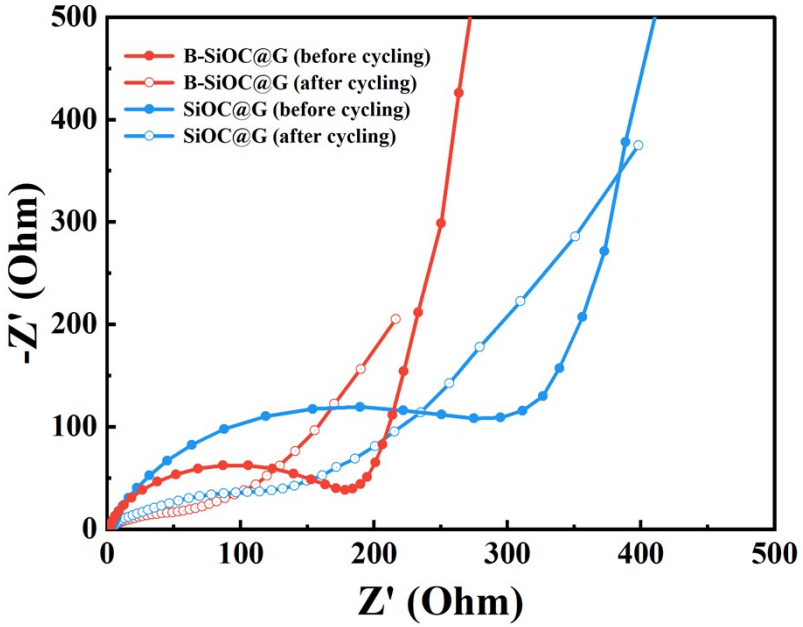

Figure S6. Nyquist plots of the B-SiOC@G and SiOC@G samples before and after 500 cycles.

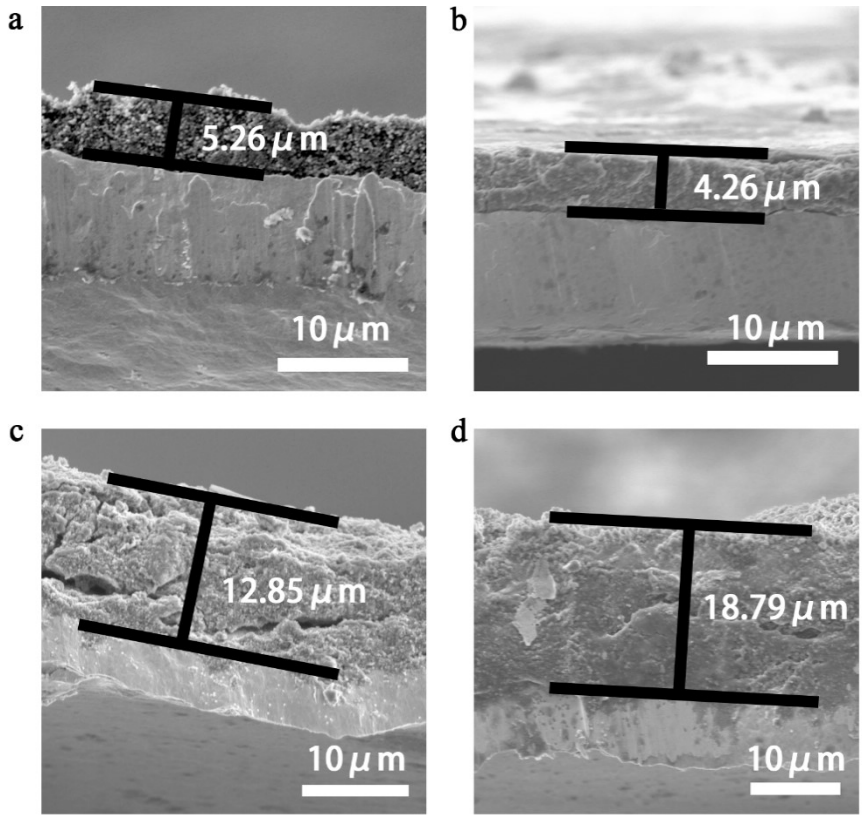

Figure S7. Cross-section images of electrode material. (a) Before cycling of B-SiOC@G and (b) SiOC@G. (c) After 500 cycles of B-SiOC@G and (d) SiOC@G.