Fig. S1 is the TG curve of C/Sn/HCNFs from room temperature to 800°C in air, it can be clearly seen that 60.13wt% of mass remains after the measurement. The residual is $SnO_2$ and we can calculate the content of Sn in C/Sn/HCNFs is 47wt%.

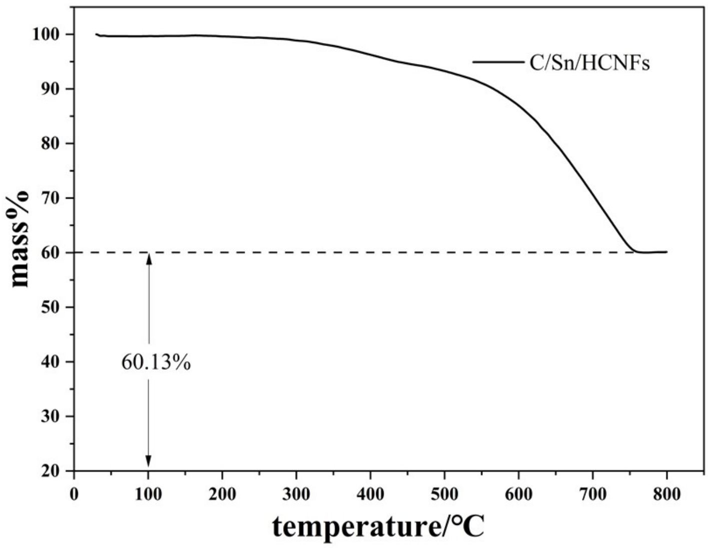


Fig. S1 The TG curves of C/Sn/HCNFs composite materials

As shown in Fig S2. (a) and (b), which made by Sn/HCNFs and glucose in 1:6 and 1:8 receptively. carbon is uniform coating on the surface of HCNFs, and carbon particles are dotted among HCNFs.

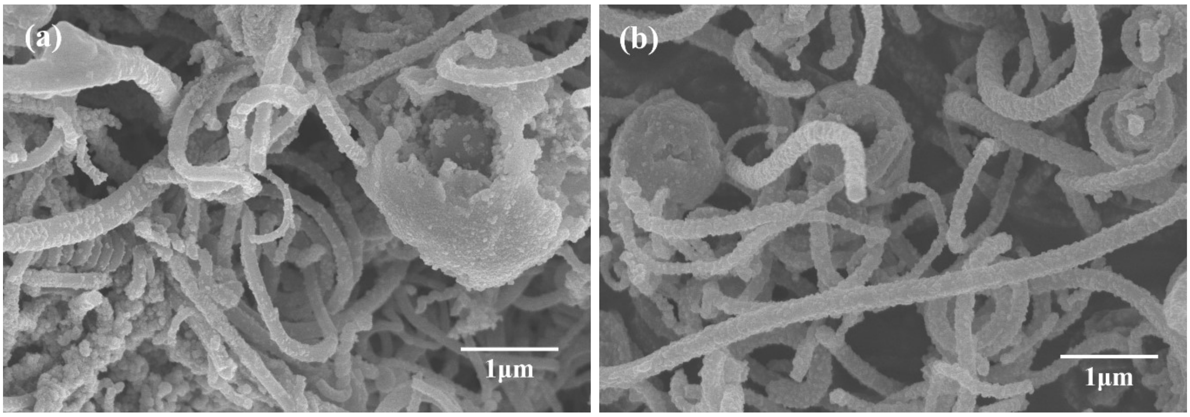


Fig. S2 FESEM images of (a) Sn/HCNFs: glucose = 1:6; (b) Sn/HCNFs: glucose = 1:8

We can see from Fig S3(a), Sn in the red circle has a thin carbon coating, which can also see in Fig S3(c), at the same place, it shows the obvious distribution of C elements.

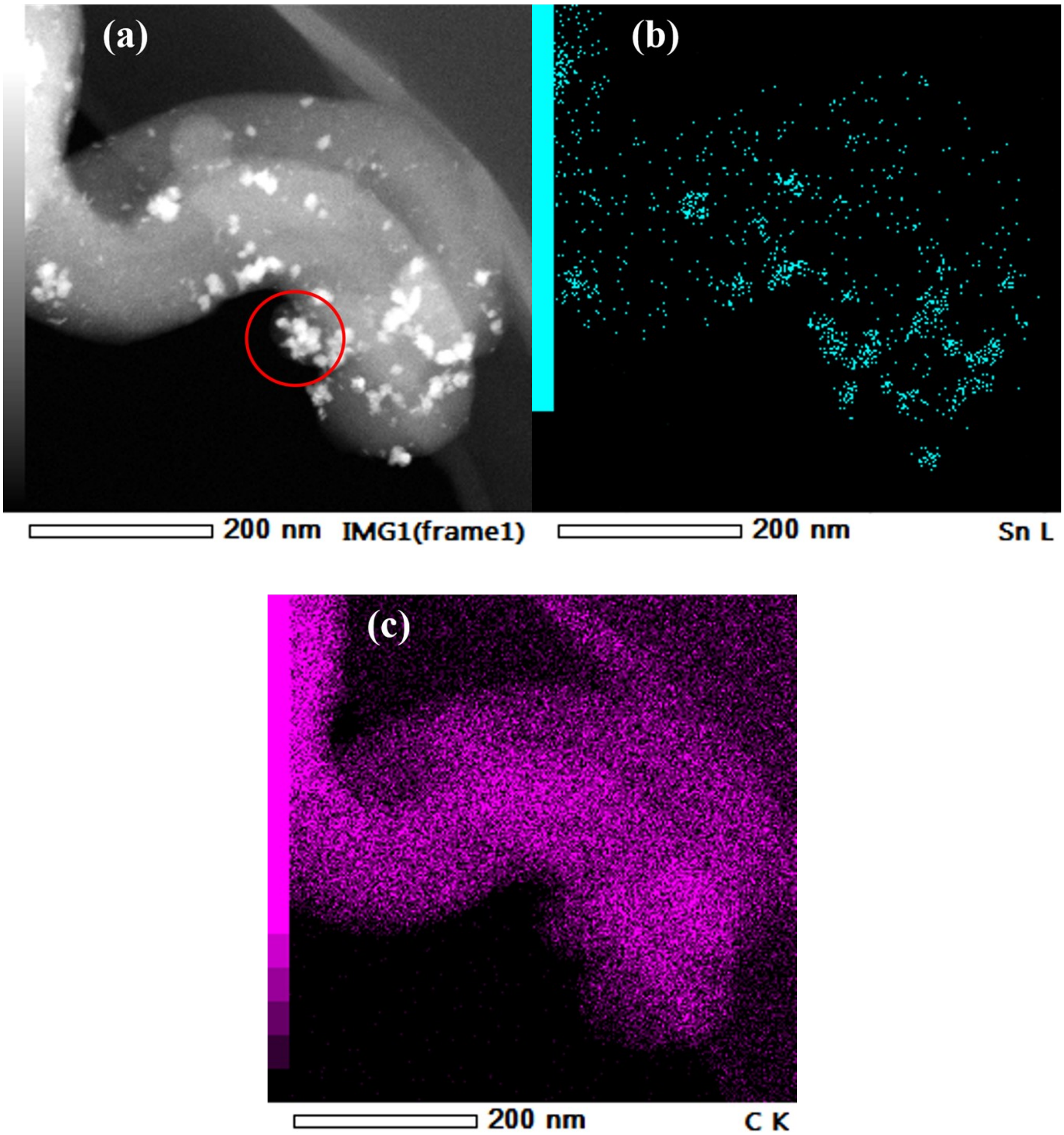


**Fig. S3** EDS elemental mapping of STEM image (a) C/Sn/HCNFs; (b)Sn element; (c)C element

Fig S4a is the SEM image of C/Sn/HCNFs after 200 cycles. The structure of C/Sn/HCNFs remains relatively intact after cycling, which shows the C coating layer and the HCNFs matrix material can well buffer the volume expansion effect of Sn, which is also the reason for the better stability of C/Sn/HCNFs. Fig S4b is the EIS curve. The impedance of C/Sn/HCNFs decreases obviously after cycling, which provides the battery a stable cycling performance.

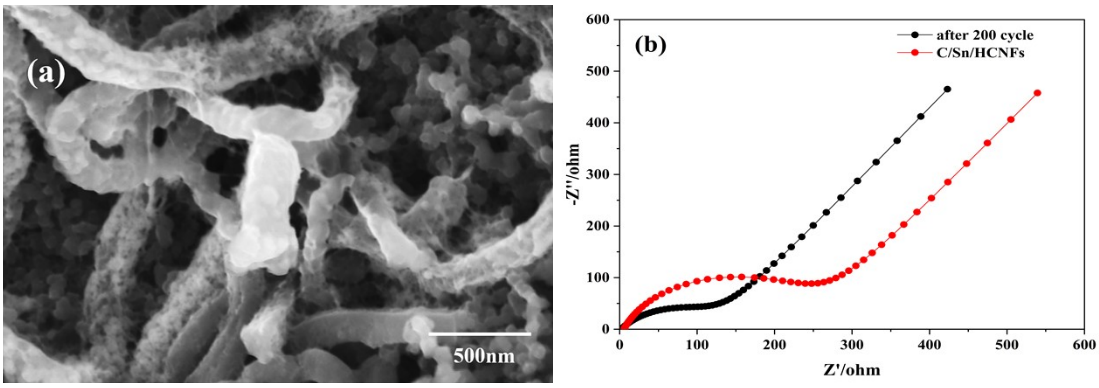


Fig S4(a) SEM image of C/Sn/HCNFs after 200 cycle charge and discharge, (b)EIS curves of C/Sn/HCNFs and after 200 cycles.