Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

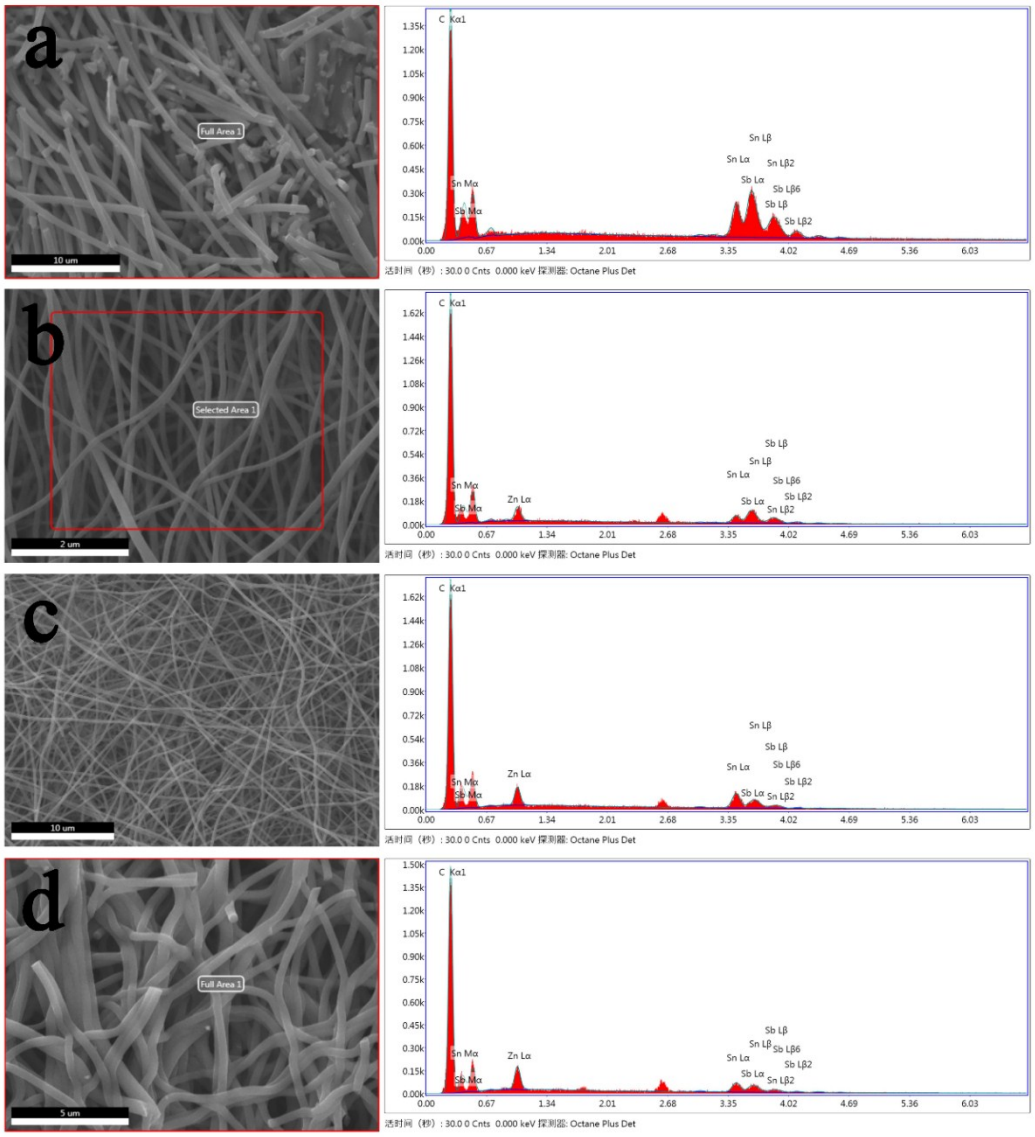

Figure S1 SEM elemental analysis of SnSb-C, $SnSbZn_{0.2}$-C, $SnSbZn_{0.4}$-C and $SnSbZn_{0.8}$-C composite nanofibers.

Table S1 SEM elemental mapping results of $SnSbZn_x$-C composite nanofibers.

	SnSb-C		$SnSbZn_{0.2}$-C		$SnSbZn_{0.4}$-C		$SnSbZn_{0.8}$-C	
Element	Weight %	Atomic %	Weight %	Atomic %	Weight %	Atomic %	Weight %	Atomic %
Sn	30.6	9.2	25.9	6.1	27.7	6.6	30.2	6.4
Sb	32.7	9.5	26.5	6.0	29.5	6.8	29.7	6.1
Zn	0	0	3.2	1.3	6.8	2.9	13.1	5.0

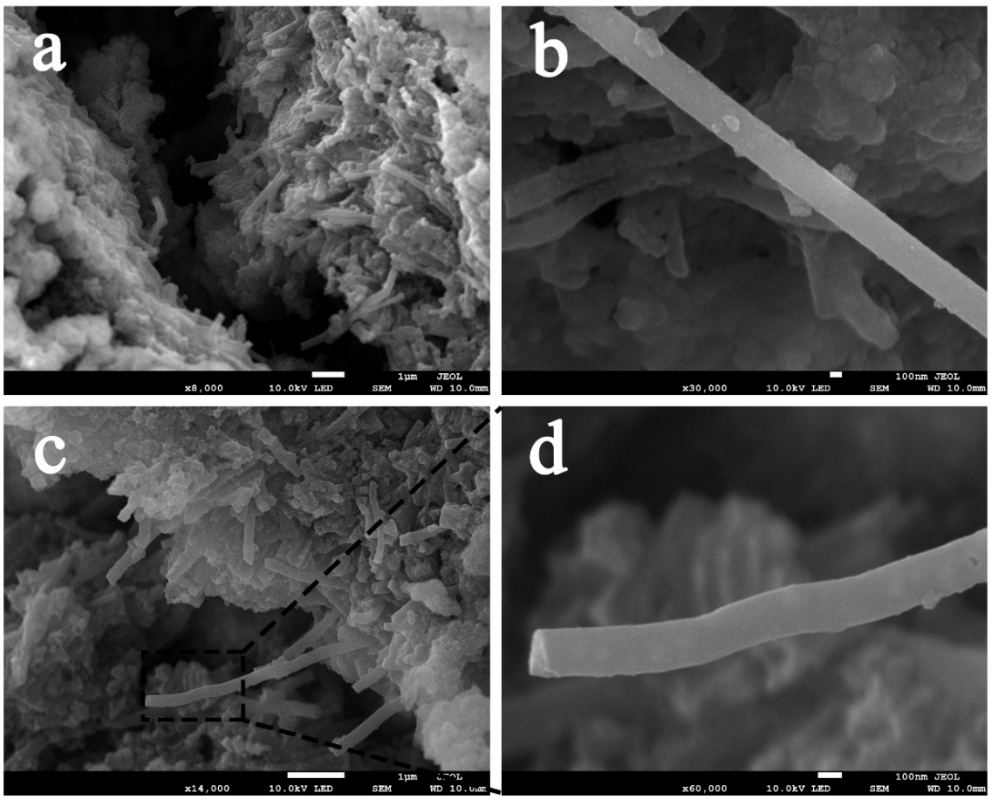

Figure S2 SEM images of the $SnSbZn_{0.4}$-C composite anode materials after 200 cycles.

Figure S3 Digital image of a piece of carbon nanofiber network.

The SnSbZn-C nanofibers were synthesized by electrospinning followed with carbonization. Figure S3 shows the digital image of a piece of nanofiber network after heat treatment. Due to the unique nanostructure and tight organization of the fibrous felts, the carbon nanofiber network electrode is pliable, foldable, and flexible. The electrical conductivity of the nanofiber composite was tested by four-probe method. To choose different positions for the measurement, the average electrical conductivity is **5.26×10^{-2} S cm^{-1}**.

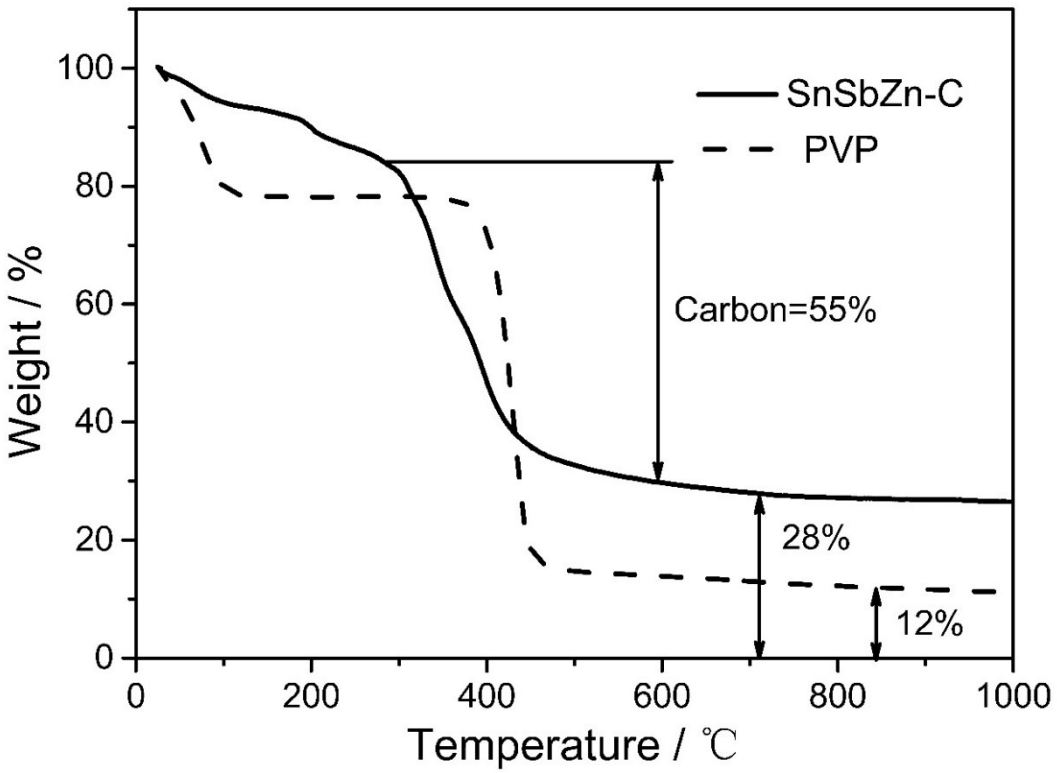

Figure S4 Thermal gravimetric analysis (TGA) of the SnSbZn-C composite nanofibers and pure PVP nanofibers.

Thermal gravimetric analysis (TGA) curves of the SnSbZn-C composite nanofibers and pure PVP nanofibers are shown in Figure S4. As can be seen, the carbon yield of PVP after carbonization is about 12%. For the composite nanofibers, which is about 17% weight loss corresponding to the removal of the bound water and the decomposition of $SnCl_2$, $SbCl_3$ and $Zn(NO_3)_2$ when the temperature is below 300 ℃, therefore, 280 ℃ was chosen as the stabilization temperature. After carbonization, the final residual weight is about 28%, which should consist 12% carbon and 16% alloys. Moreover, XPS spectra are shown in Figure S5, this analysis also confirmed that the mass ratio of alloys and carbon is about **4:3**.

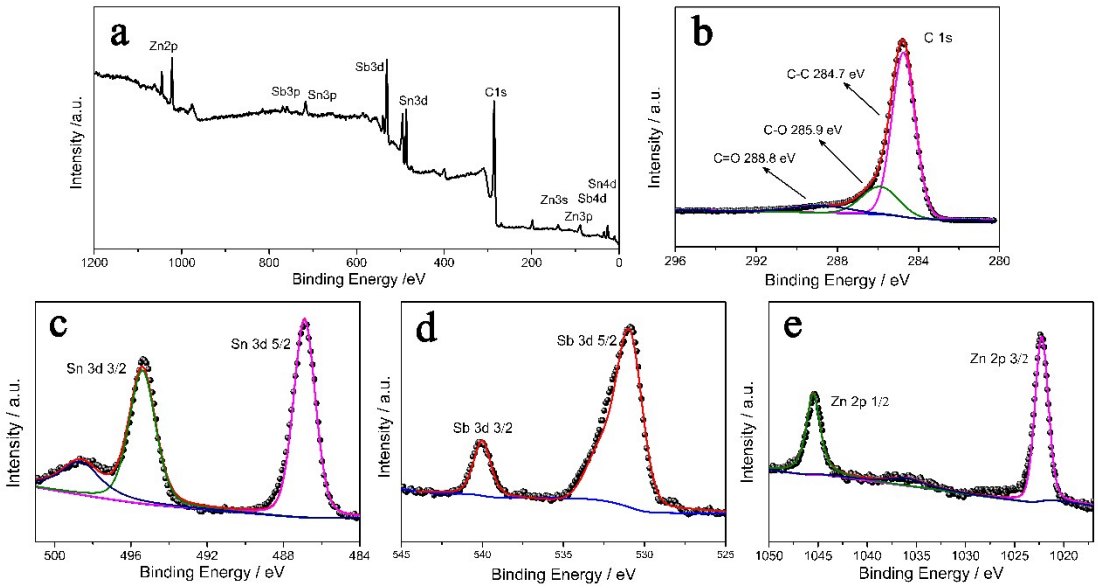

Figure S5. XPS spectra of SnSbZn-C samples.

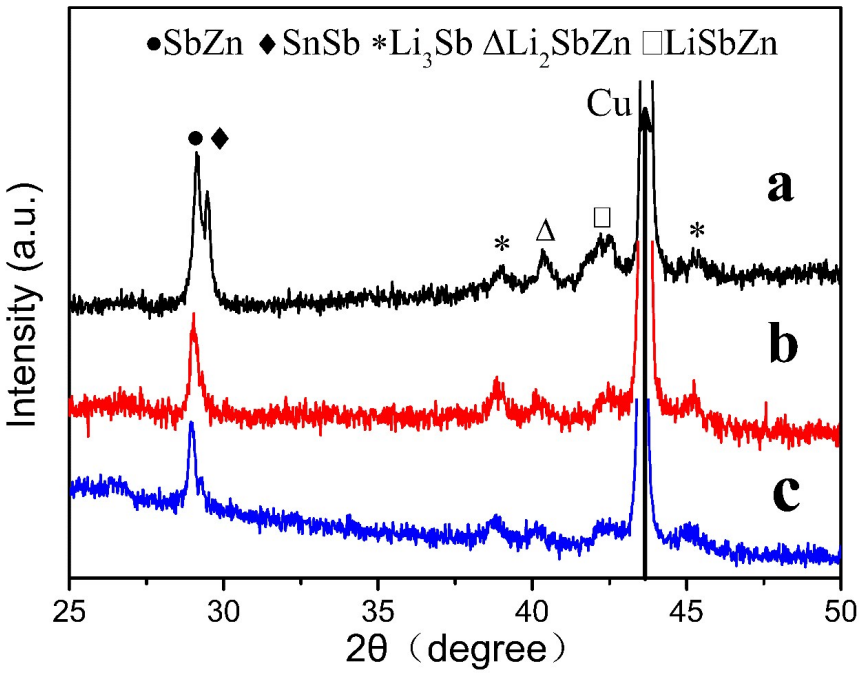

Figure S6. XRD patterns of the electrodes during the second cathodic scan at (a) 0.8 V, (b) 0.7 V and (c) 0.6 V.