Electronic Supplementary Information (ESI)

Hierarchical $CuBi_2O_4$ microspheres as lithium-ion batteries anode with superior high-temperature electrochemical performance

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Table S1-S2 and Figure S1-S7

Table S1 Quantification report of $CuBi_2O_4$

Peak	Position BE (ev)	Atomic Mass	Atomic Conc %	Mass Conc %
Cu	933.802	63.549	3.38	7.32
O	529.702	15.999	23.23	14.41
C	285.102	12.011	66.95	31.57
Bi	158.752	208.980	6.45	46.70

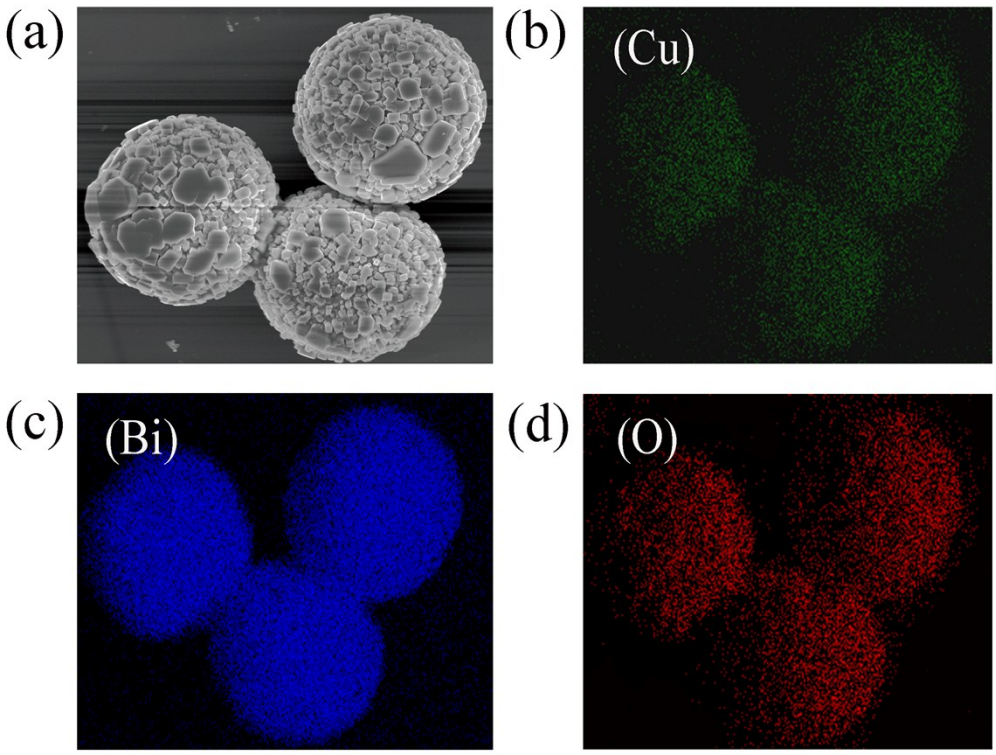

Fig. S1 (a) SEM image**.** (b), (c) and (d) are EDX mapping of hierarchical $CuBi_2O_4$ microspheres from SEM.

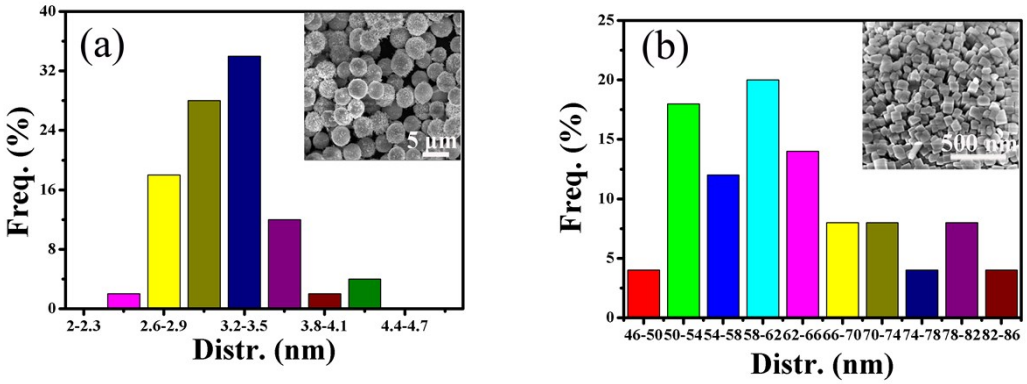

Fig. S2 (a) The size distribution of hierarchical $CuBi_2O_4$ microspheres, (b) The size distribution of the nanoparticles.

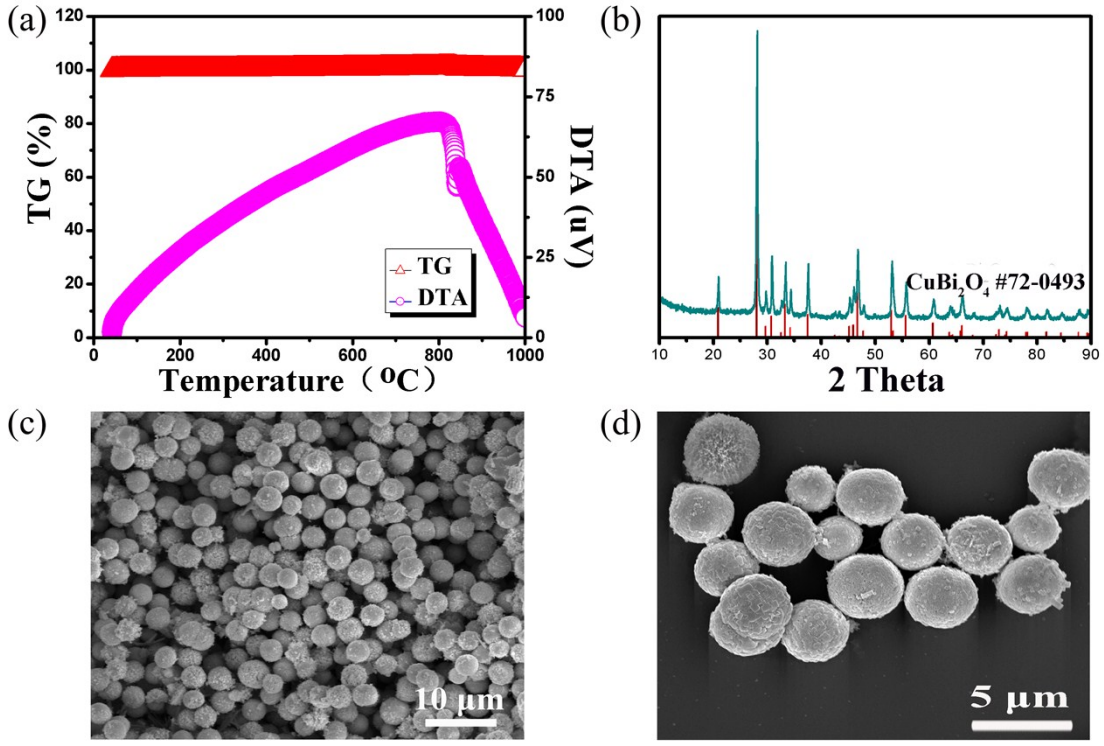

Fig. S3 (a) The TG-DTA curves of the hierarchical $CuBi_2O_4$ microspheres from room temperature to 1000 ℃ in air, (b) XRD patterns of the hierarchical $CuBi_2O_4$ microspheres after 500 ℃ calcination, (c) and (d) The different magnification of the $CuBi_2O_4$ microspheres after 500 ℃ calcination.

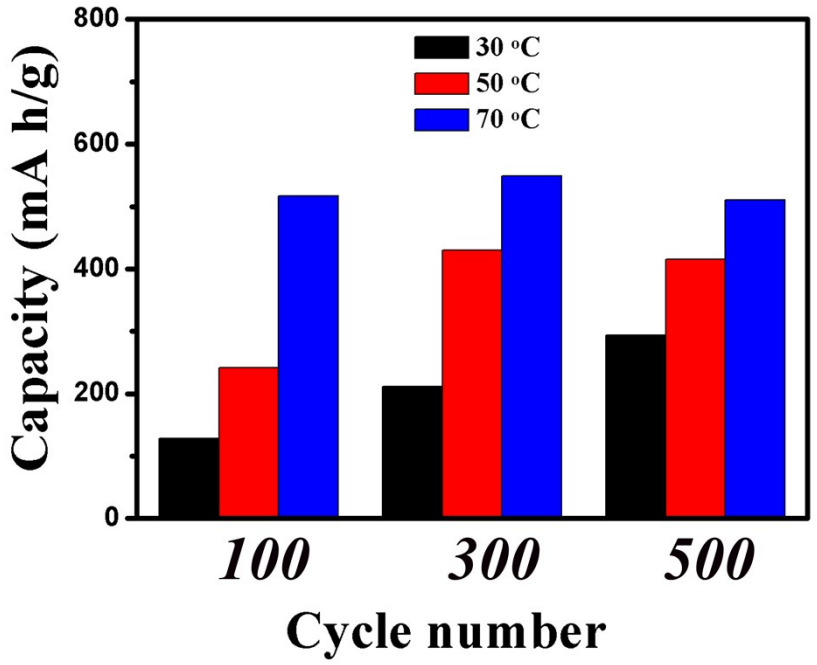

Fig. S4 Discharge capacities versus cycle number of hierarchical $CuBi_2O_4$ microsphere anodes vs Li at a current density of 100 $mA \cdot g^{-1}$.

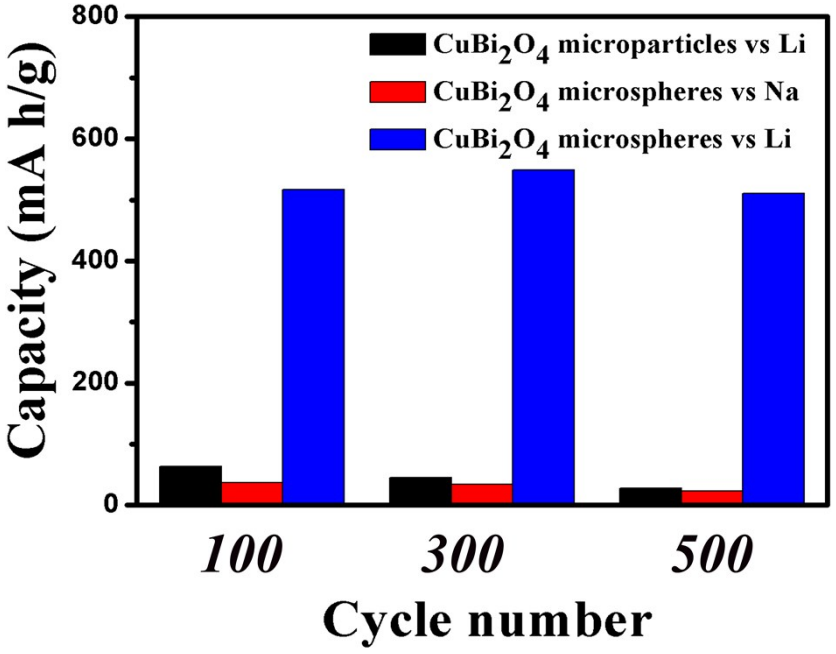

Fig. S5 Discharge capacities versus cycle number of microparticle anodes vs Li and hierarchical $CuBi_2O_4$ microsphere anodes vs Li and Na at a current density of 100 $mA \cdot g^{-1}$ (70 ℃).

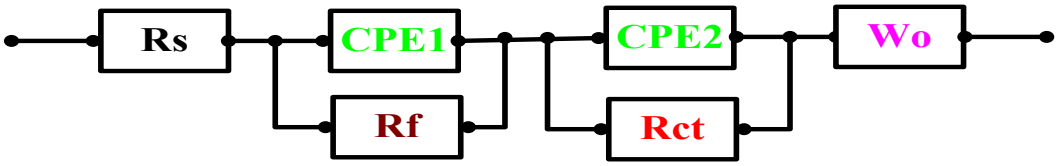

Fig. S6 Equivalent circuit model for the hierarchical $CuBi_2O_4$ microsphere anodes.

Table S2 The fitting data of EIS

T/℃	Rs/Ω	Rf/Ω	Rct/Ω	Wo-R/Ω
30	10.2	325.8	785.2	665.2
50	14.17	280.2	369.2	3224
70	3.8	143.3	245.1	291.5

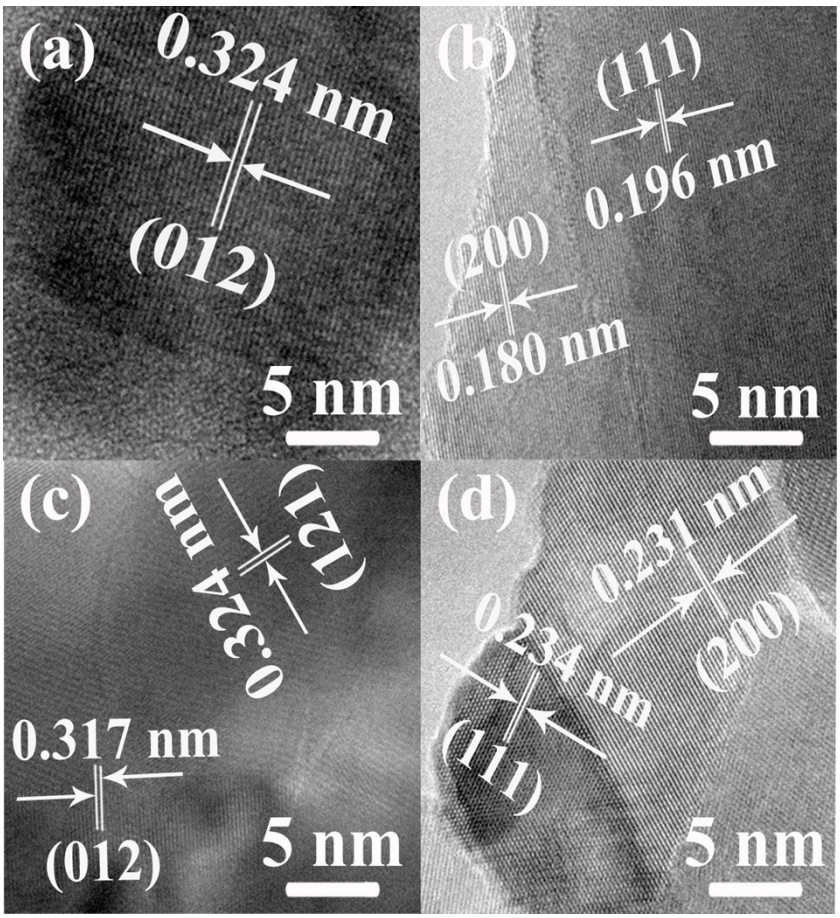

Fig. S7 (a), (b), (c) and (d) high-resolution TEM images for Bi, Cu, Bi_2O_3 and CuO during discharge-charge processes, respectively.