Electronic Supplementary Material (ESI) for Materials Chemistry Frontiers.

Regulating Li Nucleation/Deposition by Bamboo-shoot Like Lithiophilic Particles Anchored on Carbon Cloth for Dendrite-free Lithium Metal Anode

Yuchi Liu,[a,b] Zhicui Song,[a,b] Zihao Wang,[a,b] Jianxiong Xing,[a,b] Wei Zou,[c] and Jingze Li *[a,b]

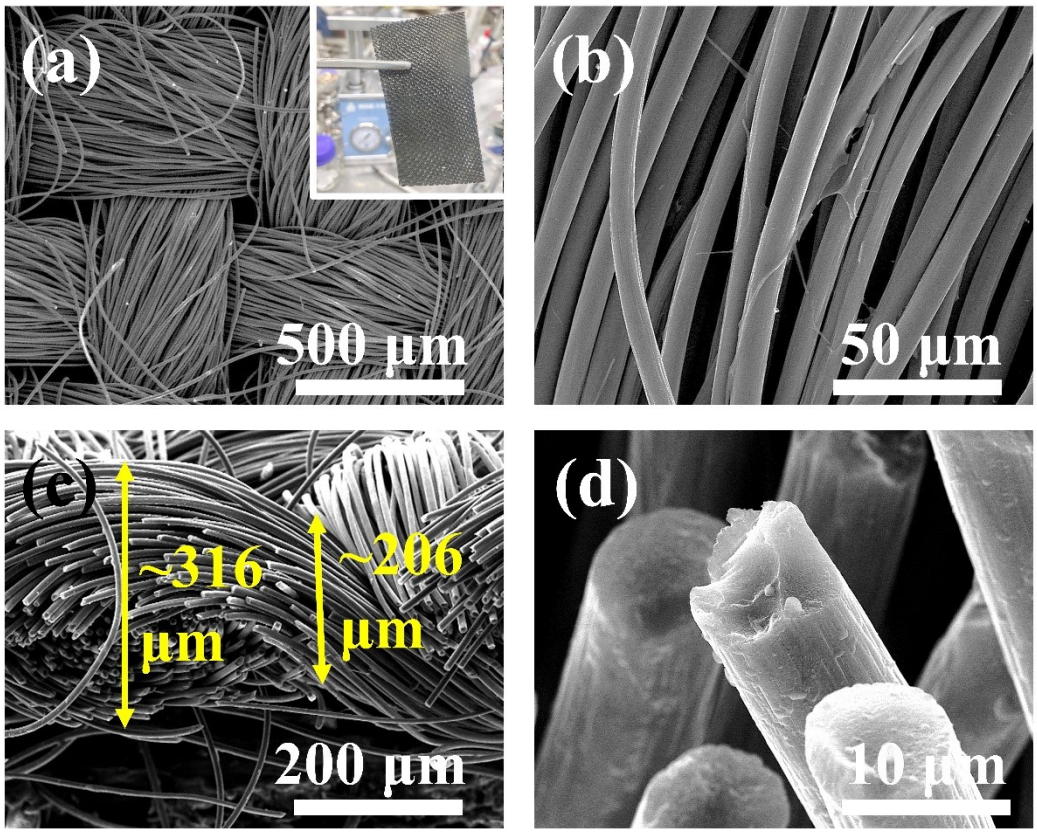

Fig. S1 (a and b) Surface morphology of CC (carbon cloth). (c and d) Side-view morphology of CC.

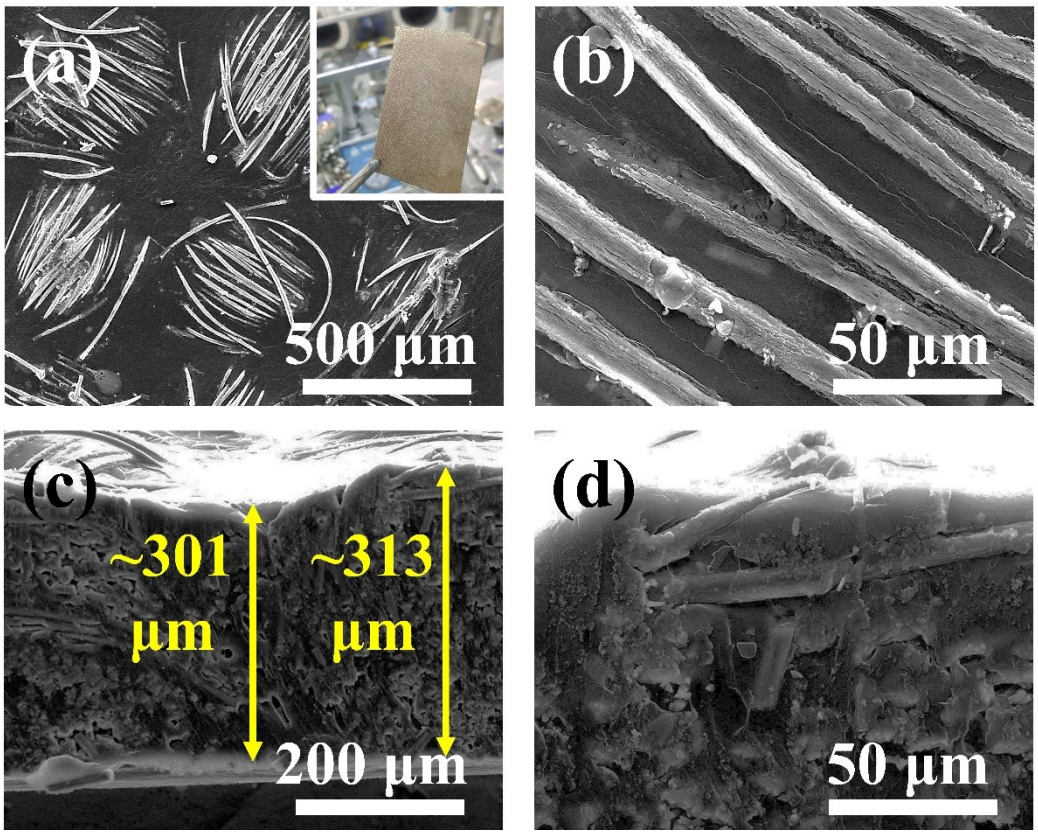

Fig. S2 (a and b) Surface morphology of Li@CC. (c and d) Side-view morphology of Li@CC.

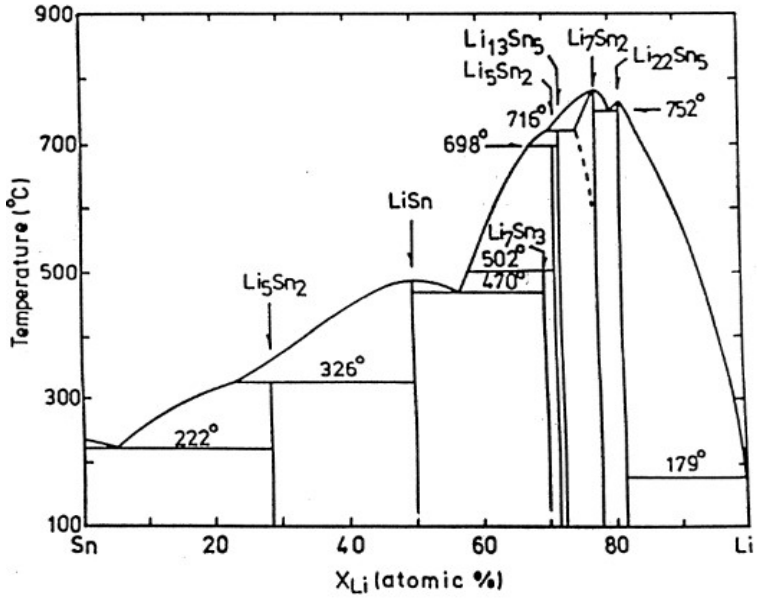

Fig. S3 Li-Sn diagram[1].

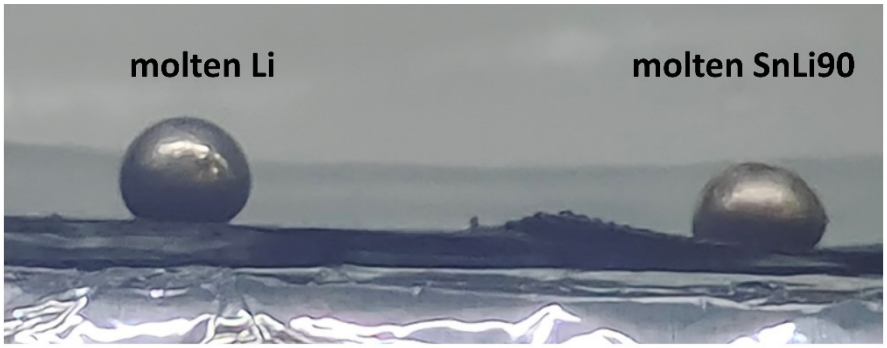

Fig. S4 Wettability of molten Li and SnLi90 alloy on CC substrates.

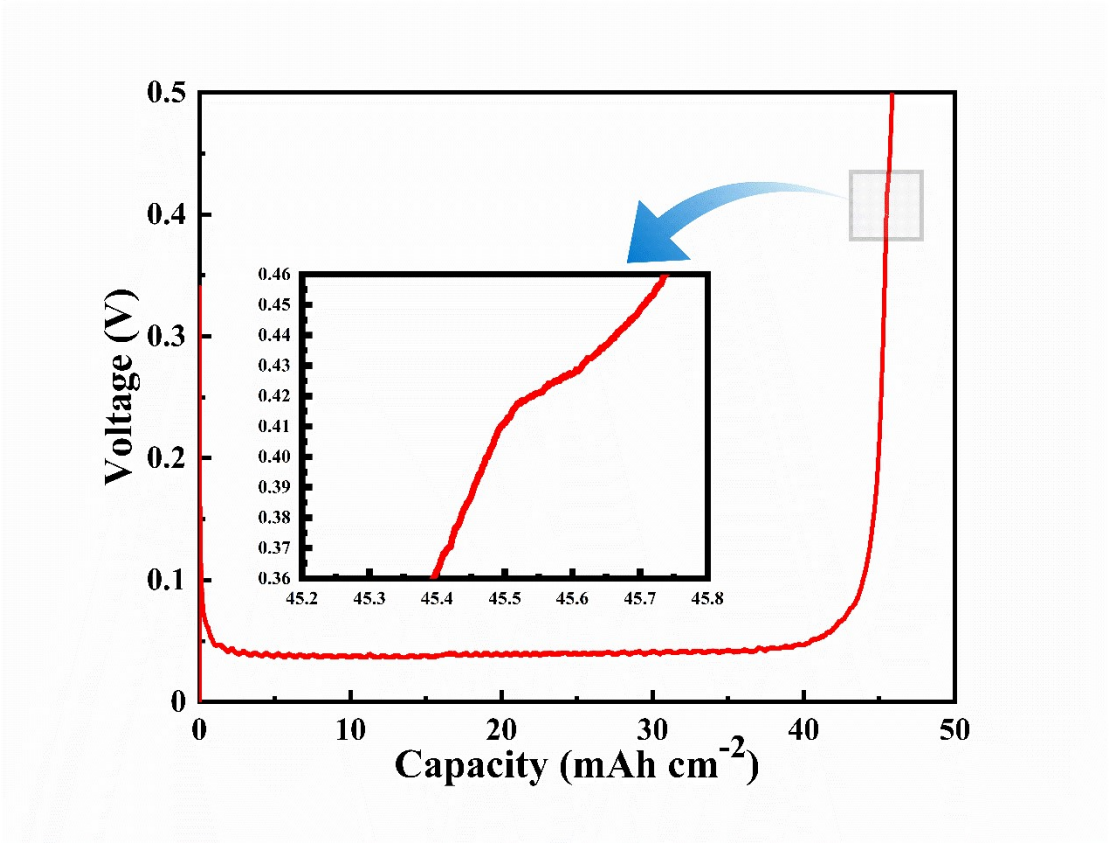

Fig. S5 Capacity-voltage curve of SnLi@CC delithiated to 0.5 V.

Table S1 Theoretical areal capacity and practical areal capacity of SnLi@CC

Materials	**Mass (g)**	**Minus the mass of CC (g)**	**Theoretical capacity (mA h g^{-1})**	**Theoretical areal capacity (mA h cm^{-2})**	**Practical areal capacity (mA h cm^{-2})**
CC	0.0098	/		/	/
SnLi90	/	/	3087	/	/

SnLi@CC	0.0214	0.0116	/	45.62（3087 mAh g^{-1}*0.0116 g/0.785 cm^2=45.62 mAh cm^{-2}）	45.52

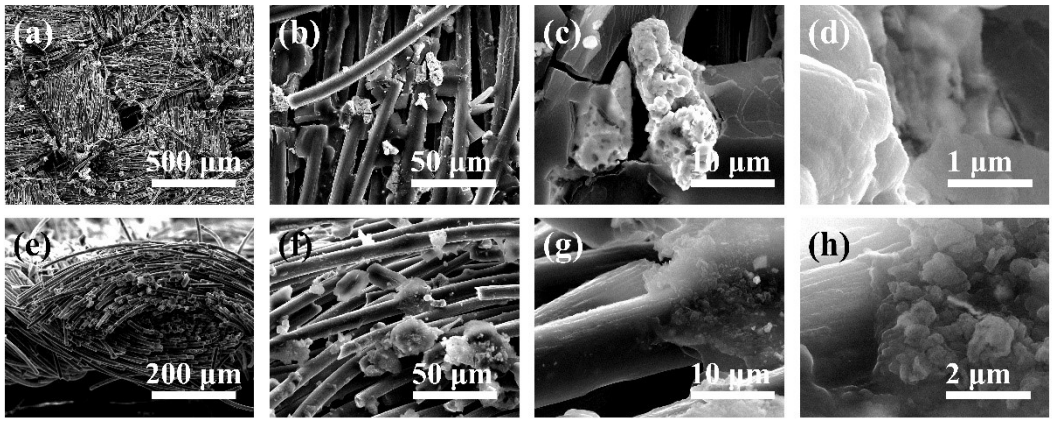

Fig. S6 Morphology of SnLi@CC after completely delithiation by reacting with H_2O, (a, b, c and d) Top-view morphology. (e, f, g and h) Side-view morphology.

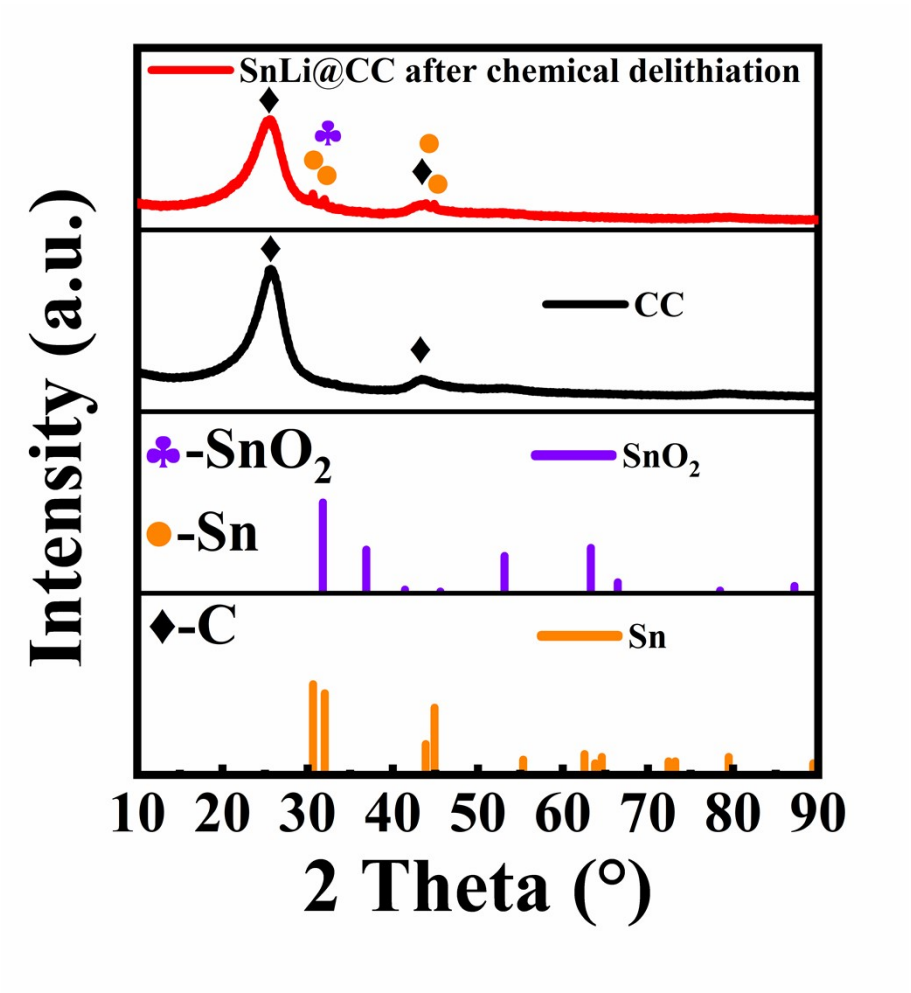

Fig. S7 XRD profiles of SnLi@CC after chemical delithiation by reaction with water.

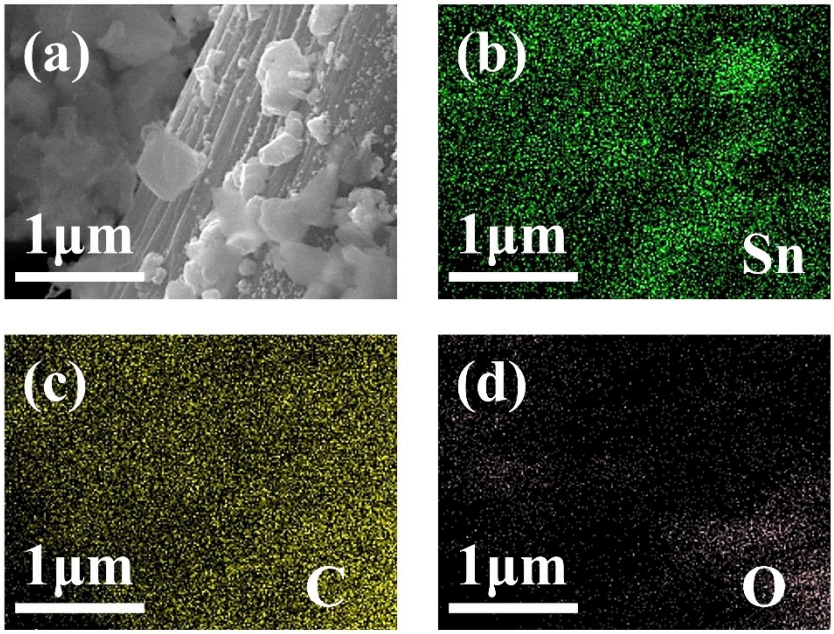

Fig. S8 EDS test of SnLi@CC after chemical delithiation by reaction with water, (a) morphology of SnLi@CC after chemical delithiation by reaction with water. (b) Sn element. (c) C element. (d) O element.

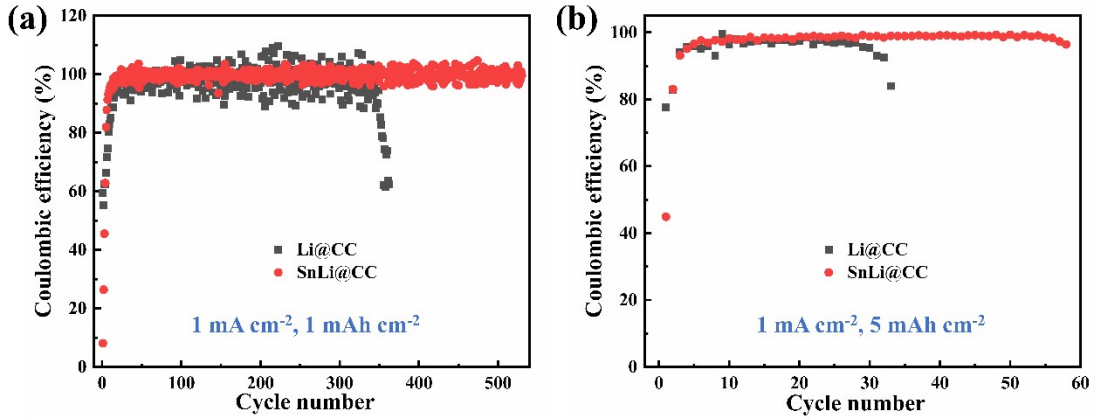

Fig. S9 Coulombic efficiency of the skeleton obtained by chemical delithiation, (a)1 mA cm^{-2}, 1 mAh cm^{-2}; (a)1 mA cm^{-2}, 5 mAh cm^{-2}.

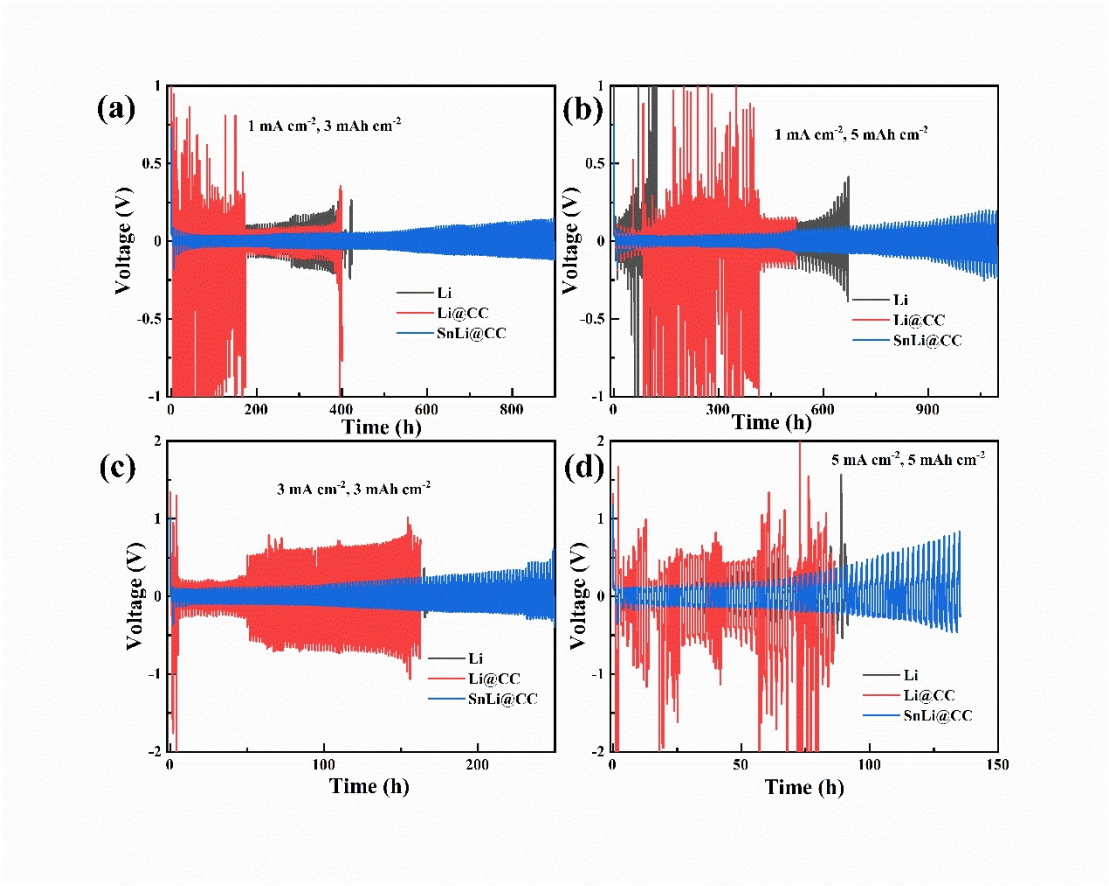

Fig. S10 Time-voltage curves for Li, Li@CC and SnLi@CC symmetric batteries at different current densities and capacities, respectively. (a) 1 mA cm^{-2}, 3 mAh cm^{-2}. (b) 1 mA cm^{-2}, 5 mAh cm^{-2}. (c) 3 mA cm^{-2}, 1 mAh cm^{-2}. (d) 5 mA cm^{-2}, 5 mAh cm^{-2}.

References

1 R. A. Huggins, Lithium alloy negative electrodes, *Journal of Power Sources*, 1999, **81**, 13-19.