Electronic Supplementary Information

Outstanding cycle stability and rate capabilities of the all-solid-state Li-S battery with $Li_7P_3S_{11}$ glass-ceramic electrolyte and core-shell S@BP2000 nanocomposite

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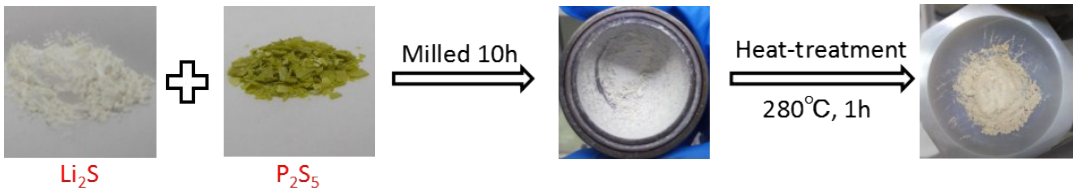

Fig. S1 Schematic illustration of synthesis process of $Li_7P_3S_{11}$ glass-ceramic.

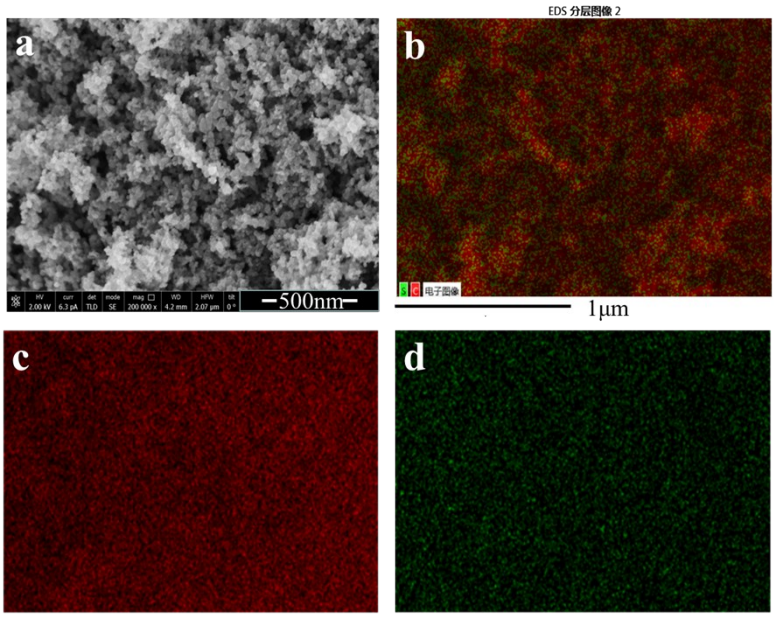

Fig. S2 (a) SEM image of S@BP2000 nanocomposite, (b) EDS hierarchical mapping image of C and S elements, EDS mapping images of (c) C and (d) S elements in S@BP2000 nanocomposite.

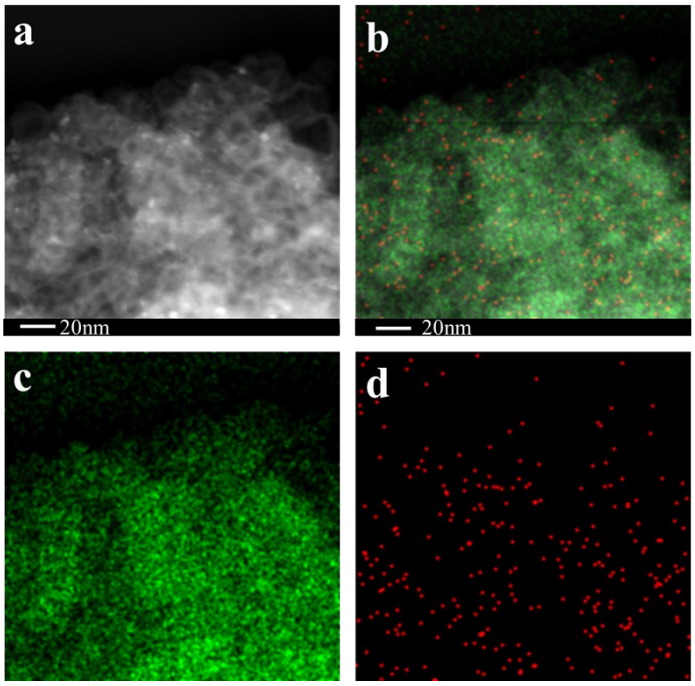

Fig. S3 (a) TEM image, (b) EDS hierarchical mapping image of C and S elements, EDS mapping image of (c) C and (d) S elements in S@BP2000 nanocomposite.

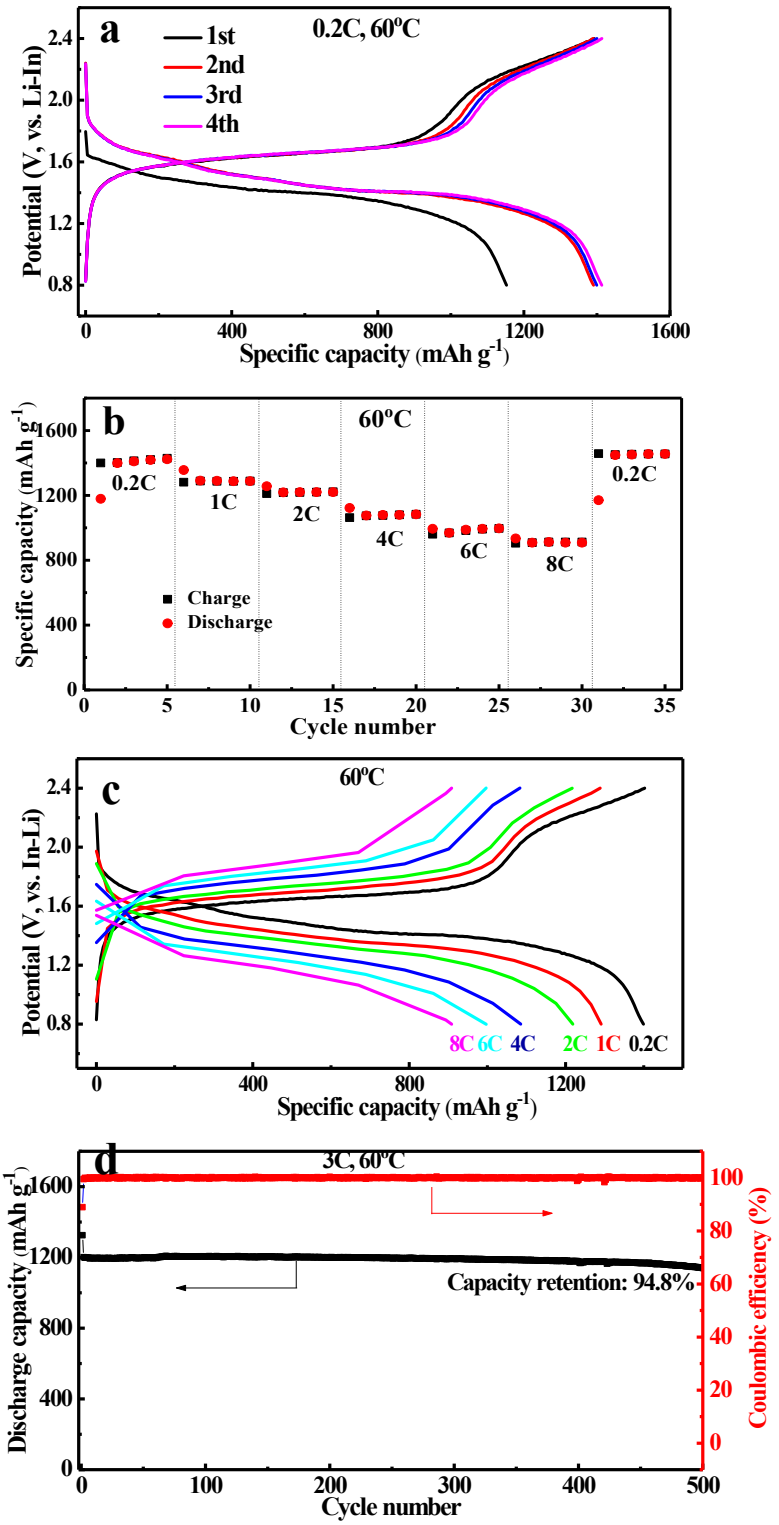

Fig. S4 Electrochemical performances of S@SBP2000 cathode for ASSLSB in the voltage range of 0.8-2.4 V at 60 °C. (a) Charge-discharge curves under 0.2 C, (b) rate performance curves and (c) charge-discharge curves under various rates from 0.2 C to 8 C, and (d) cycling performance curves. Charge-discharge specific capacity is calculated on the weight of sulfur.