

Supplementary Information

Irreversible capacity of Si-FeS anodes

Figure S1 shows typical charge-discharge curves in the first cycle obtained in the solid electrolyte (a) and the liquid electrolyte (b). Although large irreversible capacities have been often reported for Si-based anodes, coulombic efficiencies observed for the Si-FeS anodes in this study are 93.3% and 89.8% in the solid electrolyte and the liquid electrolyte, respectively, which are attributable to the small surface-to-volume ratios of the samples. In addition, the FeS included in the electrodes gives an irreversible capacity of 61.0 mAh g^{-1} . By subtracting the irreversible capacities originating from the FeS, the coulombic efficiencies for the alloying-dealloying reactions come to 95.0% and 91.5% in the solid and liquid electrolytes, respectively.

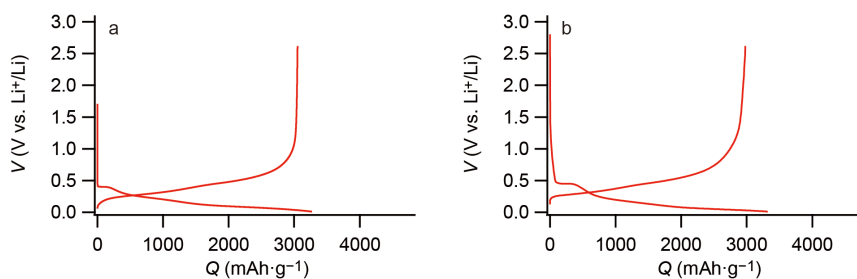


Fig. S1 The first charge-discharge curves of the Si-FeS anodes in the $70\text{Li}_2\text{S}-30\text{P}_2\text{S}_5$ solid electrolyte (a) and the $1 \text{ M LiPF}_6/\text{EC}-\text{DEC}$ liquid electrolyte.