Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Protected lithium anode with porous Al_2O_3 layer for lithium-sulfur battery

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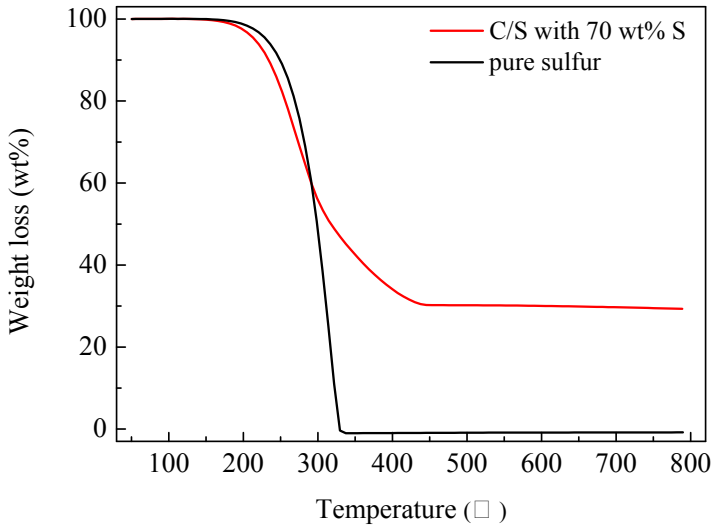

Fig.S1 TG curves of pure sulfur and S/C composites under Ar atmosphere with a heating rate of 10 ℃ min^{-1}.

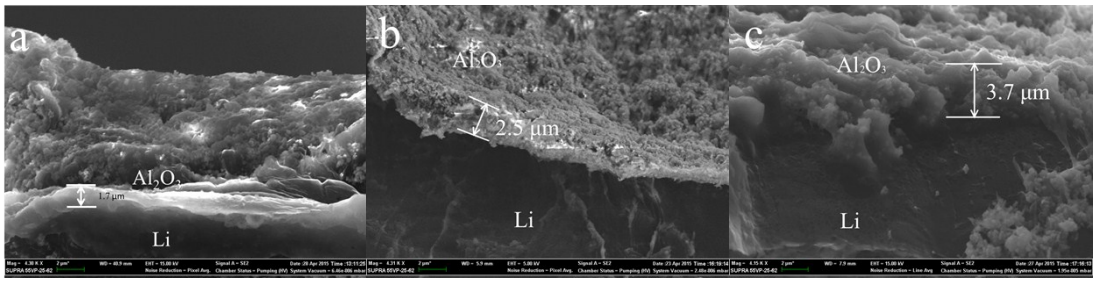

Fig S2 Cross-sectional SEM images of protected Li anode with (a) 0.23, (b) 0.58, and (c) 0.73 mg cm^{-2} coating amounts of Al_2O_3 coating layer on lithium anode surface, respectively.

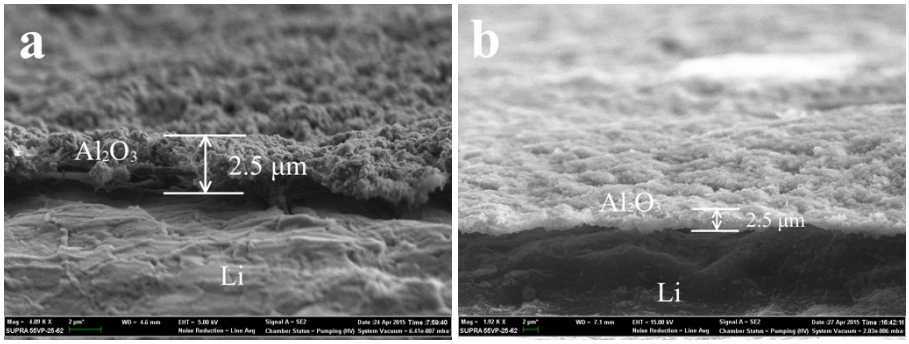

Fig.S3 Cross-sectional SEM images of protected Li anode with Al_2O_3 layer (0.58 mg cm^{-2}) after initial three cycling at (a) discharged state and (b) charged state.

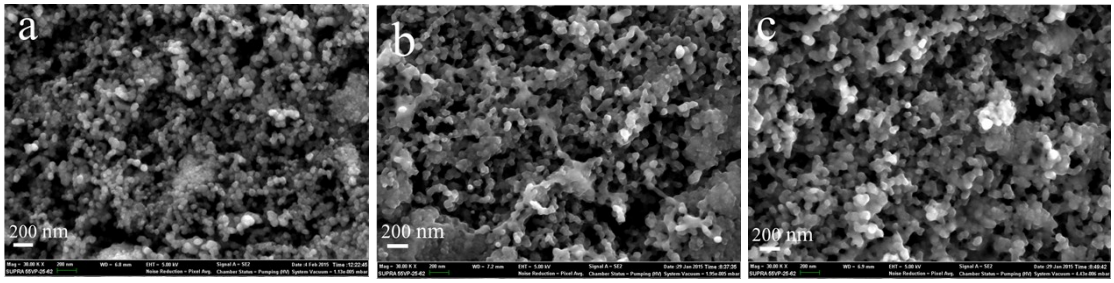

Fig.S4 The surface morphology of sulfur cathode: (a) before cycling (b) with fresh Li anode after 50^{th} cycling (c) with protected Li anode after 50^{th} cycling.