Supporting information

![Fig. S1 Morphology of the untreated expanded graphite.](image1)

![Fig. S2 Morphology and schematic illustration of the pristine sulfur cathodes with carbon black (a, d) and UGS (b, c, e).](image2)

![Fig. S3 The Cycle performances (a) and coulombic efficiencies (b) of the sulfur cathodes with UGS and carbon black at 0.2 C.](image3)

![Fig. S4 The charge capacities of the sulfur cathodes charged at various rates and discharged at 0.2 C.](image4)
Fig. S5 Morphology of the sulfur/UGS cathode after 1st discharge (a) and 1st charge (b).

Fig. S6 Morphology of the sulfur/carbon black cathode after 1st discharge (a, c) and 1st charge (b, d).