

### Supporting information

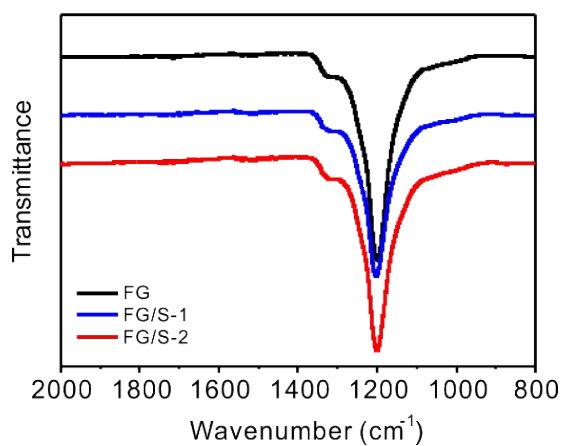


Fig.S1. The FTIR spectrum of FG, FG/S-1, and FG/S-2.

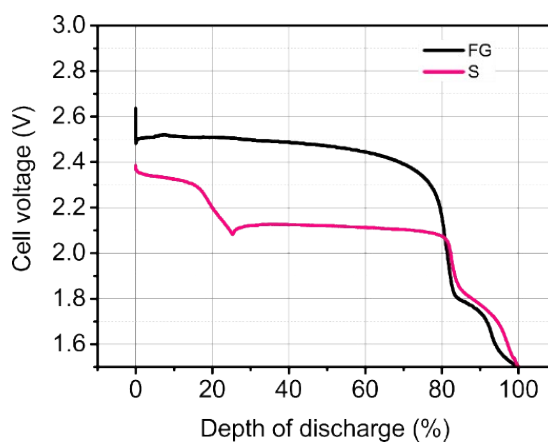


Fig.S2. Typical plots of cell voltage vs. depth of discharge for the FG and sulfur at 0.05 A g<sup>-1</sup>.

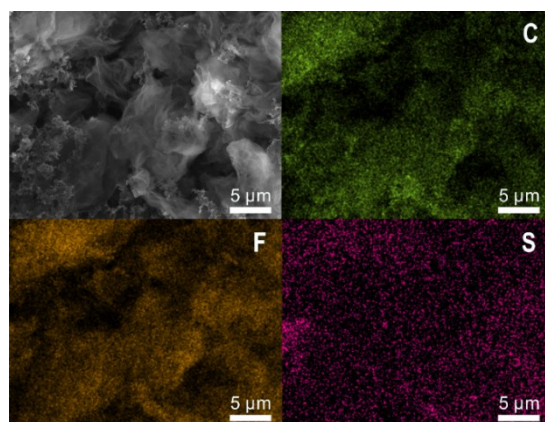


Fig.S3. The SEM morphology and corresponded element distribution for the FG/S-2 electrode.

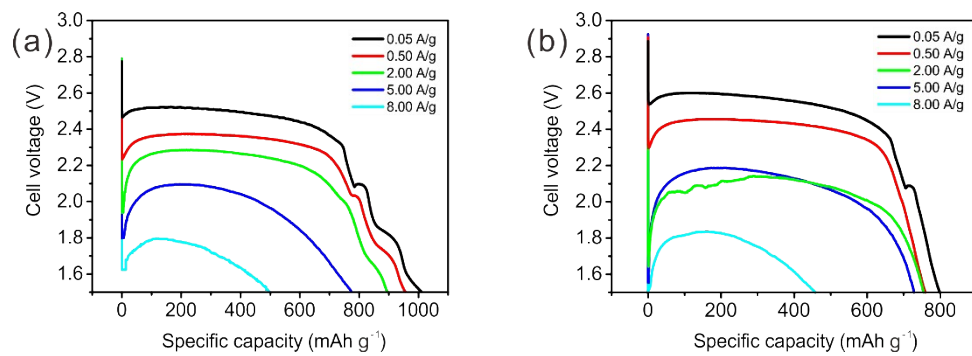


Fig.S4. The galvanostatic discharge curves of FG/S-2 electrode in the electrolyte with the additive LiNO<sub>3</sub> (a), or without LiNO<sub>3</sub> (b) at different current rates.