Supporting Information

Flexible and conductive MXene-coated fabric integrated with In-situ sulfur loaded MXene nanosheets for long-life rechargeable Li-S batteries

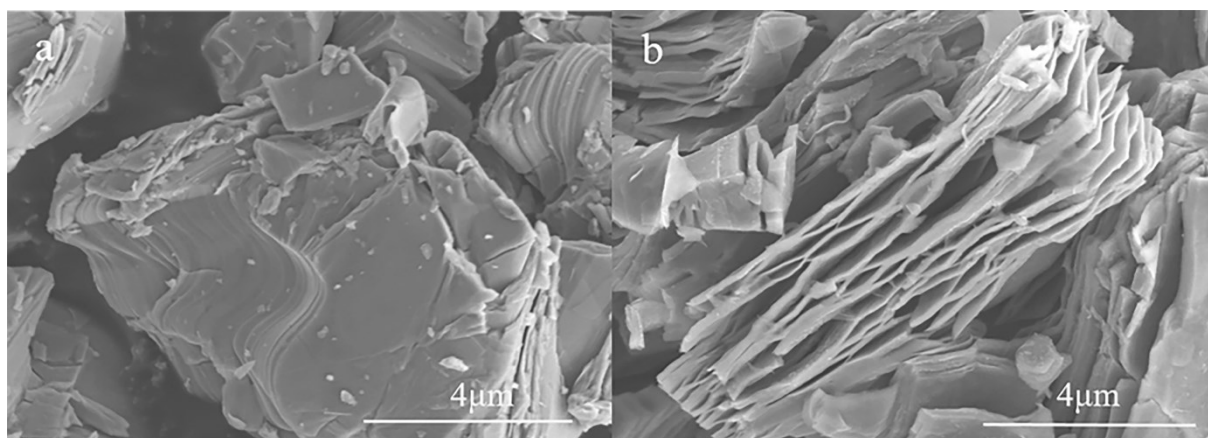*Kaige Liu,*[a,b] *Yepeng Fan ,*[a,b] *Asad Ali,*[a,b] and *Pei Kang Shen*[a]

Figure S1. SEM images of (a) Ti_3AlC_2, and (b) multi-layered $Ti_3C_2T_x$ (m-$Ti_3C_2T_x$).
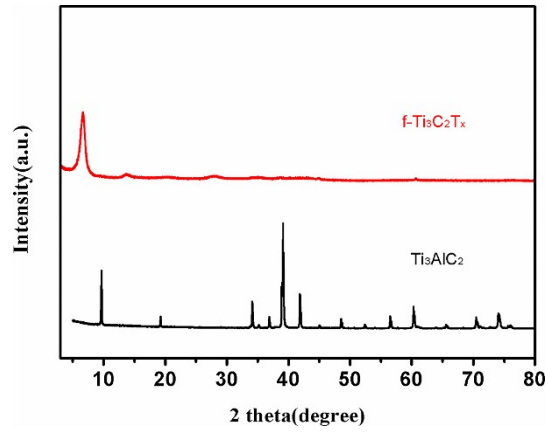
Figure S2. XRD patterns of Ti_3AlC_2 and f- $Ti_3C_2T_x$

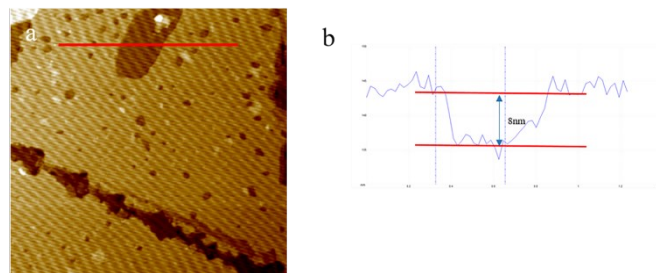**Figure S3.**   a, b). AFM image of $Ti_3C_2T_x$ flake and flake lateral size

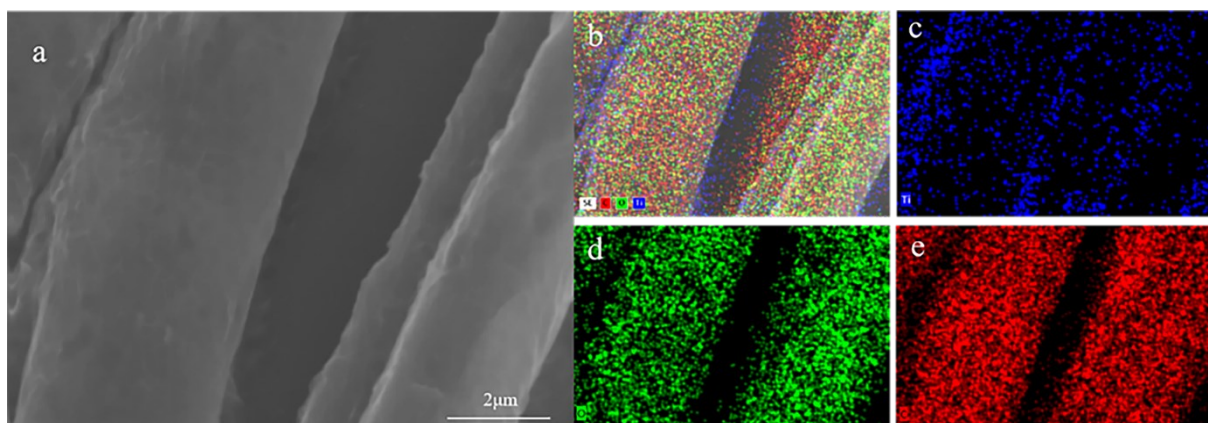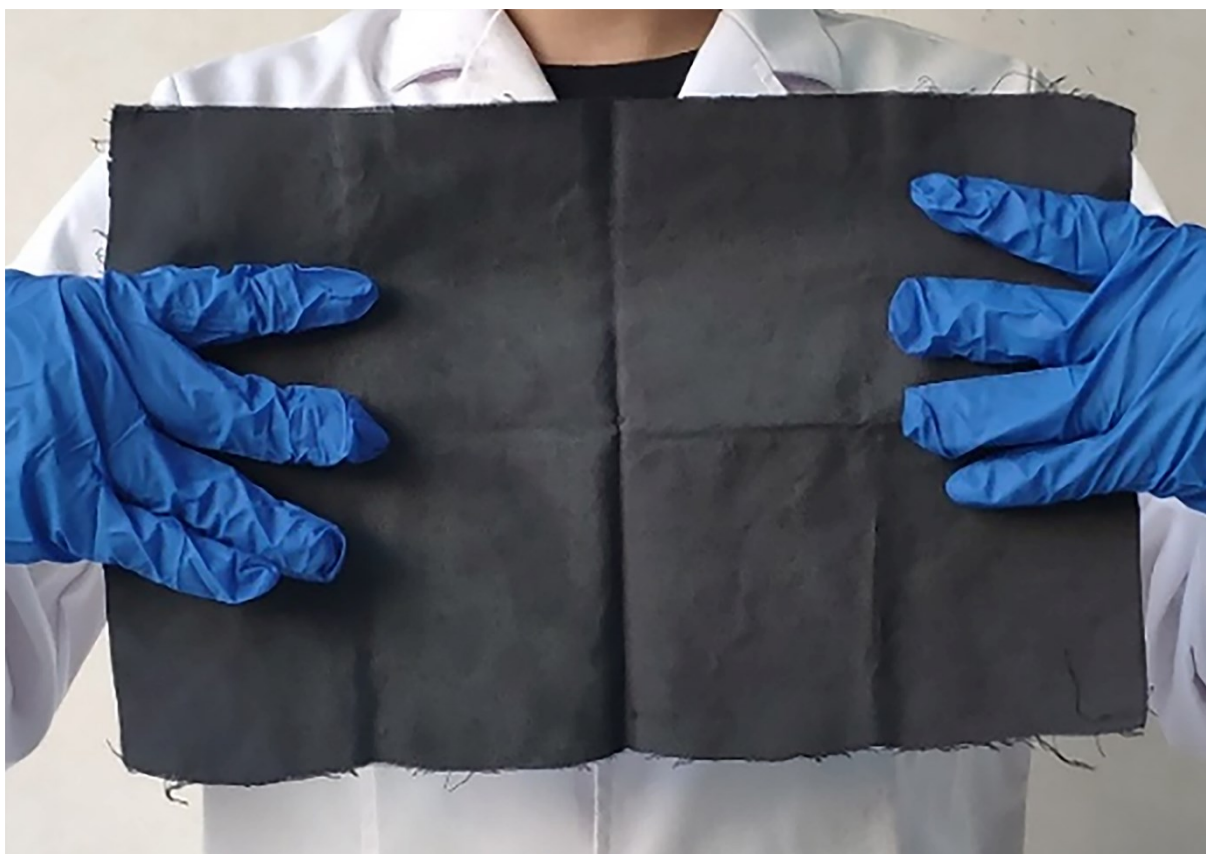**Figure S4.** a.) SEM image of the MF b-e.) EDX image of the MF

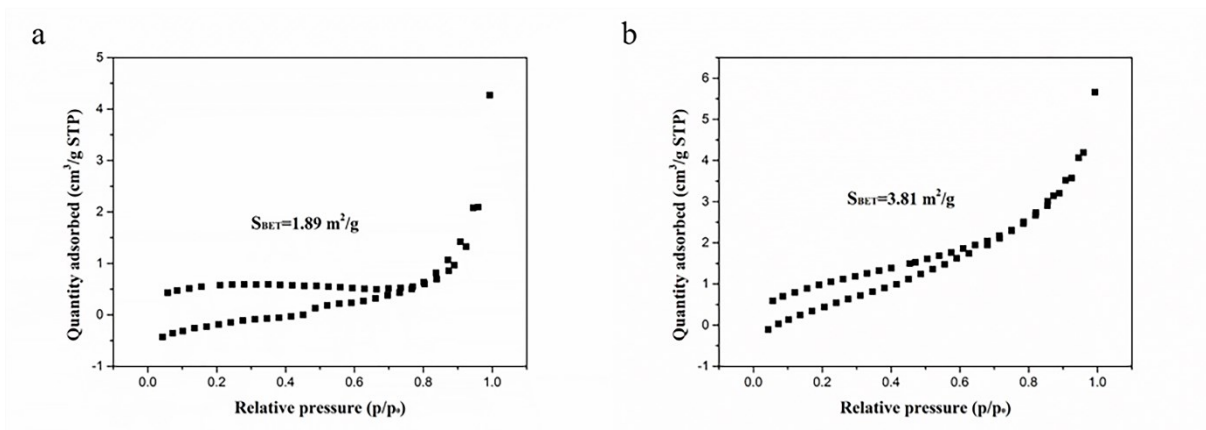**Figure S5.** Digital photo of the large-scale (30cm×40cm) MF.

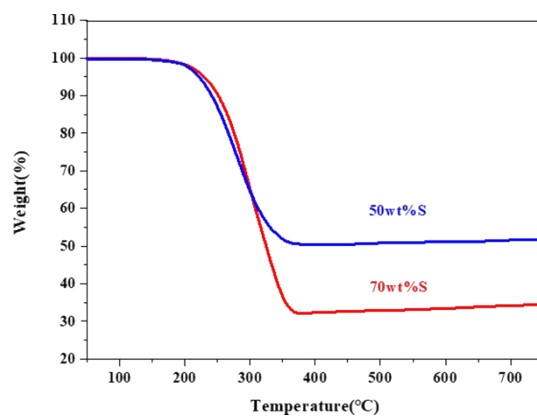**Figure S6**. Nitrogen adsorption and desorption isotherms of a) CC and b) MF.

Figure S7. a). Thermogravimetric profiles of $Ti_3C_2T_x$/S with different sulfur loadings.

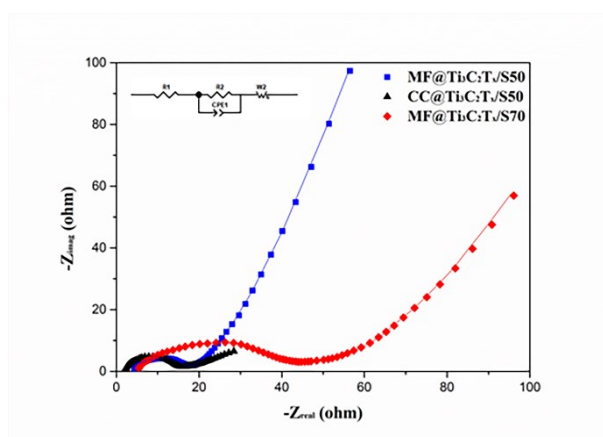**Figure S8.** Electrochemical impedance spectra (EIS) of several electrodes.

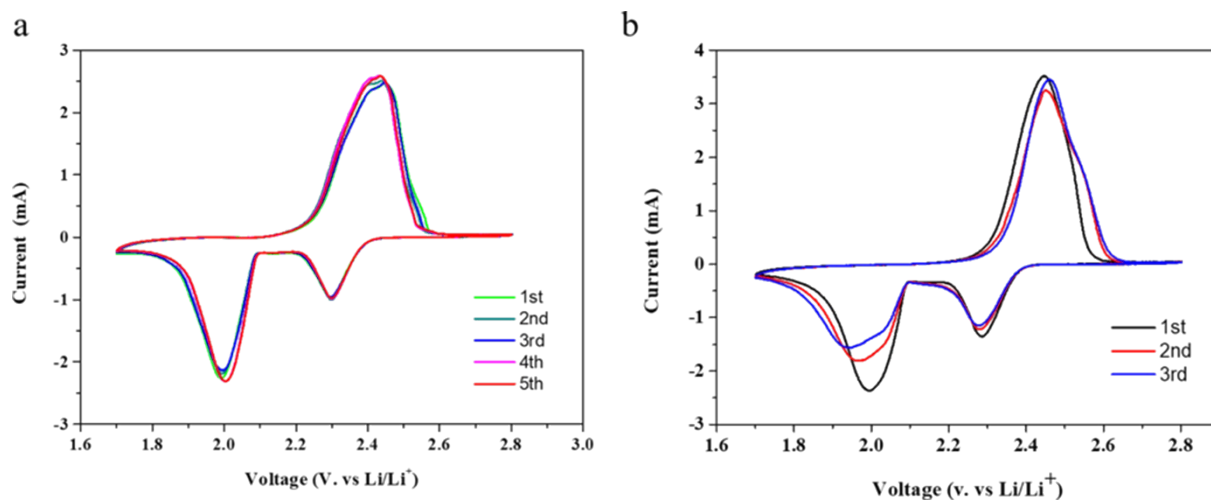**Figure S9**. CV profiles of MF@Ti$_3$C$_2$T$_x$/S70 and CC@Ti$_3$C$_2$T$_x$/S50 cathodes at a scan rate of 0.1 mV S^{-1}
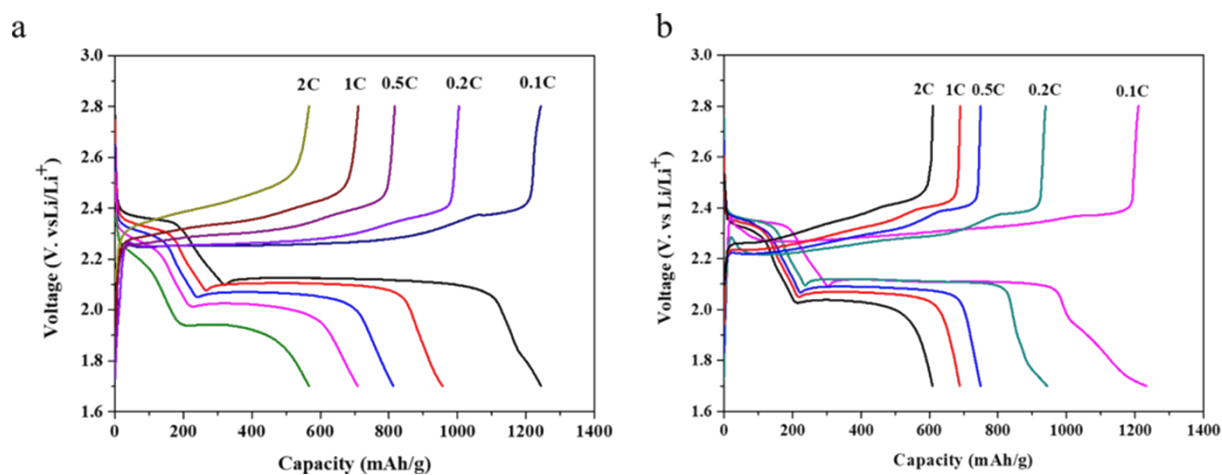

Figure S10. MF@Ti$_3$C$_2$T$_x$/S70 and CC@Ti$_3$C$_2$T$_x$/S50 cathodes at different C-rates.
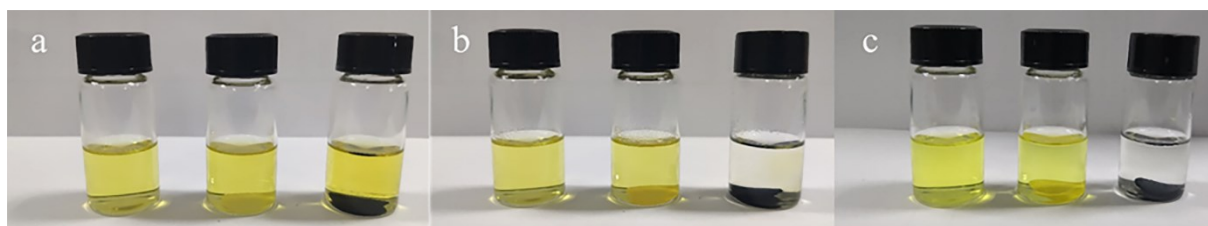
Figure S11.Photograph of Li$_2$S$_6$ adsorption (a) 0h (b) 4h (c) 8h by blank, pristine fabric and MF (from left to right) immersed in the solvent with different time. It can be clearly seen from the digital photos that MF effective adsorption of Li$_2$S$_6$