

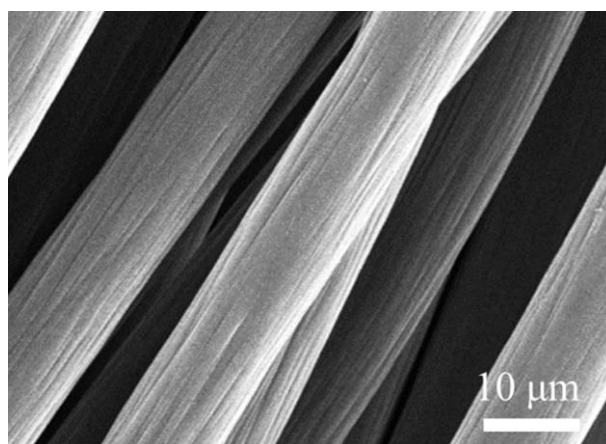
## Electronic Supplementary Material

### **Engineering zirconium-based metal-organic framework-801 films on carbon cloth as shuttle-inhibiting interlayers for lithium-sulfur batteries**

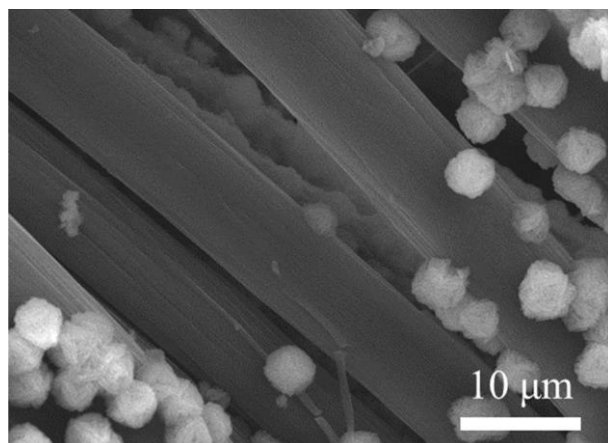
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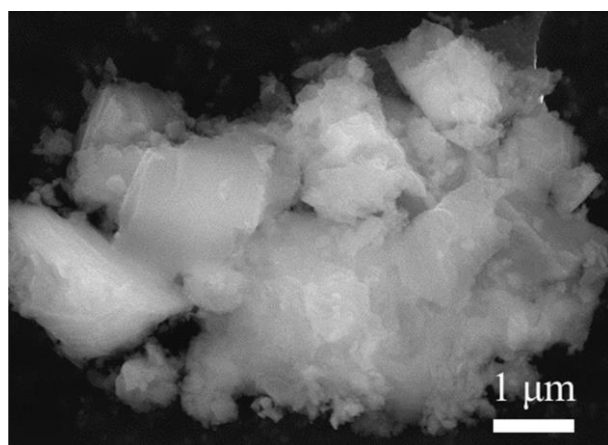
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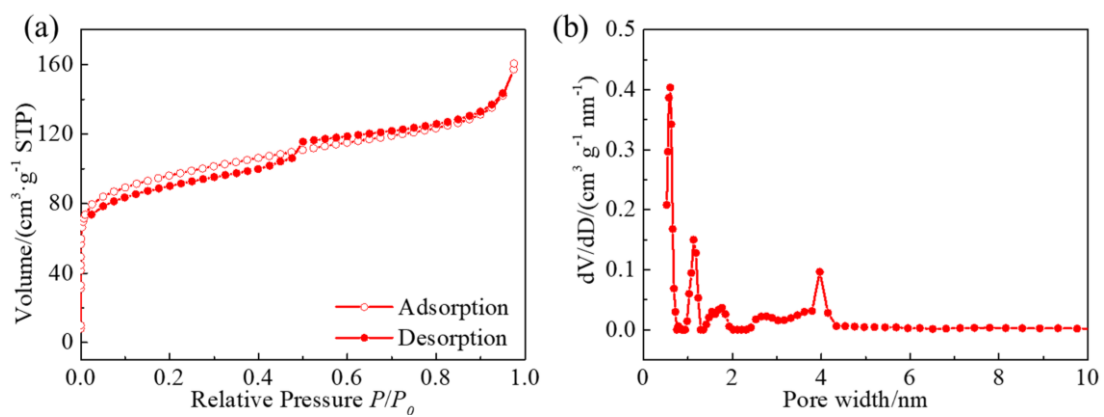
**Fig. S1** SEM image of CC.



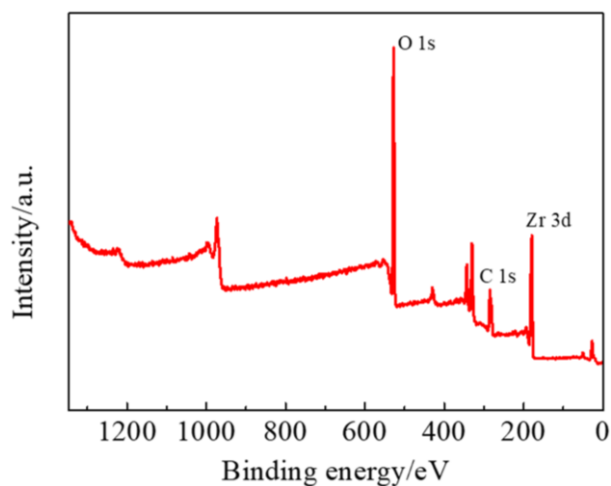
**Fig. S2** SEM image of MOF-801@CC synthesized on carbon cloth without acid treatment.



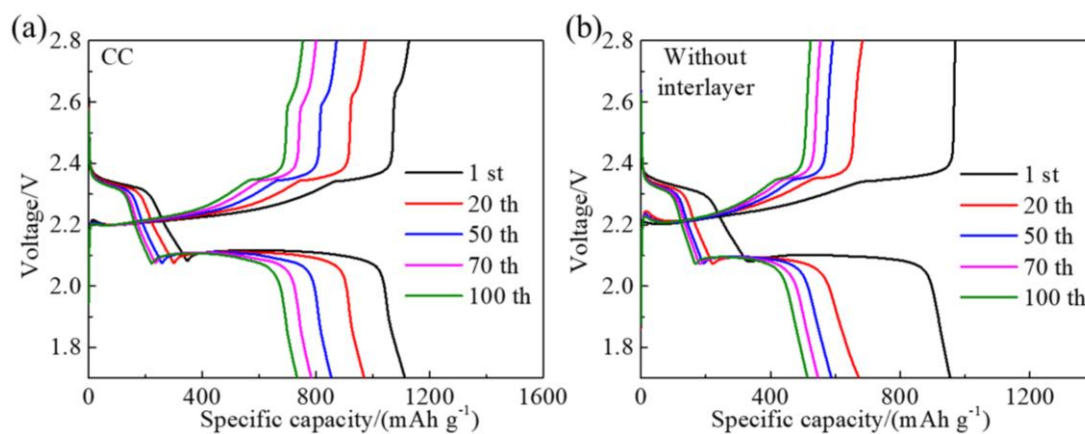
**Fig. S3** SEM image of MOF-801 powder.



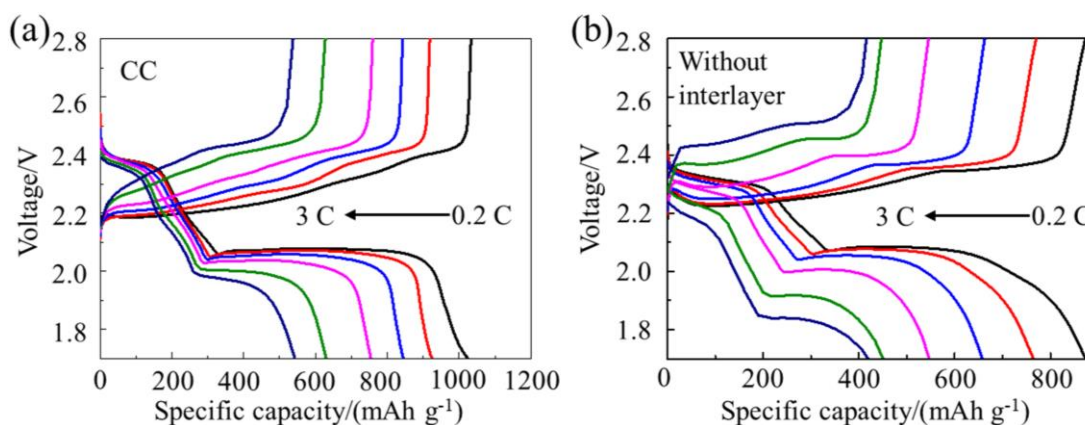
**Fig. S4** (a) Nitrogen adsorption-desorption isotherms and (b) pore size distribution of MOF-801 powder.



**Fig. S5** Whole XPS spectrum of MOF-801@CC.



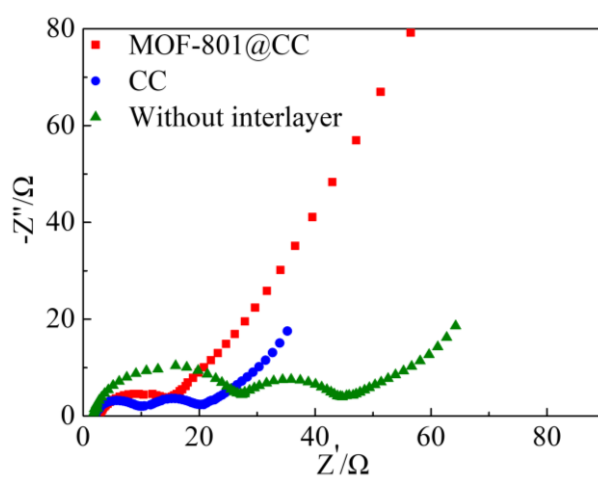
**Fig. S6** Voltage profiles at 0.2 C for batteries (a) with CC and (b) without interlayer.



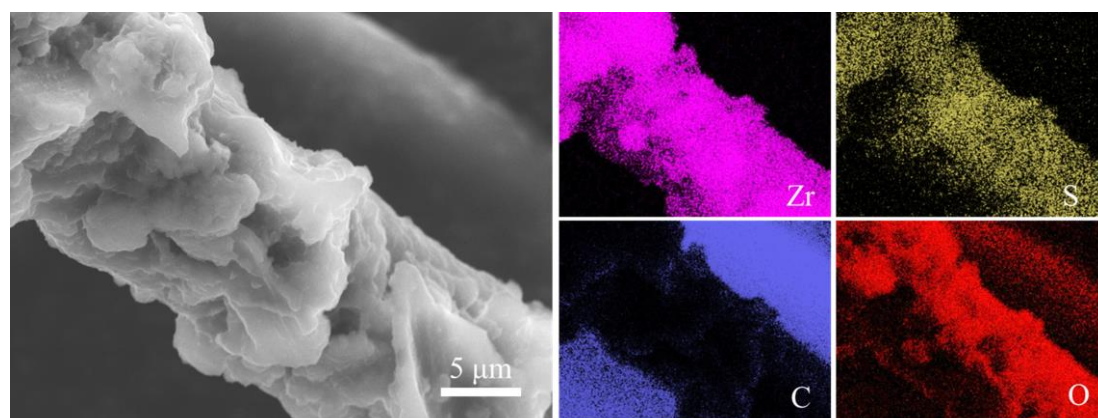
**Fig. S7** Charge and discharge profiles for batteries (a) with CC interlayer and (b) without interlayer.

**Table S1** Comparison of  $\Delta E$  values for batteries with different interlayers

Interlayer	0.2 C	0.3 C	0.5 C	1 C	2 C	3 C
MOF-801@CC	0.20 eV	0.21 eV	0.24 eV	0.30 eV	0.35 eV	0.39 eV
CC	0.25 eV	0.27 eV	0.31 eV	0.37 eV	0.42 eV	0.46 eV
no interlayer	0.27 V	0.30 eV	0.33 eV	0.40 eV	0.53 eV	0.57 eV



**Fig. S8** EIS spectra for Li-S batteries with different interlayers after 100 cycles at 0.2 C.



**Fig. S9** SEM image and element mapping of MOF-801@CC after 500 cycles at 1 C.