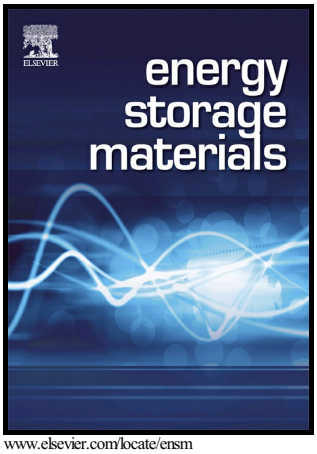

www.elsevier.com/locate/ensm

Metal-organic frameworks composites threaded on the CNT knitted separator for suppressing the shuttle effect of Lithium sulfur batteries

Feng Wu, Shuangyi Zhao, Lai Chen, Yun Lu, Yuefeng Su, Yingna Jia, Liying Bao, Jing Wang, Shi Chen, Renjie Chen

PII: S2405-8297(18)30449-5
DOI: https://doi.org/10.1016/j.ensm.2018.06.009
Reference: ENSM419

To appear in: *Energy Storage Materials*

Received date: 16 April 2018
Revised date: 1 June 2018
Accepted date: 8 June 2018

Cite this article as: Feng Wu, Shuangyi Zhao, Lai Chen, Yun Lu, Yuefeng Su, Yingna Jia, Liying Bao, Jing Wang, Shi Chen and Renjie Chen, Metal-organic frameworks composites threaded on the CNT knitted separator for suppressing the shuttle effect of Lithium sulfur batteries, *Energy Storage Materials,* https://doi.org/10.1016/j.ensm.2018.06.009

Metal-organic frameworks composites threaded on the CNT knitted separator for suppressing the shuttle effect of Lithium sulfur batteries

Feng Wu[a, b,1], Shuangyi Zhao[a, b,1], Lai Chen[a], Yun Lu[a]*, Yuefeng Su[a, b] *, Yingna Jia[a], Liying Bao[a], Jing Wang[a, b], Shi Chen[a, b], Renjie Chen [a, b]

[a]School of Materials Science and Engineering, Beijing Key Laboratory of Environmental Science and Engineering, Beijing Institute of Technology, Beijing, 100081, China;

[b]Collaborative Innovation Center for Electric Vehicles in Beijing, Beijing, 100081, China

suyuefeng@bit.edu.cn (Y. Su)

luyun @bit.edu.cn

* Corresponding authors.

ABSTRACT

Lithium-sulfur (Li-S) batteries, standing as the promising candidate in next-generation high-energy secondary batteries, are still facing severe challenges such as low recharge ability, poor rate performance and cycling instability, which can be mainly ascribed to the poor conductivity of sulfur and the dissolution of the intermediate polysulfides generated during discharge-charge cycles. In this work, a CNT@ZIF functionalized separator was designed to trap the dissolved polysulfides so as to suppress the shuttle effect. Benefiting from the Lewis acid-base interaction between zeolitic imidazolate frameworks (ZIF-8) and polysulfides, combined with the reutilizing effect of carbon nanotubes (CNT) for the trapped polysulfides operating

[1] These authors contributed equally to this work