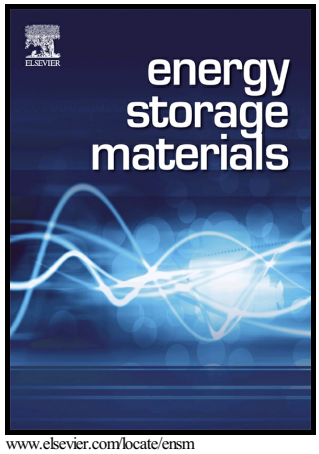

www.elsevier.com/locate/ensm

Extremely Safe, High-rate and Ultralong-Life Zinc-ion Hybrid Supercapacitors

Liubing Dong, Xinpei Ma, Yang Li, Ling Zhao, Wenbao Liu, Junye Cheng, Chengjun Xu, Baohua Li, Quan-Hong Yang, Feiyu Kang

PII: S2405-8297(17)30601-3
DOI: https://doi.org/10.1016/j.ensm.2018.01.003
Reference: ENSM287

To appear in: *Energy Storage Materials*

Received date: 9 November 2017
Revised date: 2 January 2018
Accepted date: 2 January 2018

Cite this article as: Liubing Dong, Xinpei Ma, Yang Li, Ling Zhao, Wenbao Liu, Junye Cheng, Chengjun Xu, Baohua Li, Quan-Hong Yang and Feiyu Kang, Extremely Safe, High-rate and Ultralong-Life Zinc-ion Hybrid Supercapacitors, *Energy Storage Materials,* https://doi.org/10.1016/j.ensm.2018.01.003

Extremely Safe, High-rate and Ultralong-Life Zinc-ion Hybrid Supercapacitors

Liubing Dong [a,b], Xinpei Ma [a], Yang Li [c], Ling Zhao [a], Wenbao Liu [a], Junye Cheng [d], Chengjun Xu [a,*], Baohua Li [a], Quan-Hong Yang [a,e], Feiyu Kang [a,b,*]

[a] Graduate School at Shenzhen, Tsinghua University, Shenzhen 518055, China

[b] State Key Laboratory of New Ceramics and Fine Processing, School of Materials Science and Engineering, Tsinghua University, Beijing 100084, China

[c] College of Energy, Xiamen University, Xiamen 361005, China

[d] Center of Super-Diamond and Advanced Films (COSDAF), Department of Physics and Materials Science, City University of Hong Kong, Hong Kong SAR, China

[e] School of Chemical Engineering and Technology, Tianjin University, Tianjin 300072, China

Abstract: With rapid development of portable electronics and electric vehicles, high-performance energy storage devices are urgently needed; however, the existing energy storage systems often have some deficiency, such as low energy for supercapacitors, security risks for lithium-ion batteries and poor cycling stability for alkaline zinc/manganese dioxide batteries. Here we report a novel energy storage system of zinc-ion hybrid supercapacitors (ZHSs), in which activated carbon

[*] Corresponding author: Tel/Fax: +86 755 86726649

E-mail address: vivaxuchengjun@163.com (C. Xu); fykang@mail.tsinghua.edu.cn (F. Kang)