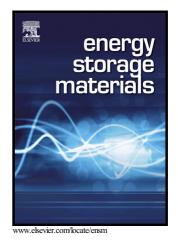
Author's Accepted Manuscript

All-Solid-State High-Energy Planar Asymmetric Supercapacitors Based on All-In-One Monolithic Film Using Boron Nitride Nanosheets as Separator

Shuanghao Zheng, Weiwei Lei, Jieqiong Qin, Zhong-Shuai Wu, Feng Zhou, Sen Wang, Xiaoyu Shi, Chenglin Sun, Ying Chen, Xinhe Bao



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ACCEPTED MANUSCRIPT

All-Solid-State High-Energy Planar Asymmetric Supercapacitors Based on All-In-One Monolithic Film Using Boron Nitride Nanosheets as Separator Shuanghao Zheng^{a,c,d}, Weiwei Lei^b, Jieqiong Qin^{a,d}, Zhong-Shuai Wu^{a*}, Feng Zhou^a,

Sen Wang^{a,d}, Xiaoyu Shi^{a,c}, Chenglin Sun^a, Ying Chen^{b*}, Xinhe Bao^{a,c}

^aDalian National Laboratory for Clean Energy, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, 457 Zhongshan Road, Dalian 116023, China ^bInstitute for Frontier Materials, Deakin University, Waurn Ponds, Victoria 3216, Australia ^cState Key Laboratory of Catalysis, Dalian Institute of Chemical Physics, Chinese Academy of Sciences, 457 Zhongshan Road, Dalian 116023, China ^dUniversity of Chinese Academy of Sciences, 19 A Yuquan Rd, Shijingshan District, Beijing 100049, China

wuzs@dicp.ac.cn ian.chen@deakin.edu.au

Abstract

Fast development of smart electronics requires urgently intergrated energy storage devices, but conventional supercapacitors, using two substrates, suffer from weak flexibility, low energy density and inferior integration. Here we demonstrate a all-solid-state high-energy printable construction of planar asymmetric supercapacitors (EG//MP-PASCs) based on all-in-one monolithic films of MnO₂/poly(3,4-ethylenedioxythiophene)stacked-laver pseudocapacitive poly(styrenesulfonate) (MP) nanosheets as positive electrode, highly ionic conductive boron nitride nanosheets as ultrathin separator (~2.2 µm), and capacitive electrochemically exfoliated graphene (EG) nanosheets as negative electrode integrated on single substrate. Notably, EG//MP-PASCs are free of conventional separators, additives, binders, and metal-based current collectors, significantly simplifying the device fabrication process. EG//MP-PASCs can be operated reversibly at high voltage of 1.8 V at polyvinyl alcohol/LiCl gel electrolyte, and exhibit Download English Version:

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