

## Accepted Manuscript

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PII: S1572-6657(18)30507-1  
DOI: doi:[10.1016/j.jelechem.2018.07.040](https://doi.org/10.1016/j.jelechem.2018.07.040)  
Reference: JEAC 12522  
To appear in: *Journal of Electroanalytical Chemistry*  
Received date: 30 April 2018  
Revised date: 21 July 2018  
Accepted date: 24 July 2018

Please cite this article as: Aiqin Liang, Danqin Li, Weiqiang Zhou, Yanli Wu, Guo Ye, Jing Wu, Yanan Chang, Rui Wang, Jingkun Xu, Guanming Nie, Jian Hou, Yukou Du , Robust flexible WS<sub>2</sub>/PEDOT:PSS film for use in high-performance miniature supercapacitors. *Jeac* (2018), doi:[10.1016/j.jelechem.2018.07.040](https://doi.org/10.1016/j.jelechem.2018.07.040)

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# Robust flexible WS<sub>2</sub>/PEDOT:PSS film for use in high-performance miniature supercapacitors

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## ABSTRACT

Layered WS<sub>2</sub> nanosheet has advantages in the application of energy devices because of its distinctive structure and high electrochemical behaviors. The fabrication of high-quality free-standing WS<sub>2</sub> film is anticipant and challenging in developing its flexible and miniature device. Here, using a highly conductive poly (3,4-ethylenedioxythiophene):poly (styrenesulfonate) (PEDOT:PSS) as binder, flexible free-standing WS<sub>2</sub>/PEDOT:PSS film as miniature supercapacitors electrode materials was easily prepared by vacuum filtration method. The WS<sub>2</sub>/PEDOT:PSS film was characterized by scanning electron microscopy, high resolution transmission electron microscopy, atomic force microscopy, Raman spectrum, X-ray photoelectron spectroscopy and electrochemical technology. The free-standing WS<sub>2</sub>/PEDOT:PSS film with conductivity of 44 S cm<sup>-1</sup> showed a good flexibility, robustly mechanical property and high electrochemical behaviors.

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