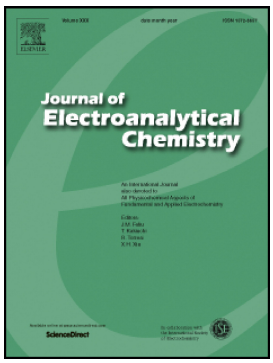

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Robust flexible WS_2/PEDOT:PSS film for use in high-performance miniature supercapacitors

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ABSTRACT

Layered WS_2 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_2 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_2/PEDOT:PSS film as miniature supercapacitors electrode materials was easily prepared by vacuum filtration method. The WS_2/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_2/PEDOT:PSS film with conductivity of 44 S cm^{-1} showed a good flexibility, robustly mechanical property and high electrochemical behaviors.