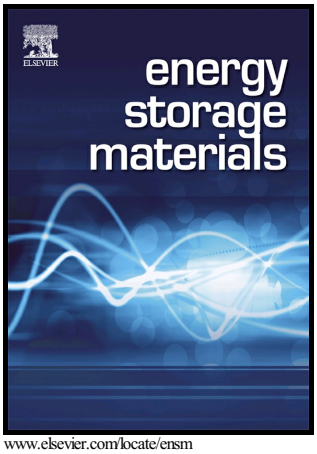

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Stretchable Tandem Micro-Supercapacitors with High Voltage Output and Exceptional Mechanical Robustness

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Abstract

The drastic advancements in wearable electronics have ultimately stimulated the urgent development of stretchable microscale power sources with high-voltage output and unprecedented integration. However, the creation of such energy storage devices remains elusive. Here we demonstrated the fabrication of stretchable tandem planar micro-supercapacitors (MSCs) with high voltage output, outstanding flexibility, robust cyclability, and sturdy integration, based on the interdigital electrode patterns of acid-treated, tightly intertwined graphene/carbon nanotube/cross-linked PH1000 film (GCP), in which PH1000 wrapped carbon nanotubes act as the stretchable backbone and capacitance contributor, and graphene nanosheets serve as high-conductive enhancer. The stretchable GCP patterns were directly manufactured by mask-assisted filtration of GCP ink, and transferred onto a pre-strain rubber substrate, showing high electrical conductivity (610 S cm^{-1}), and impressive