

3-Dimensional Carbon Fiber Electrodes for Wearable Supercapacitors

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We focus on the fiber supercapacitors (SCs) obtained to using carbon fibers and electrodes and providing a method for energy storage into textiles. They can have long cycle lives and provide high powers peak, which can use for applications of hybrid electric vehicles and military devices. Advantage of the twisted fiber are the easiest to fabricate and are compatible with many design concepts. Supercapacitor is obtained to flexible property using carbon fibers and electrodes of carbon nanotubes. When assembled with solid-state twisted fiber SCs, the SCs show high capacitance with high surface area and long cycle life. Then, SCs are flexible and stable enough despite of bending operation. In this study, carbon fiber electrodes are assembled by colloidal crystal templates covered with multi-walled carbon nanotubes. Two microporous conductive electrodes separated by electrolyte. The carbon fibers of SCs have high flexibility and provide trustworthy power output, suggesting they may be a promising candidate for wearable and on-chip energy storage applications with high power demands.