

Fabrication of Flexible and Transparent Supercapacitors Using Thin Film Carbon Electrodes with Controlled Morphologies

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Description

Currently, many types of carbon materials are used for fabrication of super-capacitors. Some of the most common ones are activated carbon, carbon aerogel, carbon black, carbon nanotubes and graphene. However, these materials are associated with limitations such as particulate nature, uncontrolled functional groups, ill-defined structures, hindered capacitance with long term degradation, and limited electrolyte ion penetration. **This novel approach allows for the development and use of novel thin film carbon electrodes with controlled morphologies for fabrication of flexible and transparent super-capacitors.**

Value Proposition

The carbon nano-material:

- Comprises a unique nano-scale cup morphology
- Is light weight with high electrical conductivity as compared to conventional materials
- Has a higher electrochemical surface area with a porous template
- Has a higher mechanical strength and current carrying capacity as compared to conventional materials
- Has 10^5 times smaller length/diameter ratio as compared to conventional nanotubes
- Enables a faster transport of ions, allowing for a higher power capability as compared to conventional approaches
- Allows for the development of high capacity (3-5 times higher) energy storage devices
- Is commercially useful for various applications such as in organic solar cell platforms

Intellectual Property Status

Provisional Application 61/623,975

License Status

Available for license

