Making Scalable Inexpensive High Power and Energy Density Graphene Supercapacitors with the LightScribe Method

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Improvements in energy storage devices can help facilitate the implementation of renewable energy resources in collecting energy, energy storage, and using the energy efficiently. Most energy storage devices today face similar problems: slow charging time, low power and energy density, safety, and cost. These issues can all be addressed by graphene supercapacitors. The improvements in the electrolytes and the pattern design can further increase graphene supercapacitors' power and energy density. Inexpensive graphene supercapacitors can lower the cost of energy storage. Graphene's flexibility and transparency give graphene supercapacitors many potential applications in electronic devices. Driving down the cost of graphene and scaling up the production will help make graphene supercapacitors commercially available. Although some lithium-ion batteries can achieve fast charging rates, graphene supercapacitors have many more benefits thanks to graphene's physical properties. A gelled electrolyte allows more flexibility and does not have the safety hazard of leakage while a reliable solid electrolyte in batteries is yet to be invented. Despite the low-cost associated with Sodium-based batteries, the comparative performance of graphene supercapacitors may still be superior. This research focuses on scalable inexpensive graphene supercapacitors from graphite oxide exfoliated with LightScribe DVD burners. This research demonstrates the feasibility of an inexpensive scalable high energy density graphene supercapacitor. The graphene capacitor made with the LightScribe method has a capacitance of approximately 200 . The capacitor can have a 1 F capacitance with a mass of 4 Kg. Keywords: energy storage, graphene, capacitor, LightScribe

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