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# Flexible Electrospun Graphene-Polymer Electrodes for Supercapacitors

With the increasing global population and advancements in portable technology, there is a growing demand for improved energy storage devices like supercapacitors, which offer high-power performance, rapid charge/discharge cycles, and longer service life than batteries despite storing less energy. To enhance supercapacitor performance, this study focuses on developing electrospun membranes composed of graphene family materials based on polymeric nanocomposites. These materials provide high specific surface area, optimal pore size distribution, low internal electrical resistance, and enhanced electrochemical and mechanical stability. Recent advancements in nanoscience highlight the potential of graphene and carbon nanotubes due to their superior properties, with reduced graphene oxide emerging as a cost-effective and scalable alternative to overcome graphene's limitations, making it a promising candidate for high-performance supercapacitors. Incorporating graphene-derived materials into (i.e., cellulose acetate) matrices via electrospinning has practical implications, producing high-performance supercapacitor electrodes with enhanced capacitance. This project not only sets the stage for future research proposals and projects but also paves the way for designing prototypes that address the need for higher technological maturity. The findings underscore the potential for developing advanced, flexible energy storage devices, highlighting the importance of optimizing material composition and electrospinning parameters for further performance improvements.

## Keywords

Graphene Derivatives, Electrospun electrodes, Polymer Nanocomposites

## Reference

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## Author approval

I confirm

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