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High-Performance and Fabrication of Graphene-based Flexible Supercapacitor

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Although electrochemical capacitors (ECs), also known as supercapacitors or ultracapacitors, is one of the most promising energy-storage devices because of its high power density, super-high cycle life, and safe operation. We herein report a synthesis of graphene-based flexible films by kneading method. Thus, a device can be readily made by sandwiching a polymer membrane included ionic liquid electrolytes between two identical graphene-based flexible films. Devices made with these electrodes exhibit ultrahigh energy density values while maintaining the high power density and excellent cycle stability of ECs. Moreover, these ECs maintain excellent electrochemical attributes under high mechanical stress and thus hold promise for high-energy, flexible electronics.

Keywords: Electrochemical capacitor, Graphene, Flexible