Facile Synthesis of Conducting Hydrogels Based on Polyaniline Fiber and Graphene Oxide for Application in all-solid-state Supercapacitors

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A new conducting hydrogel based on graphene oxide (GO) and polyaniline (PANi) fibers was facile synthesized (denoted as GO/SA/PANi) for application in flexible all-solid-state supercapacitor device. Taking advantage of the synergistic effects of the components and synthesis strategies, the conducting hydrogels showed high mechanical stability and conductivity (16.8 S/m). Furthermore, the supercapacitor based on GO/SA/PANi exhibited high area specific capacitance (2.3 F/cm² at 0.5 mA/cm²). This study not only represents a novel conducting hydrogel for application in all-solid-state supercapacitor with high performance, but also provides a new method for enhancing capacitance and mechanical stability of conducting hydrogels.

Keywords: GO/SA/PANi; in-situ polymerization; macromolecular interaction; conducting hydrogel; supercapacitor

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