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Dual doped electroactive hydrogelic fibrous mat with high areal capacitance

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Abstract

The 3D mat-like electroactive hydrogel for application as electrode material for supercapacitor was fabricated by chemical oxidative polymerization of aniline in the solution containing two dopants: organic copolymer of acrylamide with 2-acrylamido-2-methyl-propanesulfonic acid and inorganic HCl. Electrochemical tests revealed that utilization of two dopants gave a high areal capacitance 8.1 F cm^{-2} at current density 5.1 mA cm^{-2} . Prepared electrode material retains 47% of initial capacitance after applying of 5000 charge-discharge cycles.

Keywords: electroconducting hydrogel; polymers; electrical properties; supercapacitor; polyaniline.

1. Introduction

Increasing of performance of supercapacitors is crucial for their application, which leads to intensive elaboration of new electrode materials. Polyaniline (PANI) and polypyrrole attract

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