Electrospun graphene nanoplatelets-reinforced carbon nanofibers aspotential supercapacitor electrode

ABSTRACT

The combination of graphene nanoplatelets and carbon nanofibers were successfully fabricated by utilizing a one-step solution based on the electrospinning technique. A distinctive morphology was observed in which the platelets were suspended between the fibrous structure that significantly improved the specific capacitance of the nanofiber to 86.11 F g^{-1}, twice the increment from its original structure. Furthermore, all of the graphene nanoplatelets-reinforced samples recorded an optimal performance of over 90% capacitive retention after 1000 continuous charge/discharge cycles, regardless of the GnP concentration. These findings indirectly reflect the potential of CNF as the electrode material in the fabrication of high performance supercapacitor devices.

Keyword: Electrospinning; Graphene; Carbon; Composite; Nanofiber