

## Electrospun graphene nanoplatelets-reinforced carbon nanofibers as potential 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  $86.11 \text{ F g}^{-1}$ , 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