

The preparation of 3D structure reduced graphene oxide hydrogel for supercapacitor application by Ni (II) ions solution

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The three-dimensional (3D) reduced graphene oxide hydrogel (rGOH) was fabricated by the hydrothermal method using the electrostatic force and the chemical reaction between graphene oxide (GO) and Ni (II) ions. The scanning electron microscopy (SEM), X-ray diffraction spectroscopy (XRD), and BET instrument were used to analyze the physical structures of fabricated Ni-rGOH. When it was used as electrodes for supercapacitors, the specific capacitance Ni-rGOH in the charge/discharge test was as high as 299 F g^{-1} at density current 1 A g^{-1} and the retention ratio was 90% after 1000 cycles, which indicates that Ni-rGOH fabricated in this study can be a good candidate for electrodes of supercapacitors.