Preparation of Manganese Oxide/Graphene Aerogel and Its Application as an Advanced Supercapacitor Electrode Material

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Electrochemical supercapacitors (ECs) with high energy density and power capability have demonstrated promising potential in various energy applications. In this study, 3D MnO₂/rGO aerogels with excellent electrical conductivity was successfully prepared with a simple hydrothermal method. The as-prepared 3D aerogels could be applied for constructing the electrode of supercapacitor directly without the demand of other additives. Asymmetric supercapacitors were then constructed with Na₂SO₄ aqueous solution as electrolyte, MnO₂/rGO aerogel and rGO aerogel as positive and negative electrode, respectively. The asymmetric supercapacitor demonstrated maximum energy density of 18.2 Wh/kg with power density of 400 W/kg and excellent cycle stability as well.

Keywords: Supercapacitor; Aerogel; Graphene; Manganese oxide; Hydrothermal

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