Physical and Chemical Modification of Graphene for Electrochemical Energy Storage Applications

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Abstract

Graphene, a one-atom-thick, two-dimensional (2D) sp2 carbon structure, has attracted considerable interest as a next-generation electrode material for electrochemical energy storage devices.This can be attributed to a number of interesting properties of graphene, such as chemical stability, high electrical conductivity, high concentration of edge sites and a large surface area. The combination of these unique physical and chemical properties means that graphene has significant potential to act as either an electrochemically active material for use in electrochemical capacitor applications.[1-3] At the same time, graphene nanomesh exhibits quantum confinement, enriched edge and localization effects, combined with the inherent properties of graphene, and thus, they have great potential applications in the fields such as energy storage, gas separation/storage.[4-7] In this study, we report on the synthesis and electrochemical characterization of graphene nanomesh as an electrode material for energy storage applications.

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