

Abstract Submitted
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Facile preparation of reduced graphene oxide - ruthenium oxide nanocomposite electrodes for high-performance supercapacitors FATIMA AMIR, Winthrop University, VIET PHAM, JAMES DICKERSON, Brookhaven National Laboratory, WINTHROP UNIVERSITY TEAM, CFN-BROOKHAVEN NATIONAL LAB TEAM — Herein we report a facile approach of synthesis of graphene oxide (GO) sheets modified with ruthenium oxide (RuO_2) nanoparticles, followed by a reduction of graphene oxide in an alkaline medium. The as-prepared reduced graphene oxide (rGO)/ruthenium oxide (RuO_2) nanocomposite was used for the fabrication of a symmetric supercapacitor. The specific capacitance and charge-discharge periods of the supercapacitor were found to be dependent on both the structural and morphological properties, and the electrolytes used. Surface morphology analysis using scanning electron microscopy (SEM) shows the RuO_2 nanoparticles decorating rGO sheets, comprising a highly porous surface. Structural analysis obtained by x-ray diffraction (XRD) revealed an amorphous structure that is necessary to achieve a high cycling rate capability. The electrochemical properties of rGO/ RuO_2 were measured in a two electrodes system, using two different electrolytes: H_2SO_4 and Na_2SO_4 . The specific capacitance of rGO/ RuO_2 in H_2SO_4 was found to be 318 F/g, and is much higher than that of Na_2SO_4 (184 F/g).

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