

Electrodeposition of Gold Nanoparticles on Electrochemically Reduced Graphene Oxide for High Performance Supercapacitor Electrode Materials

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In this contribution, reduced graphene oxide-gold nanoparticles nanocomposite (RGO-AuNPs) was synthesized using electrochemical reduction of graphene oxide (GO) at an indium tin oxide (ITO) electrode followed by an electrodeposition process of loading AuNPs on its surface. The electrochemical reduction and deposition progress were characterized by a various technique including SEM, XRD, UV-vis spectroscopy and Raman spectroscopy. The performance of RGO-AuNPs show a reversible electrochemical property and could be successfully applied as pseudocapacitor electrodes with an outstanding stability. A high specific capacity of 288 F/g at a high current density of 28 A/g was obtained in the electrochemical investigation, which shows greatly enhanced performance for supercapacitor applications.

Keywords: Reduced graphene oxide; Electrochemical; Au nanoparticles; Supercapacitor

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