

Electrochemical characteristics of ruthenium-iridium oxides/activated carbon composite capacitor electrode

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Recently $\text{RuO}_2 \cdot x\text{H}_2\text{O}$ is one of the best candidates for use as a pseudocapacitance material, but ruthenium is a very expensive material compared to activated carbon.

In this work, we prepared active material by sol-gel method. Ruthenium-iridium oxides (denoted as $(\text{Ru} + \text{Ir})\text{O}_x \cdot n\text{H}_2\text{O}$) composites with different amounts of RuCl_3 and IrCl_3 were loaded into activated carbon by impregnating the activated carbon in an aqueous RuCl_3 - IrCl_3 solution followed by neutralization.

Each active material was characterized by X-ray diffraction (XRD), BET and etc. Surface morphologies of the metal-loaded carbon were examined by a scanning electron microscope. The electrochemical characteristics of fabricated electrodes were examined by measurement of cyclic voltammetry and galvanostatic charge-discharge studies.