

Effect on carbon materials on RuO₂/carbon composites for a Hybrid Capacitor

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It is generally known that a hybrid capacitor can overcome limitations of an electrochemical double-layer capacitor (EDLC) and a pseudo-capacitor. In this study, we synthesized RuO₂ composites with various carbon materials such as carbon aerogel, alginate and hierarchical porous graphite carbon for electrode in hybrid capacitors. Then, the specific capacitances of the resulting materials were determined using a half cell test in 1 M H₂SO₄ solution with a 3-electrode cell, as well as a single cell test in a coin cell fabricated by a paste rolling method. Additionally, the prepared RuO₂/carbon composites were characterized by TGA, BET, XRD, TEM and XPS.