

Electrosynthesis of Mesoporous Ruthenium Oxide Thin Films for Supercapacitor

김경화, 박은경, 김영수, 백성현*

인하대학교

(shbaeck@inha.ac.kr*)

Mesoporous RuO₂ (Ruthenium Oxide) thin films have been successfully electrodeposited onto ITO-coated glass substrates from aqueous RuCl₃·nH₂O (Ruthenium Chloride) solution using proper amount of SDS (Sodium Dodecyl Sulfate) as a templating agent. For comparison, control sample was electrodeposited without SDS templating. Crystallinity of synthesized film was investigated by XRD (X-ray Diffraction), and XPS (X-ray Photoelectron Spectroscopy). The mesoporous structure was confirmed by SAXRD (Small Angle XRD) and TEM (Transmission Electron Microscopy), and it was concluded that the formation of mesoporous structure strongly depended on electrodeposition conditions, such as deposition voltage, deposition time, temperature and SDS concentration. Specific capacitance of the synthesized films was evaluated by measuring CV (Cyclic Voltammetry) and charge/discharge curves in 0.5M H₂SO₄. Compared with nonporous electrode prepared without SDS templating, mesoporous RuO₂ showed higher supercapacitor performance.