Effects of Carbon Coating on The Electrochemical Performance of Spinel-type $Li_4Ti_5O_{12}$ as an Anode Material for Lithium-ion Batteries

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The lithium titanate spinel $Li_4Ti_5O_{12}$ is gaining more and more attention as anode materials for lithium secondary batteries. As the main feature of the compounds, spinel-type lithium titanate has their unique insertion-deinsertion mechanism that involves a two-phase process with the same symmetry. However, the low rate capability resulting from low electronic conductivity hindered the practical use of $Li_4Ti_5O_{12}$.
The effects of carbon coating on the electrochemical properties of spinel-type $Li_4Ti_5O_{12}$/C were systematically investigated. The experimental results showed that these coating improved the reversible capacity and cycling stability over the pristine $Li_4Ti_5O_{12}$.
Phase purity of the synthesized materials was identified by the X-ray diffraction(XRD) and scanning electron microscopy(SEM). The charge and discharge capacities were measured with coin cells in which lithium metal foil was used as the counter electrode.