Improved Electrochemical Performances of Carbon-coated Li_2MoO_3 Cathode Materials for Li-ion Batteries

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Layer-structured oxide Li_2MoO_3 was surface modified via a facile ball-milling followed by heat treatment to obtain carbon-coated materials with enhanced electrochemical performances. The samples were characterized through XRD, SEM, TEM, Raman spectroscopy, charge-discharge and EIS measurements. The structural and morphological characterization confirmed that Li_2MoO_3 particles were successfully covered with nano-sized carbon layer, and the coating of carbon had no obvious effect on the crystal structure of Li_2MoO_3 . Charge-discharge tests demonstrated that the carbon-coated materials presented improved reversible capacities, cyclability and rate capability compared to the pristine Li_2MoO_3 . EIS results revealed the enhanced electrochemical performances would contribute to the carbon coating layer, which could decrease the charge transfer resistance upon cycling.

Keywords: Li_2MoO_3 , Carbon coating, Electrochemical performance, Li-ion battery, Cathode Material

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