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Facile synthesis of Bi₂MoO₆/reduced graphene oxide composites as anode materials towards enhanced lithium storage performance

Xiangang Zhai,^a Jianping Gao,^{*,a} Ruinan Xue,^a Xiaoyang Xu,^b Luyao Wang,^a Qiang Tian,^a Yu Liu^{*,a}

^aDepartment of Chemistry, School of Science, Tianjin University, Tianjin 300072, P. R. China

^bSchool of Chemical and Pharmaceutical Engineering, Hebei University of Science and Technology

Abstract

Bi₂MoO₆/reduced graphene oxide (Bi₂MoO₆/rGO) composites were fabricated by a facile one-pot hydrothermal approach, in which Bi₂MoO₆ nanosheets and rGO were simultaneously obtained. The structure and composition of the as-synthesized Bi₂MoO₆ and Bi₂MoO₆/rGO materials were characterized via FT-IR, BET, TGA, XRD, TEM, SEM and XPS analyses, and the electrochemical performance of Bi₂MoO₆/rGO as an anode in a lithium-ion battery was investigated. Compared with pristine Bi₂MoO₆, the Bi₂MoO₆/rGO composites have higher capacities, better cycle stability and higher rates. For a current density of 100 mA g⁻¹, the initial discharge capacities of the Bi₂MoO₆/rGO-20 and pristine Bi₂MoO₆ were 1049.6 mAh g⁻¹ and 528.5 mAh g⁻¹, respectively. After 100 cycles, the capacity retention for the Bi₂MoO₆/rGO-20 and pristine Bi₂MoO₆ were respectively 80.4% and 30.7% using the 2nd cycle capacities (895.8 and 402.4 mAh g⁻¹) as references. The enhanced

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