Mn_2O_3/graphene composite as high lithium storage anode material for secondary Li-ion batteries

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Transition metal oxides(TMOs) are the most promising candidates for secondary lithium ion batteries(LIBs). Among different TMOs, Mn_2O_3 is an attractive anode material for LIBs due to the high theoretical capacity (1018 mAh g^{-1}), high abundance of Mn, low cost, less-toxic, and environmental beginity. However, similar to TMOs, Mn_2O_3 also suffers from poor cycling stability and inferior rate capability. To overcome this issues, several strategies have been proposed such as Mn_2O_3 doping with Cu, Mn_2O_3/carbon composite. Herein, porous bare Mn_2O_3 and Mn_2O_3/ graphene composite material have been synthesized by the simple, cost effective, energy saving and scalable chemical co-precipitation technique and subsequent calcination for potential application as an anode material. The synthesized Mn_2O_3/ graphene composite exhibited high specific capacity, high rate capability and superior cycling stability. This approach of making composite with graphene would be very useful in boosting the electrochemical performance of TMOs based electrode materials. This work was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Education (No. 2009-0093816).