

Support Information

MgMoO₄ as an anode material for lithium ion batteries and its multi-electron reaction mechanism

He Duan^a, Zhiyong Zhou^b, Yanming Zhao^{b, c}, Youzhong Dong^{b*}

^aSchool of Physics and Optoelectronic Engineering, Guangdong University of Technology, Guangzhou, 510006, P. R. China

^bSchool of Physics and Optoelectronics, South China University of Technology, Guangzhou, 510640, P. R. China

^cSouth China Institute of Collaborative Innovation, Dongguan, 523808, P. R. China

*Corresponding author. E-mail address: yzdong@scut.edu.cn (Youzhong Dong)

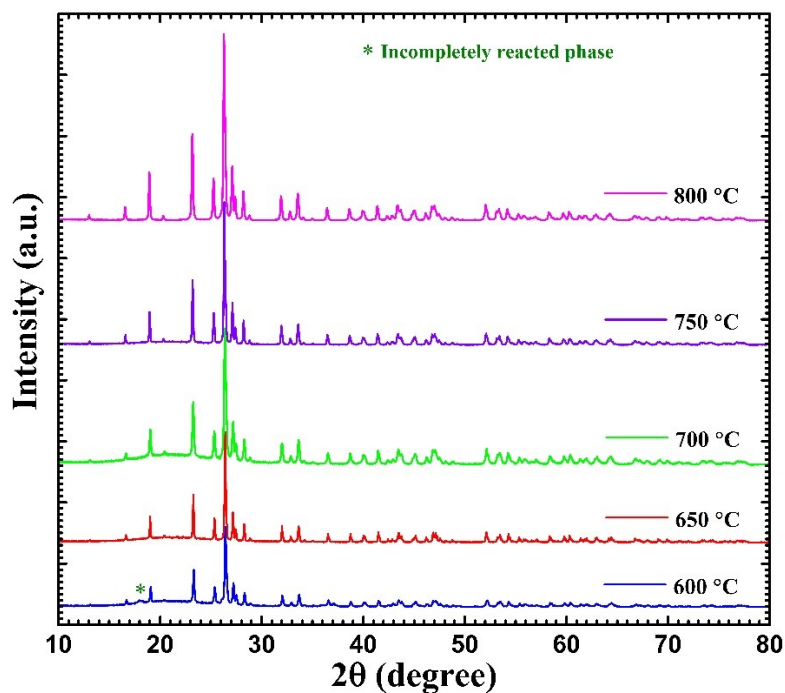


Fig. S1. XRD patterns of MgMoO₄ samples prepared at different annealing temperature.

XRD patterns of MgMoO₄ samples prepared at different annealing temperature are presented in **Fig. S1**. The pure MgMoO₄ samples can be obtained at annealing temperature of above 650 °C. As shown in **Fig. S1**, for the sample annealed at lower temperature (600 °C), an obvious diffraction peaks of the incompletely reacted phase can be observed at about 18.5°. As the annealing temperature increased to 650 °C, a pure MgMoO₄ samples was obtained. With the further increase of the annealing temperature, although the pure MgMoO₄ phase is still obtained, an obvious increase of the diffraction peak intensity can be observed implying the gradual increase in sample particle size which can be observed from the SEM image of the sample (see **Fig. S2**).

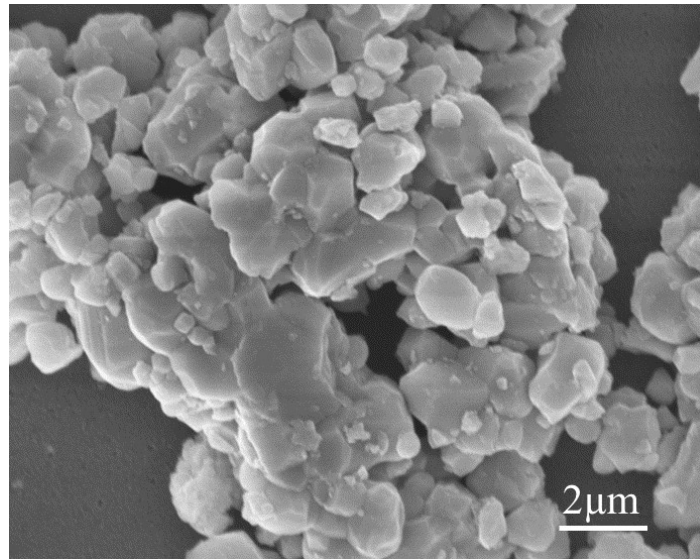


Fig. S2. SEM image of the of MgMoO₄ samples prepared at 800 °C.

SEM results show that, at lower annealing temperature (650 °C), the MgMoO₄ sample is mainly composed of many lumpy particles with an average size of about 1 μm. But at higher annealing temperature (800 °C), the prepared MgMoO₄ sample present an obvious agglomerate with a bigger particle size of 2~5 μm.

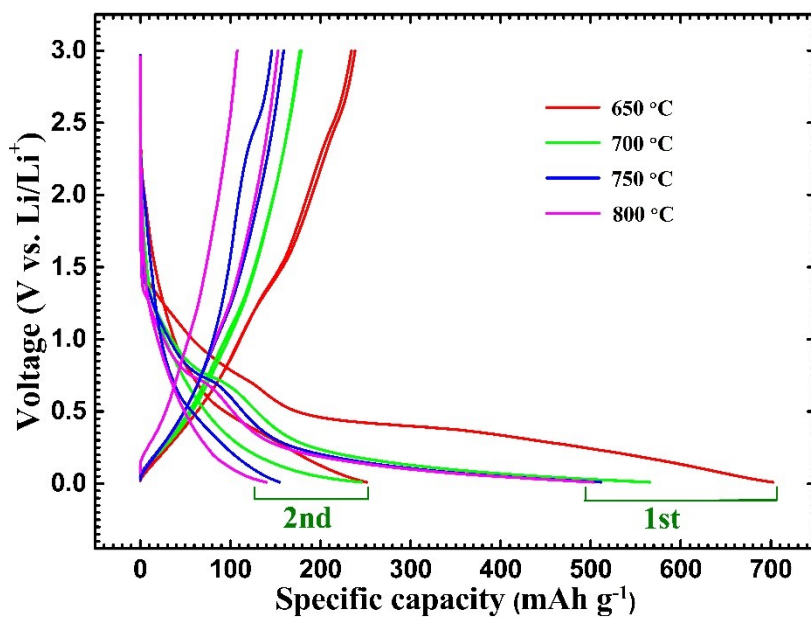


Fig. S3. Comparison of the first two cycle of the discharge/charge curves of the pure MgMoO_4 samples prepared at different annealing temperature.

Fig. S3 presented the discharge/charge curves of the pure MgMoO_4 samples prepared at different annealing temperature. Clearly, attributed to the increased lithium ion diffusion length caused by the increase of sample particle size, for the pure MgMoO_4 sample, a significant decrease of the charge/discharge capacity was observed with the increase of the annealing temperature.