High-performance $LiMnPO_4$/C nanoplates synthesized by negative pressure immersion and solid state reaction using nanoporpous Mn_2O_3 precursor

Jugong Zheng,[ab] Cancan Qin,[a] Tongfu Wu,[a] Shuangfei Xie,[a] Liang Ni,[a] Muyang Peng,[a] Yuefeng Tang*[a] and Yanfeng Chen[a]

a, National Laboratory of Solid State Microstructures, College of Engineering and Applied Sciences, Nanjing University, Nanjing 210093, China.

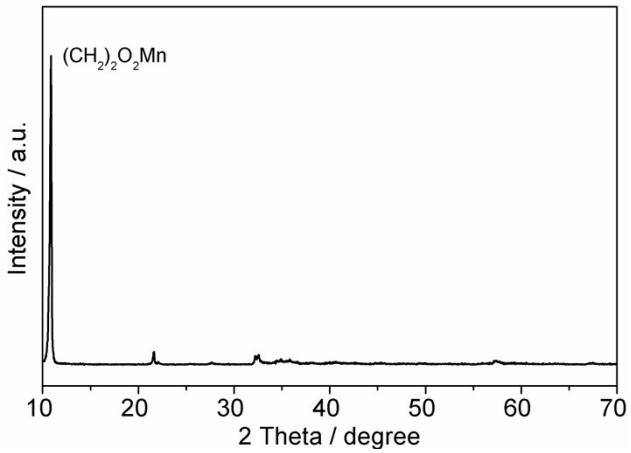
b, Department of Materials Science and Engineering, East China Institute of Technology, Nanchang 330013, China.

SI 1. Preparation of the suspensions

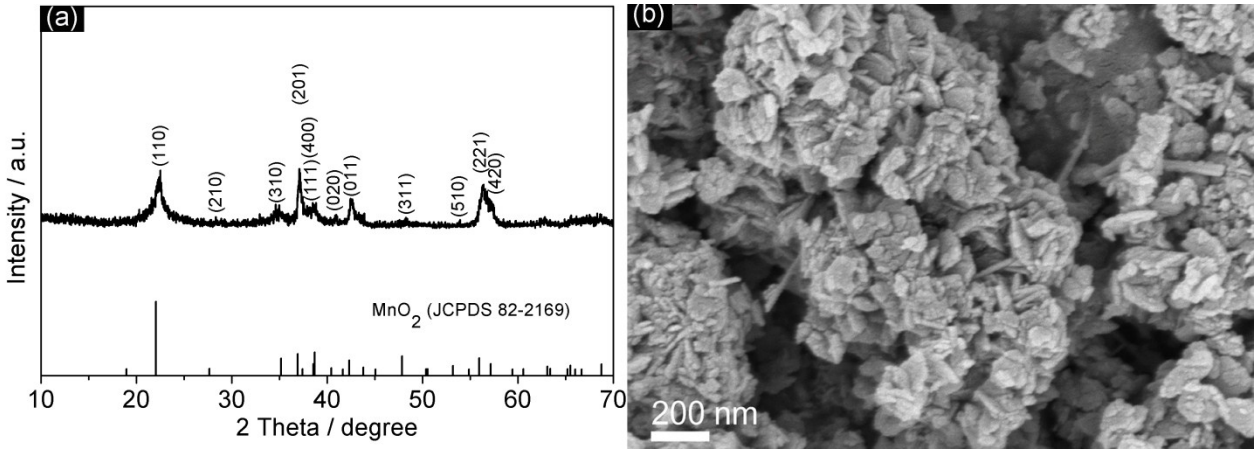
According to the stoichiometric molar ratio of Li : Mn = 1.03, and Li : C = 1 : 1.1, lithium dihydrogen phosphate (LiH_2PO_4, 99%, Aladdin Chemistry Co., Ltd., USA), lithium hydroxide (LiOH, 98%, Aladdin Industrial Co., China) and sucrose ($C_{12}H_{22}O_{11}$, AR, Sinopharm Chemical Reagent Co., Ltd.) were dissolved in deionized water. The aqueous solution was then transferred into an injector. L-Mn_2O_3 and S-Mn_2O_3 powders were weighed and put into two corundum crucibles. The crucibles were sealed in a three mouth bottle connected with vacuum pump and injector. The sealed devices were pumped to an initial pressure of 1104 Pa. Then the aqueous solution was injected into the crucibles to obtain black suspensions.

*: Corresponding Author at: National Laboratory of Solid State Microstructures, College of Engineering and Applied Sciences, Nanjing University, Nanjing, Jiangsu 210093, China, Tel.: (86)-25-83594317, Fax: (86)-25-83594668
E-mail: yftang@nju.edu.cn,

SI Figure



SI Fig. 1 XRD pattern of glycolic manganese ($(CH_2)_2O_2Mn$)



SI Fig. 2 XRD pattern and SEM image of raw material MnO_2, (a) XRD patterns, (b) SEM image.