Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A

Electronic Supplementary Information

Designed Synthesis of $LiMn_2O_4$ Microspheres with Adjustable Hollow Structures for Lithium-Ion Battery Applications

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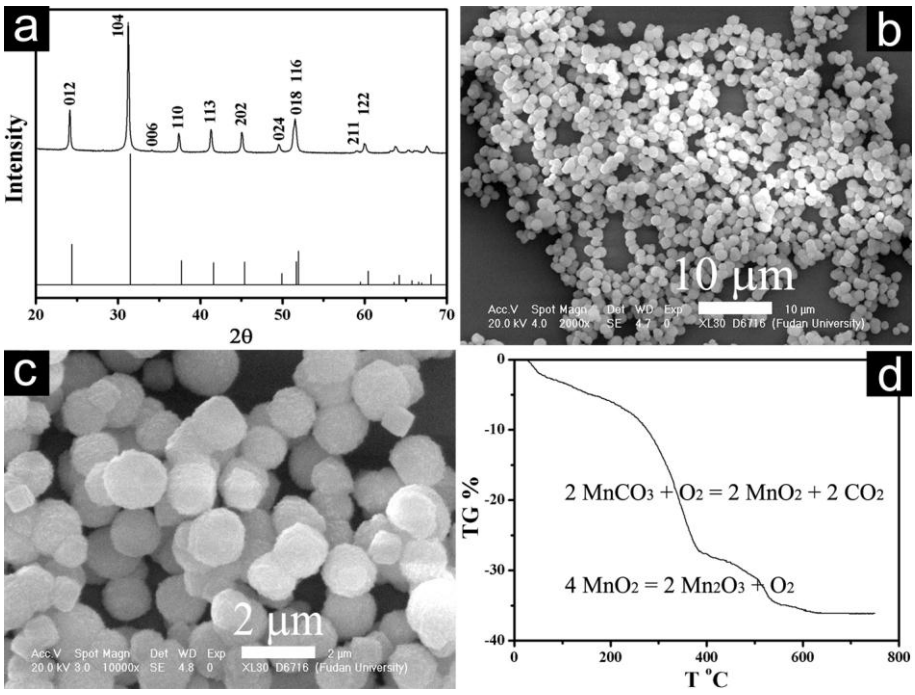

Figure S1. XRD pattern (a), SEM images (b, c), and TGA curve (d) of $MnCO_3$ microspheres.

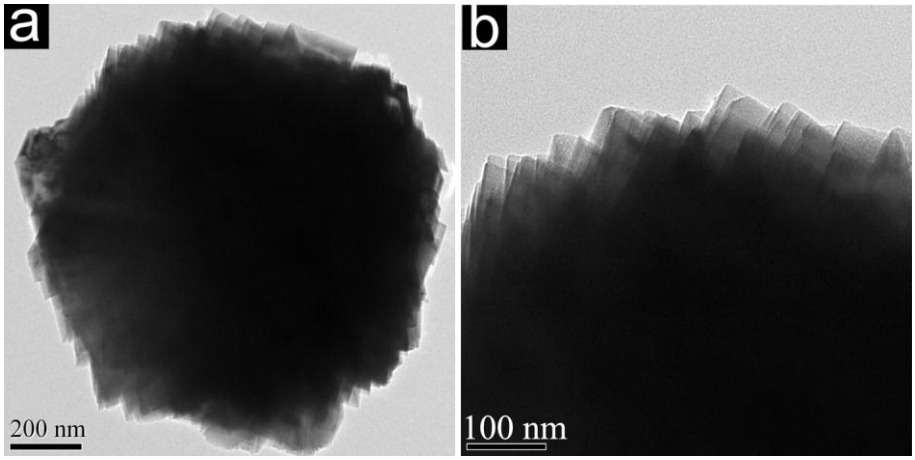

Figure S2. TEM images of $MnCO_3$ microspheres.

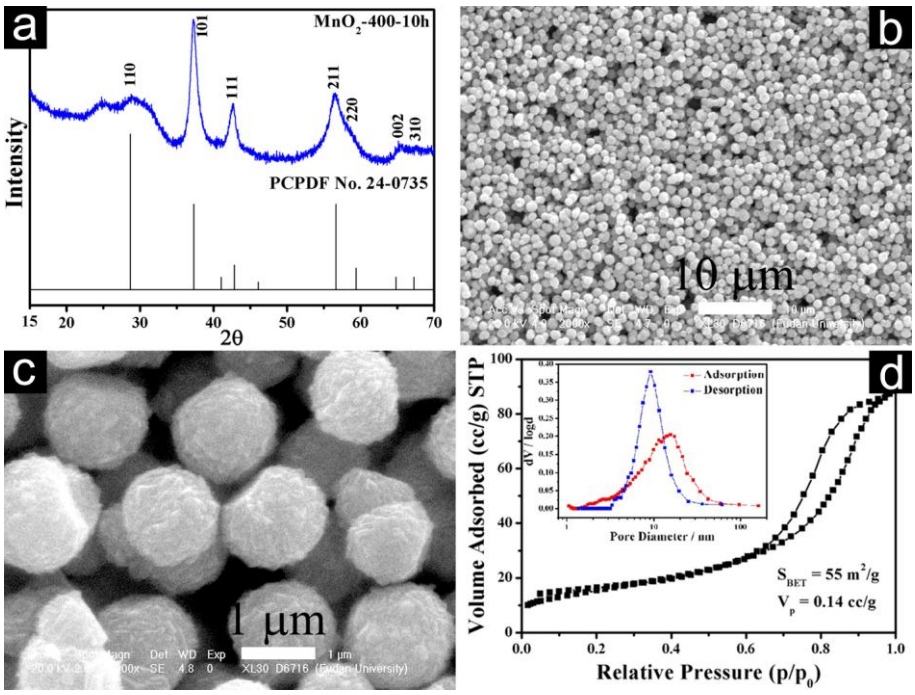

Figure S3. XRD pattern (a), SEM images (b, c), N_2 adsorption-desorption isotherm and pore size distribution (d) of porous MnO_2 microspheres treated after Step A1.

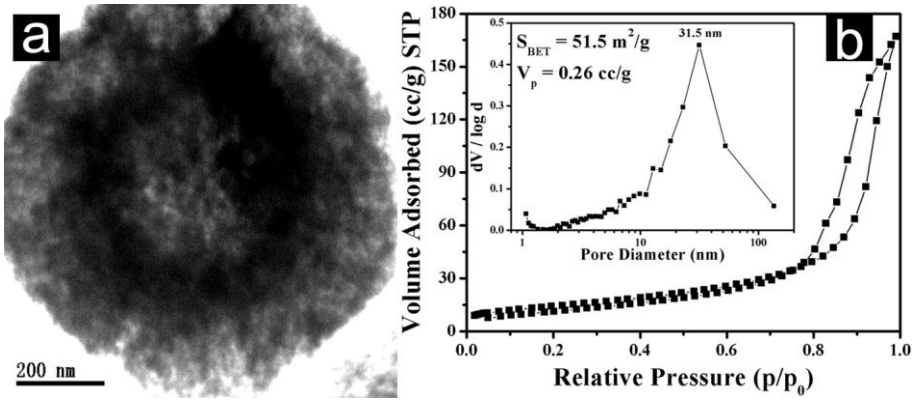

Figure S4. TEM image (a), N_2 adsorption-desorption isotherm and pore size distribution (b) of the MnO_2 hollow microspheres treated after Step B2.

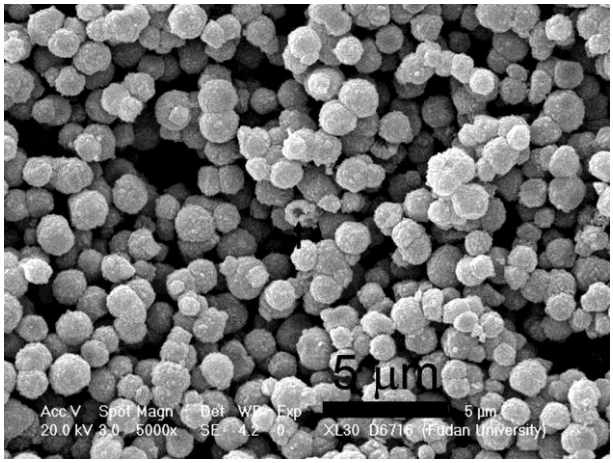

Figure S5. SEM image of $LiMn_2O_4$-A. A broken hollow microsphere is indicated by the black arrow.

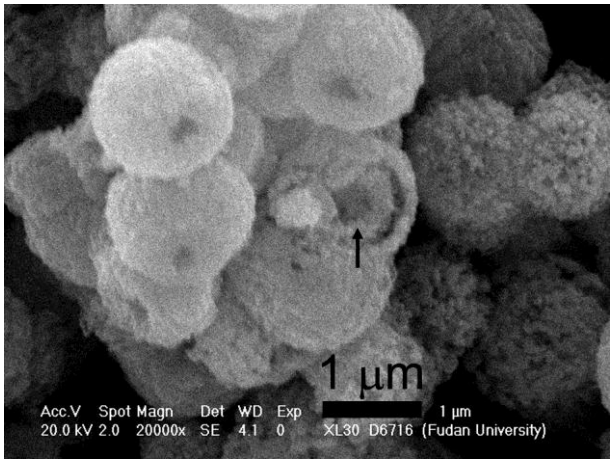

Figure S6. SEM image of $LiMn_2O_4$-B. A double-shelled hollow microsphere is indicated by the black arrow.

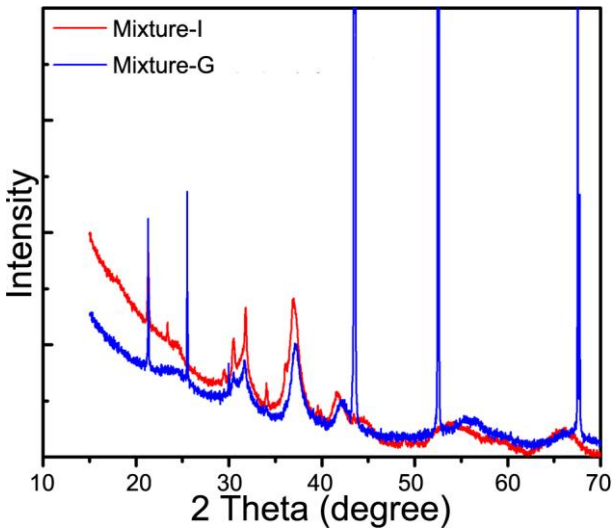

Figure S7. XRD patterns of MnO_2 and $LiOH \cdot H_2O$ mixtures prepared by the impregnation method (mixture-I) and the ground method (mixture-G).

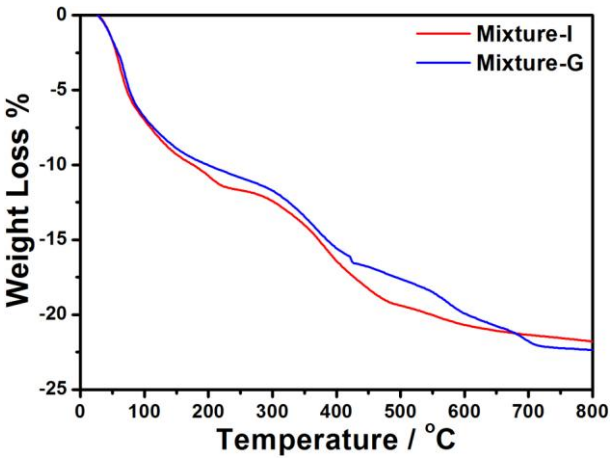

Figure S8. TGA curves of MnO_2 and $LiOH \cdot H_2O$ mixtures prepared by the impregnation method (mixture-I) and the ground method (mixture-G).

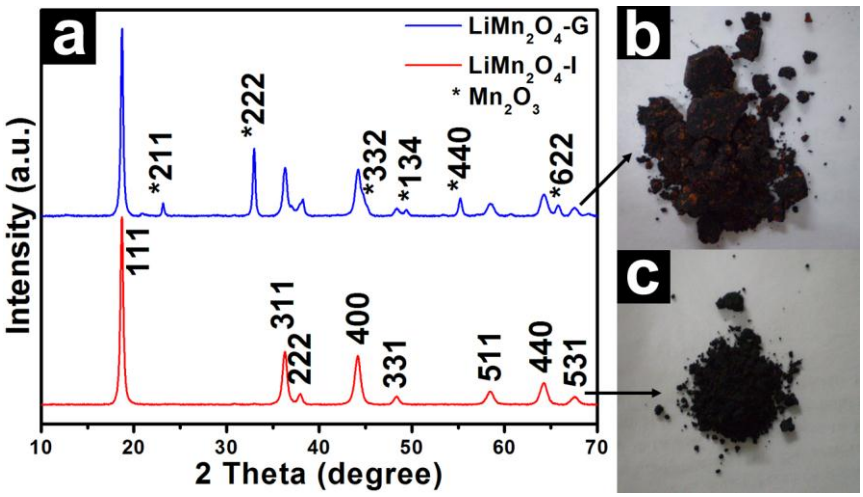

Figure S9. XRD patterns and digital photos of $LiMn_2O_4$-I and $LiMn_2O_4$-G prepared by calcination of mixture-I and mixture-G at 600 ºC for 10 hours respectively.

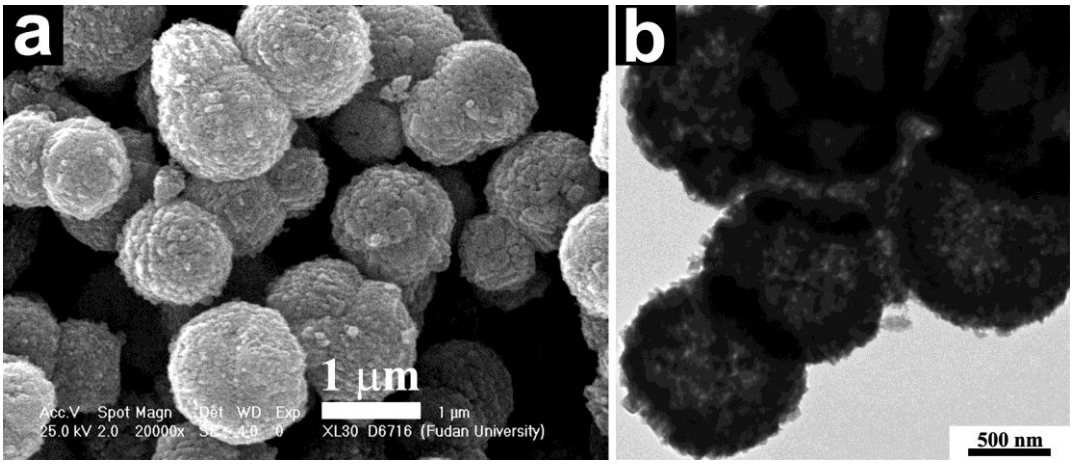

Figure S10. SEM (a) and TEM (b) images of $LiMn_2O_4$-G.