Supplementary Information

Facile hydrothermal synthesis and electrochemical properties of orthorhombic $LiMnO_2$ cathode materials for rechargeable lithium batteries

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Figure captions

Fig. S1. XRD patterns of products synthesized in 0.1 mol L^{-1} $MnCl_2$, 0.6 mol L^{-1} LiOH, 0.1 mol/L NaClO with (a) and without (b) EDTA (0.1 mol L^{-1}) at 180 °C for 24 h.

Fig. S2. XRD patterns of the synthesized pure-phased and aluminum-doped *o*-$LiMnO_2$: (a) M_0, (b) M_3, (c) M_6, (d) M_9, and (e) M_{12}.

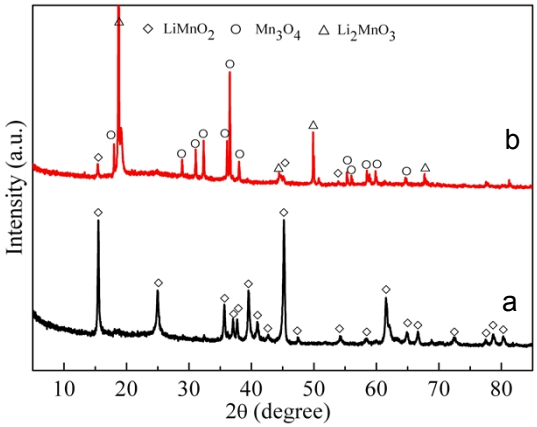
Fig. S3. Particle size distributions of M_0 (a), M_m (b), M_3 (c), M_6 (d), M_9 (e) and M_{12} (f).

Fig. S4. TEM images of M_0 (a), M_3 (b), M_6 (c), M_9 (d), M_{12} (e).

Fig. S5. XRD patterns of products synthesized under different conditions: (a) 0.1 mol L^{-1} $MnCl_2$, 0.6 mol L^{-1} LiOH, 0.1 mol L^{-1} NaClO, 0.1 mol L^{-1} EDTA, 180 °C, 24 h; (b) heat treatment of (a) in air at 300 °C for 2 h; (c) heat treatment of (a) in air at 600 °C for 2 h.

Fig. S6. Discharge specific capacities *vs*. cycle number with current density of 100 mA g^{-1} for M_0, M_m, and M_{600} after heat-treatment at 110 °C for 12 h.

1. The effect of EDTA on product composition



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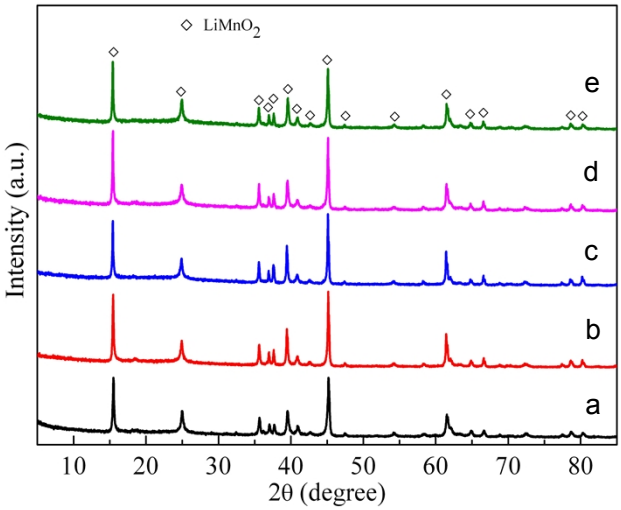
2. The preparation of Al doped *o*-$LiMnO_2$



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3. The particle size distributions of the as-obtained samples

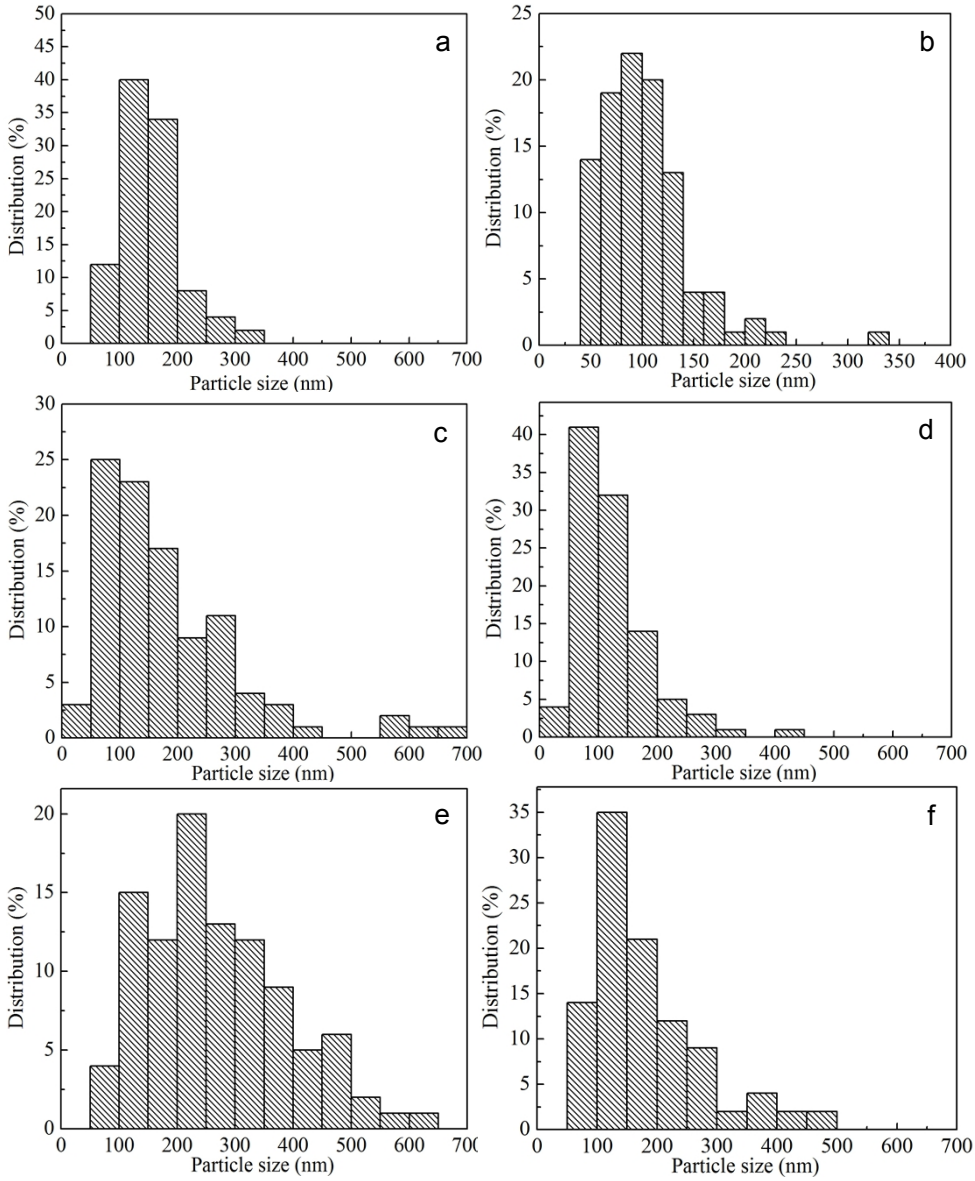


Fig. S3. Particle size distributions of M_0 (a), M_m (b), M_3 (c), M_6 (d), M_9 (e) and M_{12} (f).

4. The micromorphology and particle size of pure and Al doped *o*-$LiMnO_2$

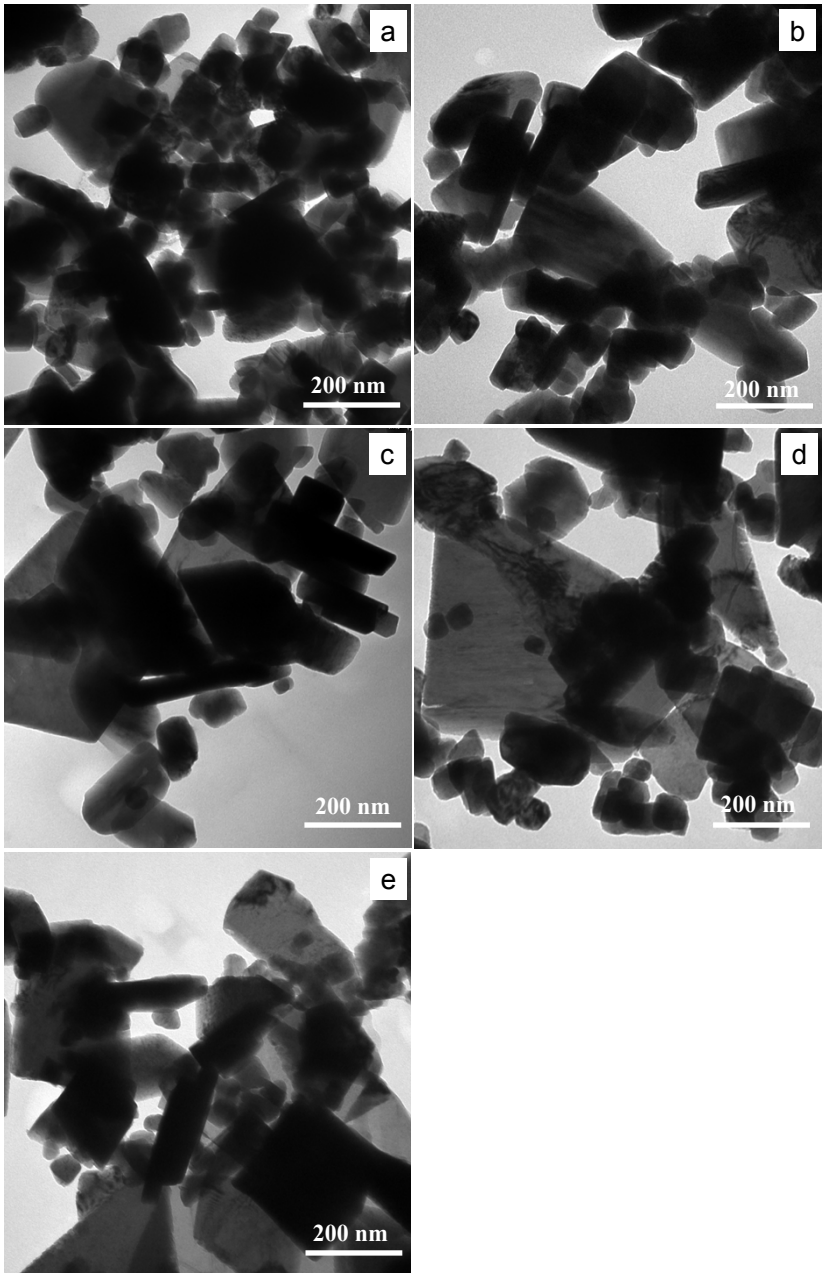
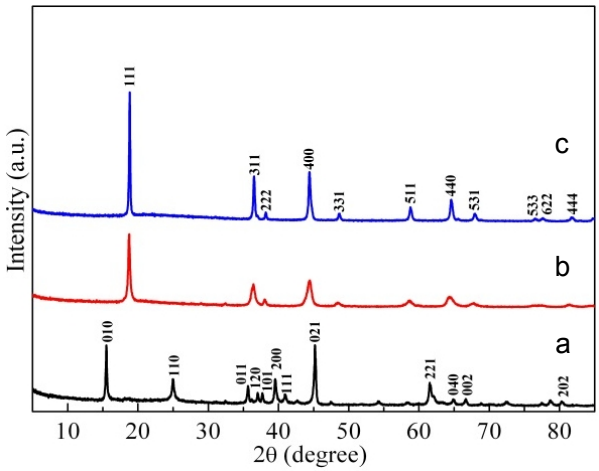


Fig. S4. TEM images of M_0 (a), M_3 (b), M_6 (c), M_9 (d), M_{12} (e).

5. The heat treatment of as-obtained *o*-$LiMnO_2$ in air



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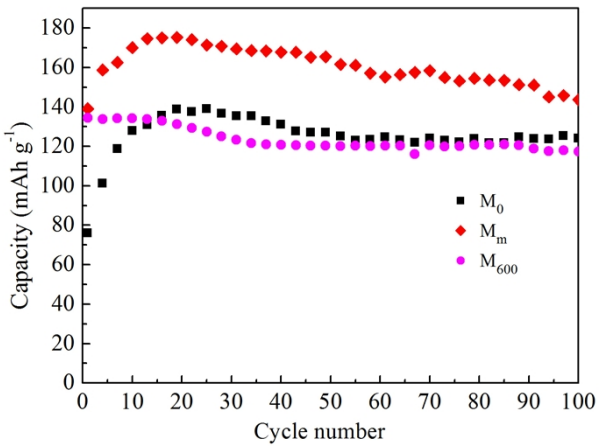
6. The electrochemical performance of the as-obtained *o*-$LiMnO_2$ and $LiMn_2O_4$



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