Synthesis and Electrochemical Properties of Mn$_3$O$_4$

Nanocrystals with Controlled Morphologies Grown from Compact Ion Layers

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**Fig. S1.** The Pourbaix diagram showing the potential-pH equilibrium for manganese-water system.
Fig. S2. SEM images of the morphological evolution of the different-shaped Mn$_3$O$_4$ nanocrystals; (a, b, c, d, e) 1 M Mn(NO$_3$)$_2$ solution and (f, g, h, i, j) 0.5 M Mn(NO$_3$)$_2$ solution.

Fig. S3. N$_2$ adsorption-desorption isotherms of Mn$_3$O$_4$ samples and the insets in (a-c) are the corresponding pore size distribution curves.

Fig. S4. SEMs of the Mn$_3$O$_4$ electrode after the charging-discharging (after 1000 cycles) experiments. (a) rod-like, (b) plate-like and (c) round Mn$_3$O$_4$. 