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***In-situ* Construction of One-Dimensional Porous MnO@C Nanorods for electrode materials**

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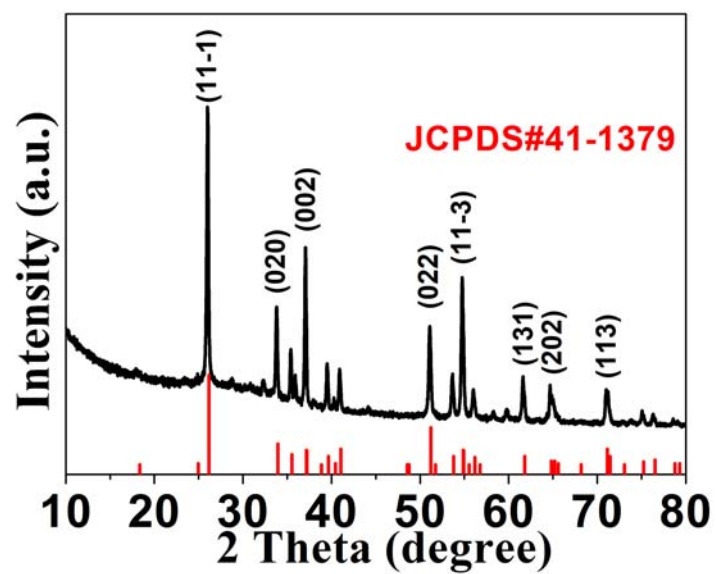*Phone/Fax:* +86-551-6559-1589.

Fax: +86-431-8526-2836.

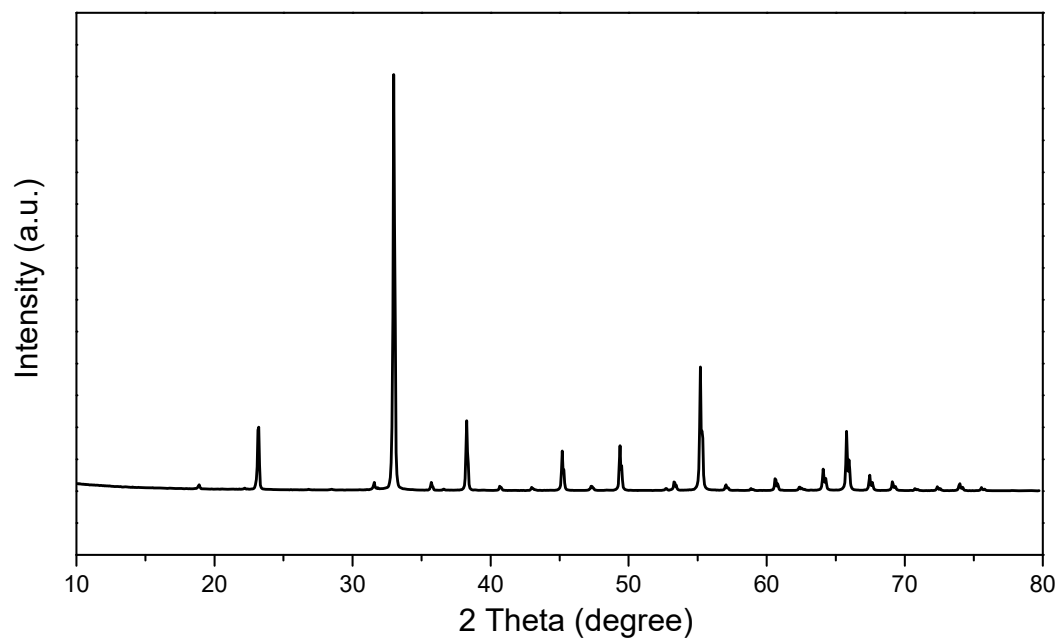**Figure S1.** X-Ray Powder Diffraction (XRD) pattern of MnOOH.

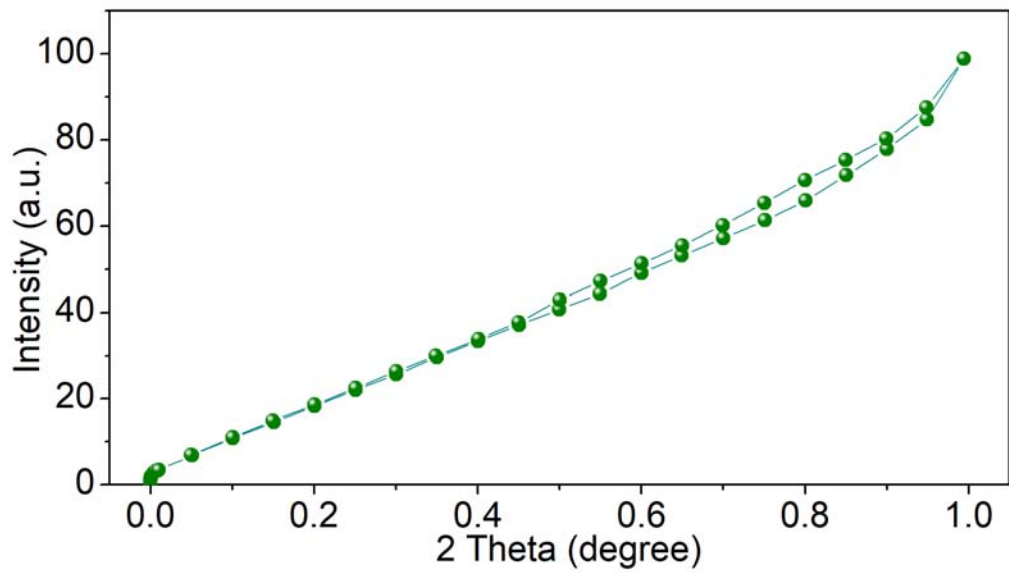**Figure S2.** XRD pattern of the final product after the TGA tests.

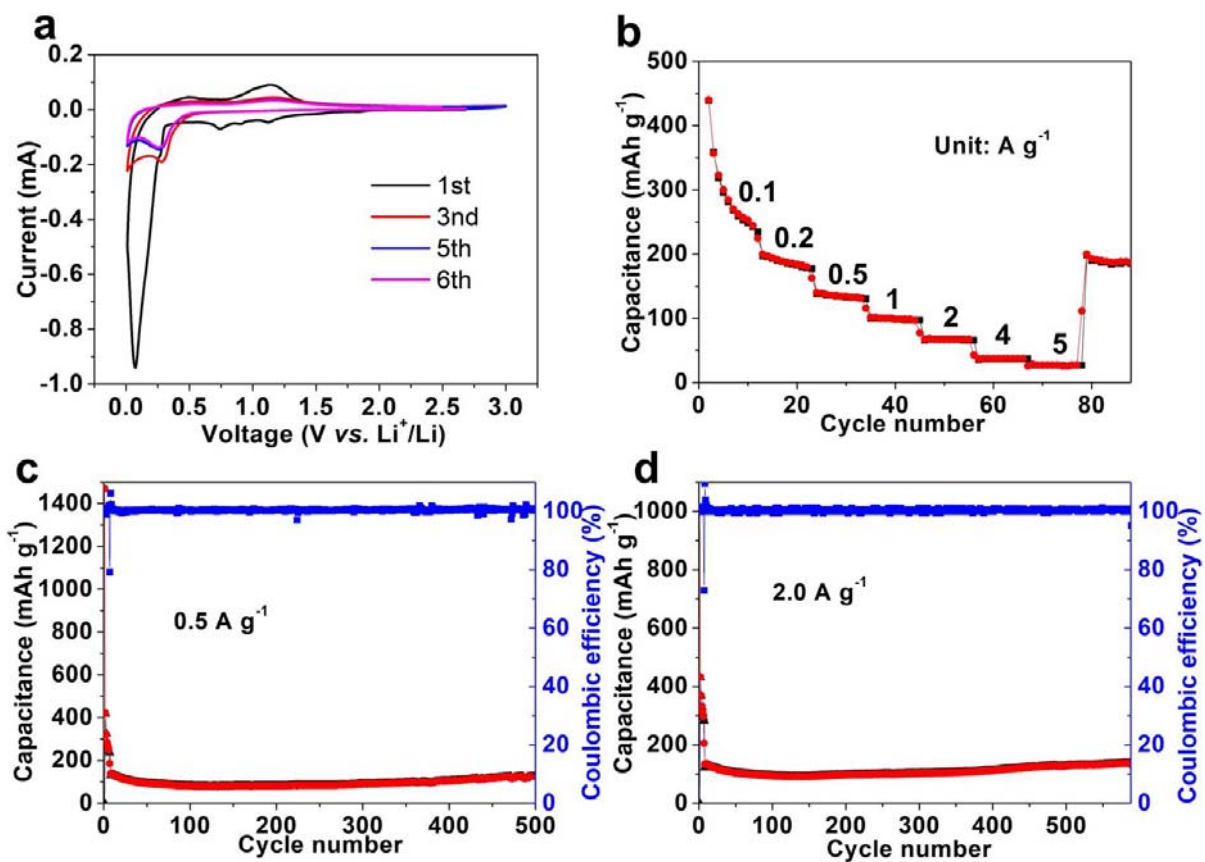**Figure S3** N_2 adsorption-desorption profile of bare MnO.

Figure S4. Electrochemical performance of MnOOH. (a) Cyclic voltammograms, (b) rate

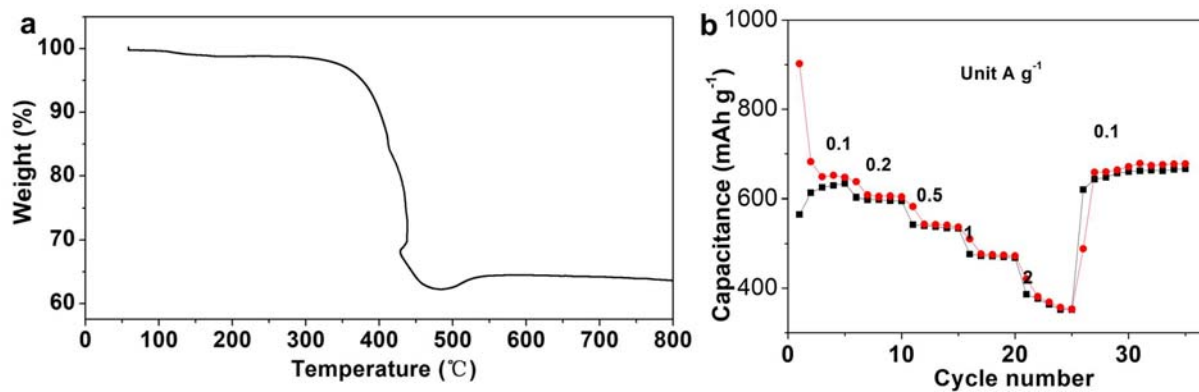capability, and (c) cycling performance at (c) 0.5 and (d) 2.0 A g^{-1}.

Figure S5. (a) TGA curve and (b) rate capacities of MnO@C annealed at 600 ^{o}C for 4 h.

The lithium ions and electron transport kinetics with the MnO@C and MnOOH are described by electrochemical impedance spectroscope (EIS) measurements. Fig. S6 presents the Nyquist plots of MnOOH and MnO@C electrodes in the fresh cells, with the equivalent circuit model revealed in the inset. According to the fitting results in Table S1, for both the MnOOH and MnO@C electrodes, the charge-transfer resistance (R_{ct}) of MnO@C (i.e. 71.6 Ω) is much lower than that of bare MnOOH (156.2 Ω), suggesting that the reactions of MnO@C are faster than bare MnO. Moreover, the internal resistance (R_s) and resistance of SEI film (R_{SEI}) values of MnO@C are smaller than that of MnOOH, meaning that MnO@C is beneficial for the enhanced electron transport.
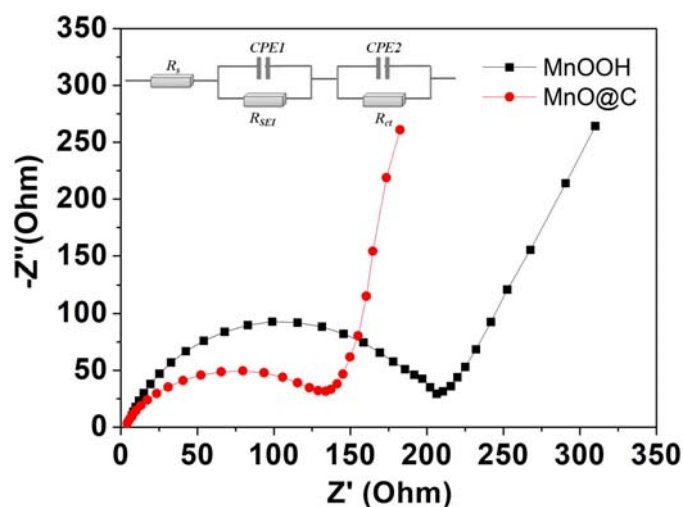

Figure S6. Nyquist plots of MnO@C and MnOOH electrode. Inset is the model of the equivalent circuit.

Table S1 Impedance parameters, R_s, R_{SEI} and R_{ct}, obtained from the EIS plots of MnOOH and MnO@C.

LIB	R_s (Ω)	R_{SEI} (Ω)	R_{ct} (Ω)
MnOOH	4.304	13.05	156.2
MnO@C	2.016	5.23	71.6