Supplementary Information for

Supercritical N, N-Dimethylformamide for exfoliation and phase transition of layered manganese oxide materials to obtain trimanganese tetroxide nanosheets

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1. Some relative characterizations

Fig. S1 UV-visible spectra of layered manganese oxides in the DMF solvent with a concentration of 0.25 mg mL$^{-1}$.

Fig. S2 Samples before (left) and after the SCF procedure (right).

2. Raman spectra

Fig. S3 In situ Raman spectra of the pre-intercalated bulk manganese oxides. The sample for in situ Raman was prepared with the mixture of layered manganese oxides and DMF in reactor increased to 200°C for a pre-intercalation for considering the effect of intercalation [Y. K. Hsu et al., Chemical Communications, 2011, 47, 1252-1254 & Z.-h. Liu et al., Langmuir 18, (2002) 4926-4932.] as much as possible, while the FTIR spectra of the samples with the temperature increased to 200°C, 300°C, and 400°C in the main text of paper indicate this treatment has little intercalation of molecules. Noises from the fluctuations in the spectra may be resulted from some thermal effects and the H$_2$O produced in the transition or the combined H$_3$O$^+$ [Chem. Mater. 16, (2004) 5581-5588 & J. Mater. Chem. 9, (1999) 319-333.]. (Ambient pressure, increasing velocity: 10 °C·min$^{-1}$, keeping time: 10min)
3. Assembly for long time

Fig. S5  Cracked nanosheet products in the exfoliating course (left) and the ones preserved in reactor for five more minutes (right).