Fig. S1: High magnification of samples; (A) MnO$_2$, (B) Na-MnO$_2$(A) and (C) Na-MnO$_2$(B).

Fig. S2: Cyclic voltammetry of (A) $\alpha$-MnO$_2$, (B) Na-MnO$_2$ (A) and (C) Na-MnO$_2$(B).

Fig. S3: Galvanostatic charge-discharge profiles of (A) $\alpha$-MnO$_2$, (B) Na-MnO$_2$ (A) and (C) Na-MnO$_2$(B).
Fig S4: (A) Variation of Cs and (B) Ragone plot for each materials at different current density (10 A g\(^{-1}\) to 0.3 A g\(^{-1}\)) in three-electrode system of 1M Na\(_2\)SO\(_4\) electrolyte.

Fig S5: Galvanostatic charge-discharge curve for samples at 5A g\(^{-1}\) in 1M Na\(_2\)SO\(_4\).
Fig. S6: Fitted data of equivalent circuit for samples; (a) MnO$_2$, (b) Na-MnO$_2$(A) and (c) Na-MnO$_2$(B) with the schematic diagram of equivalent circuit employed for fitting.

Fig. 7: Cyclic voltammetry curve for material in three-electrode configuration (A) AC commercial in 1 M Na$_2$SO$_4$, (B) AC commercial in 1M KOH (C) Na-MnO$_2$(B) in 1M KOH and (D) Na-MnO$_2$(B) in 1M Na$_2$SO$_4$, at scan rate of 50 mV s$^{-1}$. 
Fig. S8: Ragone plot for Na-MnO$_2$(B) in two electrode system with different electrolyte at different current densities (2 A g$^{-1}$ to 0.3 A g$^{-1}$).