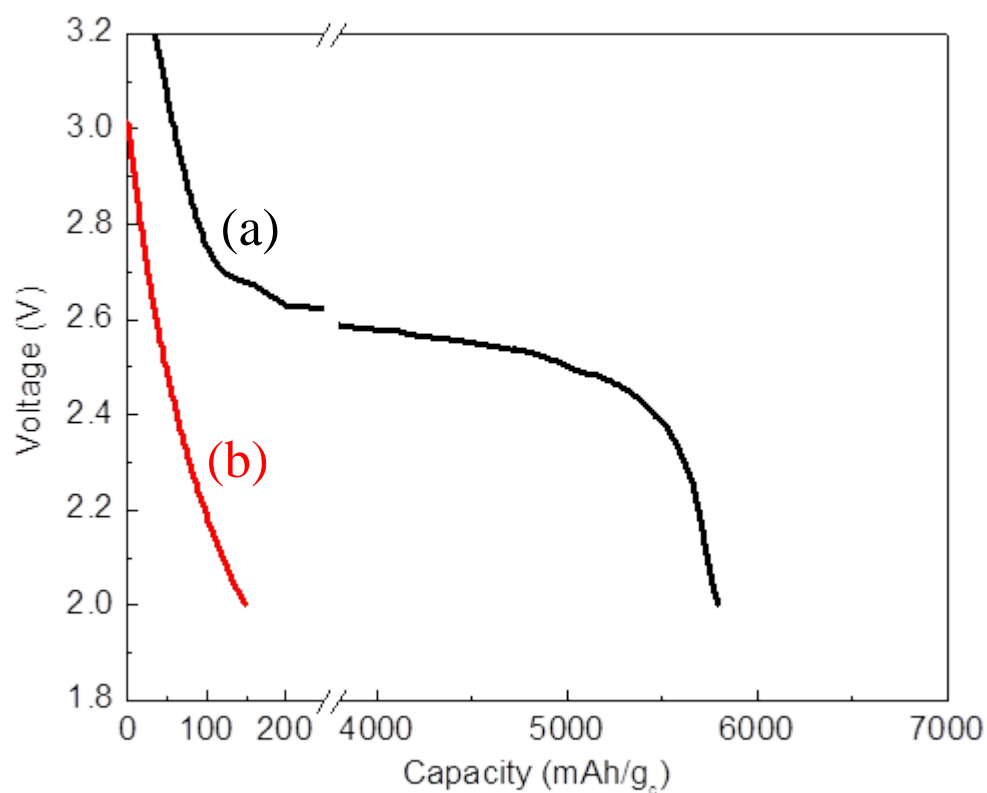


**Figure S1.** Raw EDX spectra of pristine and acid-leached phases. a) pristine  $\text{Na}_{0.44}\text{MnO}_2$ ; b) acid-leached  $\text{Na}_{0.44}\text{MnO}_2$ : 15 min; c) acid-leached  $\text{Na}_{0.44}\text{MnO}_2$ : 1 hour; d) acid-leached  $\text{Na}_{0.44}\text{MnO}_2$ : 24 hours



**Figure S2.** First electrochemical discharge curves for cathodes containing pristine  $\text{Na}_{0.44}\text{MnO}_2$  nanowires under (a) oxygen and (b) argon. These results show that the  $\text{Na}_{0.44}\text{MnO}_2$  nanowires account for roughly 3% of the total discharge capacity of the catalyst-based Li- $\text{O}_2$  cell.