

### Supporting Information:

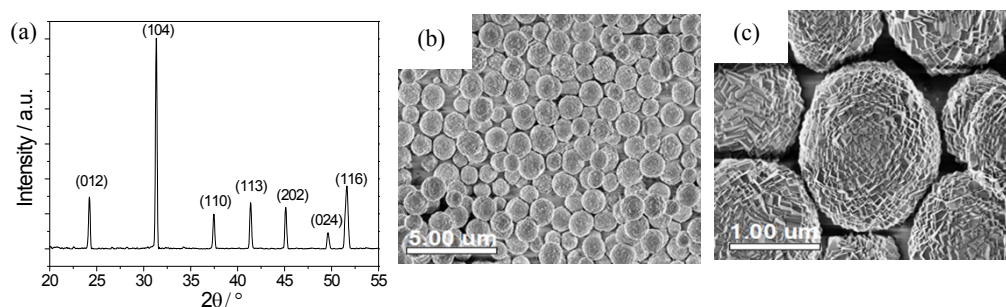


Fig. S1 (a) XRD pattern, (b) SEM and (c) FESEM micrographs of the as-prepared  $\text{MnCO}_3$ .

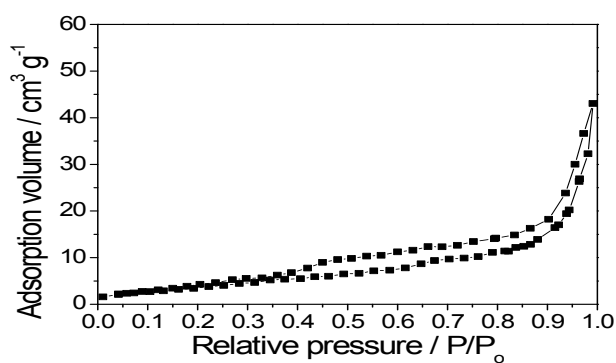


Fig.S2 Nitrogen adsorption-desorption isotherm of the  $\text{Co}_3\text{O}_4@\text{Li}_2\text{MnO}_3$  composite.

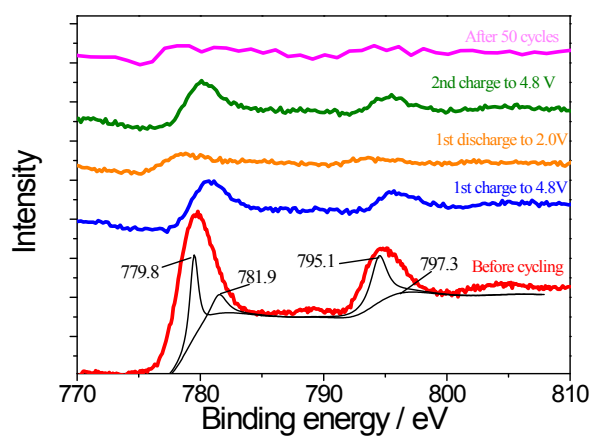


Fig. S3 XPS spectra of the  $\text{Co}_3\text{O}_4@\text{Li}_2\text{MnO}_3$  composite obtained at different charge/discharge states.

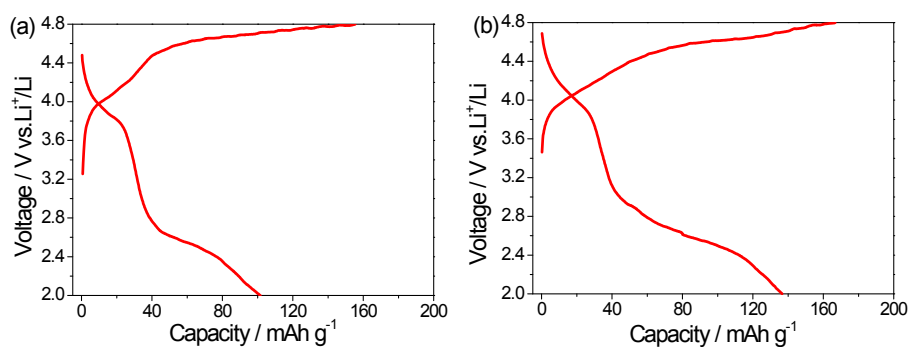


Fig. S4 Charge/discharge curves of  $\text{Li}_2\text{MnO}_3$  coated by low amount of  $\text{Co}_3\text{O}_4$ : (a) 4.6 wt%  $\text{Co}_3\text{O}_4$  and (b) 10.1%  $\text{Co}_3\text{O}_4$ .