

## *Supporting Information for*

# Power characteristics of spinel cathode correlated with elastic softness and phase transformation for high-power lithium-ion batteries

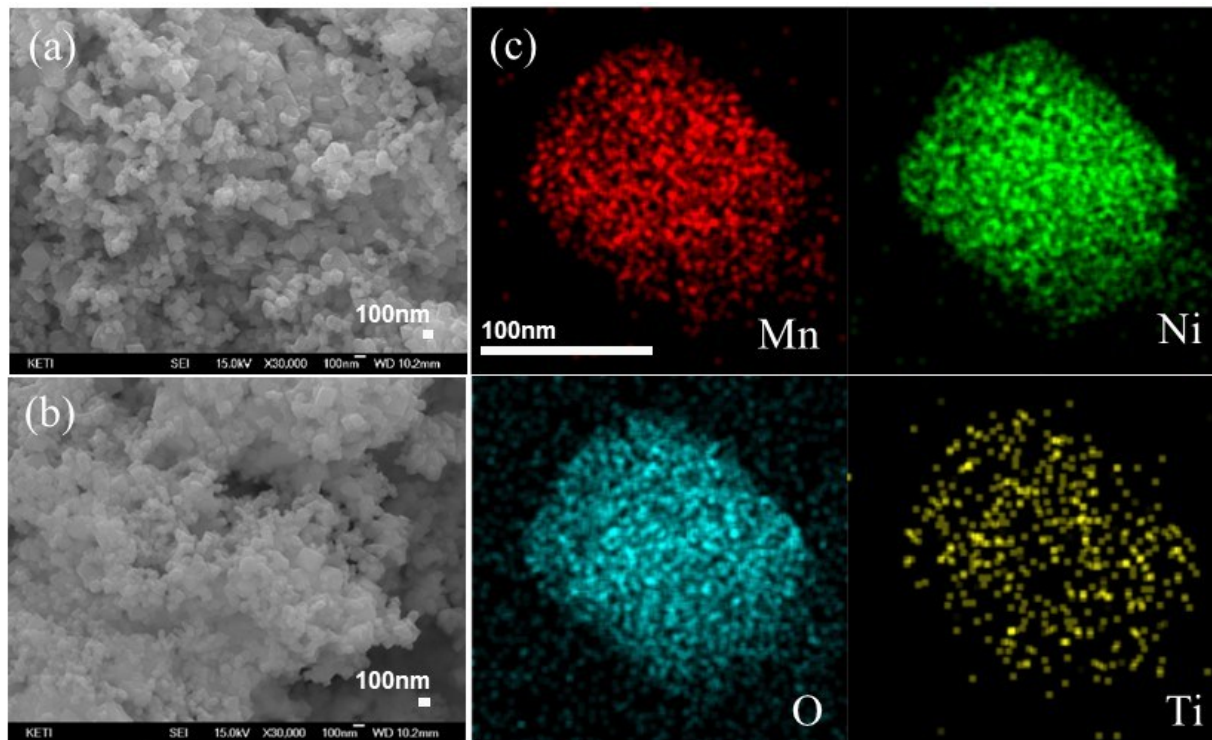
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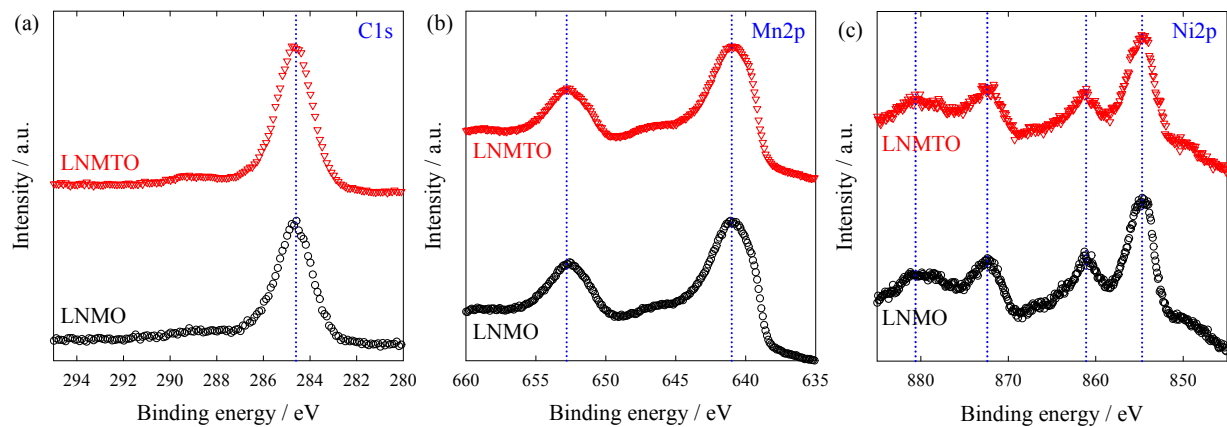
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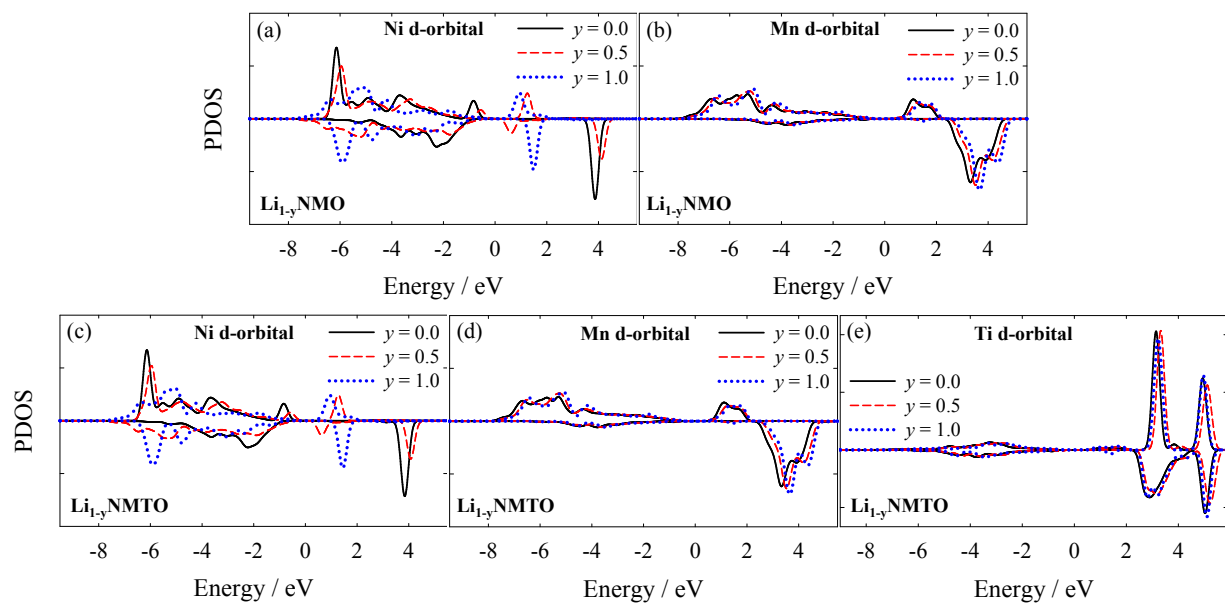
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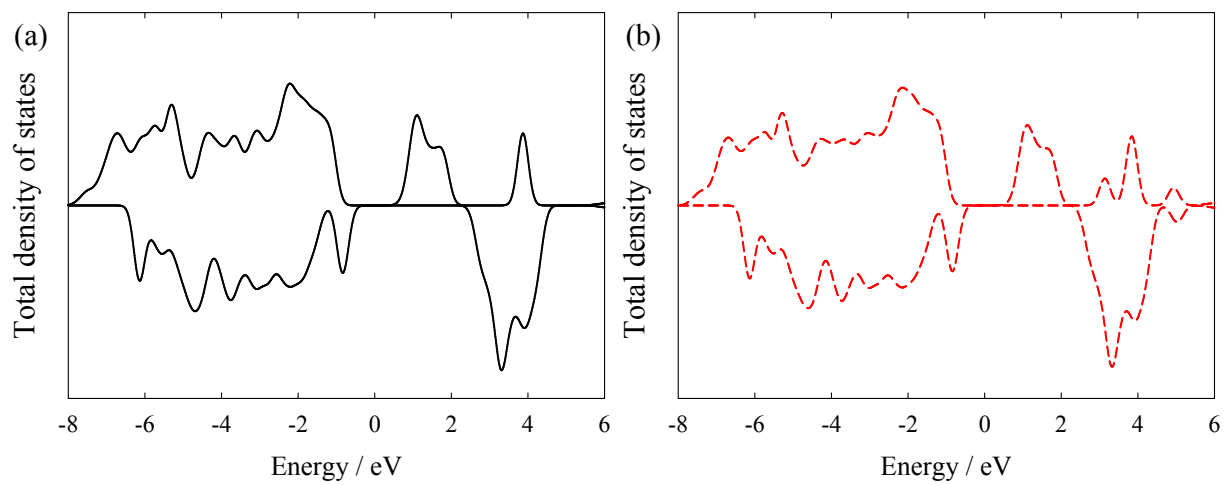
**Fig. S1.** (a, b) FESEM images of (a) LNMO and (b) LNMTO nanopowders, and (c) EDS mapping images of ion-sliced HRTEM for Mn, Ni, O, and Ti ions in a LNMTO nanoparticle.



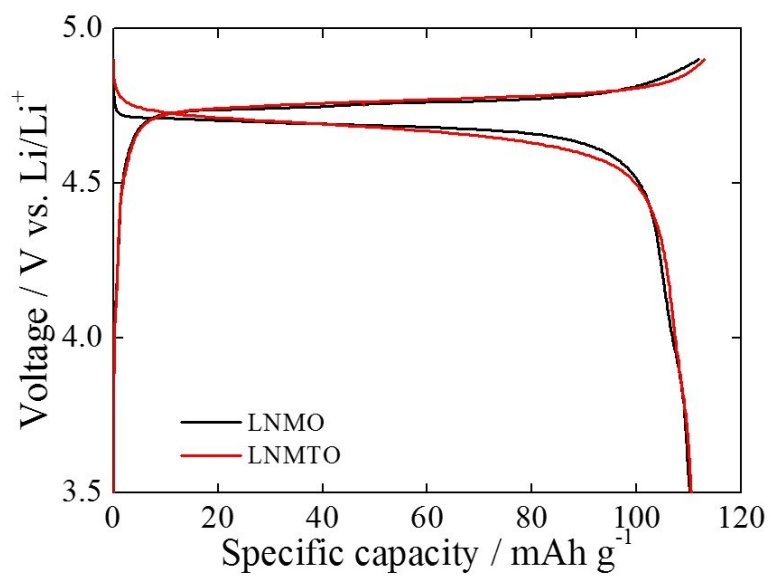
**Fig. S2.** XPS spectra of (a) C1s, (b) Mn2p, and (c) Ni2p for LNMO (black circles) and LNMTO (red triangles) after Ar ion sputtering for 300 s.



**Fig. S3.** PDOS of (a) Ni and (b) Mn d-orbitals in  $L_{1-y}NMO$ , and (c) Ni, (d) Mn, and (e) Ti d-orbitals in  $L_{1-y}NMTO$  with respect to the inverse Li content,  $y = 0$  (black solid line), 0.5 (red dashed line), and 1.0 (blue dotted line).



**Fig. S4.** Total density of states of (a) LNMO (black solid line) and (b) LNMTO (red dashed line).



**Fig. S5.** Charge-discharge profiles of LNMO (black lines) and LNMTO (red lines) at a specific current of 80 mA g<sup>-1</sup>.