Supplementary Data

Graphene wrapped Y2O3 coated LiNi0.5Mn1.5O4 quasi-spheres as novel cathode materials for lithium-ion batteries

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Diagram

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Figure S1: Schematic diagram of the synthesis process; (a) pristine LiNi0.5Mn1.5O4 (LNMO-P), (b)Y2O3 coated LiNi0.5Mn1.5O4 (LNMO-YO), and (c) in graphene wrapped Y2O3 coated LiNi0.5Mn1.5O4 (LNMO-YO-G).

Chart, line chart

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Figure S2: Thermal gravimetric curves of LNMO-P, LNMO-YO, and LNMO-YO-G in the nitrogen environment.

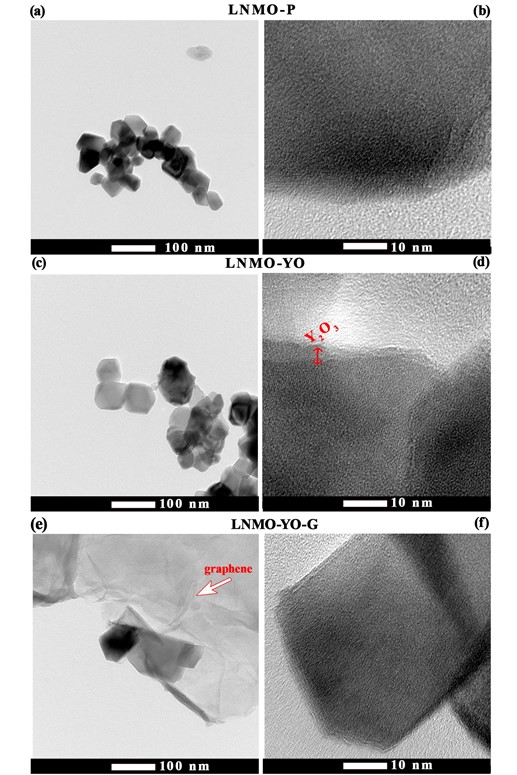


Figure S3: HR-TEM micrographs: (a, b) pristine LNMO particles (c, d) Y2O3 (5~8nm) coated LNMO particles (e, f) graphene wrapped Y2O3 coated LNMO-P particles decorated along the conduction paths.

A screenshot of a map

Description automatically generated with low confidence

Figure S4: The protective mechanism of the proposed coatings (yttria & graphene) against ionic dissolution is depicted schematically.