Supporting Information

for

Facile and scalable dry surface doping technique to enhance the electrochemical performance of $LiNi_{0.64}Mn_{0.2}Co_{0.16}O_2$ cathode materials

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Fig. S1 shows the cross-section TEM EDS mapping of the 0.6% Nd-doped NMC cathode and Nd is distributed on the surface.

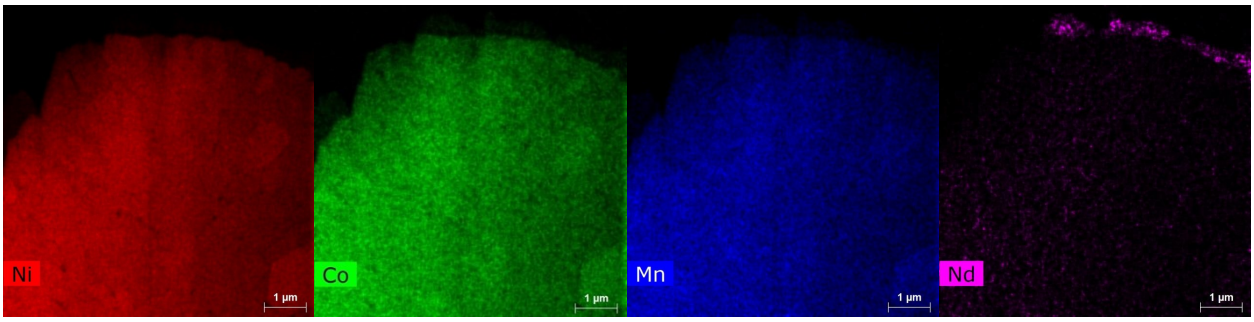

Fig. S1 Cross-section TEM-EDS mapping of the 0.6% Nd-doped NMC cathode.

Fig. S2 shows the Rietveld refinement of the XRD patterns.

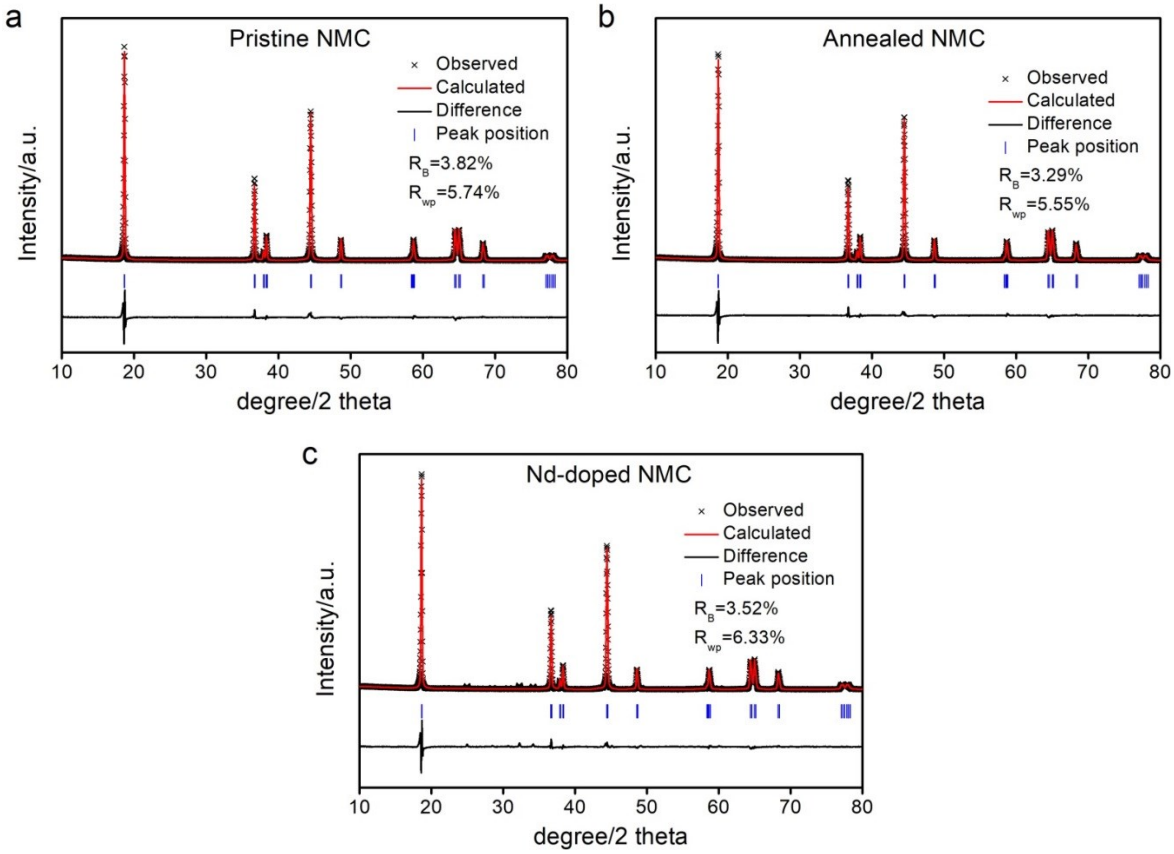

Fig. S2 Rietveld refinement of the XRD patterns of (a) pristine, (b) annealed and (c) Nd-doped NMC cathodes.

Fig. S3 displays the cycling performance of NMC cathodes doped with different amount of Nd, and 0.6% Nd-doped NMC shows the best cycling performance.

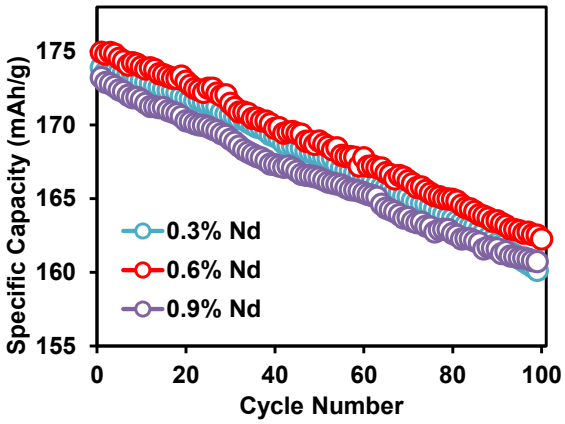

Fig. S3 Specific discharge capacities of NMC doped with different amount of Nd at C/2 in coin cells.

Fig. S4 displays the measurement positions in EELS linescan.

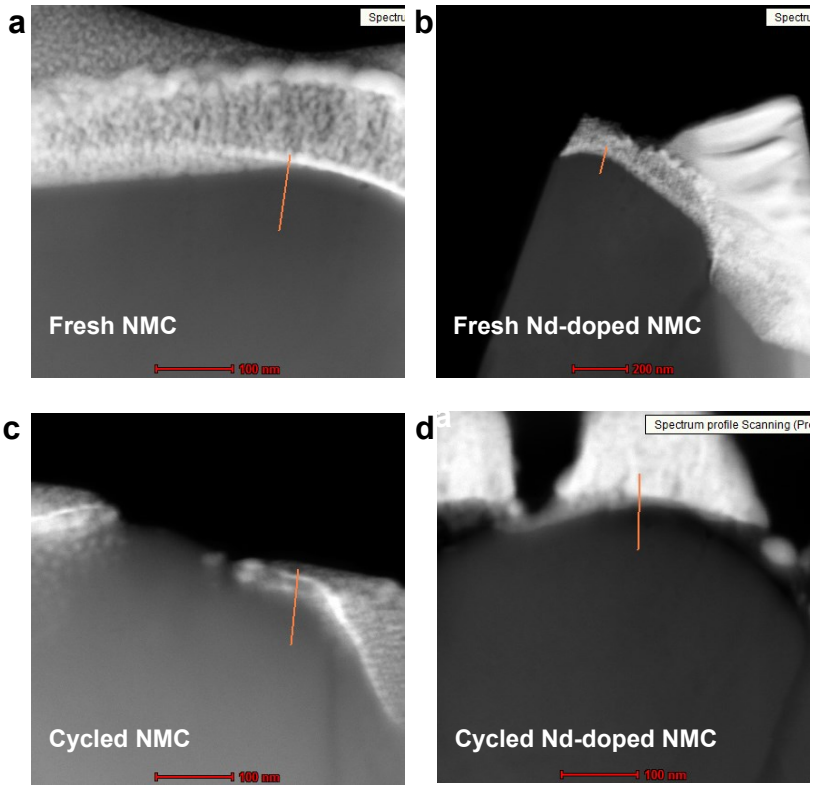

Fig. S4 Measurement positions of EELS spectra in (a) fresh NMC, (b) fresh Nd-doped NMC, (c) cycled NMC and (d) cycled Nd-doped NMC cathodes.

Fig. S5 displays similar EELS spectra of fresh NMC and Nd-doped NMC samples.

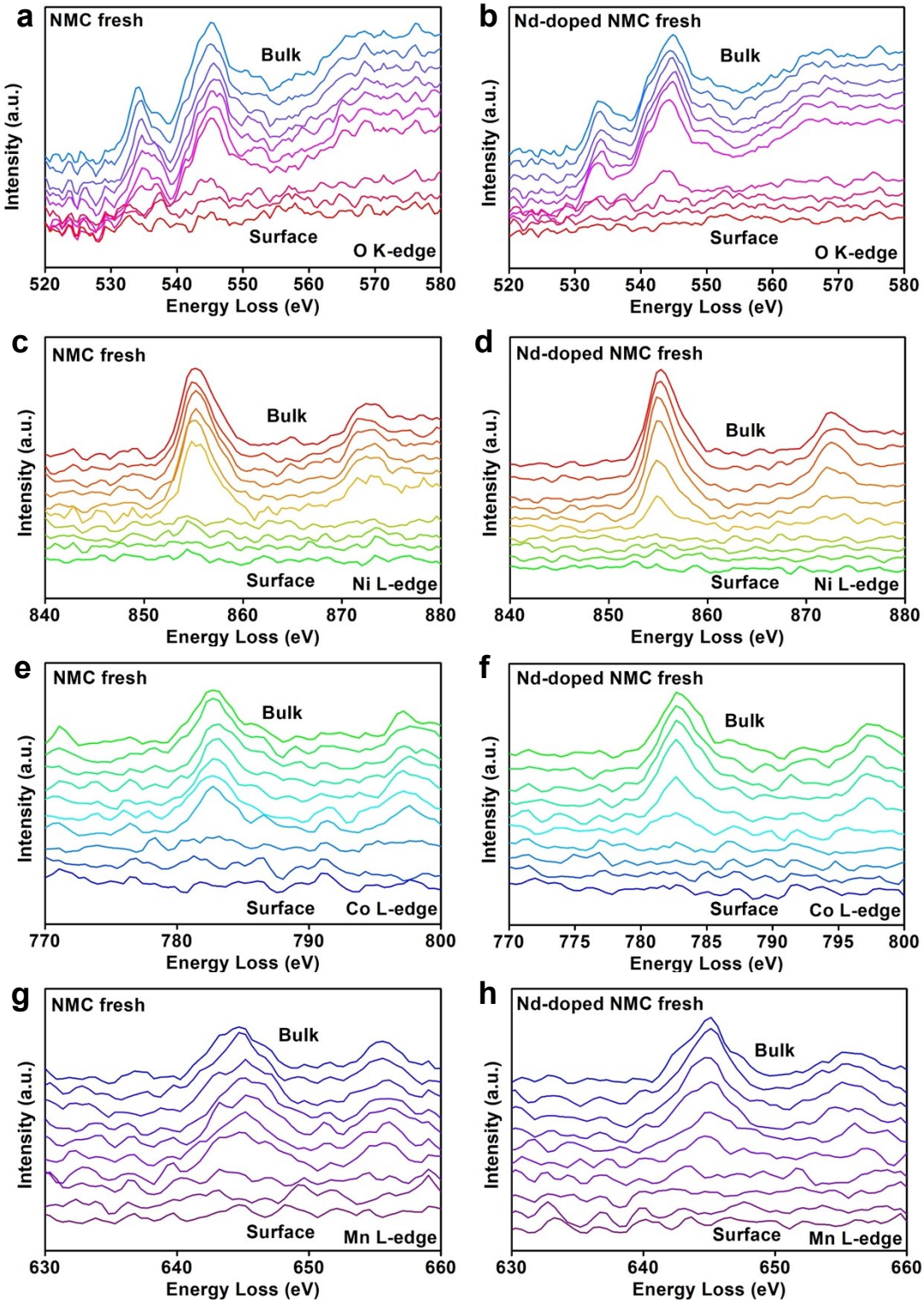

Fig. S5 EELS spectra of fresh NMC and Nd-doped NMC samples. (a-b) O K-edge, (c-d) Ni L-edge, (e-f) Co L-edge, and (g-h) Mn L-edge.