Supplementary Information

Buliding ultrathin Li$_4$Mn$_5$O$_{12}$ shell for enhancing the stability of cobalt-free lithium-rich manganese cathode materials

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Table S1. Lattice parameters and characteristic peak ratios of the LNM、

LMO@LNM-1%、LMO@LNM-3% and LMO@LNM-5%

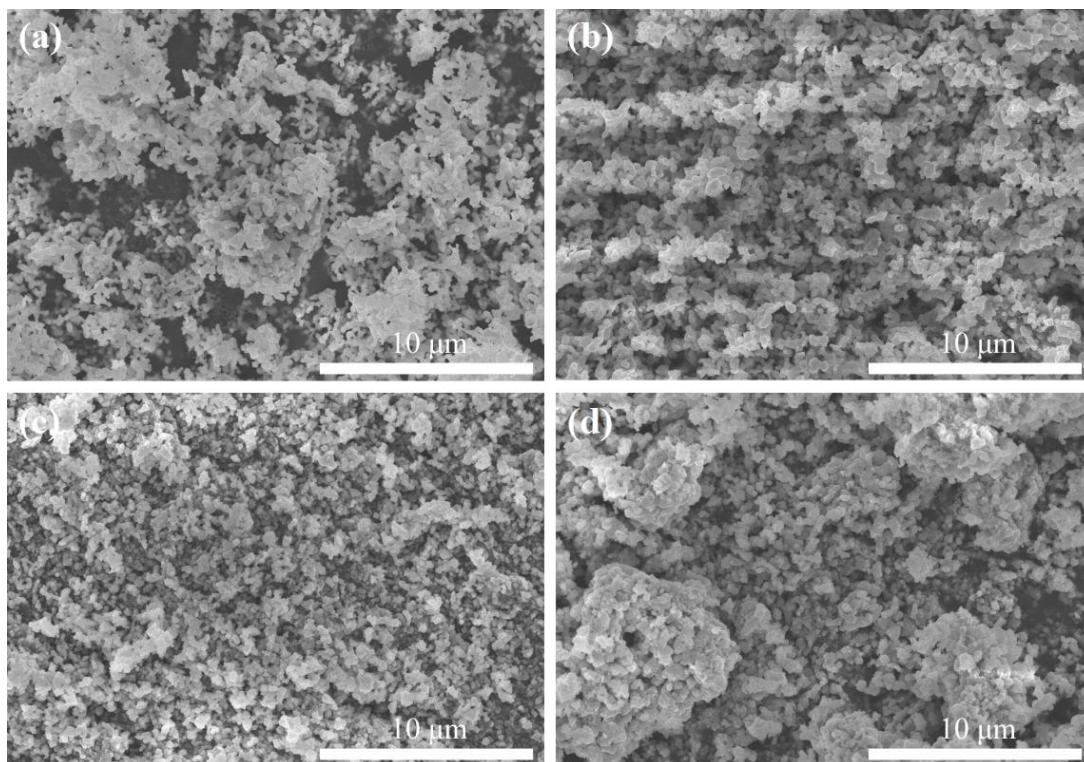| Samples	a/Å	c/Å	c/a	$I_{(003)}/I_{(104)}$
LNM	2.8772	14.3398	4.9839	1.7426
LMO@LNM-1%	2.8707	14.2839	4.9758	1.7622
LMO@LNM-3%	2.8889	14.3719	4.9749	1.8184
LMO@LNM-5%	2.8939	14.2826	4.9354	1.8743

Figure S1. Low magnification SEM images of **(a)** LNM, **(b)** LMO@LNM-1%, **(c)** LMO@LNM-3%, **(d)** LMO@LNM-5%.

Table S2. Fitted impedance parameters, weber coefficients, and lithium-ion diffusion

coefficients for the samples.

sample	R_e /Ω	R_{ct} /Ω	σ /Ω·cm^2·s$^{-1/2}$	D_{Li+} /cm^2·s^{-1}
LNM	9.544	31.46	36.750	8.32×10^{-15}
LMO@LNM-1%	6.720	273.0	83.060	1.63×10^{-15}
LMO@LNM-3%	2.929	192.6	35.026	9.16×10^{-15}
LMO@LNM-5%	5.469	346.6	121.91	6.98×10^{-15}