Supporting information

Understanding the stepwise capacity-increase of high energy low-Co Li-rich cathode materials for lithium ion batteries

Delai Ye,[a] Bei Wang,[a] Yu Chen,[a] Guang Han,[b] Zhi Zhang,[b] Denisa Hulicova-Jurcakova,[a] Jin Zou,[b,c] Lianzhou Wang[a]*

[a] Nanomaterials Centre, School of Chemical Engineering and Australian Institute of Bioengineering and Nanotechnology, The University of Queensland Brisbane, QLD 4072, Australia, E-mail: l.wang@uq.edu.au,
[b] Materials Engineering, The University of Queensland, Brisbane, QLD 4072, Australia
[c] Centre for Microscopy and Microanalysis, The University of Queensland, Brisbane, QLD 4072, Australia

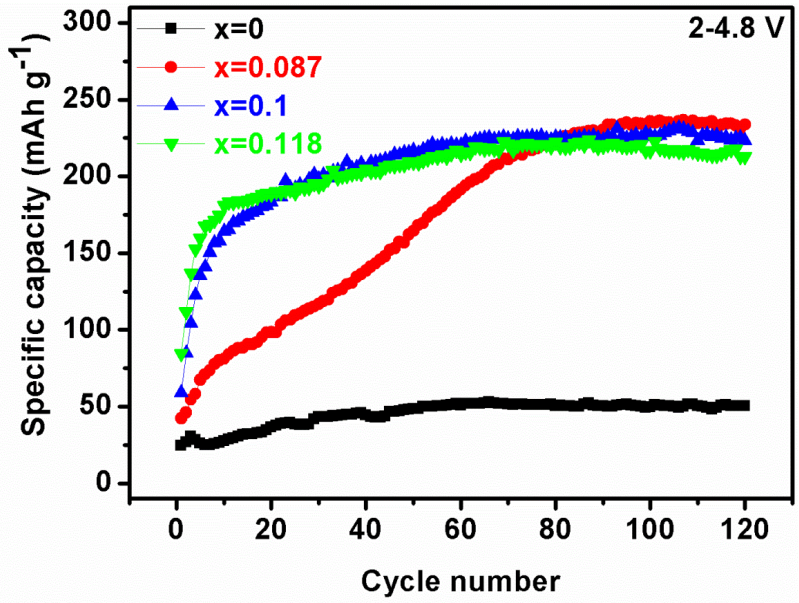

Figure S1. Comparison of the cycling performance of the $Li[Co_xLi_{1/3-x/3}Mn_{2/3-2x/3}]O_2$ (x=0, 0.087, 0.1, 0.118) composites between 2-4.8 V potential window in the first 120 charging-discharging cycles.

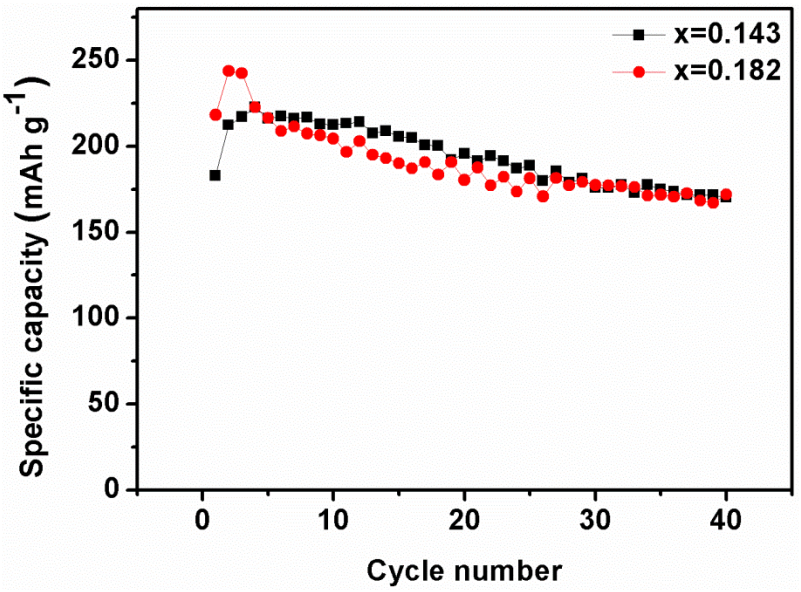

Figure S2. Cycling performance of the x=0.143 and 0.182 samples at 30 mA g^{-1} between 2-4.8 V.

Table S1. Resistance values of the $Li[Co_xLi_{1/3-x/3}Mn_{2/3-2x/3}]O_2$ (x=0.087, 0.1, 0.118) composites before cycling and after the 1st and 5th cycle.

Sample	Before cycle			After 1st cycle			After 5th cycle		
X	R1(Ω)	R2(Ω)	R3(Ω)	R1(Ω)	R2(Ω)	R3(Ω)	R1(Ω)	R2(Ω)	R3(Ω)
0.087	5.7	58.6	554.6	5.7	66.6	443.6	7.6	79.1	305.1
0.1	2.8	34.1	499	3.0	56.8	221.7	7.5	55.5	193.2
0.118	5.5	57.9	295.5	6.5	53.6	142.8	5.9	39.3	169.1