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Supplementary Materials: Continuous Composition Spread and Electrochemical Studies of Low Cobalt Content Li(Ni,Mn,Co)O_2 Cathode Materials

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In the main manuscript, thin films were deposited in the binary system with $LiMn_{0.9}Co_{0.1}O_2$ and $LiNi_{0.9}Co_{0.1}O_2$ targets by an off-axis CCS sputtering after annealing at 600 °C. We have added CCS schematic diagram, XRD measurements data and calculated lattice parameters (Table S1), charge/discharge capacity performance, SEM image with thickness profile and along with AFM top-view images for surface morphology aspects, as a supplementary information for the manuscript.

Figure S1. Schematic diagram of CCS-sputtering.

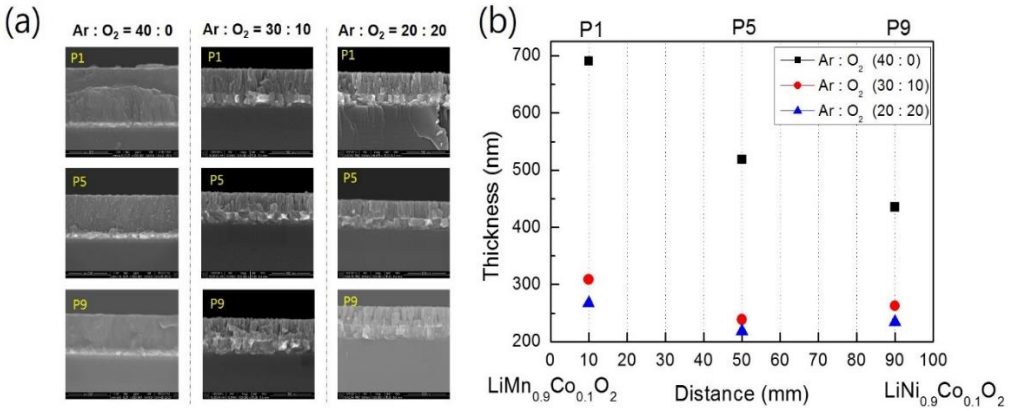

Figure S2. (**a**) SEM images and (**b**) thickness profile of thin films deposited at different gas ratios ($Ar:O_2$ = 40:0, 30:10, and 20:20).

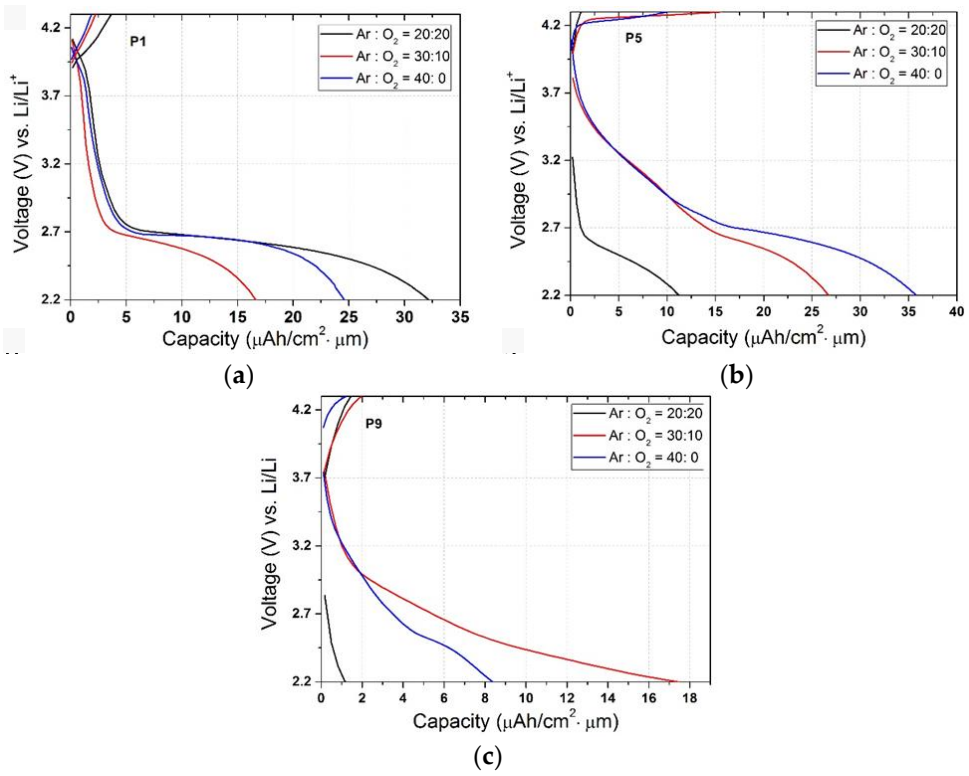

Figure S3. Charge/discharge tests of (**a**) point 1, (**b**) point 2 and (**c**) point 9 thin films grown at the gas ratios ($Ar:O_2$ = 40:0, 30:10, 20:20).

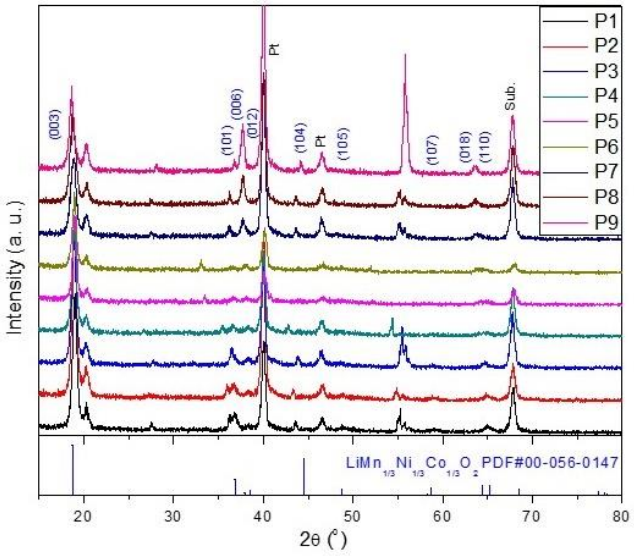

Figure S4. XRD patterns of thin films deposited at the optimized gas ratio ($Ar:O_2$ = 40:0) grown at different positions and were subsequently annealed at 600 °C in O_2 atmosphere.

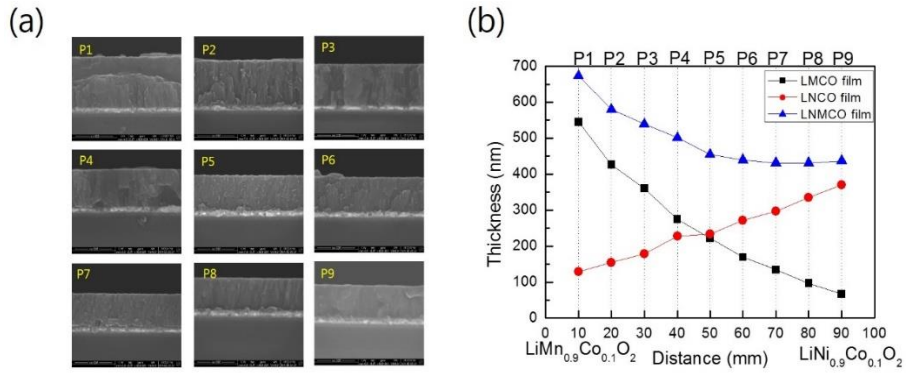

Figure S5. (**a**) SEM images and (**b**) thickness profile of thin films deposited at the optimized gas ratio of Ar to O_2 (40:0).

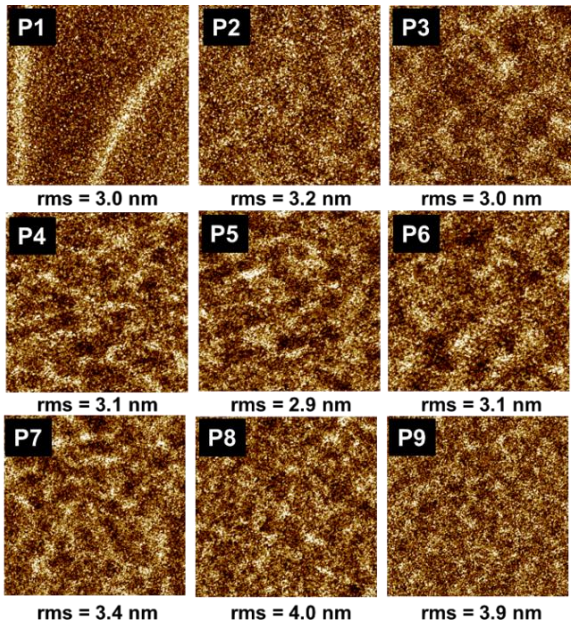

Figure S6. AFM top-view morphology of thin films (P1–P9) after annealing.

Table S1. Comparison of lattice parameters of samples from P1 to P9.

Position	Lattice Parameters		
	a (Å)	c (Å)	c/a
P1	2.8963	14.1738	4.8938
P2	2.8884	14.1820	4.9100
P3	2.8960	14.1955	4.9018
P4	2.8930	14.1768	4.9003
P5	2.8915	14.1640	4.8984
P6	2.8928	14.1918	4.9059
P7	2.8904	14.2664	4.9358
P8	2.8904	14.3045	4.9490
P9	2.8911	14.3365	4.9589