

# Low-Temperature-Aged Synthesis of CeO<sub>2</sub>-Coated Li-Rich Oxide as Cathode for Low-Cost High-Energy Density Li-Ion Batteries

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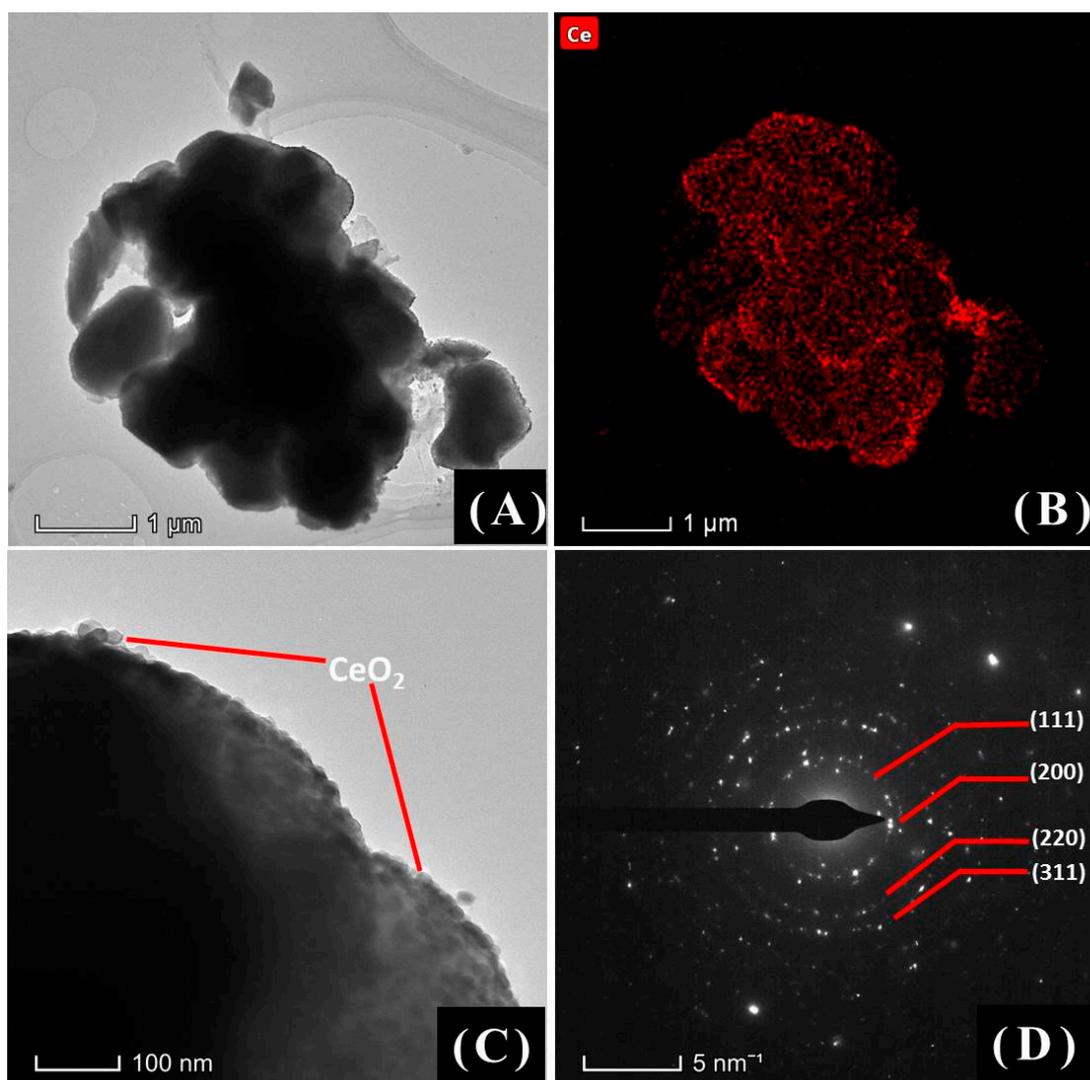
## Figures and Tables:

Figure S1. TEM image (A) and corresponding EDS elemental mapping of Ce (B), TEM image (C) and selected area electron diffraction (SAED) of CeO<sub>2</sub> (D) for CeO<sub>2</sub> coated Li<sub>1.2</sub>Ni<sub>0.2</sub>Mn<sub>0.6</sub>O<sub>2</sub> without the low-temperature-aged coating process.

Figure S2. XPS of the cycled LMN-P and LMN-C electrode.

Table S1. EDS of lithium electrodes from the cycled cells with LMN-P and LMN-C.

Table S2. ICP analysis for Mn and Ni of the lithium electrodes from the cycled cells with LMN-P and LMN-C.



**Figure S1.** TEM image (A) and corresponding EDS Ce mapping of (B), TEM image (C) and selected area electron diffraction (SAED) of CeO<sub>2</sub> (D) for CeO<sub>2</sub> coated Li<sub>1.2</sub>Ni<sub>0.2</sub>Mn<sub>0.6</sub>O<sub>2</sub> without the low-temperature-aged coating process.

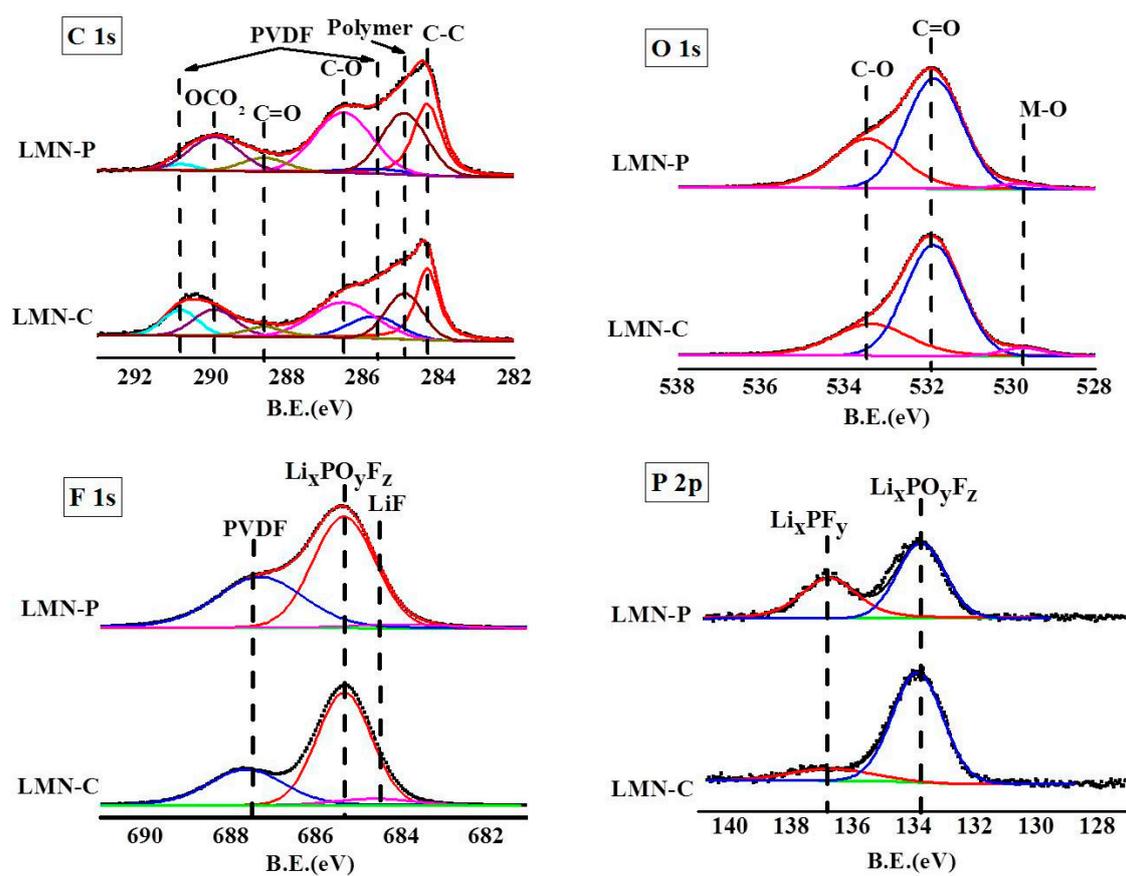


Figure S2. XPS patterns of the cycled LMN-P and LMN-C electrode.

**Table S1.** EDS element contents on the lithium electrodes from the cycled cells with LMN-P and LMN-C.

		<b>C</b> <b>(%)</b>	<b>O</b> <b>(%)</b>	<b>F</b> <b>(%)</b>	<b>P</b> <b>(%)</b>	<b>Mn</b> <b>(%)</b>	<b>Sum</b> <b>(%)</b>
<b>LMN-P</b>	<b>Sample 1</b>	21.88	45.26	25.20	6.53	1.13	100.00
	<b>Sample 2</b>	21.93	44.01	26.02	6.92	1.12	100.00
	<b>Sample 3</b>	21.89	44.62	25.69	6.67	1.13	100.00
	<b>Average</b>	21.90	44.63	25.64	6.71	1.13	100.00
<b>LMN-C</b>	<b>Sample 1</b>	11.38	38.94	45.59	3.89	0.20	100.00
	<b>Sample 2</b>	13.06	42.82	39.94	3.86	0.32	100.00
	<b>Sample 3</b>	11.51	43.48	40.64	3.99	0.38	100.00
	<b>Average</b>	11.98	41.75	42.06	3.91	0.30	100.00

**Table S2.** ICP element contents on the lithium electrodes from the cycled cells with LMN-P and LMN-C.

	<b>% Mn Detected on Li</b>	<b>% Ni Detected on Li</b>
<b>Li anode from LMN-P</b>	3.87	1.93
<b>Li anode from LMN-C</b>	0.65	0.14
<b>Fresh Li</b>	0.00	0.00