Supporting Information

Polyimide/carbon black composite nanocoating layers as a facile surface modification strategy for high-voltage cathode materials

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Figure S1. Chemical structures of pyromellitic dianhydride (PMDA)/oxydianiline (ODA) polyamic acid and resulting polyimide (PI). Detailed information on a stepwise thermal imidization process under the presence of carbon black is also provided.

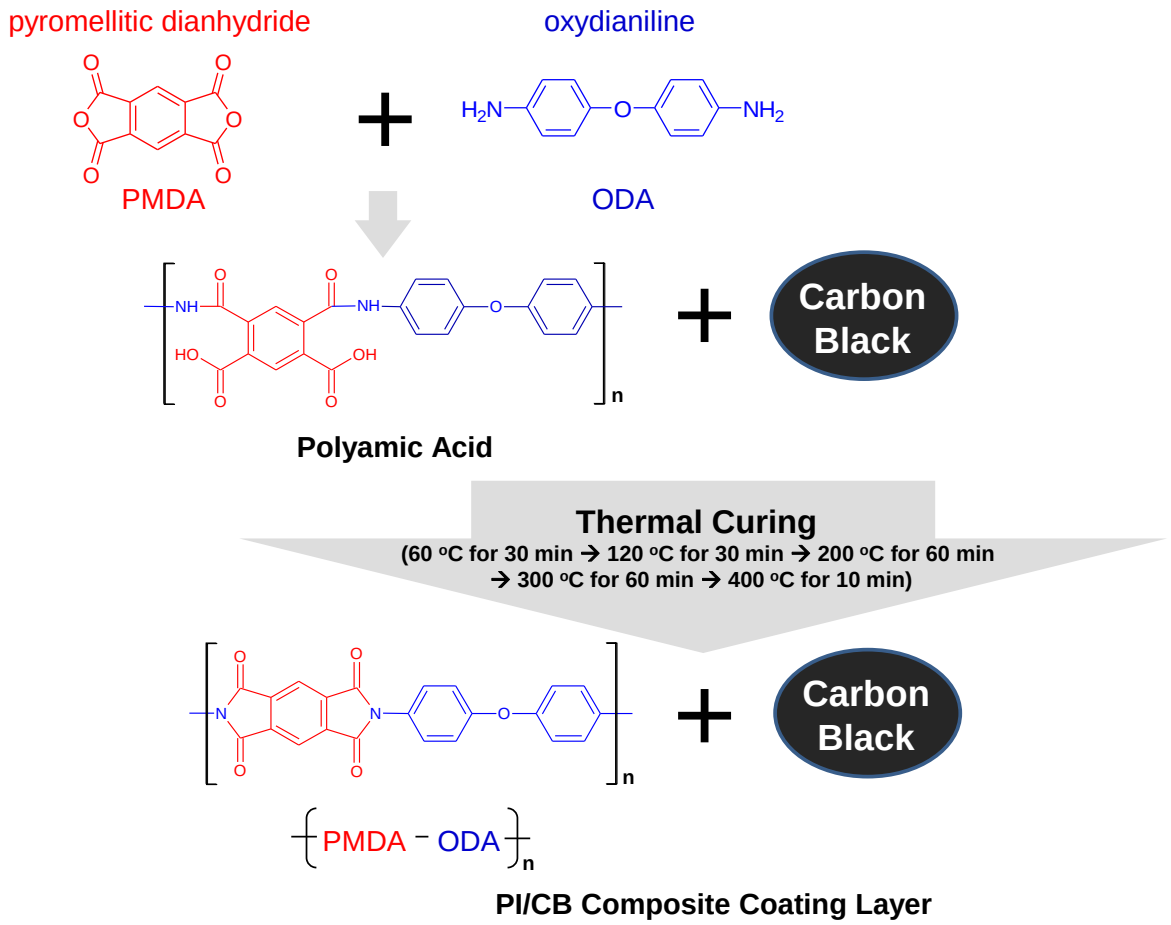
Figure S2. FE-SEM photographs of: (a) pristine LCO; (b) PI-LCO.

Figure S3. (a) Raman spectra of the pristine LCO, PI-LCO, and PI/CB-LCO under a wave number range: (a) 400 - 1800 cm^{-1}. (b) XRD patterns of pristine LCO, PI-LCO, and PI/CB LCO.

Figure S4. Discharge profiles of cells assembled with: (a) pristine LCO; (b) PI-LCO; (c) PI/CB-LCO, where discharge current densities are varied from 0.2 to 3.0 C at a constant charge current density of 0.2 C under a voltage range of 3.0 - 4.4 V.

Figure S5. AC impedance spectra (after 1st cycle) of cells assembled with: (a) pristine LCO; (b) PI-LCO; (c) PI/CB-LCO under a frequency range of 10^{-3} - 10^{6} Hz.

Figure S6. Cyclic voltammograms (after 1st cycle) of cells assembled with: (a) pristine LCO; (b) PI-LCO; (c) PI/CB-LCO, where the cells are cycled at a scan rate of 0.1 mV s^{-1} under a voltage range of 2.5 - 4.4 V.



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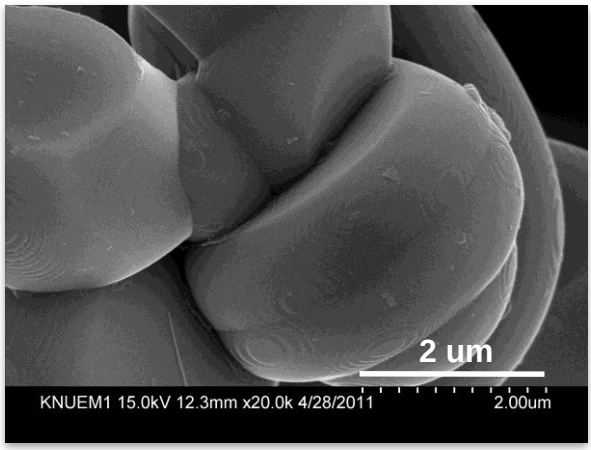
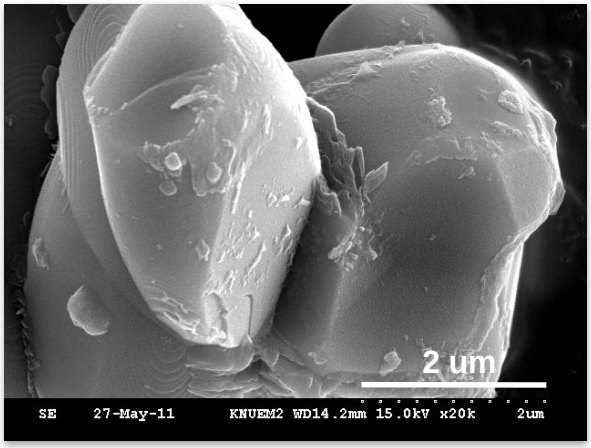


(a)



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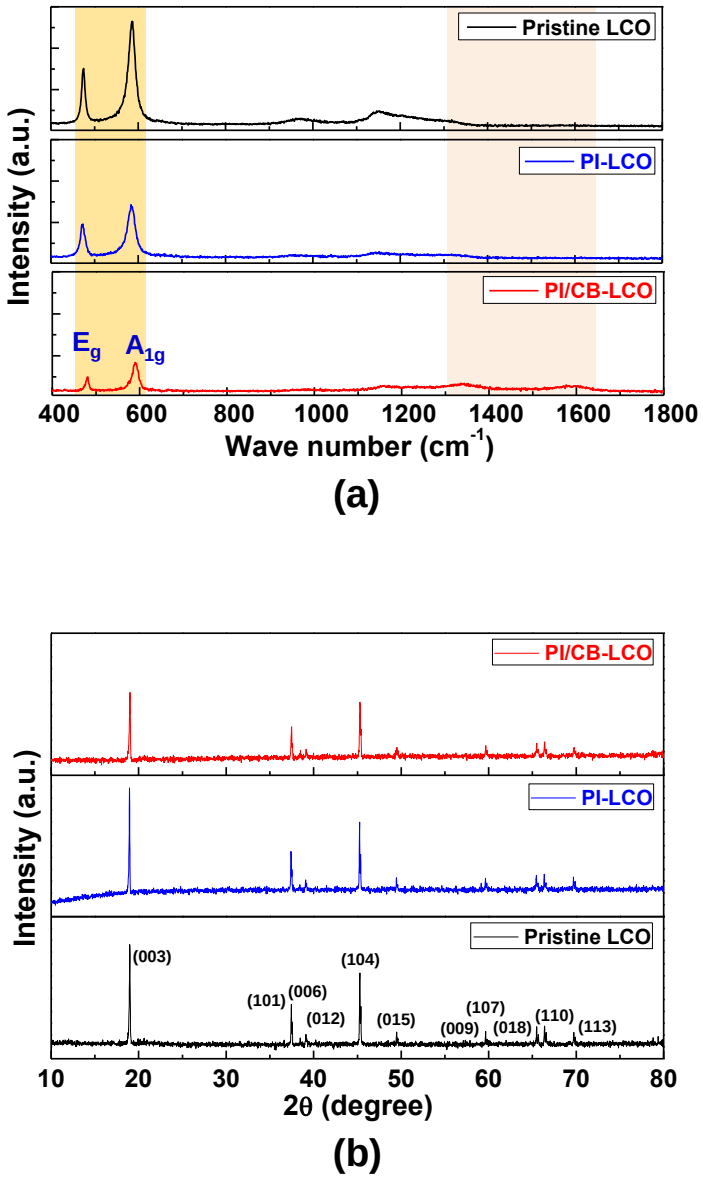

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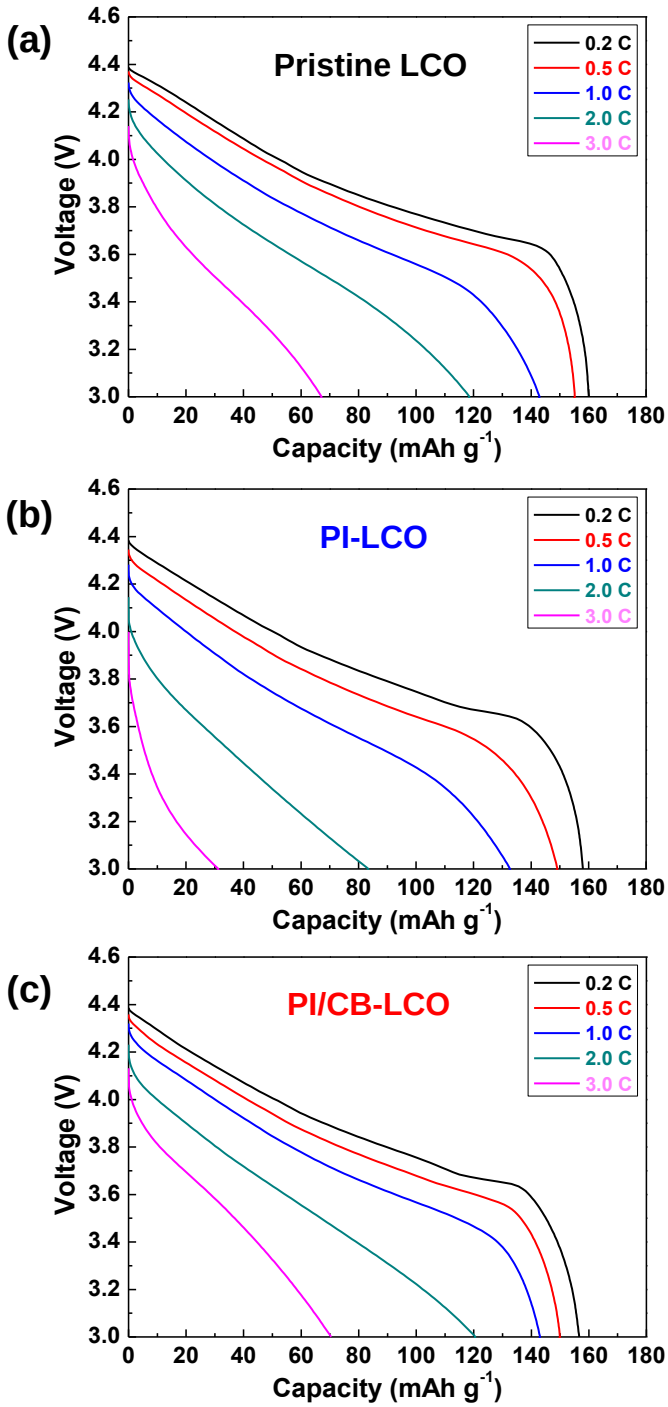

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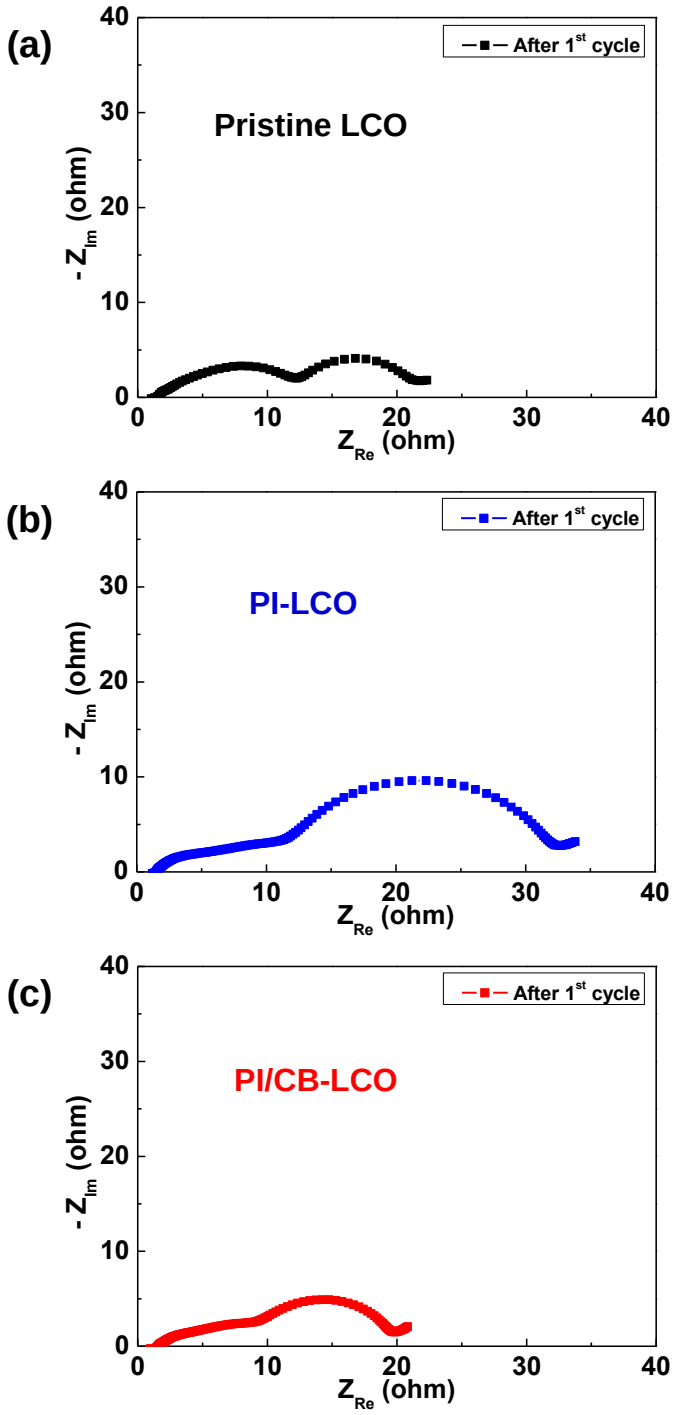

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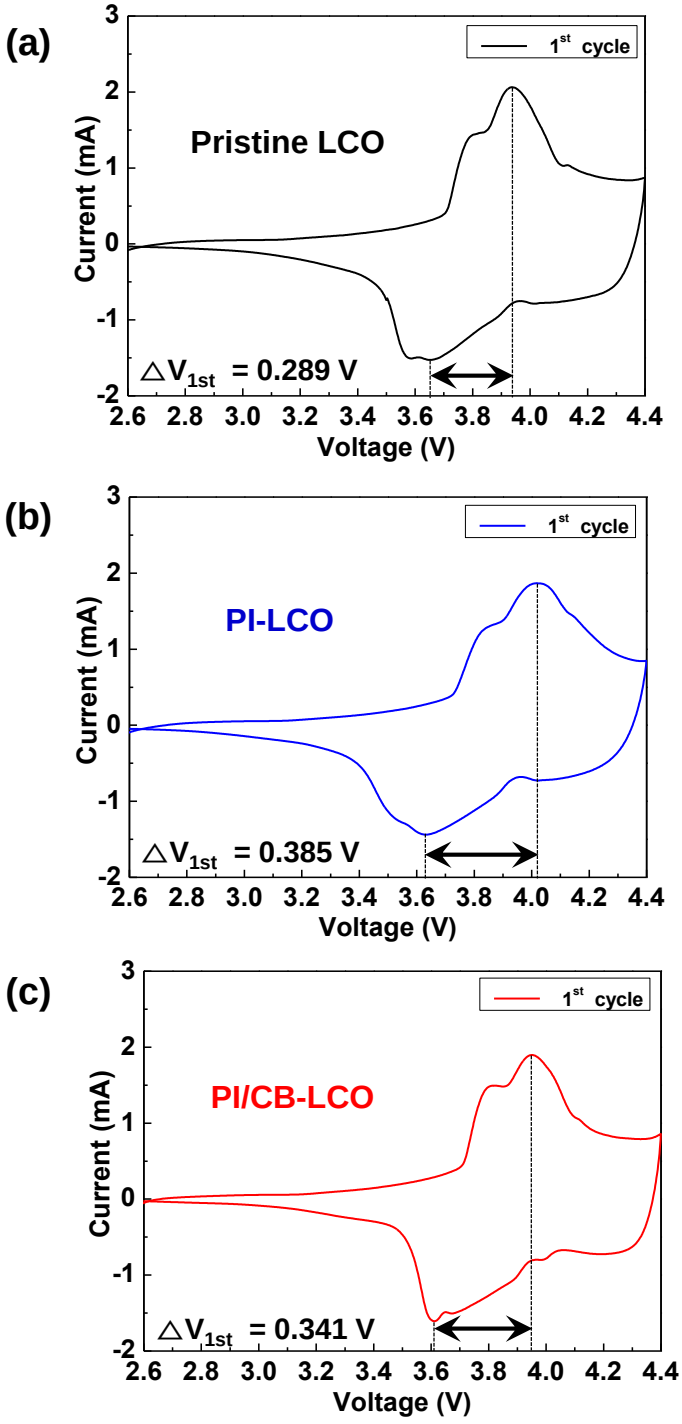

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