Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

Supporting Information

Mitigated phase transition during first cycle of a Li-rich layered cathode studied by in operando *synchrotron X-ray powder diffraction*

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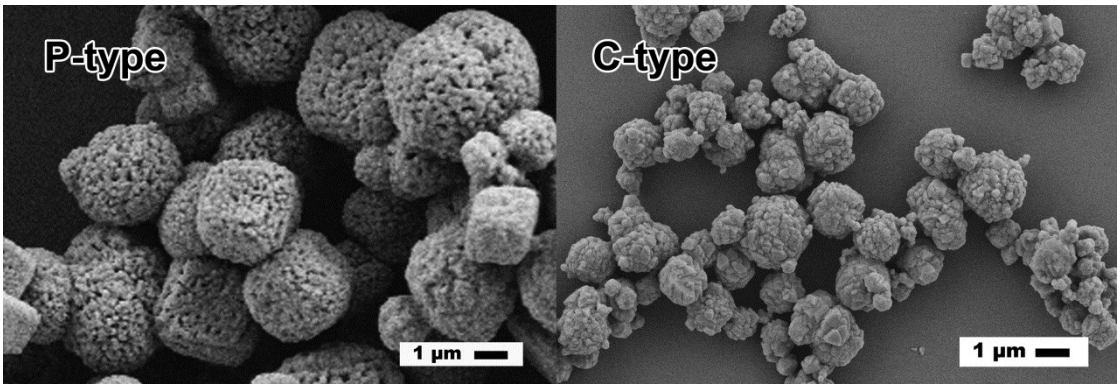

Figure S1. SEM images of P- and C-type particles.

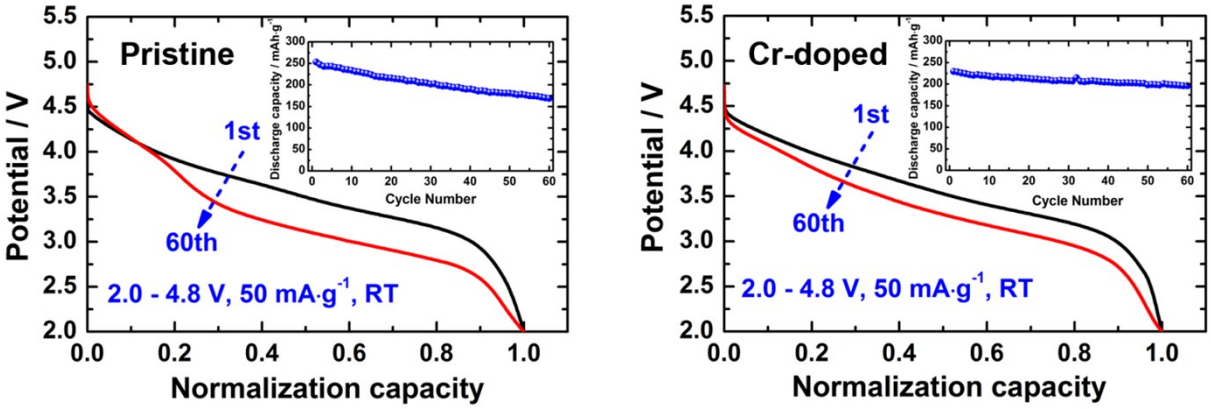

Figure S2. Comparison of discharge curves (normalized based on the specific capacity of each cycle) for the 1st and 60th cycle of pristine (P-type) and Cr-doped (C-type) cathodes cycled between 2.0 and 4.8 V at the current density of 50 mA·g^{-1}. Insets are corresponding capacity fading curves as a function of the cycle number.

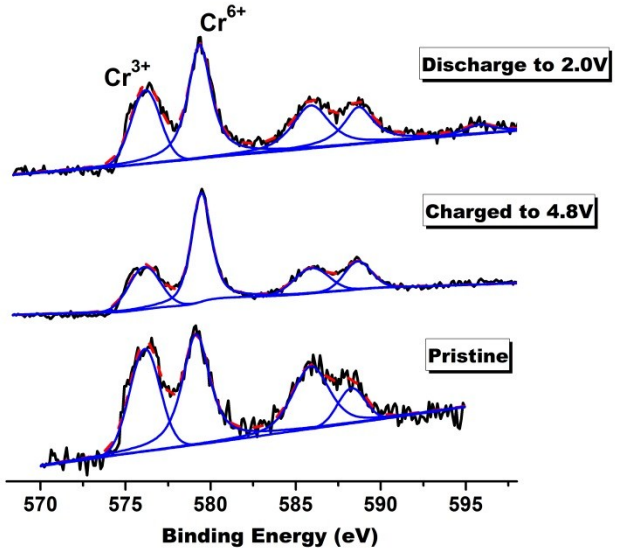

Figure S3. XPS plots of pristine, after charged to 4.8 V, and after discharged to 2.0 V electrodes with C-type material.

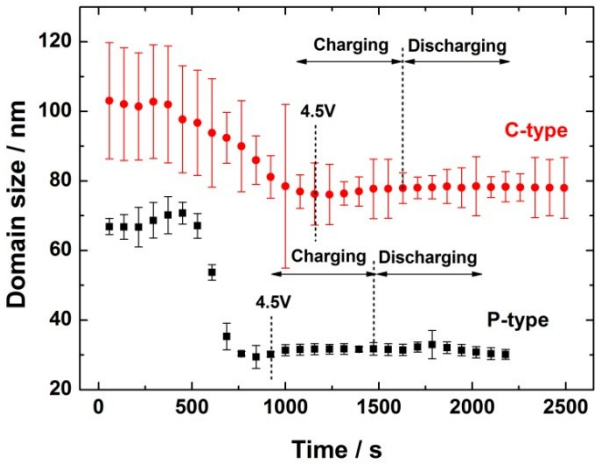

Figure S4. Domain size variations during first charge/discharge cycle of both P- and C-type cathodes at 250 mA·g^{-1}.

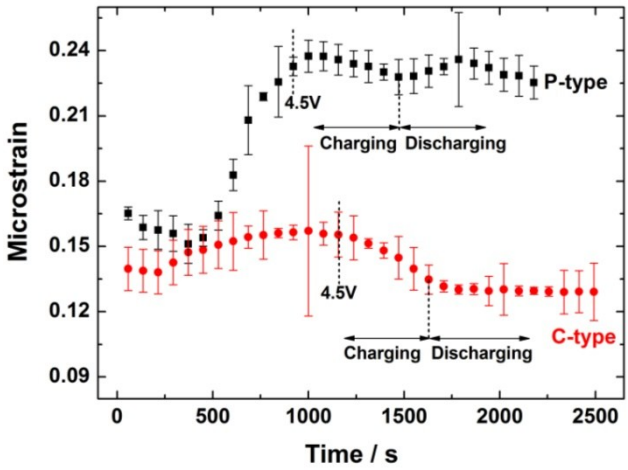

Figure S5. Microstrain variation during the first charge/discharge cycle of both P- and C-type cathodes at a 250 $mA \cdot g^{-1}$.