Supporting Information

Improving the Electrochemical Performance and Structural Stability of LiNi$_{0.8}$Co$_{0.15}$Al$_{0.05}$O$_2$ Cathode Material at High Voltage Charging Through Ti Substitution

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Figure S1. Rietveld refinement of XRD pattern of (a) NCAT-0.5 and (b) NCAT-2.
Figure S2. SEM images of (a) Ni$_{0.8}$Co$_{0.15}$Al$_{0.05}$(OH)$_2$ precursor, (b) calcined pristine NCA sample and (c) 1% Ti substitution NCAT-1 sample.
Figure S3. EDS analysis of NCA and NCAT-1 both in the center and surface of the primary particles.
Figure S4. The initial charge/discharge curves and coulombic efficiency of NCA, NCAT-0.5, NCAT-1 and NCAT-2.
Figure S5. The charge/discharge curves of the NCA and NCAT-1 samples in the (a) 10th cycle and (b) 50th cycle.
Figure S6. Cycle performance of NCA, NCAT-0.5, NCAT-1 and NCAT-2 samples at a current rate of 1 C (200 mA g$^{-1}$) in the potential range of 3.0 - 4.3 V at room temperature.
Figure S7. XANES spectra of Co K-edges of (a) NCA and (b) NCAT-1 samples and Ni K-edges of (c) NCA and (d) NCAT-1 samples at various states during the first charge process.