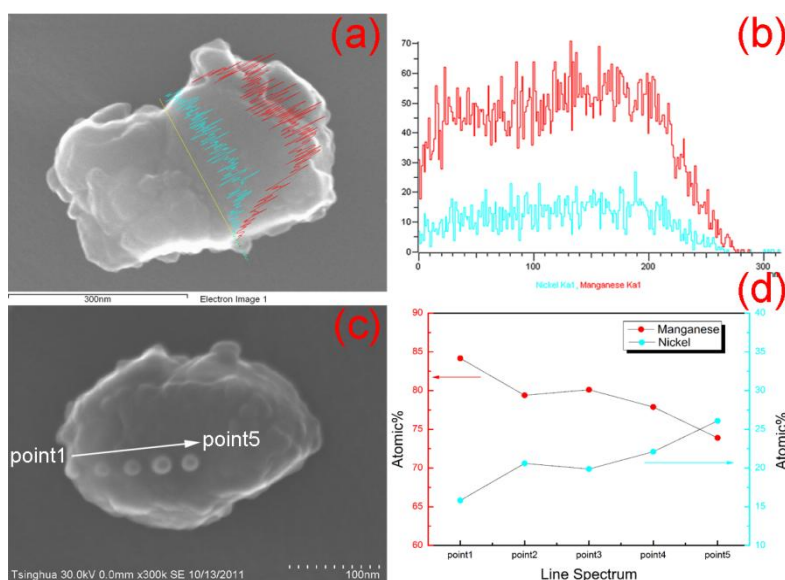**Supporting Information** for

Can surface modification be more effective to enhance the electrochemical performance of the lithium rich materials?

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Figure SI1 Energy dispersive X-ray scanning along the projected surface line of TC1 particles. To get accurate EDX data, a thin layer (8-10 nm) of carbon was sprayed on the observed particles for the low electrical conductivity of them. (a)SEM image of a specific particle for line scanning, (b)Mn Kα1 and Ni Kα1 intensity observed during scanning, (c) SEM of a specfic particle for line to point scanning, and the gray points were formed after the X-ray scanning on the particle coated by carbon, (d) quantifiable analysis of the atomic% of the Manganese and Nickel elements
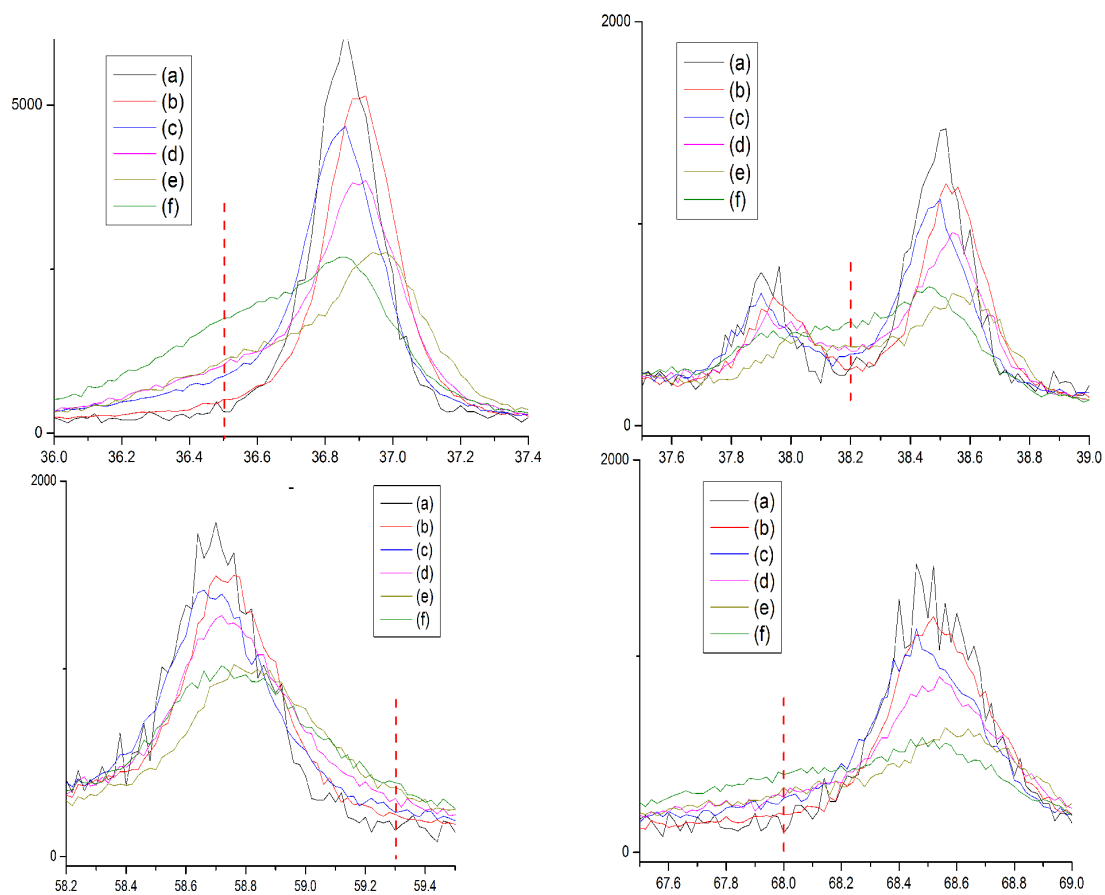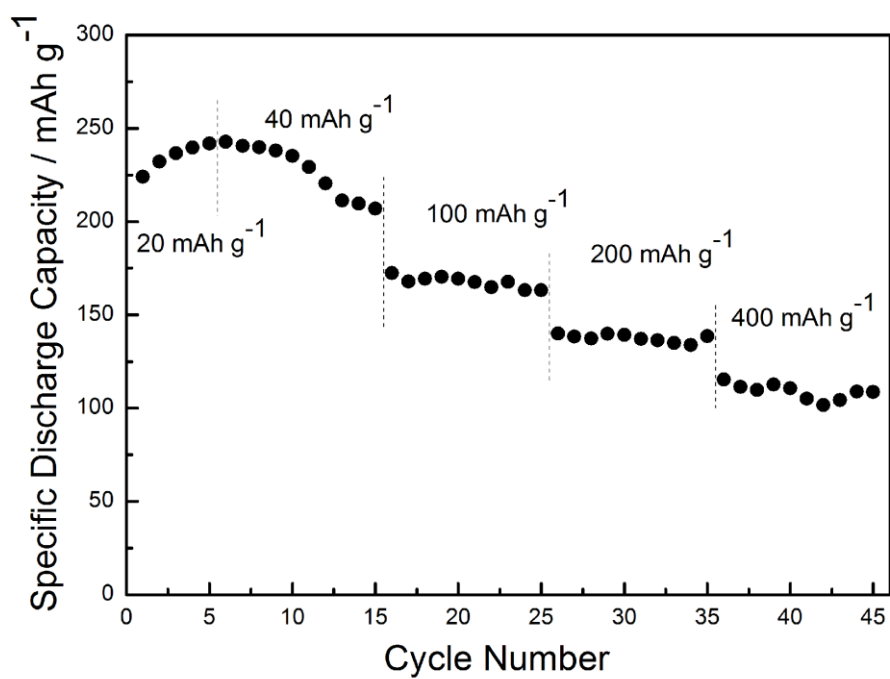
Figure SI2 The enlarged XRD patterns of zMnO$_x$•(1 - z)Li[Ni$_{0.2}$Li$_{0.2}$Mn$_{0.6}$]O$_2$ composites: (a) the pristine; (b) CC; (c) TC1; (d) TC2; (e) TC3; (f) TC4.
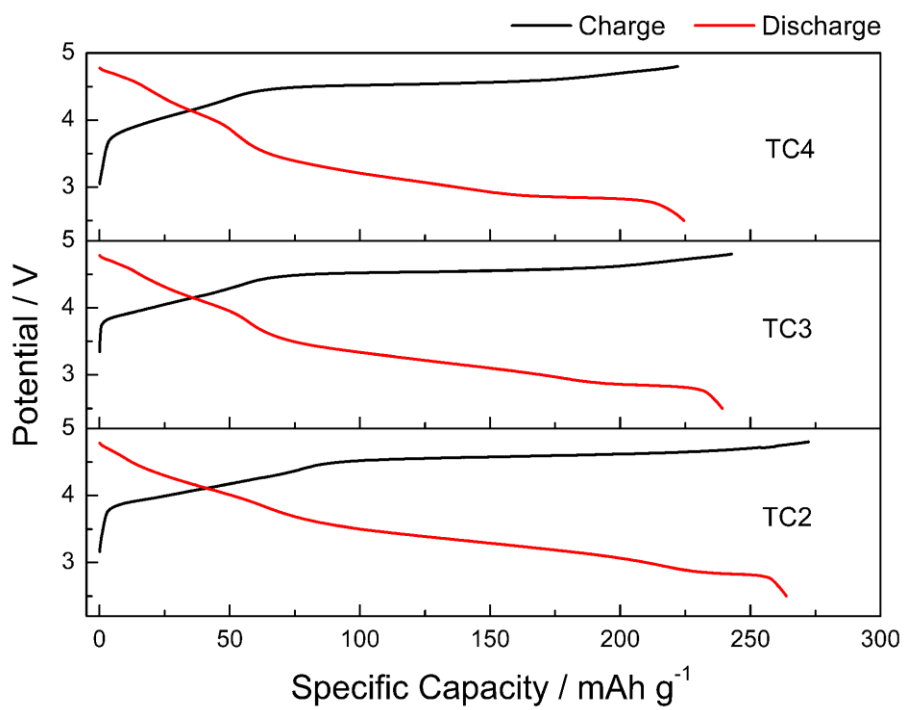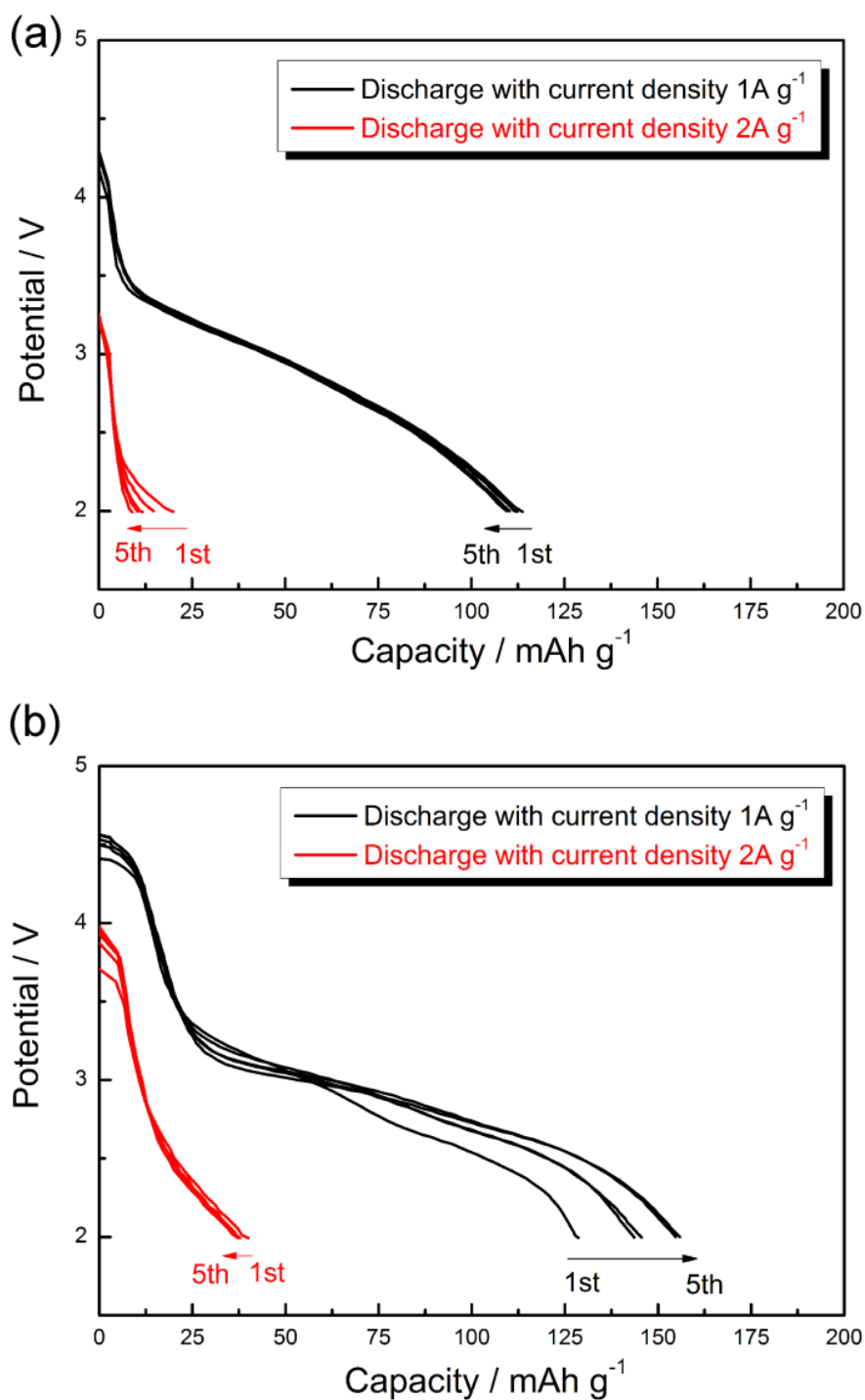
Figure SI3 The initial charge/discharge curves of other thick coated samples.
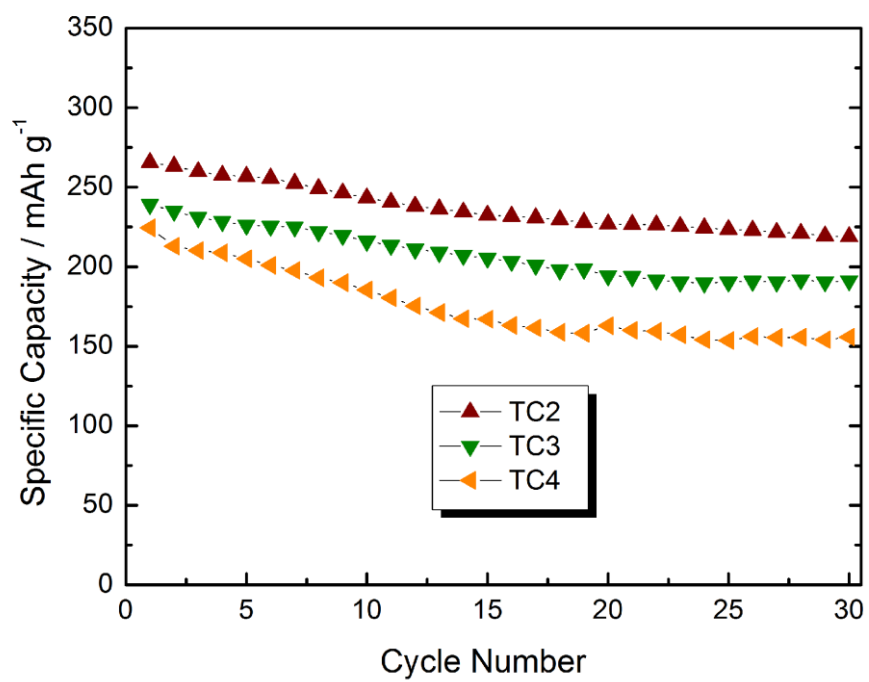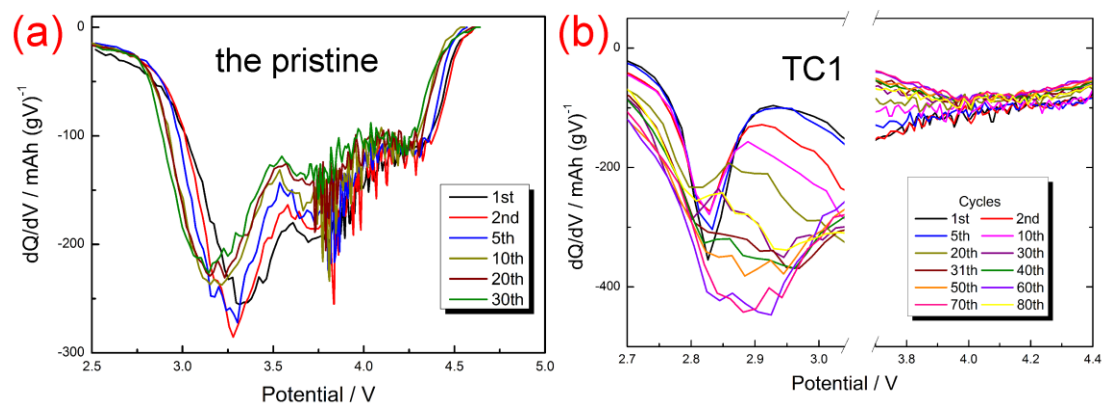
Figure SI4 The cycle performance of the other samples

Figure SI5 The rate performance of the pristine sample.

Figure SI6 The high rate discharge profiles of the modified samples: (a) CC, (b) TC1.

Figure SI7 The differential capacity versus voltage plots on discharge of samples: (a) dQ/dV plots

of the pristine sample, (b) enlarged dQ/dV plots of the TC1 sample.