Electronic Supplementary Information (ESI)

Effective Regeneration of $LiCoO_2$ from Spent Lithium-Ion Batteries: A Direct Approach towards High-Performance Active Particles

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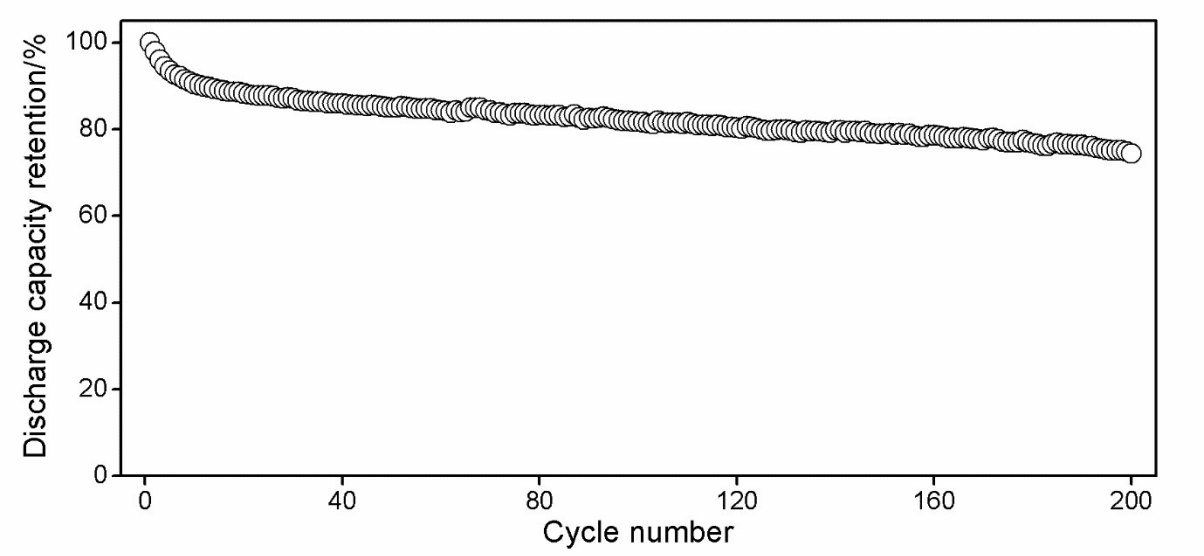

Fig. S1 Discharge capacity retention of a commercial pouch cell.

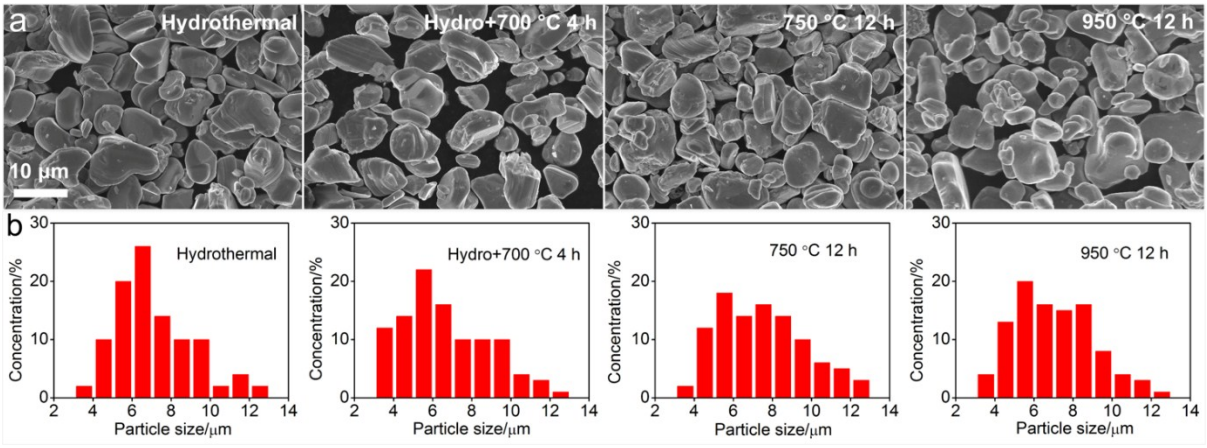

Fig. S2 SEM images of regenerated $LiCoO_2$ powders at different conditions, and (b) their particle size distributions.

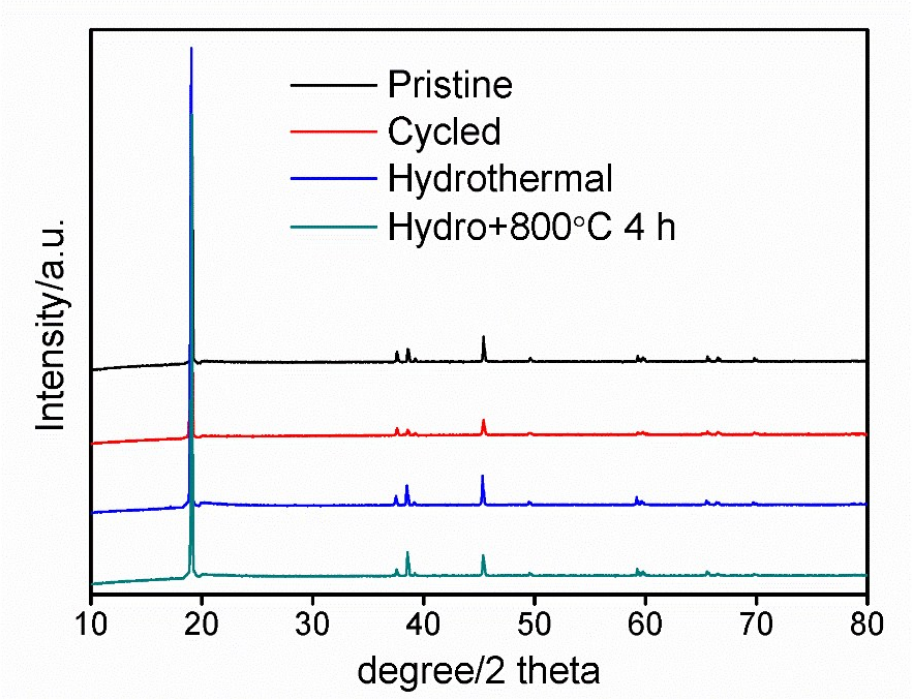

Fig. S3 XRD patterns of pristine, cycled and hydrothermal-treated $LiCoO_2$ powders.

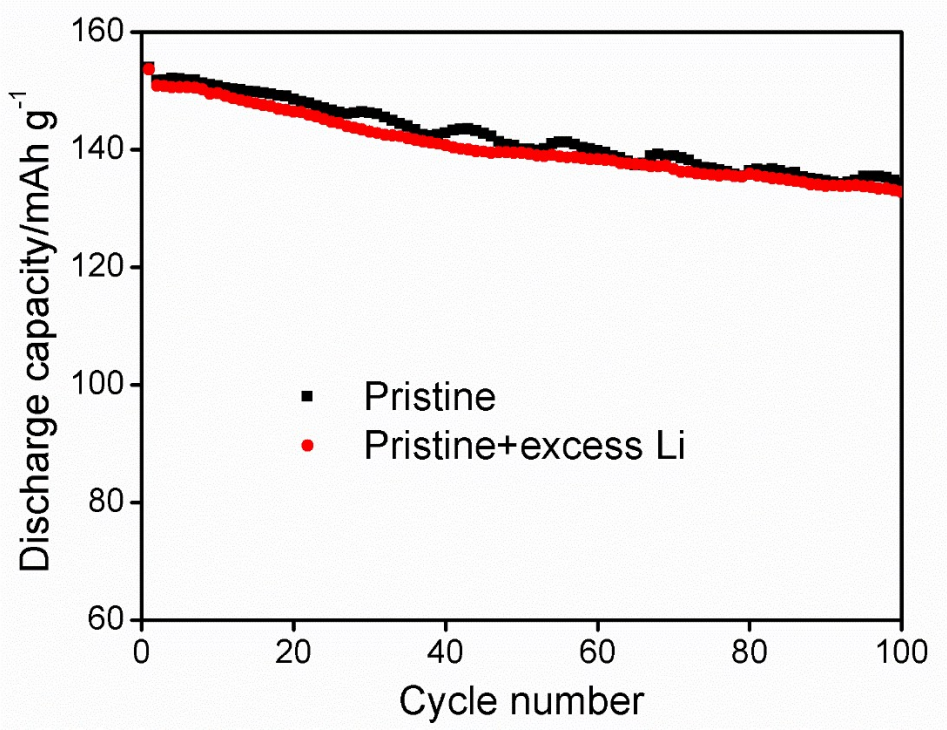

Fig. S4 Cycling performance of pristine $LiCoO_2$ and $LiCoO_2$ sintered with 5% excess Li at 850 °C for 4 h, in the voltage range of 3-4.3 V at C/10 for the first cycle and 1C for the following cycles.

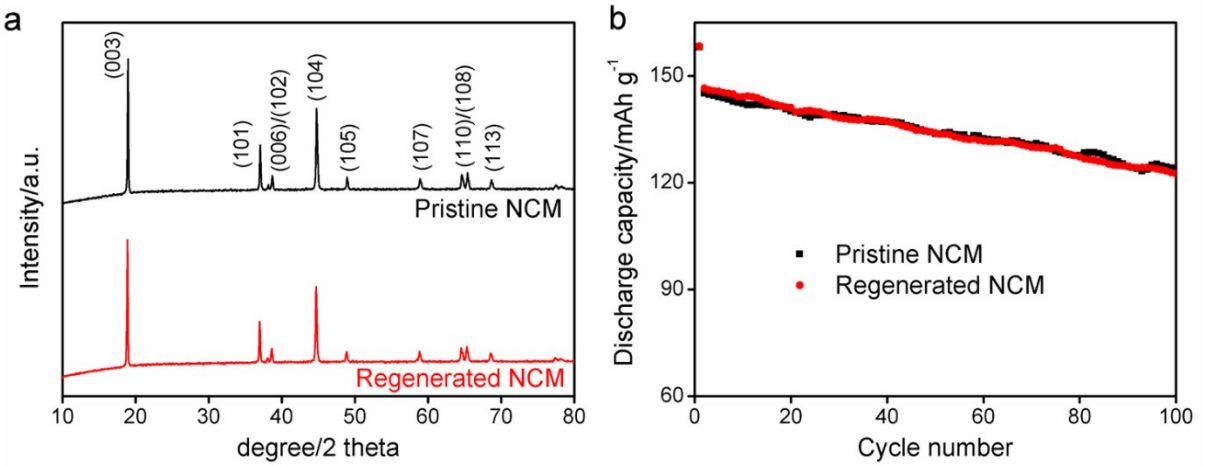

Fig. S5 (a) XRD patterns and (b) cycling performance of pristine and regenerated NCM in the voltage range of 3-4.3 V at C/10 for the first cycle and 1C for the following cycles. The NCM material for regeneration is from the cycled pure NCM pouch with a Li^+ loss of 20% after cycling.