

Supplementary Information

Enhancing the reversibility of the chemical evolution for Ni-rich

$\text{LiNi}_{0.8}\text{Co}_{0.1}\text{Mn}_{0.1}\text{O}_2$ cathode via a simple pre-oxidation process

Yan Mo^{a, b†}, Shaofeng Liu^{a, b†}, ZiKun Li^{b*}, Lingjun Guo^{c*}, Meng Zhang^b,

Yauanyuan Ren^c, Guohui Yuan^{a, b*}

^a School of Chemistry and Chemical Engineering, Harbin Institute of Technology, Harbin 150001, People's Republic of China

^b Shenzhen BTR nanotechnology Co., Ltd., Shenzhen 518106, People's Republic of China.

^c State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, Xi'an 710072, China

* E-mail address: lizikun@btrchina.com, ygh@hit.edu.cn, guolingjun@nwpu.edu.cn

† The first and second authors contributed equally.

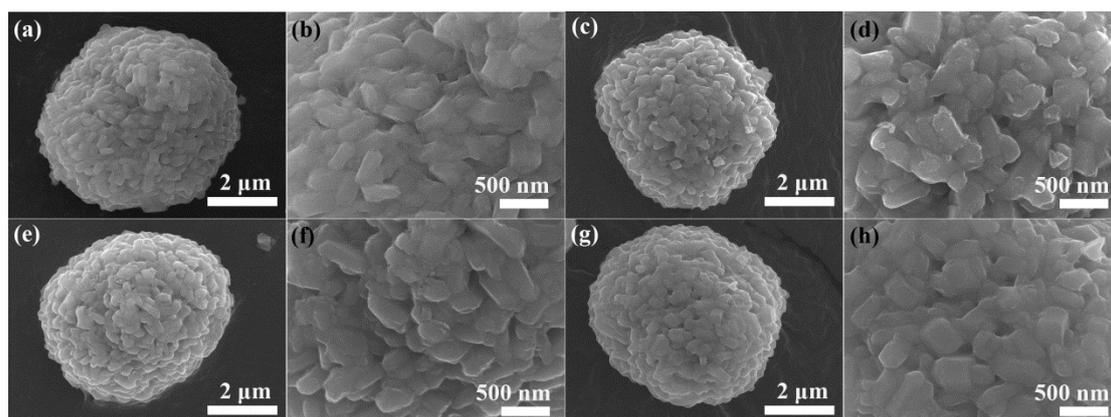


Fig. S1 The SEM images of the N-NCM (a-b), H-1 (c-d), H-2 (e-f) and H-3 (g-h) samples.

Table S1. The chemical compositions of N-NCM, H-1, H-2, H-3.

Sample	Li (g·mL ⁻¹)	Ni (g·mL ⁻¹)	Co (g·mL ⁻¹)	Mn (g·mL ⁻¹)	Formula
N-NCM	7.44	48.3	6.64	5.43	$\text{Li}_{1.036}\text{Ni}_{0.796}\text{Co}_{0.109}\text{Mn}_{0.096}\text{O}_2$
H-1	8.39	54.8	7.35	6.38	$\text{Li}_{1.029}\text{Ni}_{0.795}\text{Co}_{0.106}\text{Mn}_{0.099}\text{O}_2$
H-2	7.86	52.4	6.51	5.94	$\text{Li}_{1.019}\text{Ni}_{0.803}\text{Co}_{0.099}\text{Mn}_{0.097}\text{O}_2$
H-3	6.36	42.6	5.45	4.82	$\text{Li}_{1.011}\text{Ni}_{0.801}\text{Co}_{0.102}\text{Mn}_{0.097}\text{O}_2$

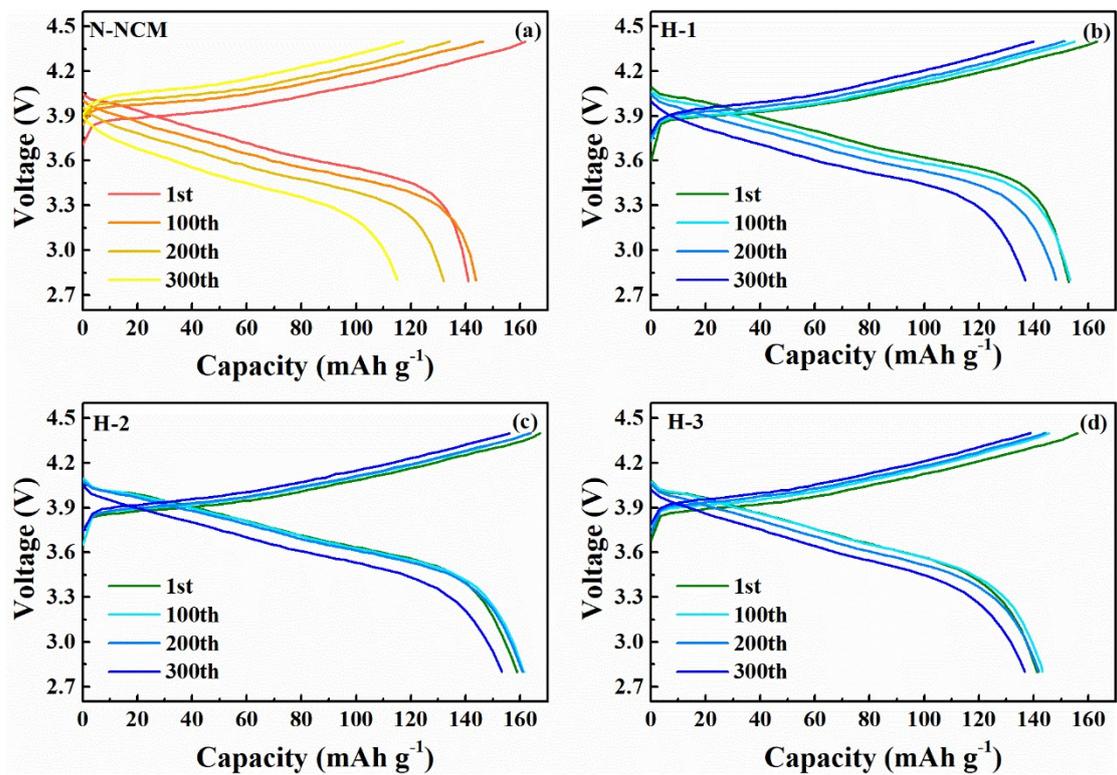


Fig. S2 The charge and discharge profiles at first, 100th, 200th and 300th cycle: (a) N-NCM, (b) H-1, (c) H-2, (d) H-3.

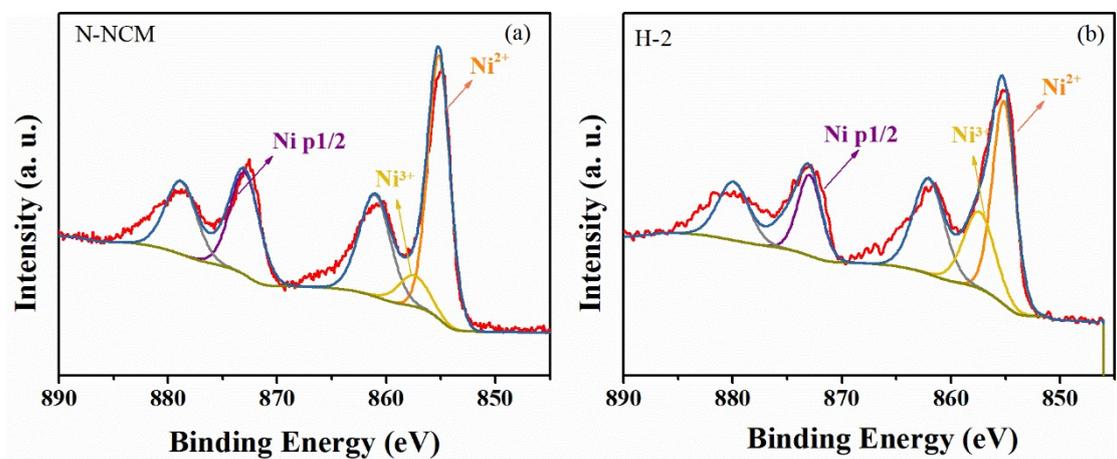


Fig. S3 The XPS result of the precursor of N-NCM (a) and H-2 (b).