

## Supporting information

# Effects of Sulfate Modification of Stoichiometric and Lithium-Rich LiNiO<sub>2</sub> Cathode Materials

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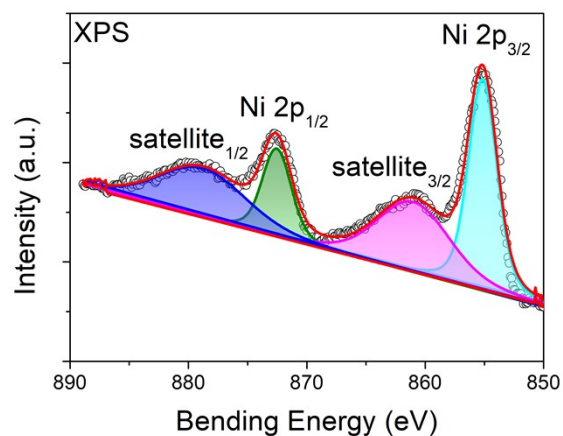


Figure S1 XPS of  $\text{Li}_{1.1}\text{Ni}_{0.85}\text{S}_{0.05}\text{O}_{2-x}$  (fitted as  $\text{Ni}^{3+}$ )

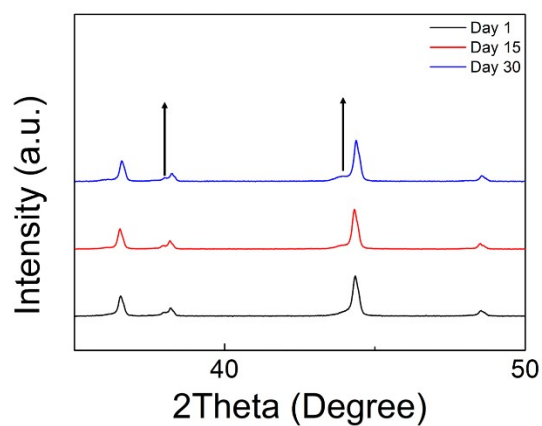


Figure S2 XRD patterns of  $\text{LiNiO}_2$  (solid state route) after the exposure in air after 1, 15 and 30 days focusing on the zoomed-in region.

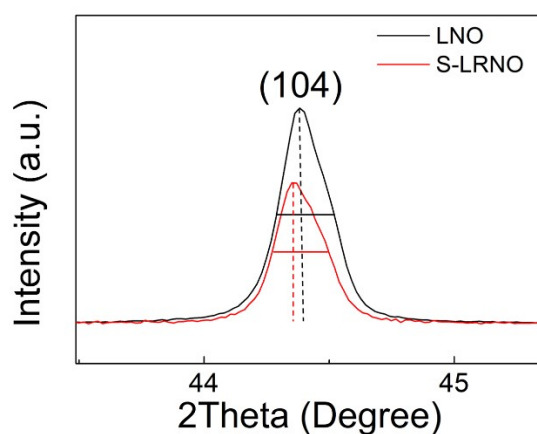


Figure S3 The (104) peak of LNO and S-LRNO prepared using solid state route.

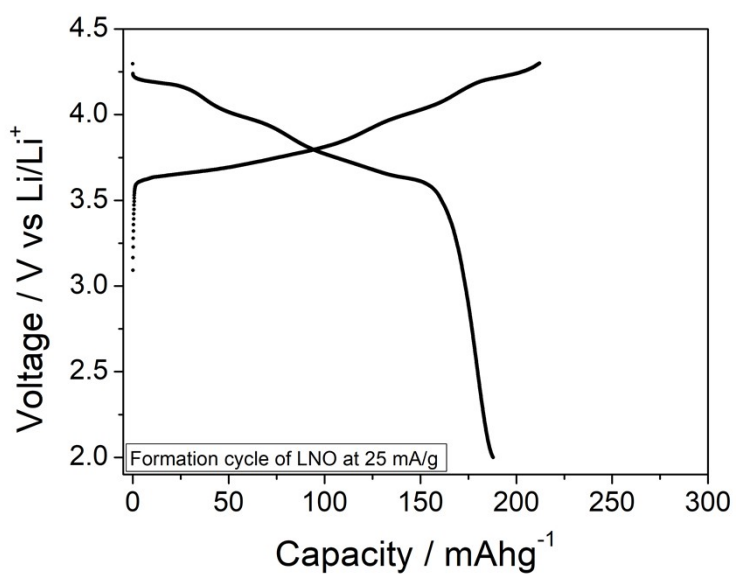


Figure S4 The charge-discharge curve at the formation cycle of LNO (solid state route) at 25 mA/g.

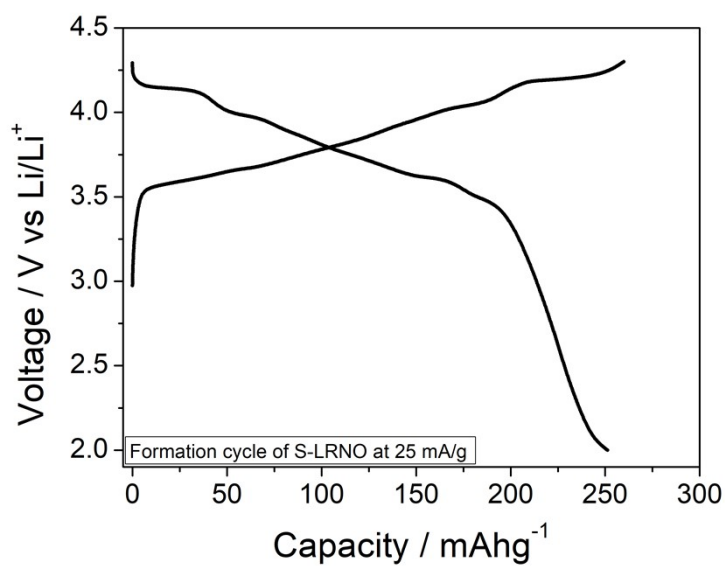


Figure S5 The charge-discharge curve at the formation cycle of S-LRNO (solid state route) at 25 mA/g.

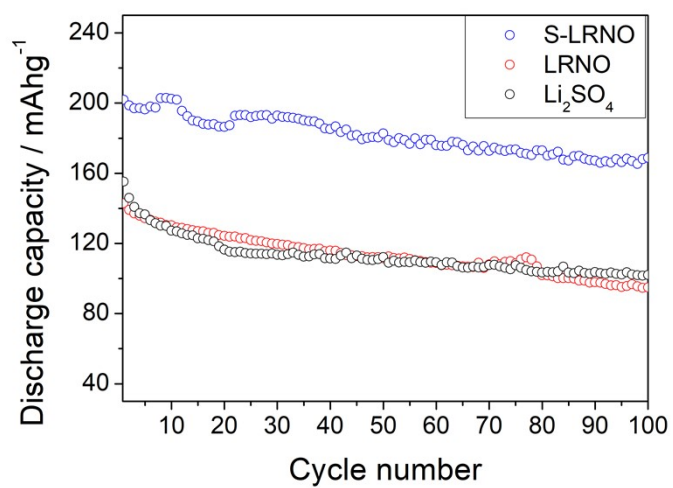


Figure S6 The cycling performance of LRNO, S-LRNO and LRNO with 5%Li<sub>2</sub>SO<sub>4</sub> at 25 mA/g.

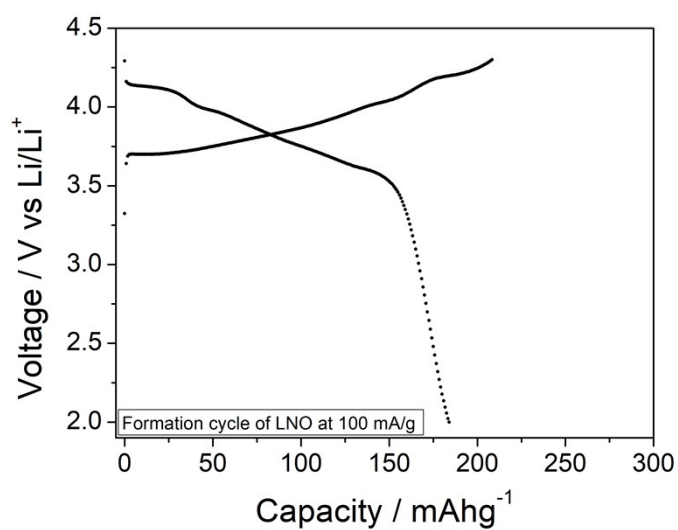


Figure S7 The charge-discharge curve at the formation cycle of LNO (co-precipitation route) at 100 mA/g.

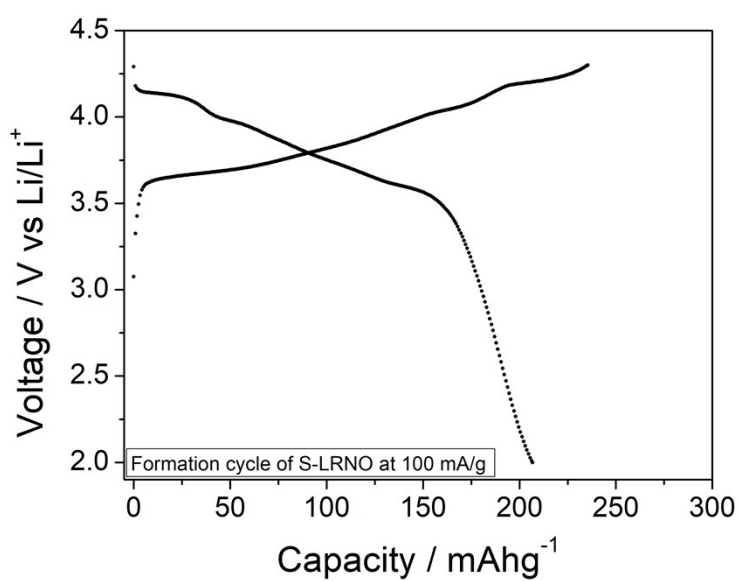


Figure S8 The charge-discharge curve at the formation cycle of S-LRNO (co-precipitation route) at 100 mA/g.