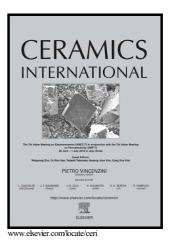
### Author's Accepted Manuscript

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#### **ACCEPTED MANUSCRIPT**

## Nano-sized over-lithiated oxide by a mechano-chemical activation-assisted microwave technique as cathode material for lithium ion batteries and its electrochemical performance

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#### Abstract

Over-lithiated oxide has been attracting enormous attention due to its high work voltage and high specific capacity. However, the bottlenecks of low initial coulombic efficiency and voltage decay block its industrial application. In this paper, nano-sized Li[Li<sub>0.2</sub>Mn<sub>0.54</sub>Ni<sub>0.13</sub>Co<sub>0.13</sub>]O<sub>2</sub> was successfully synthesized by a mechano-chemical activation-assisted microwave technique, in which Mn-Co-Ni-based micro spherical precursor by conventional co-precipitation method was ball milled with Li<sub>2</sub>CO<sub>3</sub> as lithium source and alcohol as dispersant into nano size and then sintered by microwave to obtain the final product. The as-prepared sample sintered for 30 min exhibited a superior electrochemical performance: almost no capacity fading after 100 cycles at 0.1C. The rate performance was also improved significantly and the one sintered for 30 min delivered a discharge capacity of 239, 228, 215, 193 mA h g<sup>-1</sup> at

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