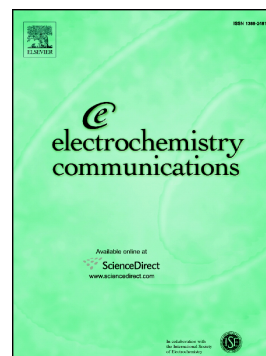


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High voltage – improved reversible capacity in Ni^{+2/+3} modified copper-based cathodes for Lithium Ion Batteries

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Abstract

The incorporation of nickel into Li₂CuO₂ is performed using a one-pot method to form particles composed of two phases, both of them containing nickel and copper as determined by XRD and Rietveld refinement. The higher amount of the secondary phase (33 wt. %) gives rise to new redox processes at higher voltages and enhances the reversible capacity and stability as LIB cathode. The secondary phase maintains crystallinity and its presence avoids irreversible phase transformations during the first oxidation cycle and allows the attainment of 150 mAh/g at C/15 during the first 50 cycles. In addition, rate capability tests show good capacity retention up to 1C and recover the reversible capacity when returning to C/15. This work opens up new avenues for the incorporation of nickel into copper-based electrodes leading to higher operation voltage and capacity retention.

Keywords.

Ni doped Li₂CuO₂; lithium-ion battery; high voltage processes; increased reversible capacity

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