

## Hybrid MnO/Ni Li-ion Battery Anode Material with Enhanced Capacity Retention

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doi: 10.20964/2018.08.20

Received: 1 April 2018 / Accepted: 22 May 2018 / Published: 5 July 2018

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Intimately mixed MnO/Ni hybrid materials are synthesized using a two-step process; Pechini process followed by a high temperature reduction step. As-prepared materials were characterized by X-ray diffraction, transmission electron microscopy and electrochemical tests.  $(\text{MnO})_{1-x}/(\text{Ni})_x$  hybrid materials with  $x=0, 0.2$  and  $0.5$  mole ratios are electrochemically evaluated as anode materials for lithium-ion batteries. The battery tests conclusively show that the coulombic efficiency, capacity utilization factor, percentage capacity retention and high rate performance values of control MnO material are enhanced with the presence of nearby metallic Ni nanoparticles. Oxide/metal hybrid material could be a cheaper alternative to commonly known oxide/graphene system.

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**Keywords:** lithium-ion battery; conversion anode, oxide/metal hybrid

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