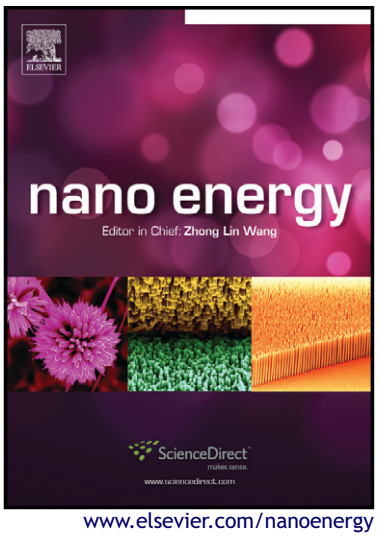

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Effects of structural defects on the electrochemical activation of Li_2MnO_3

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Abstract

Structural defects, e.g. Mn^{3+}/oxygen non-stoichiometry, largely affect the electrochemical performance of both Li_2MnO_3 and Lithium-rich Manganese-rich (LMR) layered oxides with Li_2MnO_3 as one of the key components. Herein, Li_2MnO_3 samples with different amount of structural defects of Mn^{3+}/oxygen non-stoichiometry are prepared. The results clearly demonstrate that the annealed Li_2MnO_3 (ALMO), quenched Li_2MnO_3 (QLMO), and quenched Li_2MnO_3 milled with Super P (MLMO) all show pure C2/m monoclinic phase with stacking faults. MLMO shows the largest amount of Mn^{3+}, followed by the QLMO and then the ALMO. The increased amount of Mn^{3+} in Li_2MnO_3 (such as sample MLMO) facilitates the activation of Li_2MnO_3 and leads to the highest initial discharge specific capacity of 167.7 mAh g^{-1} among the