

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Simulating Dendritic Formation and Possible Prevention Within Lithium-ion Batteries JOSEPH ORTIZ, Stony Brook University, ARPON RAKSIT, Commack High School, NING SUN, DILIP GERSAPPE, Stony Brook University — As technology advances and becomes more dependent on lithium-ion batteries for power, the formation and subsequent separation of dendrites along the cathode may shorten the lifespan and efficiency of these batteries. However, not much is known about the mechanisms that cause dendrite formation within the battery or how to prevent their occurrence. Using a three-dimensional lattice-Boltzmann simulation, a lithium-ion battery was simulated that would allow for dendritic formation and separation. The simulation was carried out using several pre-existing cathode morphologies, and the hindrance and prevention effects of these changes were examined.

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Date submitted: 19 Nov 2010

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