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Simulating Dendritic Formation on the Cathode of Lithium-ion Batteries NING SUN, DILIP GERSAPPE, Department of Materials Science and Engineering, Stony Brook University — The Lattice-Boltzmann method was used to simulate the process of dendrite formation on the cathode of lithium-ion batteries. "In-Situ" maps of the electrodeposition process under constant charging current conditions were obtained. The results showed preferential dendrites formation on higher curvature spots of the cathode, because of the higher electrical field intensity. Different morphologies were obtained due to different initial roughness of the electrode. A mossy-like electrode can be observed after deposition on a rough electrode with randomly generated initial conditions. A tree-like dendrite can be observed when depositing on a single small dendrite. A smooth surface can be obtained when the initial electrode is ideally smooth. The influence of current density was also studied.

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