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An analytical model for the fracture behavior of the flexible lithium-ion batteries under bending deformation

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Abstract

To understand the influence of the bending deformation on the stress evolution and crack propagation in nano flexible electrode during electrochemical cycling, an analytical model is developed based on core-shell structure in a cylindrical electrode. In the model, the analytical solution of stress specialized for the cylindrical electrode in the process of bending deformation and phase transformation is clarified. Further, the weight function is utilized to calculate the time-dependent stress intensity factor