Computational Fluid Dynamics Modeling of a Second Lithium Ion Battery

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A one-dimensional model is developed to simulate discharge of a primary Lithium battery. The model accounts for not only transport of species and charge but also the electrode porosity variations. Numerical simulations are performed using a finite volume method of CFD. The predicted discharge curves are compared to the experimental data with excellent agreement. The model used concentrated solution theory to describe the transport of salt in the electrolyte mainly because the concentration of salt in the electrolyte system was large and concentrated solution theory was proven to be a better representation of such systems.