Electrochemical and Thermal Modeling of Lithium Polymer Battery System

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A dynamic equivalent circuit battery model with modified discrete time concept is suggested. This model is based on first order RC circuit which represents polarization phenomenon in lithium polymer battery. Also parameter estimation algorithm for lithium polymer battery model is proposed. The model parameters are adapted by least square estimators based on experimental cell data with pulse pattern. The model and the algorithm are validated by experimental LiPB pack data with urban driving schedule for hybrid electric vehicle. The result is that proposed model and the algorithm are appropriate for estimation of battery performance such as state-of-charge and state-of-health.