

Title: Modeling Thermochemical Sources for a Broader Range of Materials and Conditions

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Abstract:

The past two decades have seen the development and implementation of models from calorimetry data that are useful for predicting the onset of thermal runaway in a single Li-Ion cell. This work looks toward further capabilities that can be extracted from calorimetry measurements. These include enabling heat release predictions that allow cell-to-cell propagation of thermal runaway; this requires more comprehensive models that include the effects of additional processes that occur after the onset of thermal runaway. Some of these additional processes are identified from calorimetry data and incorporated into models. The updated models are used to show how all of the identified high-temperature processes contribute to the total heat and gas generated during thermal runaway of Li-Ion cells. The implications for propagation scenarios are discussed.

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