

Identification of heat generation parameters of LG Li ion battery

Kenza Maher^a, MD Ruhul Amin^a, Rachid Essehli^a

^a *Qatar Environment and Energy Research Institute (QEERI) at Hamad Bin Khalifa University (HBKU), Doha, Qatar.*

E-mail: Kmaher@hbku.edu.qa

Temperature is critical to battery performance, life, and safety. During charge and discharge process, battery temperature varies due to internal heat generation. A clear understanding of heat generation within the battery and battery pack at normal and abuse conditions can provide an effective help to design the thermal management system and improve the thermal safety.

In this work, we investigate the heat generation behavior of commercial LG lithium ion battery during charge and discharge modes under different factors, including temperature, operation current and aging. It found that the heat generation rate of tested batteries increases with aging. At high current rate, the LIBs showed larger heat generation related to increase in the overpotential (Figures 1a and 1b).

Impedance spectra of same cells were measured at different temperatures and different state of charge.

The correlation between heat generation and structural transformation occurring during charge and discharge has been investigated for fresh and aged cells. .

The results will be further discussed in detail during the presentation.

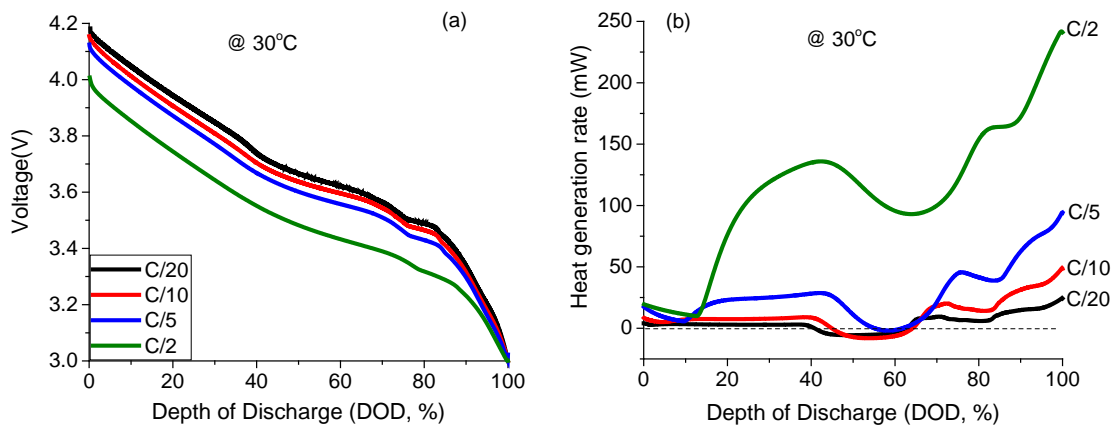


Figure 1: (a) Voltage and (b) Heat generation rate, of LG cell during discharge at different current rates.