**Announcement and Invitation**

**Discussion of**

**Selected Issues Related to Internal Short circuits in Lithium-Ion Cells**

November 15, 2016 Version

**An Invitation:** You are invited to participate in a Discussion of Selected Issues Related to Internal Short Circuits in Lithium-Ion Cells which will be held in College Park, Maryland, USA on Tuesday and Wednesday the 13th and 14th of December 2016. College Park is just north of Washington, DC, inside the Beltway. The Discussion will be jointly sponsored by the Battery Task of the International Energy Agency’s (IEA) Hybrid and Electric Vehicle Technology Collaboration Program (TCP) and the Battery Safety Council. For more information on the TCP, go to [www.ieahev.org](http://www.ieahev.org). (Technology Collaboration Program in the new name for the IEA’s Implementing Agreements.) James Barnes is the Operating Agent (organizer) for the Battery Task and for this Discussion.

**The Problem:** Internal short circuits are of great concern to anyone using lithium-ion batteries. A short can result in thermal runaway with significant safety issues. This Discussion will focus on computational and laboratory techniques that have been developed to understand and detect internal short circuits.

**Specific Questions to Be Addressed in This Discussion:**

1. Since internal short circuits occur relatively rarely in state-of-the-art cells, how can internal shorts be provoked or simulated in a laboratory setting? Data from appropriate tests can be used to help identify the way a short forms and propagates, to help a user identify cells that are less likely to fail violently if a short were to occur, and validate the predictions of a mathematical model. Presentations will discuss several of the laboratory methods now in use or development including versions of the nail penetration test, versions of the “pinch” and “dimple” tests, shorts initiated by the introduction of foreign material, and shorts caused by the “activation” of a component incorporated into a cell.
2. How can modeling inform our understanding of how shorts behave inside a cell and how the characteristics of the short and the cell affect the ultimate outcome? Violent failure or quiet discharge? Presentations will discuss models that have been developed and what predictions they can make. The characteristics of a “complete” or “robust” model will be identified. Where data are available, predictions from models will be compared with experimental results.
3. What methods exist or are in development to identify the formation of an internal short in a cell in order to allow remedial action before the short results in thermal runaway? Any method to identify a short as it forms must be validated experimentally. Presentations will not only describe technologies under development but will also explain how one or more of the laboratory techniques discussed in Section 1 have been used to validate the method.

**Who Should Attend This Discussion:  Individuals from the government, academic, manufacturing and using communities who are knowledgeable about the specific topics to be discussed and would like to learn what others are doing in the field. This meeting is intended for individuals who already have a good understanding of the basic issues related to internal short circuits and want to participate in focused, technical discussions of the questions listed.**

**The organizers of this meeting are also planning a more general, broad discussion of all of the issues related to internal short circuits. This meeting is planned for January 12 --13, 2017, all day Thursday and Friday morning. It will be held in downtown Washington, DC. If you know of someone who would be interested in attending this meeting, please have them contact Dr. Barnes for details.**

**Format of the Discussion and Restrictions on Materials and Discussions:** Attendance will be limited to allow for open discussion.

Attendees are invited to notify the organizer if they would be willing to make an informal presentation on their research as it applies to one or more of the questions listed above. If you are working in more than one area, please plan to divide your presentation for the three areas.

The output of the Discussion will be an exchange of information and ideas.  We will NOT make formal recommendations to any government or organization.

To encourage open exchange of ideas, all specific activities at the Discussion will be “off the record” and not for citation – except when a speaker specifically releases the information. Dr. Barnes will prepare a summary of the meeting for public release.

The language of the Discussion will be English.

**Discussion Registration:** If you are interested in attending the Discussion please send your name, organization, contact information (address and phone number) and a brief note about your area of interest to Dr. James A. Barnes, the organizer, at barnesjim@aol.com.

If you are willing to make an informal presentation on one of the topics, please indicate that information in your application.

**Attendance at the Discussion will be limited and selective** to allow for good discussions; therefore please **do NOT make travel plans that cannot be canceled until you receive a confirmation** from Dr. Barnes. Acceptances will be sent to applicants as soon as possible. Given that space is limited, preference will be given to individuals and organizations who are working in the field and willing to discuss their work.

**Registration Fee:** None

**Reception:** Dr. Barnes invites all attendees and accompanying persons to an informal reception at his house after Tuesday’s session. His house is at 4611 Drexel Road, College Park, about a ten minute walk from the meeting site. Details about this reception will be included in the final announcement.

**Technical Visit:** There will be an optional technical tour to the test facilities at the Naval Surface Warfare Center/Carderock Division on Thursday morning. More details about this visit, including information required to gain access, will be sent directly to all who register for the meeting.

**Logistical Information:**

**Agenda and Meeting times:**

Tuesday’s discussion will focus on the first topic. The other topics will be discussed on Wednesday. Meeting time each day will be 08:30 – 17:00 with a break for lunch.

**Meeting location:** Conference Room at Saint Andrew’s Episcopal Church, 4512 College Avenue, College Park, Maryland 20740

**Hotel Options:**

1. Dr. Barnes has booked a group of rooms at the Hilton Garden Inn, 7810 Walker Drive, Greenbelt, Maryland 20770. The rate is about $113 per night + taxes. This hotel is about 4.5 miles from the meeting site and has a shuttle that serves the Greenbelt Metro stop on the Green line. The shuttle may also be available to transport you to the meeting site. This rate was no longer available on the Hilton Internet site on November 14th. If you wish to stay at this hotel at this lower rate, call the hotel directly; have them locate the reservations by name (James A. Barnes) and date (December 12 – 15); tell them that you will be the occupant of one of the rooms and want to add your name and credit card number to the booking for one room. Then notify Dr. Barnes that you have done this so that he does not accidentally cancel your room.
2. If you prefer to stay at hotels in the Marriott family, there are a Courtyard and a Residence Inn located next to the Hilton Garden Inn.
3. Alternative hotels also include a Hampton Inn and a Best Western in College Park on Baltimore Boulevard (US Route 1). On November 15, these hotels offered rates on their Internet sites that were lower than $113 + taxes. The Best Western is the closest of the listed hotels to the meeting site. It does not offer a shuttle service but is on the bus line that runs on US 1. It is a new facility. Because it is relatively small, Dr. Barnes was unable to hold a block of rooms there.

**Transportation Options**

1. Metro: Metro offers a direct connection to College Park and Greenbelt from Washington National Airport (DCA) and downtown Washington. The meeting site is about a 15 minute walk from the College Park station on the Green line.
2. Bus: There is an express bus from Baltimore Washington International Airport (BWI) to the Greenbelt Metro station. There is also a bus that runs along Route 1 and serves the hotels in College Park and the College Park Metro station.
3. Washington Dulles Airport (IAD) is more remote; it is the major area airport for international flights. If you will arrive at Dulles, ask Dr. Barnes for transportation options.
4. Parking is free at all of the listed hotels and at the meeting site.

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