



# 2023 BATTERY SAFETY WORKSHOP

University of North Carolina at Charlotte

Organizers:

UNC Charlotte: Prof. Jun Xu, Prof. Lin Ma, Prof. Anthony Bombik, Prof. Youxing Chen, Dr. Xiang Gao

U of SC: Prof. Xinyu Huang, Prof. Golareh Jalilvand, Prof. Austin Downey

@ 345, Duke Centennial Hall, University of North Carolina at Charlotte

Jun. 8<sup>th</sup> – Jun. 9<sup>th</sup>, 2023

# Background

---

With the wide application of lithium-ion batteries in our current mobile society, the safety issues of batteries have become one of the top concerns. Emerging *in-situ/operando* characterizations, advanced modeling methodologies have been proposed to enhance the understanding of the fundamental science of battery safety behaviors and provide powerful design tools for the next-generation safe battery.

Battery Safety Workshop (BSW) is organized by Vehicle Energy & Safety Laboratory (VESL) at University of North Carolina at Charlotte and designed to be an annual forum to discuss the state-of-the-art research progress in battery safety area. Attendees may include scientists, researchers and engineers in both academia and industry to inspire collaborative and synergic efforts towards solving the battery safety issues.

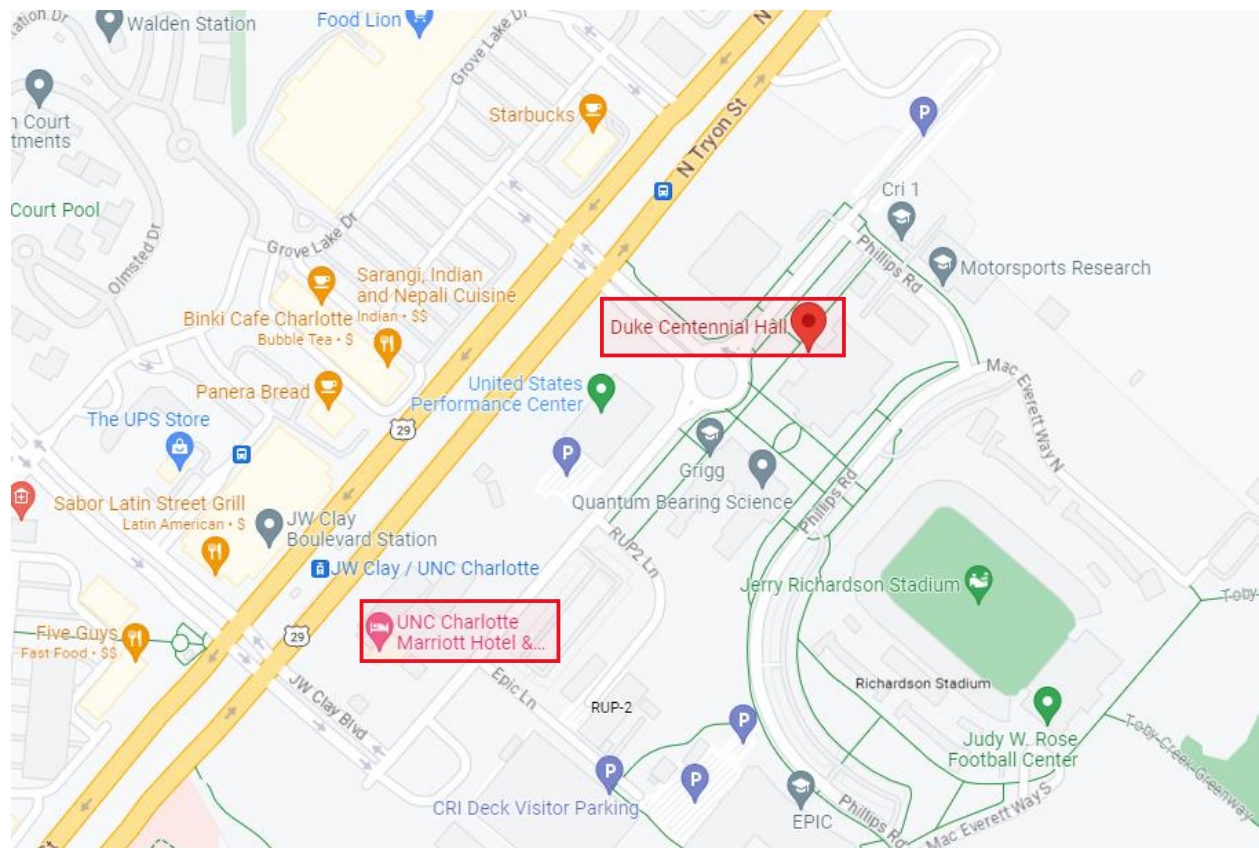
# Time/ Location

---

**Time and dates:** 7:30am-7:30pm EST, Jun. 8<sup>th</sup> (Thursday), 2023; 7:30am-4:00pm EST, Jun. 9<sup>th</sup> (Friday), 2023.

**Workshop format:** In-person and online

**Place:** Duke 345, University of North Carolina at Charlotte, Charlotte, NC (see the map below)



# Schedule

---

Thursday, June 8, 2023

7:30 am-8:20 am	Registration and Breakfast
8:20 am-8:30 am	Opening Remarks
8:30 am-9:00 am	Welcome Remarks <ul style="list-style-type: none"><li>Prof. Robert Keynton, Dean of the William States Lee College of Engineering</li></ul>
9:00 am-9:40 am	Battery Safety, Internal Short Mechanism, and Corresponding Fundamentals. Speaker: Dr. John Zhang (Celgard)
9:40 am-10:20 am	Thermal Safety Investigation of Lithium-Ion Batteries: Materials and Cells Speaker: Dr. Wenquan Lu (Argonne National Lab)
10:20 am-10:40 am	<i>Coffee Break, photograph</i>
10:40 am-11:20 am	Vehicle Dynamic Events and Battery Response for Safety Speaker: Dr. Uday Korde (GM)
11:20 am-12:00 pm	Perspectives on Lithium Metal Battery Fabrication and Testing Speaker: Dr. Killian Tallman (Albemarle)
12:00 pm-1:00 pm	<i>Lunch Break</i>
1:00 pm-1:40 pm	Toward Predicting Fire Hazard of Li-ion Battery Containing System Speaker: Dr. Dong Zeng (FM Global)
1:40 pm-2:20 pm	Using a Wholistic Approach and Innovative Technology to Advance Battery Safety Speaker: Dr. Drew Pereira (Soteria)
2:20 pm-3:00 pm	LIOVIX® Printable Lithium Technology for Advanced Anode Manufacturing Speaker: Dr. Jian Xia (Livent)
3:00 pm-3:20 pm	<i>Coffee Break</i>
3:20 pm-4:00 pm	Enhancing Battery Safety and Performance with Higher Operating Temperatures

	Speaker: Prof. Brian McCarthy (EC Power)
4:00 pm-4:40 pm	Predicting Li-ion Battery damages and thermal runaway under mechanical loading through simulation Speaker: Mr. Jean-Baptiset Mouillet (Altair) (Remote)
5:00 pm-7:30 pm (BATT CAVE building)	BATT CAVE Lab Tour Poster exhibition/Award Announcement (Dr. Anthony Bombik) Socialization/Light dinner

### Friday, June 9, 2023

7:30 am-8:20 am	Registration and Breakfast
8:20 am-9:00 am	Multiphysics-Multiscale Driven Design of Battery Cells Speaker: Dr. Sandeep Kulathu (SIMULIA)
9:00 am-9:40 am	Near End-of-Life Internal Short Circuit Phenomenon in Commercial Lithium-ion Cells Speaker: Dr. Quinn Horn (Exponent)
9:40 am-10:20 am	Physics-Informed Machine Learning for Battery Degradation Diagnostics: A Comparative Study Speaker: Dr. Chao Hu (Univ. Conn.)
10:20 am-10:40 am	<i>Coffee Break</i>
10:40 am-11:20 am	Fluid Mechanics of Venting in Small Format Li-ion Cells Speaker: Prof. Jason Ostanek (Purdue Univ.)
11:20 am-12:00 am	Understanding Internal Short Circuit and Thermal Runaway of Lithium-ion Cells through In Situ Diagnosis Speaker: Prof. Guangsheng Zhang (UA in Huntsville)
12:00 pm-1:00 pm	<i>Lunch Break</i>
1:00 pm-1:10 pm	Introduction to the Battery Safety and Durability Team
1:10 pm-1:40 pm	Mechanical abuse tolerance of lithium-ion pouch cell for EVs Speaker: Prof. Xinyu Huang (U of SC)
1:40 pm-2:10 pm	Highly Reversible Zn Metal Anode Enabled by Sustainable Hydroxyl Chemistry Speaker: Prof. Lin Ma (UNC Charlotte)

2:10 pm-2:40 pm	TBD Speaker: Prof. Golareh Jalilvand (U of SC)
2:40 pm-3:10 pm	Interactions Between SiO and Gr Particles During the Multiphysics Behavior of Anode Materials Speaker: Dr. Xiang Gao (UNC Charlotte)
3:10 pm-3:40 pm	Are Aged Cells More Dangerous Than Fresh Cells? Speaker: Dr. Jun Xu (UNC Charlotte)
3:40 pm-4:00 pm	<i>Coffee Break</i>
4:00 pm	Close

## Presenters



**Dr. Wenquan Lu**  
Senior Chemical Engineer  
Argonne National  
Laboratory



**Dr. Dong Zeng**  
Principal Research Scientist  
FM Global



**Dr. Uday Korde**  
Manager, Powertrain CAE  
Methods Group  
General Motors



**Dr. Zhengming  
(John) Zhang**  
CTO/CSO  
Celgard



**Dr. Sandeep Kulathu**  
Senior Manager  
SIMULIA



**Dr. Killian Tallman**  
Lead Battery Engineer  
Albemarle



**Dr. Brian McCarthy**  
CTO  
EC Power Group



**Dr. Drew Pereira**  
R & D Manager  
Soteria Battery Innovation  
Group



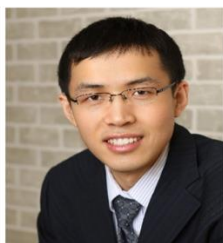
**Mr. Jean-Baptiste Mouillet**  
Multiphysics Architect  
ALTAIR



**Dr. Jason Ostanek**  
Associate Professor  
Purdue University



**Dr. Jian Xia**  
Energy Innovation Manager  
Livent



**Dr. Chao Hu**  
Associate Professor  
University of Connecticut



**Dr. Guangsheng Zhang**  
Associate Professor  
University of Alabama in  
Huntsville



**Dr. Quinn Horn**  
Principal Engineer  
Exponent



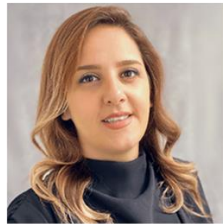
**Dr. Jun Xu**  
Associate Professor  
University of North  
Carolina at Charlotte



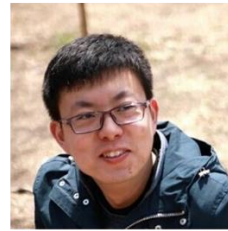
**Dr. Xinyu Huang**  
Associate Professor  
University of South  
Carolina



**Dr. Lin Ma**  
Assistant Professor  
University of North  
Carolina at Charlotte



**Dr. Golareh Jalilvand**  
Assistant Professor  
University of South  
Carolina



**Dr. Xiang Gao**  
Postdoc Fellow  
University of North Carolina  
at Charlotte

## Companies/organizations

---



## Universities

---



## Acknowledgement

---

The organizers appreciate the financial support from UNC Charlotte and the Journal of Batteries by MDPI for this workshop.



**batteries**  
an Open Access Journal by MDPI

# Quick Notes

---

