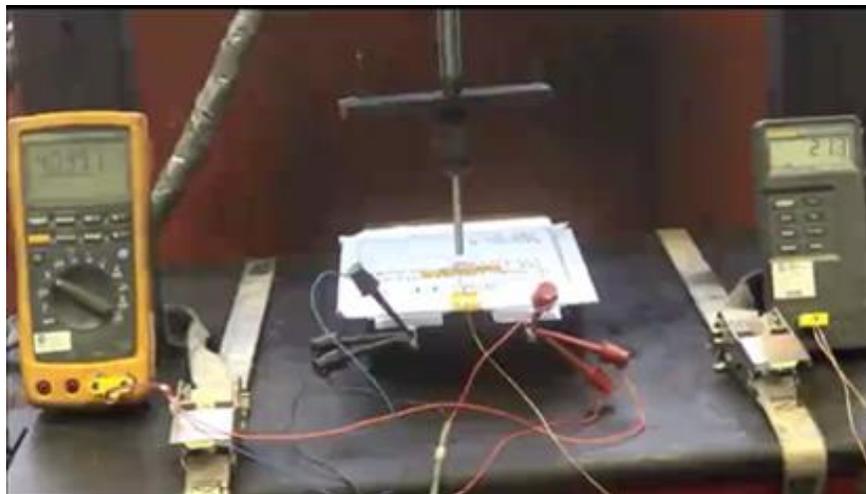


Bruce Presents

Energy Storage Technologies for Earth—and Other Planets

Thursday, August 6, 2020, 7:00 – 8:30 pm, Webinar via Zoom



A safety test of a large format Ionic Materials cell shows no fire even when pierced with a nail. Safer, higher performing batteries will be crucial in powering manned journeys to Mars.

GREENWICH, CT, July 21, 2020 — One day in the not too distant future, humans will reach for Mars—a seven-month journey each way. What will power people there and back is a revolutionary, near-indestructible battery possessing more energy than any other battery currently in existence on planet Earth.

Meet one of the scientists guiding its invention, the innovator and CEO driving its production, and a senior member of the NASA leadership team who will determine how this extraordinary battery will catapult mankind toward the stars and improve life on Earth on Thursday, August 6, 2020, 7:00 – 8:30 pm, when the Bruce Museum hosts a Zoom webinar: ***Energy Storage Technologies for Earth—and Other Planets.***

Our expert panelists: **Dr. Steve Greenbaum** is CUNY Distinguished Professor of Physics at Hunter College, whose lab investigates new materials for improved electrochemical energy storage. He is working on a revolutionary new type of battery that **Dr. Mike Zimmerman**,

Founder and CEO of MA-based Ionic Materials, will produce for the EV and Grid Storage markets. Joining the conversation will be **Dr. Will West**, Group Supervisor of the Electrochemical Technologies Group at the Jet Propulsion Laboratory (JPL). In addition to his R&D activities in energy storage/conversion, he is the Cognizant Engineer for the rover and descent stage batteries on the JPL's Mars 2020 mission.

The August 6 *Bruce Presents* webinar will begin with a brief introduction by Dr. Greenbaum, followed by short presentations each from Dr. Zimmerman and Dr. West. These experts will then open the conversation to participants, with a Q&A session moderated by Dr. Greenbaum, Bruce Museum Curator of Science **Dr. Daniel Ksepka**, and **Leonard Jacobs**, producer of the *Bruce Presents* series.

Participation in the virtual August 6 *Bruce Presents* on Zoom, for the benefit of the Bruce Museum, is \$10 for Museum members and \$15 non-members. To reserve a place, visit brucemuseum.org or call 203-869-0376. A link to join the online conversation will be sent to registered attendees one hour prior to the program. Support for *Bruce Presents*, the Bruce Museum's monthly series featuring thought leaders in the fields of art and science, is generously provided by Northern Trust and Berkley One, a Berkley Company.

Here's the challenge our speakers will address: Lithium-ion battery technology was introduced more than 25 years ago, and it is reaching its limits. The market requires better and higher performing battery technology. As anyone who has read the widely publicized incidents involving exploding smartphones, toys, electric vehicles, and aircraft may know, lithium-ion batteries and the liquid electrolytes they employ pose both a safety risk and are nearing their theoretical performance limits.

The solution you will hear about on August 6 promises greater safety, higher performance, and lower cost for a new generation of batteries. Through the invention of a novel solid polymer electrolyte material that conducts ions at room temperature, Ionic Materials is on the verge of revolutionizing battery technology. By creating a truly solid state battery with an energy storage capability exceeds those of traditional liquid systems over a wide range of temperatures, we will soon enable wide-scale electrification of transportation, and greater efficiencies in harnessing renewable intermittent energy resources like wind and solar for grid storage. Also, the long trip to Mars will require the safety that batteries like this provide.

To that end, the significant challenges of operating spacecraft in extreme environments on Mars and other planetary surfaces require novel battery solutions. Representative engineering and science aspects of designing and infusing new battery technologies for NASA applications will be discussed in the presentation.

More About the Panelists:

Dr. Mike Zimmerman

Dr. Mike Zimmerman is the Founder and CEO of Ionic Materials, a materials technology company that has developed a solid polymer electrolyte with a new conduction mechanism for solid state batteries. The company is now scaling up this technology to provide inherently safe batteries to the EV and Grid storage markets. Prior to Ionic Materials, Mike founded Quantum Leap Packaging (QLP) which invented, then developed, a new liquid crystal polymer technology used for high frequency semiconductor packaging, and films for the emerging 5G antennae and radar systems. Prior to this Mike worked at Bell Laboratories where his role was to develop new materials process for semiconductor packaging and materials for the original key technologies for fiber to the home.



Dr. Mike Zimmerman

Mike has been a Professor at Tufts University for more than 25 years, teaching materials science, and providing students opportunity for thesis/research work at his companies. He is also a Visiting Professor at Imperial College in London. Mike has a BS, MS, and PhD in Mechanical Engineering, and attended Rensselaer Polytechnic Institute (RPI), MIT, and University of Pennsylvania.

Dr. Steve Greenbaum

Dr. Steve Greenbaum is CUNY Distinguished Professor of Physics at Hunter College and a Fellow of the American Physical Society. He earned his PhD from Brown University and was a Postdoctoral Fellow at the Naval Research Laboratory in Washington, D.C. Dr. Greenbaum was a Fulbright Scholar at the Weizmann Institute of Science and a Senior Research Fellow at the Jet Propulsion Laboratory, and has held Visiting Professorships at several universities, including Stony Brook, Rutgers, Tel Aviv, Paris-Sud, Padova, and Roma/Sapienza. His lab investigates materials for electrochemical energy storage and conversion by magnetic resonance and synchrotron x-ray spectroscopy. He has authored or co-authored over 270 peer reviewed publications and given over 60 invited talks at international conferences. He received the White House-



Dr. Steve Greenbaum

sponsored 2002 Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring, and served (2014-15) as one of 11 Jefferson Science Fellows as senior Science and Technology advisors to the U.S. Secretary of State.

Dr. Will West

Dr. Will West is the Group Supervisor of the Electrochemical Technologies Group at the Jet Propulsion Laboratory (JPL). At JPL, he has worked as Principal Investigator, Co-Investigator, or Task Manager for R&D programs related to electrochemistry and energy storage/conversion. In addition to his R&D activities, he is the Cognizant Engineer for the rover and descent stage batteries on the JPL's Mars 2020 mission. He received his B.S.E. degree in Chemical Engineering and Ph.D. degree in Materials Science Engineering. After completing his Ph.D., Dr. West was appointed Postdoctoral Scholar at Caltech and JPL. He has worked as a consultant for numerous R&D firms, expert witness for the U.S. Department of Justice, lecturer at California State Polytechnic University, and as Associate Professor at Nagoya University (Japan). He holds 34 U.S. and international patents, is author/co-author on approximately 65 journal articles and 100 conference presentations, and co-edited/co-authored the *Handbook of Solid-State Batteries*.



Dr. Will West

Conceived by **Suzanne Lio**, Managing Director of the Bruce Museum, and launched in 2019, *Bruce Presents* has received enthusiastic reviews for its topical programming. The most recent *Bruce Presents* was on July 9: ***Taking It to the Streets: A Conversation with Contemporary Street Artists***. The virtual program featured five cutting-edge street artists from Connecticut and beyond. On September 10, the series continues with ***Curator, Collector, Critic, Creator: What Is 'Contemporary Art' Today?***

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About the Bruce Museum

The Bruce Museum is a community-based, world-class institution highlighting art and science. Changing galleries for art and permanent galleries for the natural sciences encompass regional to global perspectives. Accredited by the American Alliance of Museums and voted the best museum in Fairfield County by area media in recent years, the Bruce plays an integral role in the cultural life of area residents. The Museum attracts approximately 70,000 visitors annually, including 24,000 schoolchildren, and also has special programs for families, seniors, students, and community organizations. Located in a park setting just off I-95, exit 3, at 1 Museum Drive in Greenwich,



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Press Release

Connecticut, the Museum is also a 5-minute walk from the Metro-North Greenwich Station. The Bruce Museum reopened on June 27 in accordance with state and local guidelines and with advance reservations for timed ticketed entry. To make a reservation or for additional information, call the Bruce Museum at 203-869-0376 or visit brucemuseum.org.

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