


# 16<sup>th</sup> International Green Energy Conference

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Name	Chao-Yang Wang	
Affiliation	Pennsylvania State University	
<h2 style="color: red;">Invited Plenary Lecture</h2>		
Presentation Title	<h3>Safety of All Solid State Batteries</h3>	
Abstract (Approximately 200 words)	<p>Battery safety remains the first and foremost concern for electric vehicles. It is taken for granted that all solid state batteries (ASSBs) have superior safety and high energy density. But ASSBs of high energy density mean the use of lithium metal anode, a more flammable and energetic fuel than liquid carbonate electrolytes in traditional Li-ion batteries. In this talk we present a novel method to measure the shorting current, intracell temperature rise, and ensuing fires in lithium batteries. We reveal for the first time that ASSB fires occur over an ultrashort time scale of 1-5 seconds upon internal shorting, making pack-level safety measures virtually in vain.</p>	
Biographical Sketch (Approximately 200 words)	<p>Dr. Chao-Yang Wang is William E. Diefenderfer Chair Professor of Mechanical Engineering and Professor of Chemical and Materials Science &amp; Engineering at the Pennsylvania State University. He has 230+ journal publications and an H-index of 115. He holds over 140 patents and has published two books, “Battery Systems Engineering” by Wiley and “Modeling and Diagnostics of Polymer Electrolyte Fuel Cells” by Springer. Dr. Wang is known for his innovative research on batteries and fuel cells; particularly for pioneering a new battery paradigm with modulatory states and interfaces. The all-climate battery (ACB) he invented was adopted by 2022 Winter Olympics as well as commercialized by several carmakers. His latest invention on fast charging batteries was named as one of 10 biggest science stories in 2022 by the Guardian. He is a Fellow of U.S. National Academy of Inventors (NAI) and American Society of Mechanical Engineers (ASME) and a speaker of many public forums such as 2021 Tencent WE Summit alongside two Nobel Laureates, 2022 Distinguished Transport Lecture at Hong Kong University, and 2023 Hawkins Lecture at Purdue University, and 2024 PAIR Distinguished Lecture at Hong Kong Polytechnic University.</p>	