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2021 WORLD FUEL CELL CONFERENCE

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Name	Craig Gittleman	
Affiliation	General Motors, USA	
<h2 style="color: red;">Invited Plenary Lecture</h2>		
Presentation Title	Materials research and development focus areas for low cost automotive proton-exchange membrane fuel cells	
Abstract (Approximately 200 words)	<p>Research and development of fuel cell materials often focuses on designing and developing materials which will reduce the cost or improve the durability of an individual subcomponent. Examples of recent focus areas include non-Pt group metal catalysts, noncarbon catalyst supports, and nonfluorinated membranes. These studies rarely look at the entire system to comprehend the impact of these materials on the cost of ownership to the customer, including vehicle and fuel costs. This talk takes a holistic look at the impact of functional materials on automotive fuel cell systems and provides direction on which material properties will provide the greatest benefit. It also provides guidance on which material classes are the most likely to enable the achievement of systems which will result in the successful commercialization of light-duty fuel-cell vehicles. Additional consideration will be given for materials R&D priorities for heavy-duty applications which show potential for near term commercialization opportunities. Specific focus will be on catalyst and membrane materials that will enable low-cost, durable products.</p>	
Biographical Sketch (Approximately 200 words)	<p>Craig is the Engineering Group Manager for Fuel Cell Materials and Analysis at General Motors. He has responsibility for the R&D of all materials for GM fuel cell stacks and systems. Craig has 25 years of experience in industrial R&D with 21 years of experience in electrochemical energy systems and materials including fuel cells and Li-ion batteries. Craig received his B.S. in chemical engineering from the University of Pennsylvania and his Ph.D. in chemical engineering from the University of California, Berkeley. He spent five years at BOC gases developing adsorbents and sorption processes for gas separation and purification. He joined the GM in 1999, working on on-board fuel processors for fuel cell vehicles and membranes and separators for electrochemical systems including fuel cells and batteries and stack durability. Craig is currently responsible for the advanced technology work within the GM/Honda partnership developing next generation fuel cell systems. Craig is the author of 36 technical publications, 3 book chapters and 29 U.S. patents and patent applications. Craig served as industry co-chair for the USCAR Fuel Cell Tech Team for which he received two special Recognition Awards.</p>	