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2021 WORLD FUEL CELL CONFERENCE

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Name	Asmae Mokrini	
Affiliation	National Research Council Canada	
<h2 style="color: red;">Invited Plenary Lecture</h2>		
Presentation Title	Novel Manufacturing Opportunities for PEM Cost Reduction and Durability Improvement	
Abstract (Approximately 200 words)	<p>Fuel cell electric vehicles (FCEV) deployment is expanding more quickly than ever, the global FCEV stock nearly doubled to more than 25,000 units at the end of 2019, with 12,950 new vehicles sold worldwide (2,100 in the US). However, it still accounts for just 0.5% of new low-carbon vehicles sales. Fuel cell cost, durability and the availability of hydrogen refueling infrastructure are still challenges to be overcome to enable a more extensive market penetration. In terms of PEMFC cost, research has been extensively directed towards lower cost materials, such as partially or non-fluorinated ionomers to replace high cost perfluorosulfonic acid (PFSA) ionomers, or low or non-Platinum catalysts to reduce or eliminate Platinum from catalyst layer, or metallic bipolar plates to replace graphite to name a few examples. However, all of these approaches can often lead to a compromised durability. Research on alternative manufacturing processes can present great opportunities to significantly reduce cost, while keeping or improving the durability. This talk presents the work carried out at the National Research Council to develop innovative manufacturing approaches to produce proton exchange membranes, the validation and scale-up of the process with different ionomers, and the results obtained from performance and durability assessment. The Techno-economic analysis of the scaled-up process will be presented, as will the commercialization feasibility, for different FCEV annual production scenarios.</p>	
Biographical Sketch (Approximately 200 words)	<p>Asmae Mokrini is a Team Lead and a Senior Research Officer at the Automotive and Surface Transportation Research Center of the National Research Council Canada. She holds a master's degree in Polymer Science and Technology from the University of Menendez-Pelayo in Madrid and a PhD in Chemical Engineering from the University of Barcelona. She joined the National Research Council of Canada as a Research Officer in 2003, where she led and contributed to several R&D projects related to materials and manufacturing process developments for fuel cells, and different battery technologies, and established many collaborations with industry, Other Government Departments and national and international R&D organizations. With Over twenty years of achievements in research and development on Zero Emission electrochemical energy storage and generation devices for automotive applications, she holds several patents and is the author of +150 publications, conference proceedings and industrial proprietary reports.</p>	