Name	Nada Zamel	
Affiliation	Senior Scientist, Fraunhofer Institute for Solar Energy Systems	
Invited Keynote Lecture		

Presentation Title	**Understanding degradation in PEM fuel cells**
Abstract (Approximately 200 words)	Increasing the long-term stability of polymer electrolyte membrane fuel cells in general and under dynamic operation in particular is crucial for its commercialization. This stability is affected by not only operation parameters but also the components and their materials. In this talk, we discuss our initiatives at Fraunhofer ISE in order to fully understand how materials and operation parameters affect the overall degradation processes taking place in the membrane electrode assembly. We specifically highlight the importance of the use of both experimental and numerical methods to further this understanding.
Biographical Sketch (Approximately 200 words)	Dr. Nada Zamel is a Senior Scientist at the Department Fuel Cell Systems at Fraunhofer Institute for Solar Energy Systems, ISE. She received her doctoral degree in Mechanical Engineering in 2011 from the University of Waterloo, Canada. Her research interests are focused on various topics pertaining to material development and cell characterization of PEM fuel cells. Specifically, she has been involved in projects on life cycle analysis, effect of air and hydrogen contamination on PEM fuel cells, effects of various stressors on the lifetime of PEM fuel cells and the production of catalyst coated membranes. She has contributed to the field over 40 peer reviewed articles in high impact journals and several reports and book chapters. She is also an active reviewer and has been involved in the organization of various international conferences and workshops. She is currently serving on the editorial board of Energy and AI and as an Associate Editor in International Journal of Green Energy.

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