

Can we Go Beyond Fuel Cell Vehicle Future with the Help of New Nanomaterials?

Ayşe BAYRAKÇEKEN YURTCAN

Professor at
Chemical Engineering Department
&
Director of Nanoscience and Nanoengineering Research and Application Center
Atatürk University
Erzurum, Turkey
ayse.bayrakceken@gmail.com

ABSTRACT

Polymer electrolyte membrane (PEM) fuel cells seem to be promising alternative energy conversion devices for electric vehicles (EVs) due to their outstanding properties like high power density and low operating temperature. The whole picture of the utilization of PEM fuel cells in electric vehicles shows us the drawbacks related with these fuel cells. The main obstacles related with these fuel cells still suffer from the durability of the materials and also their high cost. Cheaper materials accompanied by higher lifetimes will result in the widespread utilization of these systems. In this respect, there are still many topics that can be studied about the nanomaterials of fuel cells in order to perform fuel cell in a cheaper and long life way. In this study, the drawbacks related with the nanomaterials used in PEM fuel cells and also the survey of the fuel cell electric vehicle will be summarized.

BRIEF BIOGRAPHY

She was born in 1978 in Horasan, the district of Erzurum. She graduated from Atatürk University Faculty of Engineering, Department of Chemical Engineering in 2000. In 2002, she started working as a Research Assistant in the Department of Chemical Engineering, Faculty of Engineering at Middle East Technical University. She completed her master's degree in 2004 and doctorate degree in 2008 at Middle East Technical University Faculty of Engineering, Department of Chemical Engineering. In 2006, she worked as a visiting fellow at the University of Connecticut in the United States of America. She worked as a post-doctoral Researcher in the Department of Chemical and Biological Engineering at Koç University in 2009. She worked as Assistant Professor at Atatürk University, Faculty of Engineering between 2009 and 2011. She was appointed as Associate Professor in the Department of Chemical Engineering at Atatürk University Faculty of Engineering in 2014 and she became Professor in the same department in 2020. She worked as Vice Head of Department between 2014 and 2016, Vice Director of DAYTAM between 2016 and 2017, and Director of Nanoscience and Nanoengineering Research and Application Center between 2016 and 2020. She has been a member of the Turkish Catalysis Society since 2006, and Hydrogen Technologies Association since 2015. Prof. Dr. Ayşe Bayrakçeken Yurtcan has nearly 200 national and international publications, papers and posters published so far. She has worked as an international book editor and has written parts in books. She worked as a coordinator in 17 projects and as a Researcher in 14 projects. She was awarded METU Thesis of the Year Award in 2008, Outstanding Young Scientist Award from Turkish Academy of Sciences (TUBA-GEBIP) in 2017 and METU Research Incentive Award of Prof. Dr. Mustafa Parlar Research and Education Foundation in 2018. She speaks English very well. Prof. Dr. Ayşe Bayrakçeken Yurtcan is married with two children.