

Expert Discussion Panel

Panel Topic: Roadmap and R&DD of H₂ and fuel cell around the world

Panel time and date: 8:00 am - 8:50 am on August 19, 2021 (EDT)

Panel Session Description:

As the world is brought to a standstill by the Covid19, sustainable growth of mankind is becoming an issue of pressing reality, not just theory and prediction. As a pillar in the plans for the recovery from the pandemic, more and more countries are releasing roadmaps for H₂ and fuel cell with ambitious targets. The aim of this panel discussion is to introduce and compare the roadmaps of major countries and regions, so as to examine the differences in strength and stance, identify the issues of common interest, and highlight the challenges needing collaborative action. The status and prospect of research, development, and demonstration of H₂ and fuel cell around the world will also be addressed, with emphasis on the role of fundamental research.

Panel Moderator: Dr. Jianbo Zhang, Tsinghua University, China

Expert Panelists:

- Tobias Brunner, HYENERGY GmbH, Germany
- Ibrahim Dincer, Ontario Tech University, Canada
- Marc Melaina, Hydrogen and Fuel Cell Technologies Office, DOE, US
- Mingguo Ouyang, Tsinghua University, China
- Yu Morimoto, Doshisha University, Japan
- Jianbo Zhang, Tsinghua University, China (moderator)

Biography of Panelists:



Tobias Brunner is a Managing Director and Co-owner of Hynergy GmbH, a Hydrogen Energy and Mobility Engineering company in Germany, as well as of Cryomotive GmbH, a startup company to develop cryogenic hydrogen storage and refueling technology for long-haul commercial vehicles. From 2016 to 2020 he also served Great Wall Motors as their VP Fuel Cell R&D. In 2019 Dr. Brunner was appointed Strategic Council of FTXT Future Energy, the new Hydrogen Fuel Cell Company of the Great Wall Group. Before co-founding Hynergy GmbH in 2015, Dr. Brunner has been serving BMW Group in various roles for more than 10 years, most recently as head of BMW's Technology Project Hydrogen Fuel Cell. Under Dr. Brunner's supervision several fuel cell electric vehicle prototypes and test fleets as well as novel cryogenic storage and refueling technologies have been developed and demonstrated.



Ibrahim Dincer is a full professor of Mechanical Engineering at Ontario Tech. University (formerly University of Ontario Institute of Technology). Renowned for his pioneering works in the area of sustainable energy technologies he has authored/co-authored numerous books and book chapters, and many refereed journal and conference papers. He has chaired many national and international conferences, symposia, workshops and technical meetings. He has delivered many keynotes and invited lectures. He is an active member of various international scientific organizations and societies, and serves as editor-in-chief, associate editor, regional editor, and editorial board member on various prestigious international journals. He is a recipient of several research, teaching and service awards, including the Premier's research excellence award in Ontario, Canada. During the past seven years he has been recognized by Thomson Reuters as one of the Most Influential Scientific Minds in Engineering and one of the most highly cited researchers.



Marc Melaina is a Senior Analyst at Boston Government Services (BGS) supporting hydrogen systems analysis work within the U.S. Department of Energy's Hydrogen and Fuel Cell Technologies Office. His areas of expertise include analysis of hydrogen infrastructure and hydrogen energy supply chains, electric vehicle charging infrastructure, zero emission vehicle technologies and markets, and sustainable transportation scenarios. Before joining BGS, he worked for two years at Great Wall Motors and the sister company FTXT Energy Technologies in Boading, China, ten years at the National Renewable Energy Laboratory in Golden, Colorado, and two years at the Institute of Transportation Services at the University of California, Davis in Davis, California. Other work experience includes analysis support for two committees of the National Academy of Sciences and internships at the National Transportation Research Center at Oakridge National Laboratory and the City of Ann Arbor's Energy Office. Dr. Melaina is a member of the Transportation Research Board's Committee on Alternative Transportation Fuels and Technologies. He has authored or co-authored 29 technical reports, 14 journal articles, 6 workshop proceedings, 3 book chapters, and over 35 conference papers and presentation proceedings. He has a BA degree in Physics from the University of Utah, and an MS in Civil Engineering and PhD in Natural Resources from the University of Michigan.



Mingguo Ouyang, a professor in Tsinghua University, graduated from the Technical University of Denmark with a PhD degree in Engineering in 1993 and is currently the Deputy Director of the Academic Committee of Tsinghua University. He was elected as the Academician of the Chinese Academy of Sciences (Science & Technology Department) in 2017. Prof. Ouyang has been serving as Chief Scientist of Chinese National Research Program of New Energy Vehicles since 2007 and the Director of China-U.S. Clean Energy Research Center - Clean Vehicle Consortium (CERC-CVC) since 2011. He has long been engaged in the research on the advanced powertrain system for vehicles, Recent projects focus on Internal Combustion Engine Control Systems and Hybrid Powertrains, Hydrogen Fuel Cell Engine and Hybrid Powertrains, Lithium-ion Battery Safety and Management. Prof. Ouyang has published 170 peer-reviewed papers on international journals (SCI indexed) and was included in the World's Highly Cited Researchers 2017. He has been authorized 75 invention patents. Additionally, he won the Second Prize in the National Technology Invention Award in 2007 and 2010, the First Prize in Chinese Automobile Industry Technology Invention Award in 2016, the Prize for Scientific and Technological Achievements from the Ho Leung Ho Lee Foundation in 2008 and IPHE Technical Achievement Award in 2010.



Yu Morimoto is a senior researcher in Doshisha Univ., Kyoto, Japan. Before joining Doshisha Univ., Dr. Morimoto had engaged in the R&D activities in Toyota Central R&D Labs. Inc., for more than 35 years, focusing on the energy-related electrochemistry including PEFCs, secondary batteries and electrolysis. He has published more than 70 peer-reviewed articles and holds 9 US patents. He presented plenty of plenary, keynote and invited talks in various international conferences including WFCC2019 and served as an organizer/chair for various academic meetings such as Gordon Research Conference for Fuel Cells in 2010.



Jianbo Zhang got his PhD degree on Aerodynamics in the University of Tokyo, Japan. He worked in Nissan Research Center on the R&D of fuel cell and LIB during 2000~2011. He was offered the professorship in the Department of Automotive Engineering, Tsinghua University, China, and set up the Lab of Electrochemical Power Sources in 2011. His research interests center around the diagnosis and design of electrochemical devices such as the fuel cell, lithium-ion cell, electrolyzer. He co-authored the book *The Theory and Application of the Structure Design for Lithium-Ion Battery*. He is a member of the Scientific Committee of International Symposium of Electrochemical Impedance Spectroscopy, and a member of the Scientific Committee of European Fuel Cell Forum.