

## Liquid Hydrogen Technologies Workshop

February 22-23, 2022

### Speaker Bios



#### **Ned Stetson, U.S. Department of Energy**

Dr. Ned Stetson is the Program Manager for Hydrogen Technologies R&D within the Hydrogen and Fuel Cell Technologies Office, part of the U.S. Department of Energy's Office of Energy Efficiency and Renewable Energy. Dr. Stetson has 30 years of experience in hydrogen related technologies, specializing in hydrogen storage materials development. At the DOE he manages a comprehensive portfolio of research and development efforts that encompass hydrogen production, delivery, storage and infrastructure technologies, everything from producing the hydrogen molecule to delivering it to the end-use. Prior to joining the U.S. DOE, Dr. Stetson researched complex hydrides in the group of

Professor Klaus Yvon at the University of Geneva in Geneva, Switzerland, and spent over 10 years at ECD-Ovonics, where he was involved with the development of novel hydrogen storage materials and storage systems, as well as codes and standards development. Dr. Stetson has a Ph.D. in Chemistry, specializing in inorganic, solid-state materials, from the University of California Davis, and a B.S. degree in Chemistry from the University of Vermont.



#### **Michael Meyer, National Aeronautics and Space Administration**

Mr. Meyer currently serves as the NASA Technical Fellow for Cryogenics. In this capacity, he leads a cross-agency Technical Discipline Team, augmented by industry, national laboratories, academia, and other government agency experts, to address high risk technical issues related to cryogenic system development and operation. Mike began his NASA career in 1989 as a research engineer in the Space Propulsion Technology Division of the Glenn Research Center (GRC). Over the years he has led numerous research efforts on a wide variety of new space propulsion systems involving cryogenic densification of propellants, the use of cryogenic propellants for in-space missions, and cryogenic technology advancement. He previously served as Branch Chief within, and Division Chief of, NASA GRC's In-Space Power and

Propulsion Division. He has authored or co-authored over 50 technical publications, is a member of the Cryogenic Society of America Board of Directors, is an Associate Fellow of American Institute of Aeronautics and Astronautics, and has received numerous awards including the NASA Exceptional Leadership Medal.



#### **Oriane Farges, Air Liquide**

Oriane Farges is working with the Engineering (E&C) branch of Air Liquide as a product and proposal manager, focusing largely on LH2 technologies. Oriane has been with Air Liquide for the past 9 years, including the past 7 years in Houston, TX. Her background is in process engineering in areas such as Biogas, Natural Gas Treatment, Natural Gas Liquefaction and more recently Hydrogen Liquefaction.

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#### **Raja Amirthalingam, Plug Power**

Dr. Raja Amirthalingam is a Professional Chemical Engineer who has contributed in the area of Hydrogen Production, distribution, and Refueling Stations. His previous experience include Emerson, ABB, and Air Liquide and he served as a HyCO Committee Chairman in CGA. Dr. Amirthalingam recently joined Plug Power where he is the Principal R&D Engineer in the CTO Office responsible for Hydrogen Production, Storage, and Transportation.



#### **Amgad Elgowainy, Argonne National Laboratory**

Dr. Amgad Elgowainy is a senior scientist and the leader of the Electrification and Infrastructure Group at Argonne National Laboratory, covering engineering process modeling, environmental life cycle analysis and techno-economic analysis of alternative fuel/vehicle technologies. Dr. Elgowainy has been supervising the development of the environmental life cycle analysis suite of models (GREET®), and has led the development of the hydrogen infrastructure suite of models (HDSAM). His models are recognized and used by thousands of researchers globally. Dr. Elgowainy has authored and co-authored over 200 technical publications.



#### **Jacob Leachman, Washington State University**

Jacob Leachman is an Associate Professor in the School of Mechanical and Materials Engineering at Washington State University (WSU). He initiated the Hydrogen Properties for Energy Research (HYPER) laboratory at WSU in 2010 to advance cryogenic and/or hydrogen systems. To this day, the HYPER laboratory remains the only US academic laboratory focusing on cryogenic hydrogen. His master's thesis has been adopted as the foundation for hydrogen fueling standards and custody exchange, in addition to winning the Western Association of Graduate Schools Distinguished Thesis Award for 2008. He is the lead author of the reference text "Thermodynamic Properties of Cryogenic Fluids: 2nd Edition" and "Cool Fuel: The Science and Engineering of Liquid Hydrogen" which is in development. In 2018 he received the Roger W. Boom Award from the Cryogenic Society of America.

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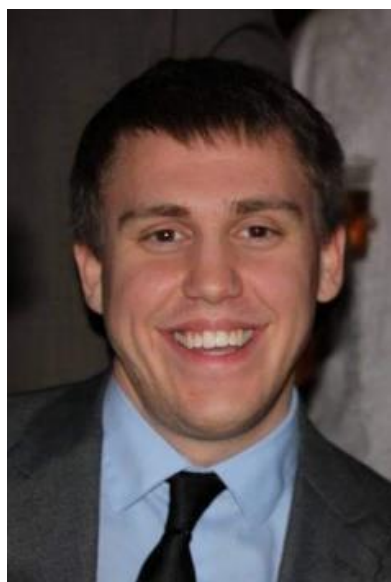
**Jo Liao, Shell International Inc.**

Jo Liao is a Senior Engineer with Process Development at Shell based in Houston. Currently, she is the Business Opportunity Manager for the HySTRA project and principal investigator for the DOE Large Scale Liquid Hydrogen Storage project. As an adaptive integrator, Jo has a variety of experiences across Chemicals, Refining, R&D and Hydrogen with a track record of implementing sustainable and efficient solutions. In her 15 years with Shell, she has enjoyed a variety of assignments in operations, environmental regulations, hydrocarbon management and business development. She graduated with a Master's of Science and a Bachelor's of Science in Chemical Engineering from University of Colorado at Boulder.



**Andy Jacobson, CB&I Storage Solutions**

John (Andy) Jacobson, P.E., S.E., RPEQ is Principal Engineer and hydrogen storage subject matter expert for CB&I Storage Solutions, a division of McDermott International, in Plainfield, Illinois. His responsibilities include project engineering management for hydrogen storage projects and internal hydrogen research and development projects. Mr. Jacobson earned B.S. and M.S. degrees in Civil Engineering from Texas Tech University. He is a member of the American Society of Civil Engineers, a Licensed Professional Engineer in 14 jurisdictions and a Licensed Structural Engineer in 6 jurisdictions. He joined CB&I Storage Solutions in 2006.



**Ian Neeser, Chart Industries**

Ian Neeser is a new product development engineer for Chart Inc. His responsibilities include the design and testing of liquid hydrogen storage systems for new markets. Mr. Neeser has a B.S. in Mechanical Engineering from the University of Minnesota. He joined Chart Inc. in 2013.



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#### **Rajesh Ahluwalia, Argonne National Laboratory**

Dr. Rajesh Ahluwalia joined Argonne after obtaining his PhD in 1977. At Argonne, he is a Senior Engineer and Manager of the Hydrogen and Fuel Cell Systems Section. He is a Principal Investigator of several DOE-EERE-HFTO projects on fuel cells, hydrogen storage and transmission, and hydrogen production. DOE recognized his dedication and support with a Hydrogen and Fuel Cells Program award for his technical insight and guidance regarding fuel cell, hydrogen storage, and hydrogen production systems in 2014, and his contributions to durability-adjusted cost analysis of fuel cells for long-haul trucks in 2021.



#### **Gladys, Anyenya, Wabtec Corporation**

Dr. Gladys Anyenya is the engineering lead for fuel cell development at Wabtec Corporation where she is responsible for the design and development of fuel cell systems for locomotive and mining applications. Gladys began her work in fuel cells during her graduate studies working on a Geothermal Fuel Cell system for CHP applications using solid oxide fuel cells. Upon graduation, she joined Doosan Fuel Cell America (Formerly UTC Power) as a Sr. Systems Engineer, where she worked in the R&D division re-designing the M400 phosphoric acid fuel cell powerplant to run on byproduct hydrogen. Her experience in the mobility sector includes work on system design and operating strategy optimization of PEM-fuel cell and battery electric vehicle powertrains at Bosch Engineering GmbH, prior to her current role. Dr.

Anyenya has a Ph.D. in Mechanical Engineering and a Master's in Engineering from Colorado School of Mines and a Bachelors in Physics and Mathematics from Hillsdale College.



#### **Ravi Subramanian, Gardner Cryogenics Department of Air Products**

Mr. Ravi Subramanian has 26 years working experience, starting as a Mechanical Design Engineer, then taking various responsibilities within Air Products and Gardner Cryogenics. He currently has commercial and technology responsibility within Gardner Cryogenics department for developing and implementing strategy for equipment and energy businesses within Helium and Hydrogen market. Over his tenure, he has been extensively involved and has hands on experience in Hydrogen fueling equipment, infrastructure development for fueling market, compressed high pressure gas storage and transportable systems, liquid hydrogen and liquid helium storage and transportable

equipment including high vacuum and super-insulation systems and transient shield technology and extensively involved in global codes, standards, and international regulations. Mr. Ravi holds a M.S. in Mechanical Engineering and M.B.A. in Business.

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#### **Angela Krenn, NASA - Kennedy Space Center**

Angela Krenn has worked at NASA's Kennedy Space Center (KSC) for over 19 years, currently serving as the Principal Technologist for thermal management systems in the agency's Space Technology Mission Directorate (STMD). Mrs. Krenn began her KSC career working for United Space Alliance supporting the Space Shuttle Program as an engineer in the Liquid Hydrogen System. She served as a primary console operator for multiple Space Shuttle mission propellant loading and launch operations. After transitioning to NASA, Mrs. Krenn worked design and analysis of cryogenic ground systems to support new programs. Later, she began working on the research and development of cryogenic systems, and led the design, build, test, and operation of a liquid methane system for servicing the Robotic Refueling Mission 3 (RRM-3). Mrs. Krenn also served as Co-PI in the development of a thermal control coating designed for cryogenic use, in space. She led the Hazardous Operations discipline team for the Human Landing System's Lander Ground Operations group while also leading a concept development for surface propellant transfer as a member of the Mars Architecture Team. Mrs. Krenn holds a Bachelor's degree in Aerospace Engineering from Embry-Riddle Aeronautical University and Master's degrees in both Business Administration and Physics from the University of Central Florida.



#### **Aaron Harris, Hydrogen Safety Panel**

Aaron developed a passion for US energy independence during his service in the US Marine Corps. While researching career options, before leaving the Marines, Aaron stumbled onto hydrogen fuel cells and became enamored with the technology. The potential for hydrogen to serve both environmental and national security interests drove his pursuit of bachelor's and master's degrees in mechanical engineering from the University of Washington. Aaron has held various positions at several companies including: International Fuel Cells, The Boeing Company, Nuvera Fuel Cells and Sandia National Laboratories. Aaron is currently the Director of Operations and Technology for Air Liquide Hydrogen Energy US LLC.



#### **Joe Ronevich, Sandia National Laboratories**

Joe Ronevich is a Principal Member of the Technical Staff at Sandia National Labs and works in the Hydrogen Effects on Materials Laboratory. His research is focused on understanding degradation mechanisms of hydrogen in structural materials such as pipelines, pressure vessels, and their welds.