Methanol has many attractive characteristics for use in energy applications. It is a simple, single-chemical liquid fuel that burns cleanly and, depending on production and use methods, can be lower carbon intensity than other liquid fuels. As a commodity that is presently produced and traded globally, the technologies in use for production and use of methanol are well understood. However, future improvements could provide pathways for methanol to serve as a low-carbon or carbon-neutral liquid fuel and energy storage medium that could have applications in transportation, renewable power storage, distributed power, and global energy movements.

The purpose of this meeting is to explore the opportunities and obstacles for methanol to expand its role in energy systems, especially in the developing world, as a mechanism to address indoor and outdoor air pollution, lower carbon intensity, and move toward an increasingly sustainable global energy system.

**Keynote Speakers**

**The Honorable Kevin Rudd**
is President of the Asia Society Policy Institute, a think/do tank head-quartered in New York. He served as Australia’s 26th Prime Minister (2007-2010, 2013) and as Foreign Minister (2010-2012). Mr. Rudd co-founded the G20 during the Global Financial Crisis. He served as Chair of the Independent Commission on Multilateralism, a two-year review of the United Nations system. He is also Chair of Sanitation and Water for All, a Distinguished Fellow at Chatham House in London, a Distinguished Statesman with the Center for Strategic and International Studies in Washington, and a Distinguished Fellow at the Paulson Institute in Chicago. He is proficient in Mandarin Chinese, serves as a Visiting Professor at Tsinghua University in Beijing, and co-chairs the China Global Affairs Council of the World Economic Forum; in 2014, he conducted a major research project on the future of U.S.-China relations at Harvard’s Kennedy School, where he was a Senior Fellow.

**Choon Fong Shih**
has been University Professor at the National University of Singapore (NUS) since 2013. Prior to this position, he served as the Founding President of the King Abdullah University of Science and Technology (KAUST) from 2008-2013. From 2000 to 2008 he was President of NUS. Shih is a foreign member of the American Academy of Arts and Sciences and US National Academy of Engineering. Dr. Shih was awarded the French decoration "Chevalier" in the Order of the "Legion d’Honneur" in 2005. In 2007, he received the inaugural Chief Executive Leadership Award for Asia Pacific from the Council for Advancement and Support for Education. Shih has advisory roles with Peking University, SUSTech, UCAS, CAS Holdings, Universiti Teknologi, Petronas, Saudi Aramco, among others. He also serves on the judging panel of the Queen Elizabeth Prize for Engineering since 2012.
Paul Ayoub  
Paul is the R&D Program Manager leading the lead generation program for Shell Chemicals as well as the Integrated System Analysis Program for the Methane to Products theme of the Long-Range Research program. He has 30 years of industrial experience and has been with Shell for 27 years, 22 of which in the Technology organization. Paul held several leadership and management roles in process development, manufacturing support, process engineering and evaluation at the interface between R&D and commercial teams, and as part of startup teams for new technology implementation. Paul also spent 9 years in the Biofuels arena, 6 of which were in technology development. Paul’s 5 years outside Technology were split between the Alternative Energies business, and the Shell Chemical business. Paul holds a Ph.D. in Chemical Engineering from Northwestern University, and B.S. in Chemistry from Texas A&M University. He was born and raised in Lebanon.

Julie Blumreiter  
Her thesis work focused on computational modeling of combustion waves, and the design and construction of a high-pressure optical access engine. Her experience building and testing engine components leaves her well-positioned to continue refining the ClearFlame concept to a demonstration level and implementing it as a retrofit technology. Prior to graduate school, Julie earned a B.S. in Mechanical Engineering from Johns Hopkins University, and volunteered for a year in Costa Rica, where she taught math and English.

Gil Dankner  
Mr. Dankner has been serving as Dor Group’s President & Chairman of the Board, since 2005, overseeing the strategic direction of the group. The Dor Group is an industry leader in the development, manufacturing and trading of chemicals, logistics and innovative solutions for environmental demands and alternative energies. The company is a leading advocate for implementing the use of methanol as a fuel alternative in industry and transport.

Alain Goeppert  
His research focuses on methane and CO2 activation and catalytic transformation to value added products including methanol, dimethyl ether and formic acid. He is also involved in the catalytic decomposition of methanol and formic acid to hydrogen and CO2 as well as the development of regenerative sorbents for the separation and capture of CO2 from various sources including the air. He is a co-author of the book “Beyond Oil and Gas: The Methanol Economy”. Alain Goeppert obtained his PhD in 2002 from the University of Strasbourg, France.

Opportunities and Challenges for Methanol as a Global Liquid Energy Carrier
Opportunities and Challenges for Methanol as a Global Liquid Energy Carrier

Reinhard F. J. Hüttl is Scientific Executive Director and Chairman of the Board at the Helmholtz Center Potsdam–GFZ German Research Center for Geosciences and VP of the National Academy of Science and Engineering. Dr. Hüttl studied Forest and Soil Sciences at the Albert-Ludwigs-University (ALU), Germany and at the Oregon State University, USA and holds the Chair of Soil Protection and Recultivation at the Brandenburg University of Technology (BTU), since 1993. Before joining the BTU, he was Assistant Professor in Geobotany at the University of Hawaii in Honolulu, and, prior to that, Head of the International Research Department at the mining company Kali und Salz AG. Hüttl also held several advisory positions and received an honorary doctorate from the University of Vienna in 2004 as well as the Cross of Merit, First Class of the Federal Republic of Germany in 2008.

Alfred M. Spormann is a professor in the Department of Chemical Engineering and Civil and Environmental Engineering at Stanford University. Prof. Spormann received his PhD in Microbial Biochemistry from Philipps University, Marburg, Germany in 1989, and came to Stanford’s Biochemistry Department as a postdoctoral fellow. In 1994 he joined the faculty in the Civil and Environmental Engineering at Stanford, and in 2007 the faculty in Chemical Engineering. The focus of his research is on Metabolic biochemistry, physiology, and metabolic ecology of primary anaerobic microorganisms involved in Bioenergy and environmental restoration processes. He has been teaching courses in microbial bioenergy systems as well as an international summer course in microbiology at the Hopkins Marine Station. He is an Elected Fellow of the American Society of Microbiology.

Bernard Johnson is the CEO of ClearFlame. Dr. Johnson completed his PhD in Mechanical Engineering at Stanford University in 2015. His thesis work produced the fundamental idea and proof of concept data that validated the ClearFlame technology. His experience in the unique combination of technologies in the ClearFlame strategy – namely engine insulation and direct-injection of alcohol fuels, leaves him well positioned to continue work in this area. Dr. Johnson also earned a B.S. and M.S. in Mechanical Engineering from Stanford University, where he was a varsity swimmer. He is a three-year veteran of the U.S. National swim team, having represented the United States in international competitions.

Harry Stokes is executive director of Project Gaia, Inc. a nonprofit organization that facilitates the development of alcohol fuels and clean-burning stoves around the world. For 40 years Harry has provided support to businesses, governments, humanitarian and development organizations on resource management and energy issues. Project Gaia currently has projects in India, Haiti and 8 countries in Africa, and with its 3 African affiliates has undertaken projects funded by Shell, USEPA, World Bank, among other companies and governments, as well as CSR funders and private donors. For its work in the refugee camps of Ethiopia, which continues today as the longest successful stove intervention in any refugee camp, Gaia won an Ashden Award in 2008, and two Energy Globe Awards for Ethiopia, in 2008 and 2011. Harry holds a Masters in Forestry from Duke University and served for 2 decades in Pennsylvania county and local government.


Michael Wang is a distinguished fellow of Argonne National Lab and manager of the Systems Assessment Group of the Energy Systems Division at Argonne. Dr. Wang’s research covers evaluation of energy and environmental impacts of advanced vehicle technologies and new transportation fuels, assessment of the market potentials of new vehicle and fuel technologies, and examination of transportation development in emerging economies. He leads the development and applications of Argonne’s GREET (Greenhouse gases, Regulated Emissions, and Energy use in Transportation) model for life-cycle analysis of advanced vehicle technologies, transportation fuels, and energy systems. Michael is a senior fellow in the Computation Institute and a faculty associate in the Energy Policy Institute, at the University of Chicago, and a guest professor at China’s Shanghai Jiaotong University.
Opportunities and Challenges for Methanol as a Global Liquid Energy Carrier

Paul Wuebben is the Senior Director for Renewable Fuels for Carbon Recycling International, where he is responsible for downstream strategic planning and market acceptance of renewable methanol by transportation and energy storage end users, auto and engine manufacturers, and regulatory officials. He plays a central role in the company’s growth, investment partnerships, end use technology optimization and future expanded large-scale production of renewable methanol from recycled CO₂. Mr. Wuebben was a founding member of the California Three Agency Methanol Task Force, as well as the 1990 Chairman of the California Electric Vehicle Task Force. He served as the Clean Fuels Advisor to the Chairman of the California Air Resources Board, and the Clean Energy Advisor to Cabinet Secretary of the California Environmental Protection Agency. He holds a BA from UCLA and a Master degree from the Harvard University Graduate School of Design.