Chemistry and Engineering of Shale Gas and Tight Oil Resource Development

A Workshop by the Chemical Sciences Roundtable

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Speaker Biographies

(In Alphabetical Order by Last Name)

Randy LaFollette, Baker Hughes, Tomball, Texas

Randy LaFollette works in the Pressure Pumping Production Enhancement Product Line at Baker Hughes in Tomball, Texas, USA. Mr. LaFollette holds a BSc degree in Geological Science from Lehigh University, Bethlehem, Pennsylvania. He has 37 years of experience in the industry and has worked in Pressure Pumping in Tomball since 1995. He is active in SPE, HGS, and AAPG, aiding with meeting organization and presenting on various reservoir, completion/stimulation, and data-mining topics. He teaches short courses on Hydraulic Fracturing for AAPG and is an SPE Distinguished Lecturer for 2015-16. His Distinguished Lecture is entitled “Lessons Learned from Data Mining in Unconventional Reservoirs.” Mr. LaFollette is a subject matter expert for Baker Hughes in Geoscience and Petroleum Engineering.

Bruce MacKay, Ph.D., Schlumberger, Sugar Land, Texas

Dr. MacKay has a Ph.D. in Chemistry from the University of British Columbia and was an NSERC Research Scholar (a faculty position) at California Institute of Technology. He won teaching awards and published a dozen papers in first-rank peer-reviewed research journals prior to joining the oil & gas industry in 2006. His career in Schlumberger has been centered on using advanced understanding of the laws of chemistry and physics to improve how the industry extracts hydrocarbons. He has spoken at SPE Section and Study Group meetings, authored four SPE publications, and contributed to seven granted patents and numerous applications. He has won internal and external awards, including Schlumberger’s highest internal award for Business Relevance and the Interstate Oil & Gas Compact Commission’s “Chairman’s Stewardship Award”, for his work on the reuse of produced water as mixwater in the crosslinked gels that enable efficient completions.

Briana Mordick, Natural Resources Defense Council, New York, New York

Briana Mordick is a Staff Scientist at the Natural Resources Defense Council (NRDC). Prior to joining NRDC, she worked for Anadarko Petroleum for six years as a petroleum geologist on projects including shale gas, tight gas sands, and CO2 enhanced oil recovery. At NRDC, Ms. Mordick serves as a technical advisor on issues related to oil and natural gas extraction and geologic sequestration of carbon dioxide. This work includes the identification of regulatory solutions and industry best practices to address the environmental impacts of oil and natural gas
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extraction. She has written and spoken frequently on these topics including to the American Chemical Society, U.S. Environmental Protection Agency, and the Yale Environmental Law Conference. She served as a representative to the Operations and Environment and Policy Subgroups of the 2011 National Petroleum Council Study on the Prudent Development of North American Resources and as a member of the Unconventional Resources Technology Advisory Committee, a Federal Advisory Committee to the Secretary of Energy. She holds a B.A. in Earth Sciences from Boston University (2002) and an M.S. in Geological Sciences from the University of North Carolina at Chapel Hill (2005).

Javad Paktinat, Anadarko Petroleum Corporation, Houston, Texas

Javad Paktinat is Global Completion Engineering Advisor with Anadarko. With 20 years of broad petroleum engineering and chemical application experience in the execution of complex mega projects in the upstream oil & gas industry, Javad is expert in development, application and troubleshooting effective solutions for hydraulic fracturing systems and related well production enhancements and sustainability. He holds Masters of Science in Chemistry from West Texas A&M University and MBA in International Business from Kent State University. As Global Completion Engineering Advisor at Anadarko in the area of shale stimulation, Javad acts as a subject-matter expert in hydraulic fracturing, fluids incompatibilities, reservoir characteristics, and flowback water recycling management and mitigation. Javad’s recent role is to strategically focus on optimizing completion fluids efficiencies, replacing reservoir fluid with environmentally friendly alternative additives. Javad’s previous experience includes Stimulation Technical Manager at Trican Service, Alberta, Canada; Director of Chemical Technology and Product Development at Universal Well Services, Meadville, PA; and Global Business Manager at Lubrizol Corporation, Wickliffe, Ohio. Javad has 10 years of international working experience in Canada, South America and the Far East in shale resources completion technologies.

In his 20 years working in upstream oil and gas industry, he has built a technical record that includes over 20 SPE publications (including peer-reviewed articles in Journal of Petroleum Technology and Production Operations), several patents and numerous presentations published at American Association of Petroleum Geologist (AAPG) and multiple IOGA (Independent Oil & Gas Associations). Javad’s most recent breakthroughs are developing friction reducers for high salinity flowback waters significantly reducing fresh water usage and friendly biocides to replace Glutaraldehyde from fracturing and drilling fluids reducing completion cost/well and environmental impacts.

Javad has been an active member of the Society of Petroleum Engineering (SPE) for more than 25 years and served on selection committee, chairman for Polymer Use for Reducing Production Water, chairman for the International Symposium in Oilfield Chemistry, session chair of the Well Stimulation for the 2013 SPE ATCE meeting (well Stimulation Session), and numerous session chairs for SPE (UGR) Unconventional Gas Resources. He is also a voting member on American Petroleum Institute (API) committees developing new recommended practices.
Danny Reible, Ph.D., Texas Tech University, Lubbock, Texas

Danny D. Reible is the Donovan Maddox Distinguished Engineering Chair in the Department of Civil, Environmental, and Construction Engineering and the Department of chemical engineering at Texas Tech University. In 2013, he joined the Texas Tech University after 23 years in the Department of Chemical Engineering at Louisiana State University (LSU) and 10 years at The University of Texas at Austin. He holds a B.S. in Chemical Engineering from Lamar University, and an M.S. and Ph.D. in Chemical Engineering from California Institute of Technology. Dr. Reible’s research career has been focused on understanding the fate and transport of contaminants in the environment, evaluating the risks posed by these contaminants, and devising effective measures for risk mitigation. He has been active in technical and policy issues associated with the assessment and in-situ remediation of contaminated sites. He has coauthored four National Research Council committee reports on risk assessment and remediation of contaminated sites, is the author of the textbooks “Fundamentals of Environmental Engineering” and “Diffusion Models of Environmental Transport”, and has authored more than 100 refereed technical papers. Dr. Reible currently serves on the National Research Council Board of Environmental Studies and Toxicology. He is an Associate Editor of the Journal of the Air and Waste Management Association, the Journal of Environmental Forensics, and the Journal of Environmental Engineering. Dr. Reible is a Fellow of the American Institute of Chemical Engineers and the American Association for the Advancement of Science. He is a Board Certified Environmental Engineer, a Professional Engineer (LA) and in 2005 was elected to the National Academy of Engineering for the “development of widely used approaches for the management of contaminated sediments.”

William Stringfellow, Ph.D., University of the Pacific, Stockton, California, and Lawrence Berkeley National Laboratory, Berkeley, California

William T. Stringfellow, Ph.D., is a Professor and Director of the Ecological Engineering Research Program at the School of Engineering & Computer Science at the University of the Pacific in Stockton, CA. He also has a joint appointment with the Geochemistry Department, Earth Sciences Division at Berkeley National Laboratory in Berkeley, CA.

He received his B. S. in Environmental Health from the University of Georgia (Athens, GA) and his Master’s Degree in Microbial Physiology and Aquatic Ecology from Virginia Tech (Blacksburg, VA). He received his Ph.D. in Environmental Sciences and Engineering from the University of North Carolina at Chapel Hill and worked as a Post-Doctoral Fellow in the Civil and Environmental Engineering Department at the University of California at Berkeley.

Dr. Stringfellow has participated in a series of scientific investigation of unconventional oil and gas development, with a specific focus on California. As part of a Federal study, he investigated hydraulic fracturing practices on federal lands in California. These initial studies were expanded to examine all well-stimulation and unconventional oil and gas development both on-shore and off-shore under a Scientific Study mandated by new state laws governing well-stimulation in California (known as SB-4 laws and regulations). Dr. Stringfellow was the lead scientist for the Water Group of the SB-4 Scientific Study, tasked with evaluating the impacts of unconventional
oil and gas development on water use and water quality. In addition, Dr. Stringfellow is serving on the expert panel advising the State Water Board on the development of criteria for monitoring the impact of oil and gas development on groundwater.

Dr. Stringfellow is the first author on over 45 journal publications, has been the lead author on numerous government reports. Dr. Stringfellow is an expert in industrial wastes and water quality and has made hundreds of presentations on the subjects of water quality, water treatment, and the microbiology of engineered systems. Dr. Stringfellow’s research focuses on engineered ecosystems and the Water-Energy-Food Nexus, including the environmental impacts of both fossil-fuel and biomass based energy systems.

Denise Tuck, P.E., Halliburton Energy Services, Inc., Houston, Texas

Denise A. Tuck, P.E. is a Principal Product Champion for Production Enhancement, Halliburton Energy Services, Inc. She provides technical support on chemistry and fluids for the stimulation product service line including hydraulic fracturing. Formerly, she held the positions of Environmental Compliance and Permitting manager and Global Chemical Compliance manager in Health, Safety and Environment for Halliburton. She joined Halliburton in 1990 and has over 30 years of experience in environmental pollution control systems design and regulatory permitting and compliance for the upstream and downstream oil and gas industry. She co-authored two sections in the National Petroleum Council report on Prudent Development – Realizing the Potential of North America’s Abundant Natural Gas and Oil Resources, several SPE papers and participates on several API and SPE committees. She has a Bachelor of Chemical Engineering from Auburn University and is a registered profession engineer in the State of Texas.

Avner Vengosh, Ph.D., Duke University, Durham, North Carolina

Avner Vengosh is a Professor of Geochemistry and Water Quality at the Nicholas School of Environment in Duke University. Dr. Vengosh also has a secondary appointment in the Department of Civil and Environmental Engineering at Duke University. He is an Associate Editor for the international journal Applied Geochemistry. In 2011 Dr. Vengosh received the International Association of Geochemistry (IAGC) Fellow Award. His paper “Impacts of shale gas wastewater disposal on water quality in western Pennsylvania” received the Best Science Paper Award for 2013 from the journal Environmental Science & Technology. His paper “A Critical Review of the Risks to Water Resources from Unconventional Shale Gas Development and Hydraulic Fracturing in the United States ”received the Second Runner-Up Best Environmental Policy Paper for 2014 from the journal Environmental Science & Technology. Dr. Vengosh has published 96 papers in peer-reviewed journals; Google Scholar Stats: h-index=38; 4,457 total citations; 11 papers with >100 citations each. Web of Science: h-index=27, 2,234 total citations. Grants: PI or co-PI on Federal and Foundation awards totaling ~$7.6 million since 2005.
Dr. Vengosh research aims to delineate the sources and pathways of contaminants in the environment and their possible impacts on human health through integration of environmental geochemistry, advanced isotope geochemistry (boron, strontium, carbon, and radium isotopes), and environmental health research. Currently Dr. Vengosh research is focused on the environmental risks of shale gas exploration and hydraulic fracturing, particularly for evaluation groundwater and surface water contamination and the possible links to shale gas exploration. Research is also directed for remediation and exploring alternative water sources for hydraulic fracturing. As part of the long-term study over 900 water samples were collected from different parts of the USA in areas associated with shale gas development. New research related to shale gas exploration is conducted also in South Africa and China. The research on the environmental impact of shale gas development and hydraulic fracturing has resulted thus far in publication of 18 papers in the journals *Proceedings of the National Academy of Science of the USA*, *Environmental Science and Technology*, and others.

**Radisav Vidic, Ph.D., P.E., University of Pittsburgh, Pittsburgh, Pennsylvania**

Radisav D. Vidic is William Kepler Whiteford Professor and Chairman of the Department of Civil and Environmental Engineering at the Swanson School of Engineering, University of Pittsburgh. His research efforts focus on advancing the applications of surface science by providing fundamental understanding of molecular-level interactions at interfaces, water management for unconventional gas industry, development of novel physical/chemical water treatment technologies, and reuse of impaired waters. He published over 250 journal papers and conference proceedings on these topics. He was elected 2008 Professor of the Year by the Pittsburgh section of American Society of Civil Engineers, won 2013 University Research Grand Prize for Excellence in Environmental Engineering and Science by the American Academy of Environmental Engineers and Scientists and 2013 Water Environment Federation Awards in Graduate Division. He was appointed to the US EPA Science Advisory Board Panel for the Review of Hydraulic Fracturing Study.