

Technical Committee on Hydraulic Fracturing

Chair



Egor Dontsov is a Chief Scientist at ResFrac Corporation. Previously, he worked at W. D. Von Gonten Laboratories and was an Assistant Professor at the University of Houston. He holds a B.S. degree in Physics from Novosibirsk State University in Russia and a Ph.D. degree in Civil Engineering from the University of Minnesota. Dr. Dontsov has over ten years of experience in hydraulic fracturing and has authored or co-authored over 50 peer-reviewed journal publications, most of which are related to the numerical modeling of hydraulic fracture growth and proppant transport. Dr. Dontsov is a lifetime ARMA member and currently serves as Chair of ARMA's Technical Committee on Hydraulic Fracturing (TCHF).

Vice Chair



John McLennan has been a faculty member in the Department of Chemical Engineering at the University of Utah since 2009, and a Senior Research Scientist at the Energy & Geoscience Institute and an Adjunct Professor in the Department of Civil Engineering at the University of Utah since 2008. Before joining the university, he had over 35 years of experience with petroleum service and technology companies, including Dowell Schlumberger (nine years) at their Denver, Tulsa, and Houston facilities; TerraTek in Salt Lake City; Advantek International in Houston; and ASRC Energy Services in Anchorage. He holds a Ph.D. in Civil Engineering (1980) from the University of Toronto. Dr. McLennan has worked on projects concerned with subsurface energy recovery (hydrocarbon, geothermal) in a variety of reservoir environments throughout the world. He is an ARMA Fellow and has served as ARMA president. Currently, he is a Co-Principal Investigator on the FORGE project. Dr. McLennan currently serves as Vice Chair of TCHF.

Vice Chair



Alexei A. Savitski is a geomechanics subject matter expert at Shell with over 20 years of experience in research and technology development and deployment. His current role is a geomechanics advisor for the Shales Argentina asset. He earned a Diploma in Physics and Mechanics from Polytechnical Institute, St. Petersburg, Russia, and an M.Sc. and a Ph.D. in Civil Engineering from the University of Minnesota. At Shell, Dr. Savitski has worked mostly in technology organizations in The Netherlands and the USA on various applications of geomechanics: borehole stability, 3D geomechanical modeling, coupled reservoir geomechanics simulations, and hydraulic fracture modeling. He has also worked on problems of unconventional reservoirs: oil sands, oil shales, and more recently, shale gas and tight oil. His current interests are in hydraulic fracturing, in-situ stress testing, and integration of subsurface data to understand the production mechanisms in unconventional rocks. He has over 25 publications and holds two patents. Dr. Savitski currently serves as Vice Chair of TCHF.

Members



Adam Bere is the Director of Consultancy and CTO of Rockfield Software, where he has worked for 24 years. He is in charge of consulting projects from a top-level management perspective, independently reviewing all technical elements of the projects prior to release to the client, and managing all manpower aspects of a busy, world-leading, geomechanics software company. In the day to day operations, he provides both commercial and technology structure to the Joint Industry Projects (JIPs) and Rockfield's ongoing internal and external research projects. He helps drive the future strategy of the company, identifying and scoping "generic software tools for the industry" that are driven from the core product ELFEN. He has over 25 year experience in geomechanical assessments ranging from geological evolution, present day stress and material state prediction, pore pressure prediction, wellbore stability, lab testing and simulations, hydraulic fracturing, CO₂ injection and storage, and geothermal energy, among other topics.



Jeff Burghardt is an Earth Scientist at the Pacific Northwest National Laboratory (PNNL) with 12 years of experience in hydraulic fracturing research and over 15 years of experience in experimental and computational geomechanics. He received his Ph.D. from the University of Utah, where his dissertation research focused on modeling large deformation and high-rate constitutive behavior of rock and soils. Subsequently, he spent five years working in R&D and operations for Schlumberger, where he led several large interdisciplinary research projects focused on hydraulic fracturing and drilling for unconventional petroleum reservoirs. In 2016, Dr. Burghardt joined PNNL, where he has continued working on experimental and computational geomechanical research with application areas in geothermal energy, geologic carbon storage, environmental remediation, and nuclear non-proliferation.



Tim Carr is the Marshal Miller Professor Emeritus in the Department of Geology and Geography at West Virginia University, where he has worked for the past 15 years. Prof. Carr was the Principal Investigator on the field project that formed the Marcellus Energy and Environment Laboratory (MSEEL). His current research interests include understanding hydraulic fracture geometry, enhanced geothermal systems, and carbon storage in the Eastern United States. Dr. Carr has published numerous journal articles and conference proceedings. He holds a Ph.D. in Geology from the University of Wisconsin Madison. Prof. Carr has been active in many professional organizations and is a past president of the Eastern Section of the AAPG.



Jordan Ciezobka is the Sub-Surface Technology Program Manager at GTI Energy, responsible for advancing safe, affordable, and environmentally conscious subsurface solutions for energy transition. Formerly, he was Principal Investigator and Project Manager for the DOE / NETL Hydraulic Fracturing Test Sites I & II (HFTS). These projects were large data-driven diagnostic pilots, focused on hydraulic fracturing research with emphasis on improved hydraulic fracture efficiency, resulting in increased hydrocarbon production and reduced environmental impact. He also led field-based resource characterization and hydraulic fracturing projects in the Marcellus and New Albany Shales. Before joining GTI in 2010, Mr. Ciezobka held various technical positions at Halliburton Energy Services. He holds degrees in Mechanical Engineering and Electrical & Computer Engineering from Purdue University. He has been awarded several patents and has authored and co-authored numerous publications.



Christine Detournay is a Principal Engineer at Itasca, where she started working as a consultant in 1993. She holds a degree in Geoengineering from the University of Liege, Belgium, and M.Sc. and Ph.D. degrees in Civil Engineering from the University of Minnesota. Her expertise is in the development of numerical models for application to coupled fluid-thermo-mechanical problems. She has contributed to the development of several Itasca codes, including FLAC, FLAC3D, 3DEC, and XSite. She is a principal developer of the groundwater-flow and thermal logic in FLAC3D and has been involved in the implementation of several of the constitutive models available with Itasca continuum codes. Dr. Detournay has worked in consulting and development on various projects in the oil and gas industry, including hydraulic fracturing, as well as on projects in underground waste repository, geothermal applications, slope stability, soil liquefaction and CO₂ sequestration. She has co-authored over 65 publications, including conference papers, journal papers, and book chapters, and is co-editor of Proceedings Int. FLAC/DEM symposia. She is presenter of the 35th ISRM online lecture on “Findings from Numerical Modeling at the site of a High Dam on the Jinsha River” and recipient of the ISRM John Hudson Rock Engineering award in 2022 for “Contributing to solving important practical rock engineering problems.”



Herbert H. Einstein is a Professor of Civil and Environmental Engineering at the Massachusetts Institute of Technology (MIT). He received his Dipl. Ing. and Sc.D. in Civil Engineering from ETH-Zürich. Prof. Einstein is involved as a teacher, advisor, consultant, and researcher in issues related to underground construction, rock mechanics and rock engineering, and natural hazards, notably landslides, as well as in waste repository problems. His activities range from experimentation to analytical and numerical modeling. Prof. Einstein has served on a number of national and international technical / scientific committees and advisory boards, and is also a co-editor of the journal Rock Mechanics and Rock Engineering and a member of the editorial board of Tunneling and Underground Space Technology. Prof. Einstein is author or co-author of over 250 publications in his area of expertise. He was the recipient of the prestigious Müller Lecture Award of the International Society for Rock Mechanics and the Outstanding Contributions to Rock Mechanics award of ARMA. He has also received several teaching awards from his Department and from the School of Engineering at MIT. His website is <https://herbert-einstein.org>.



Francis L. Elisabeth is a Geomechanics Specialist with 24 years of international experience in geomechanics for drilling and production optimization, including 17 years with Schlumberger, providing solutions to customers in North America, North Africa, Latin America, and the Middle east. In 2016, he joined the Unconventional Reservoirs team at Aramco, where he provides technical expertise and solutions for drilling and completion optimization in tight shale and tight sand formations.



Derek Elsworth is a Professor in the Department of Energy and Mineral Engineering, Department of Geosciences, and the Center for Geomechanics, Geofluids, and Geohazards at Pennsylvania State University. His research interests are in computational mechanics and mechanical and transport characteristics of fractured rocks, with applications to geothermal energy, deep geological sequestration of radioactive wastes and CO₂, unconventional hydrocarbons, including coal-gas, tight-gas-shales, and hydrates, and instability and eruption dynamics of volcanoes.



Sidney Green is Founder-President of Enhanced Production, Inc., and Research Professor at the University of Utah. He was also a founder-president of TerraTek in Salt Lake City, Utah. In 2006 TerraTek was acquired by Schlumberger, from which he retired in 2015. Mr. Green has published numerous technical papers, holds a number of patents, and has given invited presentations worldwide. He has served as Director for several companies, as well as on University advisory boards and government committees, including committees of the National Research Council and the National Academies, and has testified at Congressional hearings. Mr. Green received a B.Sc. from Missouri University of Science & Technology, an MS from University of Pittsburgh, and a Degree of Engineer from Stanford University. He is a lifetime member and a Fellow of ARMA, an SPE member, a former chair of the NAS U.S. National Committee for Rock Mechanics and the 1976 and 2010 Rock Mechanics Symposia, Chair of the Utah Academy of Engineering and Science, and a member of the U.S. National Academy of Engineering.



Mark McClure established ResFrac in 2015 to help operators maximize value through the application of advanced geomechanics and reservoir simulation. Before founding ResFrac, he was an assistant professor at the University of Texas at Austin in the Department of Petroleum and Geosystems Engineering. He holds a B.Sc. in Chemical Engineering, M.Sc. in Petroleum Engineering, and Ph.D. in Energy Resources Engineering from Stanford University.



Joseph P. Morris is the Associate Program Leader for Subsurface Energy at Lawrence Livermore National Laboratory (LLNL) with 15 years of experience in fluid-driven fracturing. He holds a Ph.D. from Monash University in Melbourne, Australia, in the area of meshfree computational methods. With over 20 years of experience developing new computational methods for fluid mechanics and geomechanics, his focus at LLNL has been on investigating defense, energy, and environmental applications of the coupling of fluid and solid mechanics. Dr. Morris also worked for five years as Principal Scientist at Schlumberger-Doll Research in hydraulic fracturing in unconventional and carbon storage. Dr. Morris is the author of over 50 journal publications and two patents. He served as President of ARMA from 2019 to 2021.



Abdelwahab Noufal is a technical expert of Structural Geology and Geomechanics. With over 30 years of international experience in exploration and operation, he works on combining various types of G&G data to improve static reservoir and geomechanical models. He received a Bachelor of Science in Honors Geology in 1989 and a Master of Structural Geology in 1992 from Cairo University, Egypt, and a Ph.D. in Stress Analysis in 1997 from Tuebingen University, Germany. Dr. Noufal worked as a Senior Structural Geologist and the Geomechanics Domain Champion at Schlumberger, as well as a Geomechanics and Structural Geology Specialist at PETRONAS Carigali and ADNOC Group. His project experience covers oil sands, shale gas, tight gas, carbonates, and conventional reservoirs in basins in Egypt, Libya, Oman, GCC (Gulf Countries), Malay Basin (Malaysia), China Sea, and Cuba. He is a registered Professional in Structural Geology and Geomechanics with AAPG and a member of SPE, SEG, and EAGE.



Mark Pearson is President & CEO of Liberty Resources LLC, a Denver-based, private-equity-funded operator in the Bakken Shale of North Dakota with both upstream and midstream assets, producing near 20,000 boepd. A renowned expert in the field of well completion and stimulation, he has authored over 45 technical papers and six patents, covering field development, “fracking”, and production aspects of oil and gas operations. He holds B.S. and Ph.D. degrees from the Camborne School of Mines, UK, and is a graduate of the Harvard Business School Advanced Management Program. He worked as a professor in the Petroleum Engineering Department of Colorado School of Mines from 1995 to 1997.



Kan Wu is an Associate Professor and Class of '75 DVG Career Development Professor in the Harold Vance Department of Petroleum Engineering at Texas A&M University. She is the director and founder of the Advanced Geomechanics Fracture & Reservoir Application Consortium (AGFRAC). Her research interests include data interpretation and geomechanics modeling of distributed fiber optic strain measurements, modeling and optimization of hydraulic fracturing, and multi-scale and multi-physics modeling. Dr. Wu has authored or co-authored over 100 technical papers, which have been cited more than 4500 times, and was selected as an SPE Distinguished Lecturer of 2023-2024. She holds a Ph.D. degree in Petroleum Engineering from The University of Texas at Austin.



Mark Zoback is the Benjamin M. Page Professor of Geophysics and the Director of the Stanford Natural Gas Initiative at Stanford University. He co-directs the Stanford Center for Induced and Triggered Seismicity (SCITS). Conducting research on in situ stress, fault mechanics, and reservoir geomechanics, he is the author of the textbook titled Reservoir Geomechanics (2007, Cambridge University Press), author or co-author of 400 technical papers, and holder of five patents. Over 8000 students around the world have completed his online course Reservoir Geomechanics. Prof. Zoback has received a number of awards and honors, including the Robert R. Berg Outstanding Research Award of the AAPG in 2015 and the Outstanding Contribution to the Public Understanding of the Geosciences Award from AGI in 2016. A member of the U.S. National Academy of Engineering, he served on the National Academy of Energy committee investigating the Deepwater Horizon accident and on the Secretary of Energy's committee on shale gas development and environmental protection.