Technical Committee on Hydraulic Fracturing

Chair

Egor Dontsov is a Chief Scientist at ResFrac Corporation. Previously, Dr. Dontsov 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 academic and industrial experience in hydraulic fracturing and has co-authored over 60 peer-reviewed journal publications and over 20 conference papers, most of which are related to the numerical modeling of hydraulic fracture growth and proppant transport. Dr. Dontsov is a lifetime ARMA and SPE member and currently serves as the Chair of ARMA's Technical Committee on Hydraulic Fracturing (TCHF) and as a member of ARMA's Board of Directors.

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

Aly Abdelaziz is an engineer with a strong background in geotechnical engineering and rock mechanics. He earned his Bachelor's degree in Civil Engineering in Egypt in 2007 and began his career in the United Arab Emirates (UAE), focusing on geotechnical engineering and laboratory and in-situ material testing until 2015. During that time, he contributed to several major construction and infrastructure projects in the UAE, Qatar, and Bahrain. He then completed his Ph.D. at the University of Toronto in 2023 under the supervision of Prof. Giovanni Grasselli, with research focused on experimental hydraulic fracturing of laminated rocks using true-triaxial testing. While a Ph.D. student, he served in several positions in the Canadian Geotechnical Society (CGS) and the American Rock Mechanics Association (ARMA). In ARMA, he contributed to student engagement, serving as Secretary of the ARMA Student Council and technical programming. He is currently a member of ARMA's Future Leaders Program, which supports the development of early-career professionals in rock mechanics and geomechanics. After completing his Ph.D. degree, he worked as a postdoctoral researcher and later joined Geomechanica Inc. Dr. Abdelaziz is now a Senior Completions Design and Geomechanics Engineer at PETRONAS Canada, where he focuses on hydraulic fracturing design and geomechanical analysis for unconventional reservoirs and subsurface characterization.

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.

Nadia Bustos is the Director of Innovation in Geoscience, Designs, and Ground Support at CODELCO. She holds a Ph.D. in Mining Rock Mechanics (2022) from Curtin University, Australia, where her research focused on an integrated design approach for drawbells in block caving mines. With over 15 years of experience in rock mechanics engineering, Dr. Bustos contributes to high-stress underground mining operations, advanced numerical modeling, subsidence analysis, and the design of stabilization techniques for complex rock masses. Her current research investigates innovative methods to enhance rock mass properties, including hydraulic fracturing techniques and resin injection for improved pillar stabilization.

Jordan Ciezobka is the Sub-Surface Technology Program Manager at GTI Energy, where he is 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. Mr. Ciezobka 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. Dr. Detournay's 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 projects in underground waste repository, geothermal applications, slope stability, soil liquefaction and CO_2 sequestration. She has co-authored over 65 publications, including conference papers, journal papers, and book chapters, and is co-editor of Proceedings of the International FLAC/DEM symposia. Dr. Detournay was the presenter of the 35th ISRM online lecture on "Findings from Numerical Modeling at the site of a High Dam on the Jinsha River" and a recipient of the ISRM John Hudson Rock Engineering award in 2022 for "Contributing to solving important practical rock engineering problems."

Herbert H. Einstein is 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 research group website is https://herbert-einstein.org.

Thomas Finkbeiner holds a Ph.D. from Stanford University and is currently Research Professor at King Abdullah University of Science and Technology (KAUST), which he joined in January of 2016. The focus of his research is in rock mechanics and geomechanics, rock physics for oil and gas, renewable energies (CCUS and geothermal), and energy storage. He collaborates with internationally renowned researchers, reputable universities and academic institutions, and very closely with the Aramco Advanced Research Center in Dhahran, Saudi Arabia. Dr. Finkbeiner is also a Senior Technicial Advisor to ResFrac assisting their business development and technical project efforts in the Middle East. Prior to KAUST, he worked for over 17 years in the petroleum industry, primarily in geomechanics and related applications. From 1998 to 2008, he worked for GeoMechanics International (GMI), where he managed and technically directed all operations in Europe, Africa, and the Middle East. After Baker Hughes acquired GMI in 2008, Dr. Finkbeiner worked for the company as a Global Geomechanics Advisor. In 2011, he received the Baker Hughes' Subject Matter Expert for Geomechanics award. From 2013 to 2015, he worked for OMV in Vienna, Austria, as a Senior Geomechanics Expert, responsible for fostering geomechanical understanding and application in OMV E&P worldwide.

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 M.S. 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.

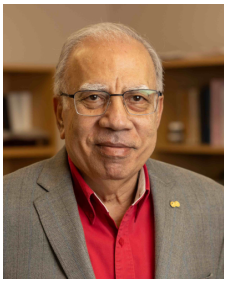
Olga Kresse is Principal Engineer and Modeling Team lead in SLB with more than 18 years of experience in hydraulic fracturing. She holds a Master's Degree in Mathematics and a Ph.D. in Mechanics of Solids from Kyiv State University, Ukraine, and a second Ph.D. in Fracture Mechanics from the University of Minnesota. Dr. Kresse has authored and co-authored over 50 scientific publications and seven patents, primarily in numerical modeling related to hydraulic fracturing in unconventional formations, wellbore dynamics, rock and fluid mechanics.

Brice Lecampion is Associate Professor and the leader of the Geo-Energy Lab – Gaznat Chair on GeoEnergy at Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland. His research aims at understanding the interplay between the growth of localized discontinuities (in the form of fractures and faults) and fluid flow in geomaterials, with applications to environmental, geothermal, and civil engineering, seismology, and tectonophysics. Prior to joining EPFL, Dr. Lecampion worked for Schlumberger Ltd from 2006 to 2015, holding several positions in research and development - from project manager to principal scientist - in Europe and the United States, and working notably on CO_2 geological storage integrity and well-stimulation technologies. He received his Ph.D. in Mechanics from Ecole Polytechnique, France, in 2002. From 2003 to 2006, Dr. Lecampion worked as a research scientist in the hydraulic fracturing research group of CSIRO's Division of Petroleum Resources in Melbourne, Australia.

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 over 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. He also worked for five years as Principal Scientist at Schlumberger-Doll Research in hydraulic fracturing in unconventionals and carbon storage. Dr. Morris is the author of over 50 journal publications and two patents. He served as the President of ARMA from 2019 to 2021.

José Gildardo Osorio holds a Ph.D. in Petroleum Geomechanics from New Mexico Institute of Mining and Technology, an M.Sc. degree in Reservoir Engineering from The University of Louisiana at Lafayette, and a B.Sc. degree in Petroleum Engineering from Universidad Nacional de Colombia. He is currently the Geomechanics and Geosteering Corporate Manager at Pluspetrol. Before joining Pluspetrol, he worked as a senior geomechanics advisor for Equion Energia, a senior geomechanics engineer for BP Exploration Colombia, and an associate professor at Universidad Nacional de Colombia, where he is stll a part-time professor. Dr. Osorio has chaired over 40 graduate theses, has received the Award for Outstanding Teaching several times, and has been a distinguished invited lecturer for graduation ceremonies. He has over 25 years of experience on petroleum related geomechanics, including modeling, wellbore stability, hydraulic fracturing, fault reactivation, naturally fractured reservoirs, wellbore integrity, micro-seismicity, simulation of coupled fluid-flow/deformation phenomena, stress state analysis, pore pressure prediction & detection, mechanical properties from lab and field data, productivity & injectivity impairment by rock and fracture deformation, cap-rock integrity, and sand production. He has also served as a member of the Petroleum Geomechanics Commission of the International Society for Rock Mechanics.



Mohamed Soliman is a professor at the Petroleum Engineering Department at the University of Houston. Since earning a Ph.D. degree in Petroleum Engineering from Stanford University in 1979, Dr. Soliman has had a unique combination of industrial and academic experience. He is a distinguished member of the Society of Petroleum Engineers (SPE), a fellow of the National Academy of Inventors (NAI), and a licensed professional engineer in the state of Texas. In 2023, Dr. Soliman was awarded the Legend of Hydraulic Fracturing award and was inducted into Hart Energy's Hall of Fame as part of the inaugural class. Dr. Soliman has authored and co-authored more than 250 technical papers and holds 38 US patents. He is the first author of “Fracturing Horizontal Wells” (published in 2016) and a co-author of “Optimization of Hydraulic Fracture Stages and Sequencing in Unconventional Formations” (published in 2018). In addition, he has authored several book chapters. His research interests are focused on the various aspects of fracturing, including diagnostic testing, analysis of fracturing data, and numerical simulation of fracture propagation in geothermal and unconventional reservoirs. Dr. Soliman and his students also investigate the area of plasma stimulation / fracturing as a method of waterless stimulation, both experimentally and numerically.

Kan Wu is an Associate Professor and the Class of '75 DVG Career Development Professor in the Harold Vance Department of Petroleum Engineering at Texas A&M University. She is also the director and founder of the Advanced Geomechanics Fracture & Reservoir Application Consortium (AGFRAC). Dr. Wu’s 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.

Roberto Suarez-Rivera is a consultant in petroleum-related rock mechanics with 39 years of experience in the petroleum industry. After graduating in Mechanical Engineering from North Carolina State University, and working as a service field engineer at Schlumberger Dowell, he earned a Ph.D. in Rock Mechanics from the University of California, Berkeley, where he worked under Prof. Neville Cook. Dr. Suarez-Rivera worked as a research scientist at IKU Petroleum Research (Trondheim, Norway) and the Lawrence Berkeley National Laboratory (Berkeley, CA) on experimental and computation rock mechanics, prior to joining TerraTek (Salt Lake City, UT) as a research scientist. At TerraTek, he held positions of Manager of Geomechanics, Manager of Stimulation, and Vice President. After Schlumberger acquired TerraTek, he became the co-founder and Director of the Schlumberger Innovation Center (Salt Lake City, UT). Dr. Suarez-Rivera later joined W.D. Von Gonten Engineering (Houston, TX) as a Scientific Director. At present, he is the Director and Consultant of RSR-Rocks LLC. His interests in rock mechanics are focused on the role of rock heterogeneity and layering in facture mechanics, hydraulic fracture modeling, and reservoir performance. He is also interested in the integration of rock mechanics with other branches of science (surface chemistry, geology, reservoir engineering, etc). Dr. Suarez-Rivera is the Director and Organizer of Friends of Calcite, a discussion group dedicated to bringing together scientists with diverse backgrounds and expertise (medical doctors, biologists, surface chemists, materials scientists, and others) to interact and collectively improve our understanding of this important mineral.

Fengshou (Frank) Zhang is a Chair Professor of Geomechanics in the Department of Geotechnical Engineering at Tongji University. He holds a Ph.D. in Geosystems Engineering from the Georgia Institute of Technology (2012). Dr. Zhang's research interests are in the THMC coupling of the subsurface, with applications to shale gas recovery, geothermal exploitation, CO_2 sequestration, and underground energy storage. He has published over 200 technical papers, and has received several honors from ARMA, including the Future Leader Class of 2015, the Early Career Keynote Speaker in 2018, and the ARMA Rock Mechanics Research Award in 2023.