



BOARD OF DIRECTORS 2021-2022

EXECUTIVE COMMITTEE

President

Gang Han is a Petroleum Engineering Consultant at Aramco Services Company. He has worked for over 20 years in global oil and gas fields, addressing geomechanics issues in unconventional development, reservoir performance, production optimization, and well planning and construction. Dr. Han's extensive expertise includes hydraulic fracturing, reservoir geomechanics, salt modeling, and sand management and control. He has over 55 publications and is a lead author of the book *Drilling in Extreme Environments*. He holds a Ph.D. in Chemical Engineering / Geomechanics from the University of Waterloo. Dr. Han is Chair of ARMA's Technical Committee on Hydraulic Fracturing.

Vice President

Andrew Bungler is Associate Professor in the University of Pittsburgh's Department of Civil and Environmental Engineering. Dr. Bungler joined the University of Pittsburgh in 2013 after working for ten years in the Geomechanics Group within the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Melbourne, Australia. He holds a Ph.D. in Geological Engineering from the University of Minnesota. His research interests include the mechanics of hydraulic fracturing, coupled fluid-shale interaction, and emplacement dynamics of magma-driven dykes and sills.

Treasurer

Douglas Blankenship is the manager of the Geothermal Research Department at Sandia National Laboratories, a group that focuses on R&D activities related to geothermal well construction and reservoir completion and operations. He has over 35 years of experience in the development, testing, and monitoring of drilled and mined openings in subterranean environments. He has been involved in a wide variety of technical and managerial efforts, including R&D for high-temperature drilling tools (e.g., Diagnostics-While Drilling); planning, development, and supervision of grassroots drilling exploration programs; in-situ stress measurements and well testing in deep boreholes; coordination and development of underground drilling programs; design and installation of instrumentation systems for underground and surface excavations; and numerical analyses of drilled and mined excavations in geologic materials.

Secretary

Haiying Huang is Associate Professor in the Geosystems group at the School of Civil and Environmental Engineering at Georgia Institute of Technology. She obtained her B.S. in geotechnical engineering from Tongji University in China in 1993 and her Ph.D. in ge-engineering from the University of Minnesota in 1999. Dr. Huang worked as a senior engineer with Schlumberger Oilfield Services in Texas from 2000 to 2006, before she joined the faculty at Georgia Tech in 2007. Prof. Huang's research interests are in the areas of computational geomechanics, discrete element modeling, poroelasticity, contact mechanics, and mechanics of granular matter. Prof. Huang was a recipient of the National Science Foundation CAREER Award in 2011.

Immediate Past President

Joseph P. Morris is Group Leader of the Computational Geosciences Group at Lawrence Livermore National Laboratory. Dr. Morris attained his Ph.D. from Monash University in Melbourne, Australia, in the area of mesh-free computational methods. He has over twenty years of experience in the development of new computational methods for fluid mechanics and geomechanics. In his ten years of work at Lawrence Livermore National Laboratory, he has investigated defense, energy, and environmental applications of the coupling of fluid and solid mechanics from high rate down to static applications. Dr. Morris also worked for five years as a Principal Scientist with Schlumberger-Doll Research, where he developed and applied novel techniques for optimizing technologies for proppant placement during hydraulic fracturing.

MEMBERS

Mark Board holds a Ph.D. in Geological Engineering from the University of Minnesota and has over forty years of experience in the application of rock engineering in the mining industry. Dr. Board is Vice President – Technical Services for Hecla Mining Company in Coeur d'Alene, Idaho. Previously, he was Director of Mining and Seismic Studies for Bechtel Corp. at the Yucca Mountain Project, and also worked as a mining consultant for Itasca Consulting Group in Minneapolis and Denver for 25 years. His primary area of expertise is the design of deep mines and caving operations. Dr. Board is a member of the U.S. National Academy of Engineering.

Tryana Garza-Cruz is a Principal Geomechanics Engineer and General Manager at Itasca Consulting Group. She holds an M.Sc. in Renewable Energy Science from the University of Iceland / University of Akureyri, and a Ph.D. in Engineering Systems – Mechanical Specialty from Colorado School of Mines. She has extensive experience in application of numerical models to assess the stability of mining excavations, underground infrastructure, and surface subsidence and to understand the creep behavior of excavations in frozen ground. Dr. Garza-Cruz has also developed specialized tools using Bonded Block Models for the study of spalling rock mass response at the tunnel-scale.

Osman Hamid is a Petroleum Engineer Consultant with Saudi Aramco with 25 years of oil and gas industry experience in various aspects of conventional and unconventional Petroleum Reservoir Geomechanics Engineering. His work experience has been mainly in 1D, 3D and 4D Geomechanics modeling and simulation using Finite Element models, hydraulic fracture modeling, rock physics, pore pressure and fracture gradient prediction, wellbore stability modeling, in-situ stress constrain and analysis for drilling events, sand prediction, reservoir geomechanics, and temperature modeling. He has consulted for the oil and gas industry for the development of solutions and workflows for geomechanics-related problems, especially in shale gas reservoir in U.S. land and deep-water oil and gas reservoirs located in the Gulf of Mexico. He currently works with Saudi Aramco, providing solutions for drilling, stimulation operations, and reservoir development using geomechanical modeling including advanced 4D dynamic models (coupling fluid-flow and geomechanics using Finite Element Models, FEM, and Finite Difference Models, FDM). He studied at the University of Khartoum in Sudan, the University of Saskatchewan in Canada, and Robert Gordon University in the UK. He has published a number of technical papers and filed six U.S. patents.

Kathy Kalenchuk has a B.Sc. in Mining Engineering from the University of Alberta and M.Sc. and Ph.D. degrees in Geomechanical Engineering from Queen's University. Since completing her Ph.D. studies, she has been working as a geomechanics consultant, primarily in the mining industry. Dr. Kalenchuk is the President and Principal Consultant of RockEng Inc., a Canadian-based geomechanics consulting firm which provides global rock engineering and ground control services to the mining and civil industries. She has extensive industry experience in rock engineering and ground control. Her technical expertise focuses on geomechanics for underground mining, induced seismicity, and high-end numerical modeling. Dr. Kalenchuk is a co-chair of the ARMA Technical Committee on Induced Seismicity and a former ARMA Future Leader.

Shawn Maxwell is a Geophysical and Geomechanical Advisor, based in The Woodlands, for Ovintiv's Anadarko Basin and Rockies operating areas. Previously he led petroleum geomechanics services at Itasca IMA GE, microseismic innovations at Schlumberger, Pinnacle / Halliburton and ESG, and was a Lecturer at Keele University in England. He was awarded a Ph.D. specializing in microseismology from Queens University in Kingston, Canada. Dr. Maxwell has acted as an SPE Distinguished Lecturer and an SEG Distinguished Instructor, published numerous papers, and authored the first textbook on microseismic interpretation.

Richard A. Schultz is a geomechanicist who works to advance underground energy storage and the energy transition toward a low-carbon energy future. Currently the owner of Orion Geomechanics LLC of Cypress, Texas, he was Senior Research Scientist at The University of Texas at Austin, Principal Geomechanicist with ConocoPhillips, and Foundation Professor of Geological Engineering and Geomechanics at the University of Nevada, Reno. Dr. Schultz has published over 115 research papers, five edited volumes, and 15 chapters in books or edited volumes, and has delivered over 350 presentations, 94 of which invited, to academia and industry worldwide. His book *Geologic Fracture Mechanics* was published by Cambridge University Press. He is a member of the Interstate Oil and Gas Compact Commission (IOGCC), the National Association of Corporate Directors (NACD), and the nonprofit resource BoardSource, a Fellow of the Geological Society of America, and a licensed Professional Geologist in the State of Texas. He holds certificates from UC Berkeley (ESG: Navigating the Board's Role), Rice (Strategic Project Management), and UT Austin (Human Dimensions of Organizations with concentration in Organizational Improvement). He is the Founding Chair of ARMA's Distinguished Service Award Committee and ARMA's Technical Committee on Underground Storage and Utilization.

Gabriel Walton is an Associate Professor at Colorado School of Mines. He received his Bachelor's and Ph.D. degrees in Geological Engineering from Queen's University in Canada. In addition to his academic efforts, Dr. Walton has also worked as an independent consultant and has led applied research efforts in collaboration with tunneling and mining industry partners. Dr. Walton's research interests include numerical modeling, mine ground control, applications of remote sensing and geophysics in rock mechanics and rock engineering, rockmass characterization, and post-peak behavior of rocks and rockmasses.

Herbert Wang is Professor Emeritus of Geoscience at the University of Wisconsin-Madison. He holds B.A. in physics from the University of Wisconsin-Madison, M.A. in Physics from Harvard University, and Ph.D. in Geophysics from MIT. At Wisconsin he taught introductory geology, geophysics, hydro-geology, and rock mechanics at the undergraduate level, as well as groundwater modeling, tectonophysics, and assorted seminars at the graduate level. He has also developed courses in environmental justice, including several workshops in the Lower Ninth Ward post-Katrina. His research interests include poroelastic behavior of rocks, geomechanical modeling, Enhanced Geothermal Systems, and applications of Distributed Acoustic Sensing (DAS). Dr. Wang is a member of project teams that investigate hydraulic stimulation and thermoelastic stress in the Sanford Underground Research Laboratory (SURF), and a member of the Science and Technology Analysis Team (STAT) for DOE's FORGE initiative. He has published nearly 100 technical research papers and books on Theory of Linear Poroelasticity and Introduction to Groundwater Modeling. Dr. Wang received the Wisconsin Alpha Chapter's 2003 Phi Beta Kappa Distinguished Faculty Award. He has also served as a rotator in the Office of Basic Energy Sciences at the Department of Energy and the Earth Sciences Division at the National Science Foundation.

R. Paul Young is Professor Emeritus and formerly Vice-President (Research) at the University of Toronto (2007-2014). He holds Ph.D. in Geophysics, M.Sc. in Rock Mechanics, and B.Sc. in Geological Sciences. Dr. Young has served as the Keck Chair in Seismology and Rock Mechanics at the University of Toronto, Chair of Earth Science at the University of Liverpool, and President of the British Geophysical Association. He has been awarded numerous honors for his research and innovation; most notably: Fellow of the Royal Academy of Engineering (UK), Fellow of the Royal Society of Canada, the Willet G. Miller Gold Medal of the Royal Society of Canada, the Queen Elizabeth II Diamond Jubilee Medal, and the John A. Franklin Award for Rock Mechanics by the Canadian Geotechnical Society. Dr. Young is a Chartered Engineer and a Fellow of the American Association for the Advancement of Science.

Over the past 40 years, Dr. Young has developed techniques that are used in monitoring and interpreting induced seismicity in the mining, petroleum, and nuclear waste disposal industries. Through his research groups at Queen's University, the University of Toronto, Keele University, and Liverpool University (U.K.), as well as spin off companies, he has made scientific advances in applied seismology and rock mechanics. Dr. Young has published over 250 scientific papers in refereed journals and conference proceedings, supervised over 40 Ph.D. students and post-doctoral research fellows, and developed innovative

instrumentation systems for induced seismicity / acoustic emission monitoring. Dr. Young's research focus is on rock fracture dynamics and induced seismicity with application to natural geologic hazards such as earthquakes and volcanic activity and engineering applications, including mining, hydro-carbon recovery, hydraulic fracturing, and deep underground storage for nuclear waste isolation. As a Senior Consultant at present, Dr. Young continues to provide scientific and project management advice to industry, universities, and government.