



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. Mr. Blankenship 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 wide variety of technical and

managerial efforts; including basic R&D associated with the development of high-temperature drilling tools (e.g., Diagnostics-While-Drilling); the 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.



Mark Board has over 40 years' experience in application of rock engineering in the mining industry. He is currently Vice President – Technical Services for Hecla Mining Company in Coeur d'Alene, Idaho. Previous work experience includes Director of Mining and Seismic Studies for Bechtel Corp. at the Yucca Mountain Project and approximately 25 years as a mining consultant for Itasca Consulting Group in Minneapolis and Denver. His areas of expertise include the design of deep mines and caving

operations. He holds a PhD degree in Geological Engineering from the University of Minnesota and is a member of the US National Academy of Engineering.

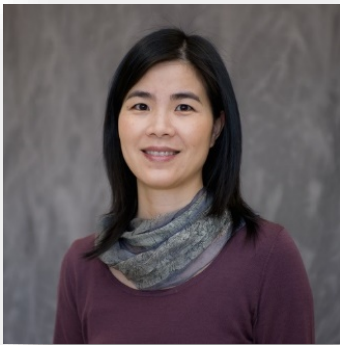


Andrew Bungler is an Associate Professor in the University of Pittsburgh's Department of Civil and Environmental Engineering. He joined the University of Pittsburgh in 2013 after spending 10 years in Melbourne, Australia working in the Geomechanics Group within the Commonwealth Scientific and Industrial Research Organisation (CSIRO). Prior to that, he received his PhD in Geological Engineering from the University of Minnesota. His research interests include the mechanics of hydraulic fractures, coupled fluid-shale interaction, and the emplacement dynamics of magma-driven

dykes and sills.



Gang Han is a Petroleum Engineering Consultant at Aramco Services Company. He has worked over 20 years in global oil and gas fields to address geomechanics issues related to unconventional development, reservoir performance, production optimization, and well planning and construction. His expertise includes hydraulic fracturing, reservoir geomechanics, sand management and control, well integrity, and salt modeling. He has 55+ publications, and is a leading author of the book, *Drilling in Extreme Environments*. He holds a Ph.D. in Chemical Engineering/Geomechanics from the University of Waterloo. He is a board member of ARMA, the chair of Hydraulic Fracturing Community, and members of SPE, AAPG, and SEG.



Haiying Huang is an Associate Professor in the Geosystems group in the School of Civil and Environmental Engineering in Georgia Institute of Technology. She obtained her B.S. in geotechnical engineering from Tongji University in China in 1993 and her Ph.D. in geoenvironmental engineering from the University of Minnesota in 1999. She worked as a senior engineer in Schlumberger Oilfield Services in Texas from 2000 to 2006 before she joined the faculty in Georgia Tech in 2007. Prof. Huang's current 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 U.S. National Science Foundation's CAREER award in 2011.



Kathy Kalenchuk has a B.Sc. degree 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 currently the President and Principal Consultant of RockEng Inc., a Canadian based geomechanics consulting firm providing global rock engineering and ground control services to the mining and civil industries. Dr. Kalenchuk 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 modelling. Dr. Kalenchuk is a former ARMA Future leader and is currently co-chair of the ARMA Technical Committee on Induced Seismicity.



Joe Labuz is the MSES/Miles Kersten Professor and Head, Department of Civil, Environmental, and Geo- Engineering, University of Minnesota. He received his degrees in civil engineering: B.S. from Illinois Tech, M.S. and Ph.D. from Northwestern University. In 1987, he joined the faculty at the University of Minnesota.

His area of expertise is experimental geomechanics. He has been involved with research on damage and fracture of rock, including strength and constitutive behavior, acoustic emission and imaging techniques, and the development of novel experimental apparatus, for which he has been awarded two patents. Notable contributions include work on size effect in post-peak response, characterization of the process zone, and failure criteria for dry and saturated rock.

Prof. Labuz has advised 44 graduate students, published over 140 papers in refereed journals and conference proceedings, and presented some 40 invited lectures. He is an Associate Editor of the International Journal of Rock Mechanics and Mining Sciences, and he is on the editorial board of Rock Mechanics and Rock Engineering and Hydraulic Fracturing Journal. He is a Fellow of ASCE, and he is the 2011 recipient of Distinguished Engineer from the Minnesota Federation of Engineering Societies.



Loren Lorig received his doctorate from the University of Minnesota under Profs. Barry Brady and Peter Cundall. He worked briefly as a post-doc researcher at CSIRO in Australia, but has spent the majority of his professional career at Itasca. He directed Itasca's Santiago, Chile office for nearly 20 years. Loren is currently CEO and President of Itasca International. He has more than 35 years of experience in engineering projects requiring specialized geomechanics consulting. His area of expertise is in the application of numerical models to provide solutions to stability, support and dynamics problems in civil and mining engineering. Dr. Lorig has worked extensively at some of the largest open pits in the world and has served as a member of consulting and peer review boards for several large civil and mining projects.

He was Itasca's project manager for Large Open Pit project, an international research and technology transfer project on the stability of rock slopes in open pit mines and lead author for Slope Design Methods (chapter 10) of Guidelines for Open Pit Slope Design (2009) and Numerical Modelling (chapter 4) of Guidelines for Evaluating Water in Pit Slope Stability (2013).

He has presented keynote lectures at both ISRM and ARMA conferences, as well as more than 50 short courses in more than 15 countries. He has been an instructor for graduate-level university courses in the United States, Sweden, Finland and Chile, author and co-author of more than 80 technical articles, and is a Registered Professional Engineer in four U.S. states.



Joseph P. Morris is the Group Leader of the Computational Geosciences Group at Lawrence Livermore National Laboratory. Dr Morris received his Ph.D. from Monash University (Melbourne, Australia) in the area of mesh-free computational methods. Dr Morris has over 20 years' experience developing new computational methods for fluid mechanics and geomechanics. Dr Morris has over a decade of experience working at Lawrence Livermore National Laboratory where he has investigated defense, energy and environmental applications involving the coupling of fluid and solid mechanics from high rate down to static applications. Dr Morris also worked for almost 5 years as a Principal Scientist with Schlumberger-Doll Research, developing and applying novel techniques for optimizing technologies for proppant placement during hydraulic fracturing. He is a member of ARMA and SPE.



Maria A. Nikolinakou is a Research Associate at the Bureau of Economic Geology, Jackson School of Geosciences, at the University of Texas at Austin. Dr. Nikolinakou is a Civil/Geotechnical Engineer. She received her Ph.D. in Theoretical Soil Mechanics from MIT in 2008. She holds a MS in Geotechnical Engineering from MIT (Geostatistics) and a Civil Engineering Diploma from NTUA, Greece (Tunneling in soft rock – Athens Metro). Before joining the University of Texas at Austin, she worked for Shell Exploration and Production on Reservoir Geomechanics. Her current research topics include poromechanical modeling of basin sediments, modeling of stresses and pore pressures in sediments bounding salt bodies, borehole stability and pore-pressure prediction. Dr. Nikolinakou was a member of the first class of the ARMA Future Leaders. She has been an invited keynote speaker at the Shale Symposium, Montreal ISRM 2015, and at the 3rd International Geoquos Workshop, in Potsdam, Germany. She received the 2015 Tinker Family BEG Publication Award. Dr. Nikolinakou volunteers for high-school STEM events and is currently the president of the MIT Club of Austin and San Antonio.



Laura J. Pyrak-Nolte is a Professor in the Department of Physics & Astronomy, College of Science, at Purdue University. She holds courtesy appointments in the Lyle School of Civil Engineering and in the Department of Earth, Atmospheric and Planetary Sciences, also in the College of Science. Prior to arriving at Purdue in 1997, she was an Assistant Professor at the University of Notre Dame in the Department of Civil Engineering and Geological Sciences. Dr. Pyrak-Nolte holds a B.S. in Engineering Science from the State University of New York at Buffalo, an M.S. in

Geophysics from Virginia Polytechnic Institute and State University, and a Ph.D. in Materials Science and Mineral Engineering from the University of California at Berkeley. Her interests include applied geophysics, experimental and theoretical seismic wave propagation, rock mechanics, micro-fluidics, particle swarms, and fluid flow through Earth materials. In 1995, Dr. Pyrak-Nolte received the Schlumberger Lecture Award from the International Society of Rock Mechanics. She received Young Investigator Awards from the National Science Foundation and the Office of Naval Research, and in 2001, Purdue recognized Dr. Pyrak-Nolte's accomplishments with a University Scholar Award. In 2012, she was appointed to the Department of Energy Earth Sciences Council and to the council for the International Society of Porous Media. In 2013, she was made a Fellow of the American Rock Mechanics Association (ARMA). In 2015, she was elected Vice President of ARMA and was appointed to the Department of Energy, Office of Basic Energy Sciences, Council on Chemical Sciences, Geosciences and Biosciences.

Professor Pyrak-Nolte has been involved in the Rock Mechanics community since 1987 and with ARMA since 1994. She has participated in conferences, has chaired or co-chaired technical sessions and has provided service as a reviewer to the organization of symposia. She was on the organizing committee for the 2012 meeting in Chicago and is the chair for the 2013 Symposium in San Francisco.



Paul Young is Professor Emeritus and formerly Vice-President (Research) at the University of Toronto (2007-14). He has a Ph.D. in Geophysics, M.Sc. in Rock Mechanics and a B.Sc. in Geological Sciences. He has held the Keck Chair in Seismology and Rock Mechanics at the University of Toronto, the Chair of Earth Science at the University of Liverpool and has been President of the British Geophysical Association. He has been awarded many honors for his research and innovation, notably, Fellow of the Royal Academy of Engineering (UK), Fellow of the Royal Society of Canada and 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. He is also a Fellow of the American Association for the Advancement of Science and is a Chartered Engineer.

Over the past 40 years, Professor Young has developed techniques used in monitoring and interpreting induced seismicity in the mining, petroleum and nuclear waste disposal industries. Through his research groups at Queen's University and the University of Toronto, Canada, Keele University and Liverpool University, UK, as well as through spin off companies scientific advances have been made in applied seismology and rock mechanics. He 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.

Professor Young's research is focused on rock fracture dynamics and induced seismicity with application to natural geologic hazards such as earthquakes and volcanic activity and engineering applications such as mining, hydrocarbon recovery, hydraulic fracturing and deep underground storage for nuclear waste isolation. As a Senior Consultant he continues to provide scientific and project management advice to industry, universities and government. He has been a long-standing supporter of ARMA presenting numerous papers with his students over the years and notably presented the plenary keynote address at the 2012 Chicago Symposium.



Herb Wang is an emeritus professor of geoscience at the University of Wisconsin-Madison. He received his BA in physics from the University of Wisconsin-Madison, AM in physics from Harvard University, and a Ph.D. in geophysics from MIT. At Wisconsin he has taught introductory geology, geophysics, hydrogeology, and rock mechanics at the undergraduate level and groundwater modeling, tectonophysics, and assorted seminars at the graduate level. He also developed courses in environmental justice, which included several workshops in the Lower Ninth Ward

post-Katrina. Herb's research interests include poroelastic behavior of rocks, geomechanical modeling, Enhanced Geothermal Systems, and applications of Distributed Acoustic Sensing (DAS). He is on project teams pursuing hydraulic stimulation and thermoelastic stress in the Sanford Underground Research Laboratory (SURF), and he is a member of the Science and Technology Analysis Team (STAT) for DOE's FORGE initiative. Herb has published about 100 technical research papers. His books include *Theory of Linear Poroelasticity* and *Introduction to Groundwater Modeling*. He received the Wisconsin Alpha Chapter's 2003 Phi Beta Kappa Distinguished Faculty Award. He has also been a rotator in the Office of Basic Energy Sciences at the Department of Energy and the Earth Sciences Division at NSF.