



FUTURE LEADERS 2018-2020

CLASS OF 2018 FUTURE LEADERS

Rob Bewick is a lead mining rock mechanics engineer at Golder Associates. He has completed expert reviews, site visits, and integrated mine scale stability optimizations for several seismic events and rockbursts that had caused damage and closure to mine excavations at both local and global scales, and has provided practical recommendations for rehabilitation, mining sequence, and ground support for mines in Australia, Brazil, Canada, Indonesia, Sweden, and USA. He is responsible for the technical aspects of projects, business development, and mentoring of personnel in several of Golder's North American offices. He has extensive experience in deep and shallow underground hard rock environments and block caving; as well as experience in crown pillar and large open pit slope site characterization and design. For the last seven years he has been involved in rock mechanics innovations for block caving through the Rio Tinto. Since 2014, he has led Golder's preferred consultancy with PTFI's Grasberg Operations. He has also worked on gold, base metal, diamond, iron ore and industrial mineral projects and in operating mines.

Nicolas Espinoza is an Associate Professor in the Hildebrand Department of Petroleum and Geosystems Engineering at The University of Texas at Austin. Dr. Espinoza earned his Civil Engineering diploma from Universidad Nacional de Córdoba in 2006 and his MS and PhD degrees from the Georgia Institute of Technology in 2008 and 2011, respectively. His primary research interests are in mechanics and physics of natural porous solids and granular media, including applications to advanced completion techniques, reservoir geomechanics, methane recovery from microporous organic rocks, methane hydrate-bearing sediments, and carbon geological storage. Dr. Espinoza has authored or co-authored over forty peer-reviewed journal articles, has served as an expert reviewer for several scientific and engineering journals, and has given seminars at various leading research and educational institutions.

Yi Fang is a research associate in the Institute for Geophysics at the University of Texas at Austin. His research interests focus on reservoir geomechanics and geofluids with applications to geoengineering activities, such as enhanced geothermal systems, induced seismicity, CO₂ sequestration, and submarine methane hydrate reservoir characterization and recovery. He received his Ph.D. in Energy and Mineral Engineering at Pennsylvania State University in 2017. His Ph.D. work was awarded the 2020 Rocha Medal Runner-up Certificate from the International Society for Rock Mechanics and Rock Engineering. Prior to his Ph.D., he received an M.S. in Geology from California State University, Long Beach, in 2013, and a B.E. in Civil Engineering from China University of Geosciences, Wuhan, in 2011. He has authored and co-authored over thirty technical papers. He also serves as a technical reviewer for ARMA, URTeC, JGR, GRL, WRR, SPEJ, Fuel, and other international journals.

Yongcun Feng is an assistant professor in the College of Petroleum Engineering at China University of Petroleum, Beijing. He received his Ph.D. from The University of Texas at Austin in 2016 and his M.S. and B.S. degrees in 2012 and 2009, respectively, from China University of Petroleum, Beijing; all in petroleum engineering. From September 2016 to May 2019 he worked first as a postdoctoral researcher and later a research associate at UT-Austin. His research interests include drilling and completion geomechanics and waste/solids injections. Dr. Feng has authored or co-authored over fifty technical papers in the area of petroleum geomechanics. He serves as a reviewer and an editorial board member for several scientific journals.

Qinghua Lei is a Lecturer and Senior Scientist in Engineering Geology at the Department of Earth Sciences at ETH Zürich, Switzerland. He holds a bachelor's degree (2009) and a Master's degree (2012) in Civil Engineering from Tongji University, China. He obtained his PhD degree (2016) in Rock Mechanics (fully-funded by the departmental scholarship) from Imperial College London, UK, after which he worked as a Postdoctoral Research Associate in Fluid Mechanics at Imperial College London between 2016 and 2018. Dr. Lei is the winner of the 2019 Rocha Medal from the International Society for Rock Mechanics and Rock Engineering (ISRM). He is also the recipient of the 2015 Rock Mechanics Research Award and the 2016 NGW Cook PhD Dissertation Award from the American Rock Mechanics Association (ARMA). His research covers many cutting-edge topics in the field of rock mechanics and rock engineering. His research interests include coupled processes in geological media, fracture mechanics, damage mechanics, flow and transport in fractured porous media, seismic wave propagation, slope stability, stress characterization and numerical modelling. Dr. Lei is a member of the ISRM Commission on Thermal-Hydro-Mechanical-Chemical Processes in Fractured Rock.

Botao Lin is a professor in the College of Petroleum Engineering and the College of Artificial Intelligence at China University of Petroleum, Beijing (CUPB). His research interests focus on petroleum-related geomechanics, including stimulation of oil sand reservoirs, hydraulic fracturing in conglomerate formations, flow simulation in fracture networks of shale reservoirs, and prediction of soil-structure interaction in the exploitation of deep-water resources. Meanwhile, he is actively promoting the application of data science and artificial intelligence in the petroleum industry. He also provides a variety of consulting services for major oil companies such as PetroChina and Saudi Aramco. Before joining CUPB, Dr. Lin earned his Ph.D. degree in civil engineering from the University of Oklahoma.

Jeffrey Oke is a Senior Geomechanics Consultant at RockEng Inc. (formerly Mine Design Engineering Inc.) with over five years of geotechnical engineering experience in the mining and civil industries. He is also a scientific advisor at META innovations technologies. He has specialized expertise in geotechnical characterization, ground support design for weak and hard rock masses, and mine backfill. Dr. Oke is a numerical modeling expert with particular skill developing calibrated models for reproducing three-dimensional ground support/rock mass interactions and overall ground reaction during excavation construction. Additionally, Dr. Oke has a thorough comprehension of structural analyses, geomatics, and rock and soil mechanics. His Ph.D. studies at Queen's University focused on the numerical, empirical, and analytical analysis of umbrella arch support systems in underground excavations.

Xiaodong Ma obtained his Ph.D. degree in geological engineering from the University of Wisconsin-Madison and his post-Doctoral training at the Department of Geophysics, Stanford University. Dr. Ma is a lecturer and senior researcher at ETH Zürich and leads the geomechanics efforts in the Bedretto Underground Laboratory for field experiments related to enhanced geothermal system and induced seismicity. He previously tackled a variety of geomechanical challenges, including the experimental characterization of the true triaxial mechanical response of porous sandstones subject to true triaxial stresses, static/dynamic poroelastic behavior of unconventional reservoir rocks, and stress variation in shales and its effect on the effectiveness of hydraulic fracturing. His research interest lies in the integrated geomechanics study combining multi-scale field, laboratory and theoretical approaches for subsurface resources and fundamental geological processes.

Reza Safari is a Staff Reservoir Geomechanicist at ConocoPhillips in the company's Houston office. Previously, he worked as a Lead Geomechanicist at Weatherford International and a Computational Mechanics Specialist for the geotechnical industry. His current focus is on geomechanical modeling of unconventional reservoir development and stimulation. He has co-authored more than fifty publications on hydraulic fracturing, water-less fracturing, hydraulic / natural fracture interactions, and wellbore strengthening. Dr. Safari has a Ph.D. degree in petroleum engineering (petroleum geomechanics) from Texas A&M University and holds multiple US patents.

Bisheng Wu is an associate professor at the Department of Hydraulic Engineering, Tsinghua University, China. He holds a Ph.D. in Applied Mathematics (2008) from the University of Wollongong, Australia, Master of Engineering Mechanics (2005) from Tsinghua University, and Bachelor of Mechanical Engineering (2002) from Xi'an Jiaotong University, China. He joined CSIRO Australia in 2009 as a postdoctoral research fellow, was promoted to research scientist (indefinite term) in 2012, and then joined Tsinghua University in 2018. His research focuses on geomechanics related to efficient and renewable exploration of subsurface energy resources. He has published about forty journal papers, has served as a session chair or an organizing committee member of more than ten international conferences and as an invited reviewer for over twenty internationally renowned journals, and was designated a Distinguished Reviewer for the International Journal of Rock Mechanics and Mining Sciences, Energy, International Journal of Solids and Structures, and Applied Thermal Engineering and Geothermics.

Cheng Zhu is an assistant professor in the Department of Civil and Environmental Engineering at Rowan University. His research focus is on multi-scale rock behavior under thermo-hydro-chemo-mechanical coupled processes across various time scales, with emphasis on damage and healing mechanics, time-dependent deformation, microstructural characterization, and computational geomechanics, for applications in geological storage of energy (e.g., oil, gas, compressed air energy storage) and waste (e.g., wastewater injection, nuclear waste disposal). He obtained his Bachelor's degree from Nanyang Technological University and his Master's and Ph.D. degrees from Georgia Institute of Technology. He is a registered professional engineer and a member of the ASCE Rock Mechanics Committee and TRB Committee on Geo-Environmental and Climatic Impacts on Geomaterials.

Qianbing Zhang is a Senior Lecturer and Australian Research Council (ARC) DECRA Fellow at Monash University, Australia. He received his Ph.D. from the Swiss Federal Institute of Technology in Lausanne (EPFL) in 2014, and prior to joining Monash in 2015 was a postdoctoral researcher at EPFL and The University of Cambridge. In 2016, he was awarded the Rocha Medal Runner-up Certificate from the International Society for Rock Mechanics. His research focuses on the application of underground Building Information Modeling (BIM) and Machine Learning (ML) methodologies to Tunnel Boring Machines (TBM) and underground construction. His team is also focused on the development and application of experimental techniques and multiphysics computational tools to understand the progressive failure of geomaterials and structures under extreme conditions such as natural hazards (e.g., earthquake, landslides and rock bursts) and human-made disasters (e.g., terrorist attacks and induced earthquakes). He has co-authored over sixty ISI journal articles and regularly reviews grant proposals, national and international theses, and papers for more than thirty journals. He has been the Associate Editor and then the Editor-in-Chief of an Elsevier Journal Tunneling and Underground Space Technology since 2016.

CLASS OF 2019 FUTURE LEADERS

Shengli Chen is an Associate Professor of the Geotechnical Engineering Program in the Department of Civil & Environmental Engineering at Louisiana State University. He received his Ph.D. degree in Petroleum Engineering from the Integrated Poromechanics Institute at the University of Oklahoma in December 2012, and was a Research Petroleum Engineer with Aramco Research Center at Houston from February 2013 to August 2014. His main research interests include theoretical and computational geomechanics, poromechanics and elastoplastic constitutive modelling of geomaterials, wellbore stability analysis and hydraulic fracturing modelling, and pile foundation and soil structure interaction. Dr. Chen has published over forty journal papers in the areas of geomechanics and geotechnical / petroleum engineering in international journals such as *Géotechnique* and *Proceedings of the Royal Society*. He has served as an Associate Editor of the *SPE Journal* since 2014 and is a member of the Engineering Mechanics Institute (EMI) Elasticity Committee, the EMI Poromechanics Committee, and the Geo-Institute (G-I) Deep Foundations Committee.

Luke P. Frash is a Staff Scientist at Los Alamos National Laboratory. He earned his BS, MS, & PhD in Engineering at Colorado School of Mines, with the most recent degree conferred in 2014 and one semester completed at University of Canterbury, New Zealand. His research areas include theory, modeling, experiments, and field work for the study of rock fracturing and fluid flow as applied to unconventional oil & gas well stimulation, enhanced geothermal systems, well integrity, CO₂ sequestration, containment of subsurface waste disposal, and anthropogenic-induced seismicity. Recent work examples include multi-well fracture caging for controlling induced seismicity and scalable en-echelon theory for relating shear fracture aperture and displacement. He has published over twenty papers.

Jennifer Day is an Assistant Professor in the Department of Geological Sciences and Geological Engineering at Queen's University in Kingston, ON, Canada. She obtained her BSc and PhD in Geological Engineering from Queen's University and received the 2017 Dr. N.G.W. Cook Award for Best PhD Dissertation in Rock Mechanics or Rock Engineering from ARMA. After spending three years as an Assistant Professor at the University of New Brunswick, Canada, she returned to her current faculty position at Queen's. Her main research interests are in rock mechanics, rock engineering, and engineering geology, and include geological and engineering characterization of complex heterogeneous rock and rock mass systems, improved laboratory and field assessment techniques for rock characterization, advanced numerical modeling for analysis of mechanical behavior of complex ground conditions, rock engineering for excavation stability, and shoreline geomechanics, investigating linkages between engineering geology characterization and ore body genesis and evolution, and influences of climate evolution and erosion on natural rock formations. Her work is applicable to mining, tunneling, deep geological repositories for nuclear waste storage, and public safety aspects of geo-tourism.

Sevda Dehkhoda is a Senior Mining Engineer with Hatch, a global consulting firm across the mining, energy and infrastructure sectors. Based in Brisbane in Australia, she applies her knowledge in mining technology and innovation, bridging the gap between development and widespread application. Dr. Dehkhoda holds a Bachelor and Master of Science degrees in Mining Engineering and a PhD with specialization on pulsed water jet rock breakage from University of Queensland. Her core expertise is in rock fracture mechanics and alternative rock breakage systems for hard rock mining, and her career spans academia, research & development, and technical consulting for mining and civil industries in Australia and the Middle East. Dr. Dehkhoda has published over forty journal articles, peer reviewed conference papers, research reports and white papers, and has served as a reviewer for international conferences and scientific journals in the areas of mechanical cutting, water jet rock breakage, and alternative rock breaking systems. She is an adjunct senior lecturer at the University of Queensland and co-advises PhD students at leading Australian universities including Monash University, University of New South Wales, and University of Tasmania.

Tryana Garza-Cruz is a Principal Geomechanics Engineer and General Manager at Itasca Consulting Group. She has extensive experience in the application of numerical models to assess the stability of mining excavations, surface subsidence, stope-back behavior, re-evaluation of underground mining method, primary fragmentation, caving potential, evaluation of extraction-level layout, ground support design to understand the creep behavior of excavations in frozen ground. She has also developed specialized tools using Bonded Block Models for the study of spalling rock mass response at tunnel-scale. Dr. Garza-Cruz has provided practical recommendations on mine design criteria (pillar, room, stope and panel dimensions), as well as regional barrier-pillar and crown-pillar dimensions, sequencing, and set back of infrastructure and access, for mines in Canada, USA, Mongolia, Mexico, and Botswana.

Bruno Gonçalves da Silva is an Assistant Professor at the New Jersey Institute of Technology (NJIT). His research interests are the experimental and numerical study of the fracturing processes of rocks and concrete subject to diverse loading conditions, with field-scale

applications to the energy, environment, and civil engineering fields. Dr. Gonçalves da Silva studied for his BSc degree in Civil and Environmental Engineering at the Instituto Superior Tecnico, Portugal. He later earned his MSc and PhD in Civil and Environmental Engineering from the Massachusetts Institute of Technology (MIT). He has worked as a geotechnical and structural engineer in the United States, England, and Portugal. Dr. Gonçalves da Silva was the co-chair of the 53rd US Rock Mechanics / Geomechanics Symposium held in New York City in 2019. His current research focuses on investigating the multi-scale physical mechanisms responsible for the fracturing of rocks that are subject to confinement stresses and hydraulic pressures, including the seismicity caused by their fracturing. Based on laboratory tests, his research group develops theoretical and numerical models to simulate and interpret fracturing mechanisms at both visible and microscopic scales. Dr. Gonçalves da Silva has also been studying, at the fundamental level, the physical mechanisms involved in thermally-induced spalling of concrete tunnel liners.

Mahdi Haddad is a reservoir engineer and geomechanicist at the Bureau of Economic Geology at The University of Texas at Austin with extensive experience in modeling injection and production-induced fault reactivation through several TexNet-CISR consortium projects. Currently, he conducts research on hydraulic-fracture mapping and CO₂ monitoring techniques through two Department of Energy projects, focused on the Devine Fracture Pilot Site. Previously, he worked as a research geomechanics intern at FracGeo, where he developed continuum damage mechanics models using the material point method for the estimation of the stimulated reservoir volumes. He also spent a summer as a research geophysics intern at Total E&P Research and Technology USA, where he proposed a method for improving the interpretation of microseismicity through 3D finite-element fracture-intersection models. His SPEJ publication on this topic awarded him the 2018 Cedric K. Ferguson Medal from SPE International. Dr. Haddad has authored twenty-one peer-reviewed journal articles and conference papers on induced seismicity, multiple-stage hydraulic-fracture design, refracturing optimization, stimulated naturally fractured reservoir simulation, and smoothed particle hydrodynamics. He is an active member of SPE and ARMA, received a technical reviewer award from SPE Reservoir Evaluation & Engineering Journal in 2020, and was inducted as an ARMA Future Leader in 2019. Dr. Haddad served as a technical committee member and session chairperson, respectively, at the 51st and 53rd U.S. Rock Mechanics / Geomechanics Symposia. He holds BS degrees in mechanical and petroleum engineering and an MS in mechanical engineering/energy conversion from Sharif University of Technology, Iran, and a PhD in petroleum engineering from UT-Austin.

Jian Huang is a research scientist working for Total EP Research & Technology USA in Houston. Previously, he was a senior geoscientist in the department of Geoscience Research and Development at Weatherford International from 2013 to 2019. His research focuses on fracture modeling and emerging stimulation technologies. Dr. Huang holds two granted US patents and five pending patent applications in reservoir geomechanics. He has more than ten years of research experience in petroleum geomechanics and has published over thirty technical papers. He holds a master's degree in geology from the University of Houston and a PhD degree in petroleum engineering from Texas A&M University.

Evangelia Ieronymaki is an Assistant Professor of Geotechnical Engineering at the department of Civil and Environmental Engineering at Manhattan College, NY. She holds B.S. and M.S. (2008) degrees in Civil Engineering from the National Technical University of Athens (NTUA) in Greece, and S.M. and Ph.D. (2015) in Geotechnical and Geoenvironmental Engineering from the Massachusetts Institute of Technology (MIT). Her research deals primarily with numerical modeling, soil behavior, deep excavations, soil-structure interaction, and tunneling. For her PhD she collaborated closely with the Crossrail Tunnel construction consortium (BAM-Ferrovial-Kier) and performed part of her research on a construction site in London, UK. She has authored and co-authored over fifteen technical papers and has received several prizes and awards, including the MIT Edward Linde Presidential fellowship and DFI Women in Deep Foundations award (2017). Dr. Ieronymaki is a licensed professional engineer and member of the Technical Chamber of Greece and an Associate Member of the American Society of Civil Engineers (ASCE). She is also a member of the ASCE/Geo-Institute Underground Engineering and Construction committee and the DFI Tunneling and Underground Systems and Project Information Management Systems committees.

Seunghee Kim is an Assistant Professor in the Department of Civil and Environmental Engineering at the University of Nebraska-Lincoln (UNL). Dr. Kim received his B.S. and M.S. from Korea Advanced Institute of Science and Technology (KAIST) and Ph.D. in Civil and Environmental Engineering from Georgia Tech. His graduate research focused on the subsurface investigation using surface waves (M.S.) and the geotechnical implications of CO₂ geologic storage (Ph.D.). He continued his research on this topic as a postdoctoral fellow at the Bureau of Economic Geology, a part of the University of Texas at Austin. Before joining UNL, he was an Assistant Professor at Western New England University. His main research area includes the pore-scale study of reactive/multiphase fluid flow in porous media, hydro-chemo-thermo-mechanically coupled processes in energy-geotechnology, and underground utilization. These topics are to tackle challenges for operations such as carbon utilization & geologic storage, geothermal energy, energy geo-storage, wastewater injection, etc. He has four years of industry experience related to the foundation design and the analysis of cut-slopes and tunnels.

Tianshou Ma is a professor in the Petroleum Engineering School at Southwest Petroleum University (SWPU), and a postdoctoral fellow in Geotechnical Engineering at the Institute of Rock and Soil Mechanics, Chinese Academy of Sciences (CAS). He received his Ph.D. degree in Oil & Gas Well Engineering from the SWPU in 2015. His research interests focused on petroleum related rock mechanics and measurement while drilling (MWD), including rock mechanics characterization, wellbore stability analysis, lost circulation prevention, wellbore integrity, new MWD tools, and advanced drilling technology of safe and efficient drilling and exploitation for complex hydrocarbon reservoirs. He has published over sixty peer-reviewed journal articles and ten peer-reviewed international conference papers and received over ten registered patents. He was invited to be a reviewer for over fifty scientific and engineering international journals and was awarded as "Outstanding reviewer" seven times. He has served as a co-chair or an organizing committee member of academic conferences more than ten times. Dr. Ma is also a Young Editorial Board member of the Natural Gas Industry and Journal of Central South University (Science and Technology).

Anahita Modiriasari is a Geotechnical Engineer at WSP USA in New York City, where she works on local and national infrastructure projects. Before joining WSP, she was a Post-Doctoral research assistant in geotechnical/geomechanical engineering in Resilient ExtraTerrestrial Habitats (RETH) group at Purdue University, where she worked on the development of the expertise needed to address the grand challenge of permanent human settlements on the Moon and Mars. Leveraging her background in geomechanics and underground construction, she analyzed the possibility of the existence and geotechnical structural stability of lunar lava tubes so as to determine their suitability as safe and resilient permanent extraterrestrial habitats. Dr. Modiriasari earned her Ph.D. in Civil (Geotechnical) Engineering from Purdue University in 2017. She holds a Master's and Bachelor's Degree in Mining Engineering from Amirkabir University of Technology, Tehran, Iran. Her areas of interest include geotechnical engineering, rock fracture mechanics, wave propagation through fractured media, tunneling and underground construction. Dr. Modiriasari's work has been published in peer-reviewed journals and international conferences. Her work was recognized by her peers with the 2016 Best Poster Award at the 50th US Rock Mechanics/Geomechanics Symposium and by the 2018 Dr. N.G.W. Cook Ph.D. Dissertation award by American Rock Mechanics Association (ARMA).

Mojtaba Pordel Shahri is a registered Professional Engineer and Subsurface Integration Team Lead at Apache Corporation in Houston. He received his B.S. and M.S. degrees in Petroleum Engineering from the Petroleum University of Technology, Iran, and Ph.D. in Petroleum Engineering from the University of Tulsa. He has authored more than sixty technical papers primarily in the area of drilling and rock mechanics and holds eight pending US patent applications. Dr. Shahri is the recipient of the 2012 SPE Star Award, 2012 SPE Henry DeWitt Smith Award, 2013 SPE Nico van Wingen Award, 2016 and 2018 SPE-GCS Exemplary Volunteer Award, 2016 SPE Regional Young Member Outstanding Service Award, and 2019 Young Engineer of the Year Award. He has served as a committee member in several SPE conferences and as a technical editor in petroleum-related journals. He is a member of SPE, AADE, ARMA and Phi Kappa Phi and was selected as an SPE Distinguished Lecturer for the 2017-2018 season.

Hamid Roshan is a Senior Lecturer in the School of Minerals and Energy Resources Engineering at University of New South Wales, Australia and the leader of GeoEngineering Research Laboratory (www.georesearch-lab.com). Dr. Roshan received his PhD degree in Petroleum Geomechanics Engineering from the School of Petroleum Engineering at UNSW Sydney in 2012. His main research area centers on micro- to macro-scale fundamental understanding of multi-physical processes in porous media using new theoretical, experimental, and numerical developments that have a wide range of applications from petroleum to mining, civil and environmental engineering. Before joining UNSW Sydney, Dr. Roshan worked as a Petroleum Engineer with a major Oil & Gas producer in the Middle East. He holds two patents in rock mechanics, has co-authored over sixty peer-reviewed journal articles, and serves as a reviewer for several research funding bodies in the United States and Australia.

Haiyan Zhu is a professor in the College of Energy & State Key Lab of Oil and Gas Reservoir Geology and Exploitation, Chengdu University of Technology, Chengdu, China. He holds a PhD degree in petroleum-related rock mechanics and engineering from the China University of

Petroleum, Beijing. He previously worked at the SINOPEC Jiangnan Oilfield Company for one year (2009-2010) and as an associate professor in Petroleum Engineering at Southwest Petroleum University for five years (2013-2018). Dr. Zhu's research interests are in petroleum-related geomechanics, including laboratory experiments and numerical simulation of rock breaking, wellbore stability, reservoir stimulation and 4D geostress evolution. He has authored or co-authored over fifty peer-reviewed journal papers. He is also an associate editor of the Journal of Petroleum Science and Engineering.

CLASS OF 2020 FUTURE LEADERS

Anita Ai has fifteen years of experience in the rock mechanics field and has worked as a geomechanics consultant for British Petroleum, Baker Hughes, and Golder Associates. Her responsibilities included building valid geomechanical and fracture models, which would help clients to reduce drilling risk, improve drilling safety, and enhance production. Dr. Ai specializes in wellbore stability, pore pressure prediction, fracture permeability, geomechanical core testing, and fracture modeling. She has led and delivered numerous geomechanical projects and has worked with clients in North America, South America, Europe, Middle East, and Asian Pacific. As a member of SPE and ARMA, Dr. Ai has chaired numerous meeting sessions and reviewed hundreds of papers. She received her B.S. degree in Geology from Peking University, China, and her Ph.D degree in Geophysics from Caltech.

Ehsan Ghazvinian is a geomechanics engineer at Itasca Consulting Group. He has experience in the application of continuum and discontinuum numerical tools to assessing the stability of underground mining excavations, sequencing life of mine and cave mine simulations, and predicting potential seismic hazards associated with deep mining. He received his PhD degree (2015) in Geological Engineering from Queen's University in Canada. Dr. Ghazvinian is a Professional Engineer in Ontario, Canada.

Miguel Fuenzalida is a senior geomechanics engineer at Itasca Consulting Group, a consulting and software firm across the mining, civil engineering, and energy industries. He holds a Bachelor's degree and a Master of Science in Mining Engineering from the University of Chile. He received the "Juan Bruggen" Best Graduate of the Class of 2010 Mining Engineering Award by the Mining Engineering Institute of Chile (IIMCh). Now based in Minneapolis, MN, he provides consulting services to underground mining by applying numerical modeling to sequencing, stability, ground support, and mining-induced seismicity. He has extensive experience in sublevel, block and panel caving projects — from concept to feasibility level — and cave mines in North America, South America, Africa, Eastern Europe, Southeast Asia, and Australia, and has specialized in undercut and extraction level design, draw scheduling, forecasting of caveability, fragmentation, recovery, infrastructure stability, and surface subsidence. He has participated in several mining and rock mechanics conferences and has been a part of international collaborative research consortia such as Mass Mining Technology (MMT) and Caving2040,

focused on critical reviews of conventional caving design approaches, collation of common caving practices, and advancing the understanding of caving fundamentals. He is a member of the American Rock Mechanics Association (ARMA) and the Society of Mining Engineering (SME).

Mengsu Hu is a Research Scientist at the Lawrence Berkeley National Laboratory with research interests in numerical modeling of coupled thermal-hydro-mechanical-chemical (THMC) processes in the energy geosciences, including: (1) development of modern computational methods, e.g., extended finite volume method and numerical manifold method; (2) numerical modeling of microscale mechanical-chemical processes, e.g., carbonate compaction, pressure solution, fracture alteration, and fracture healing; and (3) multi-scale, long-term analysis of THMC processes in energy-geosciences applications such as nuclear waste disposal. Dr. Hu is also interested in making flexible use of machine learning for energy geosciences applications. She has published over ten papers in peer-reviewed journals as a lead author and has won several prestigious awards, including the No. 1 Ranked PhD Thesis Award by the Chinese Society for Rock Mechanics and Engineering. She was one of six winners of the 2019 Early Career LDRD awards at the Berkeley Lab. Dr. Hu co-chaired CouFrac 2018, the International Conference on Coupled Processes in Fractured Geological Media: Observation, Modeling, and Application, and has served as the lead guest editor of a Special Issue in Computational Geosciences and as an invited reviewer for a number of journals, proposals, and conferences.

Fatemeh S. Rassouli holds a PhD (2017) and a MSc. (2015) degree in geophysics from Stanford University, where she also conducted postdoctoral research at the Department of Geophysics. The main focus of her research was studying the effect of time-dependent deformation on mechanical properties of shales and soft rocks. Before coming to the US, she earned a MSc. (2011) and a BSc. (2008) degree from Tehran University in Mining Engineering. Dr. Rassouli completed an internship with Carl Zeiss microscopy, where she used various imaging tools from macro to micro-scale to visualize the mechanical structure of shale rocks. As a visiting scholar, she studied different experimental tools to conduct creep tests on Oya tuff in Tokai University and Toyota national college in Japan in 2010.

Shahrzad Roshankhah is a visiting research scientist at the California Institute of Technology, where she studies the behavior of hydraulic fractures in naturally-fractured rocks through laboratory experiments and numerical simulations. She received her Ph.D. from the Georgia Institute of Technology and her M.Sc. from Amirkabir University of Technology, both in geotechnical engineering. The results of her research on various geo-energy-related topics have been published in prestigious peer-reviewed journals and conferences, for which she was the lead author of a dozen papers. Dr. Roshankhah is also a lecturer at the California State University, Long Beach, where she teaches civil and geotechnical engineering courses. Prior to her doctoral studies, she worked in an engineering consulting company for over four years, conducting analysis and design of a variety of civil infrastructure and seismic rehabilitation of existing buildings. She is now a licensed Professional Engineer in the state of California. Dr. Roshankhah is the recipient of several research, educational, and leadership awards from NSF and her previous home institutions. She regularly serves her respective scientific communities, including ARMA, GeoCongress, ICEGT, and SPE, as a session organizer and technical reviewer.

Sheng Mao is a professor in petroleum engineering at the College of Petroleum Engineering, China University of Petroleum at Beijing (CUPB). His research interests focus on hydraulic fracture mechanics for reservoir stimulation, involving hydraulic fractures propagation, hydro shearing in unconventional shale oil and gas reservoirs, and high-pressure waterjet cutting. Recently, he started studying the AI application in the horizontal well completion. Dr. Sheng holds a PhD degree from China University of Petroleum at Beijing (2014) and has worked as a visiting scholar at the University of Oklahoma. He has authored thirty-plus technical publications and holds six registered patents to date.

Junlong Shang is a tenured faculty member in the James Watt School of Engineering at the University of Glasgow, UK, where he holds a lectureship (assistant professorship) and has started a Rock Mechanics research group devoted to research for underground spaces (e.g., tunnels, caverns) and earth resources (e.g., minerals, geothermal energy). An array of approaches, including laboratory and field experiments, computational modeling, and analytical solutions, is used to understand the mechanical behavior of rocks and geological discontinuities under the influence of underground environmental (e.g., complex stresses, high temperature, high pressure) and anthropogenic (e.g., hydro-fracturing, human excavation, blasting) factors. The research group has recently focused on the application of machine learning in geosciences and geotechnics and the analysis of coupled THMC processes with implications for underground energy storage and enhanced geothermal systems (EGS) development and production. Dr. Shang is the recipient of the 2020 ISRM Rocha Medal. He is a Scientific Editor for the Journal of Rock Mechanics and Geotechnical Engineering and an Editorial Board Member for Rock Mechanics and Rock Engineering. He served as an organizing committee member for the 10th Asian Rock Mechanics Symposium (ARMS 10, the ISRM International Symposium for 2018), and currently serves as a co-Chair of the scientific committee for the 13th Asian Regional Conference (ARC 13) of the International Association for Engineering Geology and the Environment (IAEG), to be held in Singapore in November 2021. Dr. Shang has published about forty peer-reviewed journal articles, including three ESI top 1% highly-cited papers.