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SUMMARY

- Personal** US citizen, born in Moscow, Russia, emigrated from Russia in 1989
- Education** Ph.D. in Engineering Sciences (specialization in *Solids State Physics*)
- Current Appointments**
Professor, School of Civil and Environmental Engineering, Georgia Tech
Adjunct Professor, School of Earth and Atmospheric Sciences, Georgia Tech
- Teaching** 4 post-doctoral fellows
13 students graduated with Ph. D. degrees
19 students graduated with M.S. degrees
- Research Areas** Energy resources, mining and petroleum engineering
Geology and geophysics
Rock mechanics, fracture mechanics
Hydraulic fracturing, geothermal energy
Methane hydrates, CO₂ sequestration
Subaerial and submarine landslides
Natural and induced earthquakes
Applied mathematical methods
Properties of earth and extra-terrestrial materials
Biomechanics, properties of brain and breast tissue
- Professional Activities**
137 technical publications including 1 book, 2 book chapters, and 134 papers (88 in peer-reviewed journals)
PI and Co-PI on 38 government grants and industrial contracts totaling \$7.9M
145 presentations for national and international meetings
8 expeditions on research vessel *Atlantis* with dives on research submersible *Alvin*
- Recognitions** Foreign Fellow of the Russian Academy of Natural Sciences
12 keynote and guest lectures and 14 invited papers
78 invited seminars in various organizations and universities
Research Award from the American Rock Mechanics Association
Basic Research Award from the U.S. National Committee for Rock Mechanics
Georgia Tech Sigma Xi Best Paper Award

I. DEGREES

- 1982 *Ph.D. in Engineering Sciences (Specialization in Solids State Physics)*
Department of Mathematics, Moscow State Mining University
- 1977 *M.Sc. (includes B.Sc.) in Engineering Physics (Specialization in Physical Processes in Mining)*
School of Engineering Physics, Moscow State Mining University

II. APPOINTMENTS

- 2001–present *Professor*
- 1997–2001 *Associate Professor*
School of Civil and Environmental Engineering
Georgia Institute of Technology, Atlanta, Georgia
- 1997–present *Adjunct Professor*
School of Earth and Atmospheric Sciences
Georgia Institute of Technology, Atlanta, Georgia
- 1991–1997 *Senior Research Scientist*
School of Petroleum and Geological Engineering and Sarkeys Energy Center
The University of Oklahoma, Norman, Oklahoma
- 1991 *Rock Mechanics Research Analyst/Specialist*
DOE Yucca Mountain Project (High Level Radioactive Waste Repository)
Parsons Brinckerhoff-KBB, Inc., Las Vegas, Nevada and Houston, Texas
- 1990–1991 *Post-Doctoral Fellow*
School of Earth and Atmospheric Sciences
Georgia Institute of Technology, Atlanta, Georgia
- 1984–1989 *Senior Research Scientist*
- 1983–1984 *Research Scientist*
Department of Mathematical Modeling, Scotchinsky Research Institute of Mining
The USSR Academy of Science and USSR Ministry of Coal Industry, Moscow, Russia
- 1984–1989 *Senior Lecturer*
- 1983–1984 *Lecturer*
Department of Mathematics, Moscow State Mining University, Moscow, Russia
- 1980–1982 *Research Scientist*
Department of Mathematics, Moscow State Mining University, Moscow, Russia
- 1977–1979 *Research Scientist*
Laboratory of Physics of Explosives, Scotchinsky Research Institute of Mining
The USSR Academy of Science and USSR Ministry of Coal Industry, Moscow, Russia
- 1974–1977 *Graduate Research Assistant*
School of Engineering Physics, Moscow State Mining University, Moscow, Russia

III. TEACHING

Guided 4 post-doctoral fellows, 13 students graduated with Ph. D. and 19 students with M.S. degrees.

POST-DOCTORAL FELLOW GUIDANCE

Dr. Peter Van Dyke, Georgia Tech, 2000 – 2004

Research: *Fluid Flow, Chemical Transport, and Fracture Evolution due to Thermoelastic Stress and Chemical Dissolution and Precipitation*

Presently with Baker-Hughes (Houston, TX)

Dr. Alla Balueva, Georgia Tech, 1998 – 2001

Research: *Diffusion-Controlled Fracture Processes and Material Degradation due to Hydrogen Embrittlement*

Presently associate professor at the Georgia State University

Dr. Lev Ring, The University of Oklahoma, 1994 – 1997

Research: *Fracture Processes in Petroleum and Mining Geomechanics*

Presently Director of Technology at Weatherford, Houston, Texas

Dr. Adel Diek, The University of Oklahoma, 1994 – 1995

Research: *Environmentally Affected Fractures*

Presently Research Faculty at The University of Oklahoma

PH. D. STUDENTS

Mr. Adebayo Ayorinde

Dissertation: *Injection-triggered Earthquakes in Northwestern Oklahoma*

Progress: started in Fall 2016

Dr. Joshua Smith, Georgia Tech, expected to graduate in 2017

Dissertation: *Geophysical Fluid Flow During Hydrothermal Venting and Carbon Sequestration*

Progress: finalizing dissertation after defense

Dr. Devon Gwaba, Georgia Tech, graduated in 2017

Dissertation: *Fluid-assisted fracturing in geological materials*

Presently with Schlumberger (Saudi Arabia)

Dr. Sihyun Kim, Georgia Tech, graduated in 2014

Dissertation: *Shear band and landslide dynamics in submerged and subaerial slopes*

Presently assistant professor, Bradley University (IL, USA)

Dr. Gence Genc, Georgia Tech, graduated in 2012

Dissertation: *Serpentinization-assisted deformation processes and characterization of hydrothermal fluxes at mid-ocean ridges*

Presently assistant professor, Çankaya University (Ankara, Turkey)

Dr. Robert Hurt, Georgia Tech, graduated in 2011

Dissertation: *Hydraulic Fracturing in Saturated Particulate Materials*

Presently with Baker-Hughes (Houston, TX)

Dr. Jong-Won Choi, Georgia Tech, graduated in 2011

Dissertation: *Geomechanics of Subsurface Sand Production and Gas Storage*

Presently assistant professor, Texas A&M University (Kingsville, Texas)

Dr. Pierre Ramondenc, Georgia Tech, graduated in 2008

Dissertation: *Effect of Seismicity and Diking on Hydrothermal Circulation at Mid-Ocean Ridges*

Presently with Schlumberger (Houston, TX)

Dr. Cem Ozan, Georgia Tech, 2007

Dissertation: *Image Guided Constitutive Modeling of Human Brain Tissue*

Presently with Baker-Hughes (Houston, TX)

Dr. Ruiting Wu, Georgia Tech, graduated in 2006

Dissertation: *Some Fundamental Mechanisms of Hydraulic Fracturing*

Presently with Schlumberger (Houston, TX)

Dr. Young Jong Sim, Georgia Tech, graduated in 2004

Dissertation: *Mechanics of Complex Hydraulic Fractures in the Earth's Crust*

Presently with Korea Land and Housing Corporation (Daejeon, Korea)

Dr. Hong Chang, Georgia Tech, graduated in 2004

Dissertation: *Hydraulic Fracturing in Particulate Materials*

(received 2005 [The Best Ph.D. Thesis Award](#) from the American Rock Mechanics Association)

Dr. Rajesh Chanpura, Georgia Tech, graduated in 2001

Dissertation: *Fault Reactivation as a Result of Reservoir Depletion*

Presently Senior Solution Engineer with Schlumberger (Houston, TX)

(received 2003 [The Best Ph.D. Thesis Award](#) from the American Rock Mechanics Association)

Dr. Dmitriy Astakhov, Georgia Tech, graduated in 2000

Dissertation: *Permeability Evolution as a Result of Fluid-Rock Interaction*

Presently with Halliburton (Bakersfield, CA)

OTHER PH. D. STUDENTS

Mr. Ali Shafiee, Georgia Tech, 2009-2010

Dissertation: *A Controllable Earthquake Rupture Experiment on the Homestake Fault*

Student returned back to Iran and was replaced by Mr. Devon Gwaba (see above)

Mr. Kasemchart (Sem) Sriawalai, Georgia Tech

Dissertation: *Alcohol Flooding of Water Saturated Media Applied to Hazardous Waste Cleanup: Numerical Simulations and Physical Experiments*

Progress: passed comprehensive exam, completed minor, working in absentia

Presently a professor at Thammasat University (Thailand)

M.S. STUDENTS

Mr. John Hu

Research: *Geological carbon sequestration in sedimentary deposits*

Progress: expected to graduate in 2018

Mr. Thomas Wang, Georgia Tech, graduated in 2015

Research: *Hydromechanical well testing*

Started as a civil engineering student in 2013 and completed M.S. program in computer sciences in 2015

Presently with Google

Mr. Joshua Smith, Georgia Tech, graduated in 2014

Research: *Heat and flow measurements in seafloor hydrothermal setting*

Presently a PhD student at Georgia Tech (see above)

Mr. Xiaoyu Song, Georgia Tech, graduated in 2009

Research: *Characterization of fractured rock aquifers using hydromechanical well tests*

Presently assistant professor, Florida University (Gainesville, Florida)

Mrs. Gence Genc, Georgia Tech, graduated in 2007

Research: *Measurements of heat fluxes and fluid flow rates at Mid Oceanic Ridges*

After graduation became a PhD student at Georgia Tech (see above)

Mr. Tahiru Mawia, Georgia Tech, graduated in 2007

Research: *Fractures in Rock and Soil Caused by Tree Roots*

Mr. Charles George, Georgia Tech, graduated in 2006

Research: *Thermally Induced Faults at the Yucca Mountain Nuclear Waste Repository*

Mr. Robert Hurt, Georgia Tech, graduated in 2006

Research: *Hydraulic Fracturing in Dry Particulate Materials*

After graduation became a PhD student at Georgia Tech (see above)

Mr. Devon Gwaba, Georgia Tech, graduated in 2006

Research: *Mechanisms of Rock Exfoliation*

Presently a Ph.D. student at Georgia Tech (see above)

Mr. Pierre Ramondenc, Georgia Tech, graduated in 2005

Research: *Hydrological Effects on Seismicity at Mid-Oceanic Ridges*

After graduation became a Ph.D. student at Georgia Tech (see above)

Mrs. Roya Rostamian, Georgia Tech, graduated in 2003

Research: *Mechanisms of Rock Exfoliation in Granite (Stone Mountain, Georgia, USA)*

Presently with Metro Geotechnical LLC (Atlanta, GA)

Mr. Chris Corrigan, Georgia Tech, graduated in 2000

Research: *Hydraulic Fracturing of Non-Cohesive Materials*, graduated in Fall 2000

- Presently a Staff Engineer with *GeoSyntec Consultants* (Atlanta)
- Mr. Sheamus Kelleher, Georgia Tech, graduated in 1999
 Research: *Direct 3-D Visualization of Growing Fractures in Rock Samples*
 Presently a practicing engineer in Boston (Massachusetts)
- Mr. Dmitriy Astakhov, The University of Oklahoma, graduated in 1997
 Thesis: *Thermoelasticity and Temporal Variability of Seafloor Hydrothermal Systems*
 After graduation became a Ph.D. student at Georgia Tech (see above)
- Mr. Michel Bakala, The University of Oklahoma, graduated in 1996
 Thesis: *Fracture Propagation in Sediment-Like Materials*
 Presently a practicing engineer in Africa (Congo)
- Mr. Khay-Kok Lee, The University of Oklahoma, graduated in 1994
 Thesis: *Analysis of Crack Initiation and Propagation Techniques in Compression*
 (received 1995 [The Best Master Thesis Award](#) from the National Research Council and US National Committee for Rock Mechanics)
 Presently with Dowell Schlumberger (Houston, TX)

OTHER M.S. STUDENTS

- Mr. Clément Dupont, graduated in 1997
 Exchange program of The University of Oklahoma and the University of Clermont Ferrand (France)
 Thesis: *Effect of Leakoff on Multisegmented Hydraulic Fracture*
 Responsibility: supervised student's research while being a research faculty
 Presently with Italian national petroleum company Agip, Paris
- Mr. Vincent Dubusset, graduated in 1996
 Exchange program of The University of Oklahoma and the University of Blaise Pascal (Clermont Ferrand, France)
 Thesis: *Petroleum Waste Disposal: Fracture Aspect*
 Responsibility: supervised student's research while being a research faculty
 Presently a practicing engineer in Europe
- Mr. Leovaldo Reyes, The University of Oklahoma, graduated in 1996
 Research: *Micromechanisms of Fracture in Rock Samples* (non thesis option)
 Responsibility: supervised student's research while being a research faculty
 Presently a practicing engineer in Venezuela
- Mr. Fabio Gonzales, The University of Oklahoma, graduated in 1994
 Thesis: *Study of Fracturing Process in Reservoir Rocks*
 Responsibility: supervised student's research while being a research faculty
 Presently with British Petroleum

UNDERGRADUATE RESEARCH GUIDANCE (ALL AT GEORGIA TECH)

- Mr. Sagar Soni, 2013
- Mr. Lucas Curry, 2010-2012
- Mr. Alexander Sitt, 2009-2010
- Mr. Ilya Odinets, 2009
- Mr. Robert Smith, 2008 – 2009
- Mr. Phillip Davis, 2006 – 2007
- Mr. Jesus Treto, 2006
- Mr. Justin Cooner, 2005 – 2006
- Mr. Cameron Troxel, 2005 – 2006
- Mr. Warren Wade, 2005 – 2006
- Mr. Alex Berry, 2005
- Mr. Robert Hurt, 2003 – 2005, [won the 2004 Best Undergraduate Research Award at Georgia Tech](#)
- Mr. Christopher Arjona, 2004 – 2005
- Ms. Holli Jones, Georgia Tech, 2004

Ms. Mariam Yousuf, Georgia Tech, 2004
 Mr. Christian Braneon, Georgia Tech, 2004
 Mr. Andrew Schildmeyer, 2004
 Mr. Chris Corrigan, 1999
 Mr. Steven Aiosa, 1999
 Mr. Brian deMartin, 1998

CURRICULUM DEVELOPMENT (GRADUATE COURSES)

2016 CEE 4803 Introduction to Petroleum Geomechanics
 2016 CEE/EAS 6751 Physical Properties and Rheology of Rocks (new curriculum)
 2015 CEE 6461 Mathematical Applications for Civil and Environmental Engineering (new curriculum)
 2009 CEE 8813M Computational Mechanics of Geomaterials
 2008 CEE 8813F Mathematical Modeling and Scale Analysis
 2006 CEE 8813D Computational and Experimental Fracture Mechanics
 2005 CEE 8813J Computational Mechanics of Materials
 2003 CEE 6461 Mathematical Applications for Civil and Environmental Engineering
 2002 CEE 6482 Applied Fracture Mechanics
 2000 CEE 6451 Rock Mechanics
 1999 CEE/EAS 6751 Physical Properties and Rheology of Rocks
 1999 CE 8103 Fracture and Flow in Geomaterials
 1999 CE 8103 Mathematical Modeling for CEE
 1998 CE 8103 Special Topics in Applied Fracture Mechanics
 1997 CE 6159 Rock Mechanics

THESIS COMMITTEES

2017 Jin Longde, Ph.D. thesis, Georgia Tech
 2017 Yifei Ma, Ph.D. thesis, Georgia Tech
 2017 Yixuan Sun, Ph.D. thesis, Georgia Tech
 2012 Fengshou Zhang, Ph.D. thesis, Georgia Tech
 2012 Kevin Chao, Ph.D. thesis, Georgia Tech
 2011 Lei Liu, Ph.D. thesis, Georgia Tech
 2010 G. Xu, M.S. thesis, University of Georgia, Athens
 2010 Seth Buseti, Ph.D. thesis, University of Oklahoma, Norman
 2008 Kevin Chao, Georgia Tech, EAS
 2007 Kayla Lewis, Ph.D. thesis, Georgia Tech
 2007 Y. Yang, Ph.D. Thesis, Georgia Tech, EAS
 2006 Sudeep Pant, University of Western Australia, Perth
 2005 Zeynep Bade Sozer, Ph.D. thesis, Georgia Tech
 2004 Amr Elhakim, Ph.D. thesis, Georgia Tech
 2003 Jose Alvarelllos, Ph.D. thesis, Georgia Tech
 2003 Kayla Lewis, M.S. thesis, Georgia Tech
 2002 Julio Valdes, Ph.D. thesis, Georgia Tech
 2002 Daniel K. Burnell, Ph.D. thesis, Georgia Tech
 2001 Taecil Choi, Ph.D. thesis, Georgia Tech
 2001 Yu-Hsing Wang, Ph.D. thesis, Georgia Tech
 2001 Yufeng Yao, M.S. thesis, Georgia Tech
 2000 Timothy R. Wyatt, Ph.D. thesis, Georgia Tech
 2000 Jin-Young Park, Ph.D. thesis, Georgia Tech

1998	Jeff Martin, Ph.D. thesis, Georgia Tech
1996	Allan Soltani, Ph.D. thesis, The University of Oklahoma
1994	Emad Sahouryeh, M.S. thesis, The University of Western Australia
1988	Sofia Mogilevskaya, Ph.D. thesis, Scotchinsky Research Inst. of Mining, Moscow, Russia
1988	Lev Shleifman, Ph.D. thesis, Scotchinsky Research Institute of Mining, Moscow, Russia

ORGANIZED FIELD TRIPS

Organized and lead 19 Petroleum Engineering, Geological Engineering, and Rock Mechanics field trips.

1. *Panola Mountain*, Georgia, 2011
2. *Granite Quarries of Vulcan Company*, Georgia, 2009 and 2012
3. *Peeks Creek landslide, Macon County*, North Carolina, 2009, 2010, 2011, 2012
4. *Black Rock State Park, Tallulah Gorge, and Peeks Creek landslide*, 3 days, Georgia, November 2008
5. *Faults and Fractures in Blue Ridge region*, 3 days, GA, 2008
6. *Geology and Rock Engineering at the Construction Site of the Atlanta Sewer Tunnel*, Atlanta, Georgia, 2006 and 2010
7. *Geology and Rock Engineering in Tallulah Gorge State Park*, Georgia, 2005, 2010, 2011
8. *Mountain Arabia*, Georgia, 2004, 2007, 2010 (twice), 2011 (twice), 2012 (twice), 2013, 2014, 2015, 2016 (twice), 2017 (twice)
9. *Mount Elbert, Mount Princeton, Pikes Peak, and Grays Peak*, all above 4300 m (14100 ft), Colorado, 2003, 2009, and 2011
10. *Appalachian Trail*, Georgia and North Carolina, series of ten field trips in 2003 - 2013
11. *Stone Mountain*, Georgia, CE 6159A, CEE 6451, CEE/EAS 6741, and CEE 6482 students, yearly trips in 1997, 1998, 1999, 2000 (twice), 2001, 2002, 2003 (twice), 2004 (twice), 2005 (twice), 2006 (twice), 2007 (twice), 2008 (twice), 2009 (twice), 2010 (twice), 2011 (twice), 2012 (twice), 2013, 2014, 2015 (twice), 2016 (twice)
12. *Fractures in Rock Materials*, Elberton, Georgia, CEE 6482, 2002 and 2016
13. *Rock Structures*, Alabama, CEE/EAS 6751, 17, 2001
14. *Rocks and the City: Rock Mechanics on the Walls of Buildings in Atlanta*, CEE 6451A, 2000, 206, 2012
15. *Rock Mechanics and Rock Engineering*, Tallulah Gorge State Park, Georgia, CEE 6451A, 2000 (twice), 2008, 2017
16. *Rock Properties*, Lookout Mountain and Cloudland Canyon, Georgia, CEE/EAS 6751, 1999 and 2008
17. *Fractures and Flow*, Ladds Quarry, Cartersville, Lookout Mountain limestone quarry, Ocoee River, Graves Mountain, Georgia, Tennessee, and South Carolina, CE 8103J, 1999, 2004, 2016
18. *Rock Fractures*, Vulcan Bartow Quarry and Redtop Mountain State Park, Georgia, CE 6159A, 1998, 2009, 2016
19. *Rock Structures*, Ocoee Gorge, Tennessee, CE 8103N, 1998, 2008, 2014

IV. SCHOLARLY ACCOMPLISHMENTS

A. PUBLICATIONS

137 technical publications including 1 book, 2 book chapters, and 134 papers (88 in peer-reviewed journals).

Books and Book Chapters

1. Puzrin A.M., Rushton, D., Mackenzie, B., Germanovich, L.N., and Randolph, M. (2017) Submarine Landslides—Stability Analysis and Risk Assessment for Offshore Developments, Encyclopedia of

Maritime and Offshore Engineering, JohnWiley & Sons, Ltd., Edited by John Carlton, Yoo Sang Choo, and Paul Jukes, ISBN: 978-1-118-47635-2, DOI: 10.1002/9781118476406.emoe521, pp. 1 – 14.

2. Cherepanov, G. P. and Germanovich, L. N., 1998, Theory of catastrophes and failure criteria, Chapter 11 in *Fracture: A topical Encyclopedia of Current Knowledge Dedicated to Alan Arnold Griffith*, Krieger Publishing Co., Malabar, Florida, USA, pp. 255-274.
3. Dmitriev, A. P., Goncharov, S. A., and Germanovich, L. N., 1990, *Thermal Fracture of Rocks*, Nedra Publishers, Moscow, 256 pp.

Refereed Archival Journals

1. Germanovich L.N., Kim S., Puzrin A.M. (2016), Dynamic growth of slip surfaces in catastrophic landslides, *Proc. of the Royal Society: A – Math., Phys. and Eng. Sciences*, Vol. 472 (2185): 20150758, <http://dx.doi.org/10.1098/rspa.2015.0758>, pages 1-28.
2. Puzrin, A. M., L. N. Germanovich, and B. Friedli (2016), Shear band propagation analysis of submarine slope stability, *Géotechnique*, Vol. 66, Issue 3, pages 188-201, DOI: 10.1680/jgeot.15.LM.002.
3. Choi, J.-W., Germanovich, L.N., Murdoch, L.C., and Castle, J.W. (2016) Pressure transients to characterize cavities dissolved for natural gas storage, *Journal of Natural Gas Science and Engineering*, Vol. 33, pp. 611-623, DOI: 10.1016/j.jngse.2016.03.082.
4. Craft K.L., Patterson, G.W., Lowell, R.P., Germanovich, L.N. (2016), Fracturing and flow: Investigations on the formation of shallow water sills on Europa, *Icarus*, Vol. 274, pp. 297-313.
5. Germanovich, L.N., Hurt, R.S., J.E. Smith, Gence, G., and R.P. Lowell (2015), Measuring fluid flow in seafloor hydrothermal environments, *Journal of Geophysical Research*, Vol. 120, DOI:10.1002/2015JB012245, pages 1-25.
6. Trapper, P.A., Puzrin, A.M. and Germanovich, L.N., 2015, Effects of shear band propagation on early waves generated by initial breakoff of tsunamigenic landslides, *Marine Geology*, 370, pp. 99-112, doi:10.1002/2015WR017335.
7. Murdoch, L.C., Freeman, C.E., Germanovich, L.N., Thrash, C., and DeWolf, S., 2015. Using in situ vertical displacements to characterize changes in moisture load, *Water Resources Research*, 51(8), pp. 5998-6016, DOI: 10.1002/2015WR017335.
8. Hisz, D.B., Murdoch L.C., Germanovich, L.N. 2013, A portable borehole extensometer and tiltmeter for characterizing aquifers, *Water Resources Research*, Vol. 49, Issue 7, pages 7900–7910, DOI: 10.1002/wrcr.20500.
9. Slack, T.Z., Murdoch, L.C., Germanovich, L.N., and D.B. Hisz, 2013, Reverse water-level change during interference slug tests in fractured rock, *Water Resources Research*, Vol. 49, Issue 3, pages 1552–1567, DOI: 10.1002/wrcr.20095.
10. Germanovich, L.N., Gence, G., Lowell, R. P., Rona, P. A., 2012, Deformation and surface uplift associated with serpentinitization at mid-ocean ridges and subduction zones, *J. of Geoph. Research*, Vol. 117, Issue B7, July 2012, DOI: 10.1029/2012JB009372.
11. Murdoch, L.C., and L.N. Germanovich, 2012, Storage change in a flat-lying fracture during well tests, *Water Resources Research*, 48, W12528, doi:10.1029/2011WR011571, December 2012, 14 pages, 8 figures, 2 tables.
12. Garagash, D., and Germanovich, L.N., 2012, Nucleation and arrest of dynamic slip on a pressurized fault, *Journal of Geophysical Research: Solid Earth*, Volume 117, Issue B10, October 2012, DOI: 10.1029/2012JB009209.
13. Murdoch, L. C., Germanovich, L. N., Wang, H., Onstott, T. C., Elsworth, D., Stetler, L., Boutt, D., 2012, Hydrogeology of the vicinity of Homestake mine, South Dakota, USA, *Hydrogeology Journal*, Vol. 20, Issue 1, pp. 27-43, DOI: 10.1007/s10040-011-0773-7.
14. Lowell, R.P., Farough, A., Germanovich, L. N., Hebert, L.B., Horne, R., 2012, A Vent-Field-Scale Model of the East Pacific Rise 9 degrees 50 ' N Magma-Hydrothermal System, *Oceanography*, Vol. 25, Issue 1, pp. 158-167.

15. Di Iorio, D., Lavelle, J. W., Rona, P. A., Bemis, K., Xu, G., Germanovich, L. N., Lowell, R. P., Genc, G., 2012, Measurements and Models of Heat Flux and Plumes from Hydrothermal Discharges Near the Deep Seafloor, *Oceanography*, Vol. 25, Issue 1, pp. 168-179.
16. Balueva, A., and Germanovich, L.N., 2012, Asymptotic analysis and Pade approximation in problems on diffusion-controlled crack propagation, *Revista de Matematica: Teoria y Aplicaciones* (ISSN: 1409-2433), 19(2), pp. 127–139.
17. Germanovich, L. N., R. P. Lowell, and P. Ramondenc, 2011, Magmatic origin of hydrothermal response to earthquake swarms: Constraints from heat flow and geochemical data, *J. of Geoph. Research*, Vol. 116, No. B05103, Art. doi: 10.1029/2009JB006588, 25 pp.
18. Wankel, S. D., Germanovich, L. N., Lilley, M. D., Gence, G., DiPerna, C. J., Bradley, A. S., Olson, E. J., and P. R. Girguis, 2011, Influence of subsurface biosphere on geochemical fluxes from diffuse hydrothermal fluids, *Nature Geosciences*, Vol. 4, pages 461-467, doi: 10.1038/ngeo1183.
19. Germanovich L. N. and Murdoch L. C., 2010, Injection of Solids to Lift Ground Surface in Coastal Areas, *Proceedings of the Royal Society A: Mathematical, Physical, and Engineering Sciences*, Vol. 466, pp. 3225–3252, doi: 10.1098/rspa.2010.0033.
20. Puzrin A.M., E. Saurer, and L.N. Germanovich, 2010, A Dynamic Solution of the Shear Band Propagation in Submerged Landslides, *Granular Matter*, 12, 3, p. 253-265.
21. Ramondenc, P., L. N. Germanovich, and R. P. Lowell, 2008, Modeling the hydrothermal response to earthquakes with application to the 1995 event at 9°50' N, East Pacific Rise, in *Magma to Microbe: Modeling Hydrothermal Processes at Oceanic Spreading Centers*, Geophys. Monogr. Ser., Vol. 178, pp. 97-122.
22. Qin R., Buck W. R., and Germanovich, L. N., 2007, Comment on “Mechanics of tidally driven fractures in Europa’s ice shell” by S. Lee, R.T. Pappalardo, and N.C. Makris [2005. *Icarus* 177, 367–379], *Icarus* Vol. 189, pp. 595–597, doi:10.1016/j.icarus.2007.01.013.
23. Xu, W., and L. N. Germanovich, 2007, Reply to comment by Nabil Sultan on “Excess pore pressure resulting from methane hydrate dissociation in marine sediments: A theoretical approach,” *Journal of Geophysical Research*, Vol. 112, No. B02104, doi:10.1029/2006JB004722.
24. Wu, R., Germanovich, L. N., Van Dyke, P. E., and Lowell, R. P., 2007, Thermal technique for controlling hydraulic fractures, *J. of Geoph. Research*, Vol. 112, No. B05209, Art. doi:10.1029/2005JB003815.
25. Ramondenc, P., Germanovich, L. N., Lowell, R. P., and Von Damm K. L., 2006, The first measurements of hydrothermal heat output at 9°50' N, East Pacific Rise, *Earth and Planetary Science Letters*, Vol. 245, pp. 487 – 497.
26. Xu, W., and Germanovich, L. N., 2006, Excess pore pressure resulting from methane hydrate dissociation in marine sediments: A theoretical approach, *Journal of Geophysical Research*, Vol. 111, No. B01104, doi:10.1029/2004JB003600.
27. Murdoch, L. C., and Germanovich, L. N., 2006, Analysis of a deformable fracture in permeable material, *International Journal of Numerical and Analytical Methods in Geomechanics*, Vol. 30, pp. 529–561.
28. Puzrin, A. M., and Germanovich, L. N., 2005, The growth of shear bands in the catastrophic failure of soils, *Proc. of the Royal Society: A – Math., Phys. and Eng. Sciences*, Vol. 461 (2056), pp. 1199-1228.
29. Lowell, R.P., L.N. Germanovich, 2004, Hydrothermal Processes at Mid-Ocean Ridges: Results from Scale Analysis and Single-Pass Models, in *Mid-ocean Ridges: Hydrothermal Interaction between the Lithosphere and Ocean*, Geophys. Monogr. Ser., Vol. 148, pp. 219-244.
30. Puzrin, A. M., Germanovich, L. N., and Kim, S., 2004, Catastrophic failure of submerged slopes in normally consolidated sediments, *Géotechnique*, Vol. 54, No. 10, pp. 631-643.
31. Germanovich, L. N., and Astakhov, D. K., 2004, Fracture closure in extension and mechanical interaction of parallel joints, *J. of Geophysical Research*, Vol. 109, No. B02208, doi:10.1029/2002JB002131.
32. Germanovich, L. N., and Astakhov, D. K., 2004, Stress dependent permeability and fluid flow through parallel joints, *J. of Geophysical Research*, Vol. 109, No. B09203, doi:10.1029/2002JB002133.
33. Lowell, R.P., Y. Yao, and L.N. Germanovich, 2003, On the relationship between focused and diffuse flow in seafloor hydrothermal systems, *J. Geoph. Research*, Vol. 108, No. B9, doi: 10.1029/2002JB002371.

34. Sahouryeh, E., Dyskin, A. V., and Germanovich, L. N., 2002, Crack growth under biaxial compression, *Engineering Fracture Mechanics*, Vol. 69 (18), pp. 2187-2198.
35. Germanovich, L. N., Lowell, R. P., and Astakhov, D. K., 2001, Temperature-dependent permeability and bifurcations in hydrothermal flow, *Journal of Geophysical Research*, Vol. 106, No. B1, pp. 473 - 495.
36. Germanovich, L. N., Lowell, R. P., and Astakhov, D. K., 2000, Stress dependent permeability and the formation of seafloor event plumes, *J. of Geophysical Research*, Vol. 105, No. B4, pp. 8,341 - 8,354.
37. Germanovich, L. N. and Dyskin, A. V., 2000, Fracture mechanisms and instability of openings in compression, *International Journal of Rock Mechanics and Mining Sciences*, Vol. 37, pp. 263 - 284.
38. Dyskin, A. V., Germanovich, L. N., and Ustinov, K. B., 2000, Asymptotic analysis of crack interaction with free boundary, *International Journal of Solids and Structures*, Vol. 37, No. 6, pp. 857 - 886.
39. Dyskin, A. V., Germanovich, L. N., and Ustinov, K. B. 1999, A 3-D model of wing crack growth and interaction, *Engineering Fracture Mechanics*, Vol. 63, pp. 81 - 110.
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Other Publications

1. Germanovich, L.N., Murdoch, L.C., Garagash, D., Reches, Z., Martel, S.J., Gwaba, D., Elsworth, D., Onstott, T.C., 2011, Earthquake Rupture Experiment on the Homestake Fault, *CMMI Conference*, Atlanta, GA, 9 pp.
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Selected Conference Abstracts

1. Murdoch, L.C., Thrash, C.J., Germanovich, L.N., DeWolf, S., and R. Moak, 2015, Effects of Hydrologic Processes on Vertical Displacements in the Critical Zone, AGU Fall Meeting, Abstract H53C-1669.
2. DeWolf, S., Murdoch, L.C., Moysey, S., Germanovich, L.N., Hanna, A., and J. Smith, Removable Tensor Strainmeter and Vector Tiltmeter System for Use With Forward and Inverse Methods for Characterizing Deformation During CO₂ Injection, AGU Fall Meeting, Abstract S21A-2673.
3. Garagash, D., and Germanovich, L.N., 2014, Gravity driven hydraulic fracture with finite breadth. In A. Bajaj, P. Zavattieri, M. Koslowski, & T. Siegmund (Eds.). *Proceedings of the Society of Engineering Science 51st Annual Technical Meeting*, October 1-3, 2014, West Lafayette: Purdue University Libraries Scholarly Publishing Services, <http://docs.lib.purdue.edu/ses2014/honors/rudnicki/13>.
4. Germanovich, L.N., Garagash, D., Murdoch, L.C. and Robinowitz, M., 2014, Gravity-Driven Hydraulic Fractures, AGU Fall Meeting, Abstract H53C-0874.
5. Germanovich, L.N., Lowell, R.P. and Smith, J.E., 2014, Large-Scale Deformation and Uplift Associated with Serpentinization, AGU Fall Meeting Abstract V52A-03.
6. Smith, J.E., Germanovich, L.N. and Lowell, R.P., 2014, Heat Source for Active Venting at the Lost City

- Hydrothermal Field, AGU Fall Meeting Abstract V53A-4839.
7. Thrash, C.J., Murdoch, L.C., Germanovich, L.N. and Weinberg, A., 2014, Monitoring Changes in Moisture Load Using Elastic Displacements in the Vadose Zone, AGU Fall Meeting Abstract H31E-0658.
 8. Craft, K.L., Lowell, R.P. and Germanovich, L., 2014, Is Sudden Permeability Change from Dike Emplacement the Cause of Flood Outbursts at Athabasca Valles, Mars?, Lunar and Planetary Science Conference Abstract 2915 .
 9. Germanovich, L.N., Garagash, D., Murdoch, L.C. and Robinowitz, M., 2013, December. Abyssal Sequestration of Nuclear Waste in Earth's Crust, AGU Fall Meeting Abstract NG11A-1588.
 10. Smith, J.E., Germanovich, L.N. and Lowell, R.P., 2013, Near-field entrainment in black smoker plumes, AGU Fall Meeting Abstract OS43C-03 .
 11. Murdoch, L.C., Kim, S., Moysey, S.M., Ebenhack, J., Skawski, G., Hisz, D. and Germanovich, L., 2012, Wellbore deformation as a monitoring and assessment tool during CO2 sequestration, GSA Annual Meeting, Vol. 44, No. 7, p. 153.
 12. Freeman, C.E., Murdoch, L.C., Germanovich, L.N. and Miller, S., 2012, Using subsurface soil displacement to estimate change in water content, GSA Annual Meeting, Vol. 44, No. 7, p. 48.
 13. Freeman, C.E., Murdoch, L.C., Germanovich, L. and Miller, S., 2012, Estimating Hydrologic Processes from Subsurface Soil Displacements. AGU Fall Meeting Abstract H43F-1434.
 14. Kim, S., Murdoch, L.C., Germanovich, L., Moysey, S.M., Skawski, G.M., Ebenhack, J., Smith, J. and Ozan, C., 2012, Using Wellbore Deformation as a Diagnostic Tool during CO2 Sequestration, AGU Fall Meeting Abstract H41C-1195.
 15. Wankel, S.D., Germanovich, L.N., Lilley, M.D., Genc, G., DiPerna, C.J., Bradley, A.S., Olson, E.J. and Girguis, P.R., 2011, Influence of subsurface biosphere on geochemical fluxes from diffuse hydrothermal fluids: direct measurement of subsurface hydrogen oxidation, AGU Fall Meeting Abstract B22A-03.
 16. Germanovich, L.N., Hurt, R.S., Ayoub, J. and Norman, W.D., 2011, Toughness-Dominated Regime of Hydraulic Fracturing in Cohesionless Materials, AGU Fall Meeting Abstract H13H-01.
 17. Farough, A., Lowell, R.P., Craft, K. and Germanovich, L.N., 2011, Some Approaches to Modeling Diffuse Flow at Mid-Ocean Ridges, AGU Fall Meeting Abstract OS11B-1479 .
 18. Germanovich, L.N., Murdoch, L.C., Garagash, D., Reches, Z., Martel, S.J., Johnston, M.J., Ebenhack, J. and Gwaba, D., 2011, Earthquake Nucleation and Fault Slip: Possible Experiments on a Natural Fault, AGU Fall Meeting Abstract H21B-1096
 19. Germanovich, L. N., Hurt, R. S., Ayoub, J., Norman, W.D., 2011, Toughness-dominated regime of hydraulic fracturing in cohesionless materials, AGU Fall Meeting, Abstarct H13H-01.
 20. Germanovich, L. N, Murdoch, L. C., Garagash, D., Reches, Z., Martel, S. J., Johnston, M. J. S., Ebenhack, J., Gwaba, D., 2011, Earthquake nucleation and fault slip: possible experiments on a natural fault, AGU Fall Meeting, Abstract H21B-1096.
 21. Wankel, S. D., Germanovich, L. N., Lilley, M. D., Gence, G., DiPerna, C. J., Bradley, A. S., Olson, E. J., and P. R. Girguis, 2011, Influence of subsurface biosphere on geochemical fluxes from diffuse hydrothermal fluids: Direct measurement of subsurface hydrogen oxidation, AGU Fall Meeting, Abstarct B22A-03.
 22. Skawski, G. M., Tokunaga, T., Ito, Y., Mogi, K., Cho, A., Germanovich, L. N., Hisz, D. B., Ebenhack, J., Wang, H. F., Murdoch, L., 2011, Development of a 3D FBG extensometer for hydromechanical well testing, AGU Fall Meeting, Abstract H21B-1107.
 23. Farough, A., Lowell, R. P., Craft, K., Germanovich, L. N., 2011, Some Approaches to Modeling Diffuse Flow at Mid-Ocean Ridges, AGU Fall Meeting, Abstarct OS11B-1479.
 24. Garagash, D. and Germanovich, L. N., 2011, Run-out distance of dynamic fault rupture nucleated by locally elevated pore pressure, Drucker Medal Symposium to honor J. W. Rudnicki, ASME Winter Annual Meeting, Denver, Colorado, November 15, 2011, Abstract IMECE2011-66117.
 25. Germanovich, L. N., and Balueva, A. V., 2011, Hydrogen induced fracture near the surface, ASME 2011 International Mechanical Engineering Congress & Exposition, Denver, Colorado, November 11-17, 2011, Abstract IMECE2011-62326.
 26. Lowell, R. P., Farough, A., Germanovich, L. N., 2010, Preliminary model of hydrothermal circulation at

- East Pacific Rise 9 degrees 50' N constrained by thermal, chemical, and seismic data. *Geochimica et Cosmochimica Acta*, Vol. 74, Issue 12, Supplement 1, p. A633, Goldschmidt Conference on Earth, Energy, and the Environment, Knoxville, TN, June 13-18, 2010.
27. Germanovich, L N, Murdoch, L C, Garagash, D., Reches, Z., Martel, S. J., Gwaba, D., Elsworth, D., Lowell, R P, Onstott, T C. (2010), A Controllable Earthquake Rupture Experiment on the Homestake Fault, AGU Fall Meeting, Abstract H13F-1045.
 28. Garagash, D, and Germanovich, L. N. (2010) Nucleation and Arrest of Dynamic Fault Rupture on a Pressurized Fault, AGU Fall Meeting, Abstract T31D-06.
 29. Murdoch, L C, Ebenhack, J., Germanovich, L. N., Wang, H. F., Boutt, D. F., Onstott, T. C., Kieft, T., Moser, D. P., Elsworth, D. (2010), Analysis of Ground Water Flow and Deformation in the Vicinity of DUSEL Homestake, AGU Fall Meeting, Abstract H13F-1052.
 30. Hisz, D. B., Ebenhack, J., Germanovich, L. N., and Murdoch, L. C. (2010), Characterization of Fractured Rock during Well Tests using Tilt-X, a Portable Tiltmeter and Extensometer for Multi-Component Deformation measurements, AGU Fall Meeting, Abstract H13F-1057.
 31. Rumiantsev, N., Lowell, R. P., Germanovich, L. N., Sonnenthal, E. L., Uzunlar, N., Elsworth, D., Mailloux, B. J., Maher, K. (2010), Boundary Layer Flow and Heat Transfer near Vertical Heated Boreholes in Water-Saturated Rock: An Approach to the THMCB Experiment at DUSEL Homestake, AGU Fall Meeting, Abstract H13F-1054.
 32. Craft, K.L., R.P. Lowell, and L.N. Germanovich (2010), Dike emplacement and hydrothermal circulation on Mars, 41st Lunar and Planetary Science Conf., Woodlands, TX, March 1-5, 2010, Abstract 2583.
 33. Lowell R.P., A. Farough, and L.N. Germanovich (2010), Preliminary Model of Hydrothermal Circulation at East Pacific Rise 9°50' N Constrained by Thermal, Chemical, and Seismic Data, Goldschmidt 2010, Knoxville, TN, *Geochimica et Cosmochimica Acta*, Vol. 74, No. 12, p. A633.
 34. Germanovich, L.N., D. Di Iorio, G. Genc, R. Hurt, R.P. Lowell, J.F. Holden, D.A. Butterfield, and E.J. Olson (2009), Direct Measurements of Hydrothermal Heat Output at Juan de Fuca Ridge, *Eos Trans. AGU*, 90(52), Fall Meeting Suppl., Abstract OS13A-1179.
 35. Hisz, D. B., Ebenhack, J., Burbey, T. J., Germanovich, L. N., Murdoch, L. C. (2009), Multi-Component Deformation of a Dipping Fracture Zone during a Well Test *Eos Trans. AGU*, 90(52), Fall Meeting Suppl., Abstract H21C-0851.
 36. Onstott, T. C., Peters, C. A., Murdoch, L. C., Elsworth, D., Sonnenthal, E. L., Kieft, T., Boutt, D. F., Germanovich, L., Glaser, S. D., Wang, H. F., Roggenthen, B., Lesko, K., Cushman, P., Stetler, L. D., Bang, S., Anderson, C. (2009), DUSEL and the future of deep terrestrial microbiology *Eos Trans. AGU*, 90(52), Fall Meeting Suppl., Abstract B21D-02.
 37. Garagash, D., Germanovich, L. N., Murdoch, L. C., Martel, S. J., Reches, Z., Elsworth, D., Onstott, T. C. (2009), A Thermal Technique of Fault Nucleation, Growth, and Slip. *Eos Trans. AGU*, 90(52), Fall Meeting Suppl., Abstract H23E-0995.
 38. Murdoch, L. C., Germanovich, L. N., Boutt, D. F., Kieft, T. L., Wang, H. F., Onstott, T C. (2009), A Conceptual Hydrogeologic Model of the Vicinity of DUSEL Homestake. *Eos Trans. AGU*, 90(52), Fall Meeting Suppl., Abstract H23E-1009.
 39. Craft, K., R.P. Lowell, and L.N. Germanovich (2008), Models of diffuse flow near mid-ocean ridge axes, *Eos Trans. AGU*, 89(53), Fall Meeting Suppl., Abstract V41B-2073.
 40. Germanovich, L. N., and Murdoch, L.C., (2008), Protecting coastal areas from flooding by injecting solids into the subsurface, *Eos Trans. AGU*, 89(53), Fall Meeting Suppl., Abstract OS23C-1276.
 41. Murdoch, L.C., D. Hisz, T. Slack, J. L. Germanovich (2008). Recent developments with hydromechanical well tests. *Eos Trans. AGU*, 89(53), Fall Meeting Suppl., Abstract NS51A-03.
 42. Murdoch, L.C. and L. Germanovich (2008), Can hydraulic fractures save the coastal cities of the world? 17th Clemson Hydrogeology Symposium. 3 April, 2008.
 43. Germanovich, L. N., Hurt, R. S., Huang, H., (2007) Hydraulic fracturing in saturated cohesionless materials, *Eos Trans. AGU*, 88(52), Fall Meeting Suppl., Abstract H11B-0492.
 44. Murdoch, L.C. T., Schwesinger, D. Hisz, T. Slack, and L. Germanovich (2007), Interactions between fluids

and fractures during well tests in fractured rock, *Eos Trans. AGU*, 88(52), Fall Meeting Suppl., Abstract H13J-07.

45. Ramondenc, P. L.N. Germanovich, and R.P. Lowell (2007), Effect of Magma Degassing on Dike Propagation at Mid-Ocean Ridges, *Eos Trans. AGU*, 88(52), Fall Meeting Suppl., Abstract T11A-0348.
46. Germanovich, L.N., G. Genc, P.A. Rona, and R.P. Lowell (2006), Deformation associated with serpentinization at mid-ocean ridges with reference to the TAG hydrothermal field, *EOS Trans. AGU*, 87(52), Fall Meeting Suppl., Abstract B31B-1100.
47. Germanovich, L. N. and Chanpura, R. A Model of Fault Reactivation due to Reservoir Depletion, *EOS Trans. AGU*, 87(52), Fall Meeting Suppl., Abstract T11E-04.
48. Ramondenc, P., L. N. Germanovich, and R. P. Lowell (2006), Effect of magma degassing on diking processes at mid-ocean ridges, *EOS Trans. AGU*, 87(52), Fall Meeting Suppl., Abstract B31B-1103.
49. Murdoch, L.C. T., Schwesinger, L. Germanovich (2006), Interpreting Mechanical Displacements During Hydromechanical Well Tests in Fractured Rock, *Eos Trans. AGU*, 87(52), Abstract H13D-1437.
50. Germanovich, L. N., Genc, G., Rona, P. A., Lowell, R. P. (2006), Deformation Associated with Serpentinization at Mid-Oceanic Ridges with Reference to the TAG Hydrothermal Field, *Eos Trans. AGU*, 87(52), Fall Meeting Suppl., Abstract B31B-1100.
51. Ramondenc, P., L.N. Germanovich, and R.P. Lowell (2005), Modeling hydrothermal response to earthquakes at mid-ocean ridges, *Eos Trans. AGU*, 86(52), Fall Meeting Suppl., Abstract T31B-0500.

B. MEETING PRESENTATIONS

147 presentations at national and international meetings

1. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 12-16, 2016
2. *50th US Rock Mechanics/Geomechanics Symposium*, Houston, TX, June 26-29, 2016
3. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 14-18, 2015
4. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 15-19, 2014
5. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 9-13, 2013
6. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 3-7, 2012
7. *SPE Annual Technical Conference and Exhibition*, 8-10 October, 2012, San Antonio, Texas
8. Gordon Research Conference on Feedback Processes in Rock Deformation, August 19-24, 2012, Andover, New Hampshire
9. *US/New Zealand Joint Geothermal Workshop*, Rotorua, New Zealand, April 18, 2012
10. *SPE International Symposium and Exhibition on Formation Damage Control*, Lafayette, Louisiana, 15–17 February 2012
11. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 13-17, 2011
12. *ASME 2011 International Mechanical Engineering Congress & Exposition*, Denver, Colorado, November 11-17, 2011
13. *XXV International Union of Geodesy and Geophysics General Assembly*, Melbourne, Australia, July 2, 2011
14. *American Geophysical Union Fall Meeting*, San Francisco, CA, December 13-17, 2010
15. *Earthquake Rupture Experiments in The Homestake Mine*, Workshop, San Francisco, CA, Dec. 12, 2010
16. *Schlumberger Client-Advisory Board Meeting*, Florence, Italy, Sept. 2010
17. *Transparent Earth DUSEL Workshop*, Berkeley, CA, June 2010
18. *Aramco Hydraulic Fracturing Workshop*, Dhahran, Saudi Arabia, January 2010
19. *American Geophysical Union Fall Meeting*, San Francisco, California, December 2009
20. *Workshop on DUSEL SCIENCE and Development of the MREFC*, Lead, SD, Sept, 30 – Oct. 3, 2009
21. *Schlumberger Client-Advisory Board Meeting with Major Petroleum Companies*, New Orleans, Sept. 2009

22. *From Shear Bands to Rapid Flow*, Scientific Conference, Monte Verità, Switzerland, Feb. 22-27, 2009
23. *9th Hydraulic Fracture Summit*, San Antonio and Houston, TX, July 2009
24. *American Geophysical Union Fall Meeting*, San Francisco, California, December 2008
25. *5th International Conference on Flow Dynamics*, Sendai, Japan, November 2008
26. *Schlumberger Client-Advisory Board Meeting*, Breckenridge, CO, September 25-27, 2008
27. *Homestake DUSEL Initial Suite of Experiments Workshop*, Lead, SD, April 21-26, 2008
28. *Endeavour ISS Integration and Synthesis Workshop*, Seattle, WA, September 18-19, 2008
29. *17th Clemson Hydrogeology Symposium*, April 3 2008.
30. *Mid-Atlantic Ridge 35-37.5°N Implementation Plan Workshop*, Portland, OR, March 27-28, 2008
31. *Mantle to Microbe: Integrated Studies at Oceanic Spreading Centers*, Portland, OR, March 25-26, 2008
32. *National Earthquake Laboratory in South African Mines, Workshop*, USGS, Menlo Park, Jan. 2008
33. *American Geophysical Union Fall Meeting*, San Francisco, California, December 2007
34. *Schlumberger Client-Advisory Board Meeting*, Anaheim, California, November 2007
35. *Deep Underground Science and Engineering (DUSEL) Workshop*, Washington, D.C., October 2007
36. *Marine Heat Flow Workshop*, Salt Lake City, September 6-7, 2007
37. *Deep Underground Science and Engineering (DUSEL) Workshop*, Lisbon, Portugal, July 2007
38. *6th Hydraulic Fracture Summit*, Atlanta, GA, May 2007
39. *American Geophysical Union Fall Meeting*, San Francisco, California, December 2006
40. *9th International Conference on Medical Image Computing and Computer Assisted Intervention*, Copenhagen, Denmark, October 1-6, 2006
41. *Schlumberger Client-Advisory Board Meeting*, San Antonio, TX, Sept. 2006
42. *Ridge Theoretical Institute: Modeling Oceanic Spreading Center Hydrothermal Processes*, California, Mammoth Lake, June 25-30, 2006
43. *Lau ISS Science and Planning Workshop*, Reno, NV, June 24-25, 2006
44. *9th International congress Fatigue 2006*, Atlanta, Georgia, May 2006
45. *Deep Underground Science and Engineering (DUSEL) Workshop*, Stony Brook, N.Y., May 2006
46. *East Pacific Rise ISS Science and Field Planning Workshop*, Lamont Observatory, Columbia University, New Jersey, April 10-12 2006
47. *3rd Schlumberger Applied Mathematics Study Group*, Houston, TX, January 11-13, 2006
48. *American Geophysical Union Fall Meeting*, San Francisco, California, December 2005
49. *Schlumberger Client-Advisory Board Meeting*, Dallas, Texas, October 2005
50. *8th U.S. National Congress on Computational Mechanics*, Austin, Texas, July 2005
51. *5th Hydraulic Fracture Summit*, Vancouver, Canada, June 2005
52. *American Geophysical Union Fall Meeting*, San Francisco, California, December 2004
53. *12th Annual Hubbert Quorum on Hydrogeology*, US Geological Survey, Menlo Park, CA, Dec. 2004
54. *Where is the Risk in Hydraulic Fracturing?*, *SPE Technology Workshop*, Moscow, Russia, Nov. 2004
55. *Tight Gas Reservoirs*, *SPE Forum*, Nice, France, September 2004
56. *6th North American Rock Mechanics Symposium*, Houston, June 2004
57. *Fairhurst Colloquium*, Minneapolis, October 2004
58. *Schlumberger Client-Advisory Board Meeting with Major Petroleum Companies*, Atlanta, GA, Sept. 2004
59. *4th Hydraulic Fracture Summit*, Moscow, Russia, June 2004
60. *Karabash Environmental Disaster, Meeting of the US Delegation with Russian Entrepreneurs*, Chelyabinsk, Russia, January 2004
61. *Soft Rock Workshop*, Moscow, Russia, December 2003
62. *Ridge 2000 Workshop*, Boulder, Colorado, November 2003
63. *3rd Hydraulic Fracture Summit*, Wisconsin, May 2003
64. *American Geophysical Union Fall Meeting*, San Francisco, California, December 2002

65. *Drilling Active Faults in South Africa Mines, Workshop*, Johannesburg, South Africa, 23 - 26 Sept., 2002
66. *International Conference on Structural Integrity and Fracture*, Perth, Australia, September 2002
67. *First International Ridge Institute*, Pavia, Italy, September 2002
68. *Int. Workshop on Bifurcations and Instabilities in Geomechanics*, Collegeville, Minnesota, June 2-5, 2002
69. *Petroleum Consortium Meeting*, Cambridge Research Center, Dowell-Schlumberger, UK, May 2002
70. *Ridge Integrated Studies Community Education Workshop*, Long Beach, California, March 2002
71. *American Geophysical Union Meeting*, San Francisco, December 2001
72. *38th US Rock Mechanics Symposium*, Washington, D.C., July 2001
73. *Hydraulic Fracturing Workshop*, Washington, D.C., July 2001
74. *IUTAM Symposium on Analytical and Computational Fracture Mechanics of Non-Homogeneous Materials*, Cardiff University, Cardiff, UK, 18-22 June, 2001
75. *9th Annual David S. Snipes/Clemson Hydrogeology Symposium*, Clemson University, April 12-13, 2001
76. *American Geophysical Union Meeting*, San Francisco, December 2000
77. *Thermo-Hydro-Mechanical Coupling in Fractured Rock, 3rd Euroconference on Rock Physics and Rock Mechanics*, Bad Honnef (Bonn), Germany, November 14-18, 2000
78. *4th North American Rock Mechanics Symposium*, Seattle, August 2000
79. *Subsurface Biosphere, Ridge Theoretical Institute*, Big Sky, Montana, July 2000
80. *American Geophysical Union Meeting*, San Francisco, December 1999
81. *7th Annual Hubbert Quorum on Hydrogeology*, US Geological Survey, Menlo Park, CA, Dec. 1999
82. *9th International Congress on Rock Mechanics*, Paris, France, August 25-28, 1999
83. *4th International Conference on Constitutive Laws for Engineering Materials*, Troy, NY, July 27-30, 1999
84. *37th US Rock Mechanics Symposium*, Vail, Colorado, June 5-6, 1999
85. *Latest Advances in Hydraulic Fracturing*, Vail, CO, June 3-4, 1999.
86. *American Geophysical Union Meeting*, San Francisco, CA, December 1998
87. *Hubbert Quorum '98 on Hydrogeology*, US Geological Survey, Menlo Park, CA, December 1998
88. *Cook Conference on Rock Mechanics*, Berkeley, California, October 1998
89. *Biot Conference on Poromechanics*, Brussels, Belgium, September 1998
90. *3rd North American Rock Mechanics Symposium*, Cancun, Mexico, June 1998
91. *EUROCK '98, Joint Symposium of the International Society for Rock Mechanics and Society of Petroleum Engineers*, Trondheim, Norway, July 1998
92. *American Geophysical Union Meeting*, San Francisco, December 1997
93. *Annual Meeting of Porous Media Research Institute*, University of Waterloo, Canada, Nov. 20-21, 1997
94. *Workshop, Hydraulic Fracture Mechanics - Searching for the Next Breakthrough in Stimulation*, Houston, Shell Exploration and Production Technology Co., Bellaire Technology Center, September 18, 1997
95. *A Geological Society of America Penrose Conference, Faults and Subsurface Fluid Flow: Fundamentals and Applications to Hydrogeology and Petroleum Geology*, Taos, New Mexico, Sept. 10-15, 1997
96. *37th U.S. Rock Mechanics Symposium*, New York, June 1997
97. *Hydraulic Fracturing, technology transfer workshop for gas and oil industry*, The University of Oklahoma, Norman, Oklahoma, May 1997
98. *Meeting with PEMEX (national oil company of Mexico) and IPM (national petroleum institute of Mexico)*, Norman, Oklahoma, February 1997
99. *American Geophysical Union Meeting*, San Francisco, December 1996
100. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, December 1996
101. *EUROCK '96, Symposium of the International Society for Rock Mechanics*, Turin, Italy, September 1996
102. *Second North American Rock Mechanics Symposium*, Montreal, Canada, June 1996
103. *Workshop on Rock Cutting*, Montreal, Canada, June 1996
104. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, June 1996

105. *Meeting with Shell, Conoco, Exxon, British Petroleum, and ARCO on Waste Disposal and Sanding*, The University of Oklahoma, Norman, Oklahoma, March 1996
106. *American Geophysical Union Meeting*, San Francisco, December 1995
107. *Hubbert Quorum '95 in Hydrogeology*, United States Geological Survey, Menlo Park, CA, December 1995
108. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, November 1995
109. *8th International Congress on Rock Mechanics*, Tokyo, Japan, September 1995
110. *Meeting at the Institute of Mechanics*, Moscow State University, Moscow, Russia, August 1995
111. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, June 1995
112. *National Science Foundation Site Visit*, Norman, Oklahoma, June 1995
113. *RIDGE Theoretical Institute*, Tahoe City, California, June 1995
114. *35th US Symposium on Rock Mechanics*, Lake Tahoe, Nevada, June 1995
115. *12th International Conference on Basement Tectonics*, Norman, Oklahoma, May 1995
116. *Mechanics of Jointed and Faulted Rock*, Second International Conference, Vienna, Austria, April 1995
117. *American Geophysical Union Meeting*, San Francisco, December 1994
118. *Hubbert Quorum '94 on Hydrogeology*, US Geological Survey, Menlo Park, CA, December 1994
119. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, November 1994
120. *EUROCK '94, Joint Symposium of the International Society for Rock Mechanics and Society of Petroleum Engineers*, Delft, The Netherlands, August 1994
121. *First North American Rock Mechanics Symposium*, Austin, Texas, June 1994
122. *Eighth International Conference of the Association for Computer Methods and Advances in Geomechanics, IACMAG*, Morgan Town, West Virginia, May 1994
123. *Asia-Pacific Forum Series of the Society of Petroleum Engineers*, Bali, Indonesia, May 1994
124. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, May 1994
125. *American Geophysical Union Meeting*, San Francisco, December 1993
126. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, October 1993
127. *Meeting at the Australian Center for Geomechanics*, Perth, Australia, September 1993
128. *RIDGE Theoretical Institute*, Big Sky, Montana, August 1993
129. *3rd International Symposium on Rockbursts and Seismicity in Mines*, Kingston, Canada, August 1993
130. *34th US Symposium on Rock Mechanics*, Madison, Wisconsin, June 1993
131. *Meeting at Russian Engineering Academy of Science*, Moscow, Russia, April 1993
132. *NSF Meeting with Independent Oil Companies*, Norman, Oklahoma, April 1993
133. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, March 1993
134. *American Geophysical Union Meeting*, San Francisco, December 1992
135. *Meeting at Geothermal Division at the U.S. Department of Energy*, Washington, DC, December 1992
136. *Meeting at Aerospace Science Directorate at Air Force Office of Scientific Research*, Bolling Air Force Base, Washington, DC, November 1992
137. *2nd Int. Conference on Fracture and Damage of Concrete and Rock*, Vienna, Austria, Nov. 1992
138. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, October 1992
139. *Penrose Conference on Fluid-Volcano Interaction*, Kahneeta Resort, Warm Springs, OR, Oct. 1992
140. *Rock Mechanics Meeting at ARCO petroleum company*, Dallas, Texas, August 1992
141. *33rd US Symposium on Rock Mechanics*, Santa Fe, New Mexico, June 1992
142. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, March 1992
143. *RIDGE Theoretical Institute*, Tucson, Arizona, January 1992
144. *American Geophysical Union Meetings*, San Francisco, December 1991
145. *Rock Mechanics Consortium Meeting*, Norman, Oklahoma, October 1991
146. *32nd US Symposium on Rock Mechanics*, Norman, Oklahoma, July 1991

147. *American Geophysical Union Meeting*, San Francisco, December 1990

C. INVITED SEMINARS

78 invited seminars in various organizations and universities

1. Pittsburgh University, Pittsburgh, Pennsylvania, February 24, 2017
2. *Swiss Federal Institute of Technology (ETH)*, Zurich, Switzerland, July 2016
3. *Department of Civil Eng., Swiss Federal Institute of Technology (ETH)*, Zurich, Switzerland, August 2015
4. *Institute for Geotechnical Engineering, Swiss Federal Institute of Technology (ETH)*, Zurich, Switzerland, July 2013
5. *BP Petroleum*, Houston, Texas, January 2013
6. *Colorado School of Mines*, Golden, Colorado, March 2013
7. *Institute for Geotechnical Engineering, Swiss Federal Institute of Technology (ETH)*, Zurich, Switzerland, February 2012
8. *Weatherford R&D*, Houston, Texas, October 2011
9. *Department of Civil and Resource Engineering, The University of Western Australia*, Perth, Australia, July 2011
10. *Department of Civil Eng., Swiss Federal Institute of Technology (ETH)*, Zurich, Switzerland, Sept. 2010
11. *Department of Civil Engineering*, University of Tokyo, February 2010
12. *School of Geology and Geophysics*, The University of Oklahoma, Norman, Oklahoma, December 2009
13. *Engineering Applications, Sugar Land Research Center, Schlumberger*, Houston, TX, March 2008
14. *Department of Geology and Geophysics*, Virginia Tech, March 26, 2007
15. *Data & Consulting Services (DCS)*, Schlumberger, Houston, TX, October 30, 2006
16. *Department of Petroleum and Geosystems Engineering*, The University of Texas at Austin, April 3, 2006
17. *School of Geology and Geophysics*, The University of Oklahoma, Norman, Oklahoma, November 2005
18. *Department of Eng. Sciences., Swiss Federal Institute of Technology (ETH)*, Zurich, Switzerland, May 2005
19. *Departments of Civil Engineering, Earth Sciences, and Physics*, Purdue University, October 2004
20. *Institut für Werkstoffkunde und Werkstofftechnik*, Technische Universität Clausthal, June 2003
21. *Department of Civil Engineering*, Korea Institute of Science and Technology, Seoul, Korea, March 2003
22. *Department of Civil and Structural Engineering*, The Hong Kong Polytechnic University, March 2003
23. *Department of Civil Engineering*, The Hong Kong University of Science and Technology, March 2003
24. *Institut für Werkstoffkunde und Werkstofftechnik*, Technische Universität Clausthal, January 2003
25. *Sugar Land Research Center, Dowell-Schlumberger*, Houston, July 2002
26. *Sugar Land Research Center, Dowell-Schlumberger*, Houston, January 2002
27. *Department of Civil and Mineral Engineering*, University of Minnesota, Minneapolis, November 2001
28. *South African Council for Scientific and Industrial Research*, Johannesburg, May 2001
29. *Department of Earth Sciences, Swiss Federal Inst. of Technology (ETH)*, Zurich, Switzerland, April 4, 2001
30. *Departement Terre Atmosphere Ocean, Ecole Normale Superieure*, Paris, France, January 4, 2001
31. *Department of Civil and Environmental Engineering*, University of Delaware, October 28, 2000
32. *Department of Civil Engineering*, Technion, Haifa, Israel, July 21, 2000
33. *Department of Environmental Sciences and Energy Research*, Weizmann Institute, Israel, July 18, 2000
34. *Laboratoire de Sismologie*, Institut de Physique du Globe de Paris, France, July 10, 2000
35. *Colloquia on Modern Topics in Mechanics*, Council on Theoretical and Applied Mechanics, Departments of Civil Engineering and Mechanical Engineering, Northwestern University, Chicago, March 2000

36. *Department of Geophysics*, Stanford University, Stanford, California, December 1999
37. *TotalFina Petroleum Company*, Paris, France, September 1999
38. *Cambridge Research Center*, Schlumberger, Cambridge, United Kingdom, July 1999
39. *Sugar Land Research Center*, Dowell-Schlumberger, Houston, May 1999
40. *Department of Petroleum and Geosystems Engineering*, The University of Texas at Austin, Nov. 1998
41. *Bellair Research Center*, Shell Petroleum Company, Houston, September 1998
42. *Sugar Land Research Center*, Dowell-Schlumberger, Houston, Austin, August 1998
43. *Civil and Environmental Engineering Program*, Delft Technical University, The Netherlands, July 1998
44. *Interview Seminar* (with job offer), Georgia Institute of Technology, Atlanta, February 1997
45. *Mobil Oil Company*, Dallas, Texas, May 1997
46. *Interview Seminar* (with job offer), The University of Illinois, Chicago, May 1997
47. *School of Geology and Geophysics*, The University of Oklahoma, Norman, Oklahoma, February 1997
48. *Phillips Oil Company*, Bartlesville, Oklahoma, September 1996
49. *Agip Oil Company*, Milan, Italy, September 1996
50. *Woods Hall Oceanographic Institution*, Woods Hall, Massachusetts, August 1996
51. *Geological Engineering Program*, The University of Wisconsin at Madison, April 1996
52. *Department of Civil and Materials Engineering*, The University of Illinois, Chicago, April 1996
53. *School of Geology and Geophysics* at The University of Oklahoma, Norman, Oklahoma, March 1996
54. *Lawrence Berkeley National Laboratory*, University of California, Berkeley, December 1995
55. *Institute for Problems in Mechanics of Russian Academy of Science*, Moscow, Russia, August 1995
56. *Geophysical Seminar Series* at Georgia Institute of Technology, Atlanta, Georgia, April 1995
57. *Department of Civil and Mineral Engineering*, University of Minnesota, Minneapolis, March 1995
58. *Lamont Geological Observatory and H. Krumb School of Mines*, Columbia University, N.Y., Feb. 1995
59. *Department of Earth and Space Sciences* at the State University of New York, Stony Brook, Feb. 1995
60. *Department of Geophysics* at Stanford University, Stanford, California, December 1994
61. *Rock Mechanics Research Center* at The University of Oklahoma, Norman, Oklahoma, September 1994
62. *Institute for Problems in Mechanics of Russian Academy of Science*, Moscow, Russia, September 1994
63. *Mining and Petroleum Engineering Program*, Delft Technical University, The Netherlands, Sept. 1994
64. *College of Chemistry*, Moscow State University, Moscow, Russia, March 1994
65. *School of Petroleum and Geological Engineering*, The University of Oklahoma, Norman, November 1993
66. *Department of Civil and Recourse Engineering*, The University of Western Australia, Perth, Sept. 1993
67. *Geophysical Seminar Series* at Georgia Institute of Technology, Atlanta, Georgia, June 1993
68. *Geophysical Seminar Series* at Georgia Institute of Technology, Atlanta, Georgia, April 1993
69. *Institute for Problem in Mechanics of Russian Academy of Science*, Moscow, Russia, April 1993
70. *School of Petroleum and Geological Engineering* at The University of Oklahoma, Norman, March 1993
71. *School of Earth Sciences*, Stanford University, Stanford, California, December 1992
72. *Cornell Fracture Group*, Cornell University, Ithaca, New York, December 1992
73. *Shell (KSEPL)*, Rijswijk, The Netherlands, November 1992
74. *School of Petroleum and Geological Engineering*, The University of Oklahoma, Norman, October 1992
75. *British Petroleum (BP)*, Houston, Texas, April 1992
76. *Interview seminar* (with job offer), The University of Oklahoma, Norman, Oklahoma, August 1991
77. *Interview seminars* (with job offer), Parsons Brinckerhoff-KBB, Inc., Las Vegas, Nevada, February 1991
78. *Geophysical Seminar Series*, Georgia Institute of Technology, Atlanta, Georgia, November 1990

D. OTHER SCHOLARLY ACCOMPLISHMENTS

Expeditions

1. *Southeastern Pacific Ocean, East Pacific Rise*, research vessel *Atlantis*, December 2013 - January 2014
2. *North Pacific Ocean: Endeavour Segment, and Middle Valley of Juan de Fuca Ridge Complex*, research vessel *Atlantis*, July 2010
3. *North Pacific Ocean: Endeavour Segment and Axial Valley, Juan de Fuca Ridge*, research vessel *Atlantis*, diving to 2100 m on research submersible *Alvin*, June 2009
4. *North Pacific Ocean: Endeavour Segment and Axial Valley, Juan de Fuca Ridge*, research vessel *Atlantis*, Diving to 2100 m on research submersible *Alvin*, August-September 2008
5. *North Pacific Ocean: Endeavour Segment and Axial Valley, Juan de Fuca Ridge*, research vessel *Atlantis*, Diving to 2100 m on research submersible *Alvin*, July 2008
6. *North Pacific Ocean, Endeavour Segment and Middle Valley of Juan de Fuca Ridge complex*, research vessel *Atlantis*, Diving to 2100 m on research submersible *Alvin*, October 2007
7. *Southeastern Pacific Ocean, East Pacific Rise*, research vessel *Atlantis*, Diving to 2500 m on research submersible *Alvin*, November 2006
8. *Southeastern Pacific Ocean, East Pacific Rise*, research vessel *Atlantis*, Diving to 2500 m on research submersible *Alvin*, March – April 2004

Patents

1. Germanovich, L.N., Murdoch, L.C., Robinowitz, M.J., 2015, Abyssal sequestration of nuclear waste and other types of hazardous waste, US Patent No. 9,190,181.
2. Germanovich, L.N., Churaev, N.F., Kusov, N.F., and Voronkov, G.Ya., 1981, Composition for physico-chemical fracture of the mineral combustible solids, Patent certificate of the USSR, No. 836342, *Official Bulletin of the USSR Committee for Invention and Discovery Affairs*, No. 21, p. 167.

Software

- Sim, Y., and Germanovich, L. N., 2000, *MultiFrac 2000, User Manual*, Georgia Tech. This document describes software which is a development of MultiFrac 99 [see also ref 31].
- Astakhov, D. K., Germanovich, L. N., and Sim, Y. 1999, *MultiFrac 99, User Manual*, Georgia Tech. This document describes software which is a development of MultiCrack 2.05 [see also ref 40].
- Chanpura, R., and Germanovich, L. N., 1999, *Fault 99*, Software for evaluating fault slip magnitude in hydrocarbon reservoirs as a result of their depletion. Georgia Tech [see also ref 88].
- Astakhov, D. K., Ring, L. M., and Germanovich, L. N., 1998, *MultiCrack 2.05, User Manual*, Georgia Tech. This document describes software for simulating hydraulic fractures with multiple segments observed in the field and in the lab [see also refs 42, 43].
- Germanovich, R., and Chanpura, L. N., 1998, *Deplete 98*, Software for simulating fault reactivation in hydrocarbon reservoirs as a result of their depletion, Georgia Tech [see also ref 88].

V. SERVICE

A. PROFESSIONAL CONTRIBUTIONS

Organized Workshops and Conferences

- 2013 Hydraulic Fracture Mechanics Considerations for Unconventional Reservoirs, Rancho Palos Verdes, California, Terranea Resort, September 11 – 13, 2013, Member of The Organizing Committee

- 2010 Earthquake Rupture Experiments in The Homestake Mine, Workshop, San Francisco, CA, *Chair*
- 2009 US Rock Mechanics Symposium, *Member of The Organizing Committee*
- 2008 American Geophysical Union Fall Meeting, San Francisco, California, Special session *Impacts of Effective Sea Level Rise on Coastal Areas: Advances in Understanding, Assessment, and Mitigation (co-convened with L. Murdoch)*
- 2008 Reservoir Geomechanics, SPE Forum, Colorado Springs, *Member of the Organizing Committee*
- 2007 American Geophysical Union Fall Meeting, San Francisco, California, Special session *Interactions Between Fluids and Fractures (co-convened with L. Murdoch)*
- 2007 6th Hydraulic Fracturing Summit, Atlanta, Georgia, *Chair of the Organizing Committee*
- 2006 41st US Rock Mechanics Symposium, Golden, Colorado, *Session Chair*
- 2004 Schlumberger Client-Advisory Board Meeting with Major Petroleum Companies, Georgia Tech, Atlanta, Georgia, *Organizer*
- 2004 6th North American Rock Mechanics Symp., Houston, TX, *Chair of Hydraulic Fracturing Session*
- 2003 American Geophysical Union Fall Meeting, San Francisco, California, Special session *Interactions Between Fluids and Fractures (co-convened with L. Murdoch)*
- 2003 Probability Theory and Reliability Analysis in Geosystems Engineering, Short Course given by Prof. Milton Harr, Atlanta, Georgia, *Organizer*
- 2002 International Conference on Structural Integrity and Fracture, Perth, Australia, *Chair of Fracture Mechanics Session*
- 2002 5th North American Rock Mechanics Symposium, Toronto, Canada, *Chair of Fracture Mechanics and Hydraulic Fracturing Session*
- 2001 38th US Symposium on Rock Mechanics, Washington, D.C., *Chair of Hydraulic Fracture Mechanics Session*
- 2000 3rd Euroconf. on Rock Physics and Rock Mechanics, Bad Honnef (Bonn), Germany, *Session Chair*
- 2000 *Advances in Rock Fracture Mechanics*, Jerusalem, Israel, *Short Course at Hebrew University*
- 1999 37th US Symposium on Rock Mechanics, Vail, Colorado, *Chair of Fracture Mechanics Session*
- 1999 Recent Advances in Hydraulic Fracturing, Workshop, Vail, Colorado, *Organizer*
- 1998 Probability Theory and Reliability Analysis in Geosystems Engineering, Short Course given by Prof. Milton Harr, Atlanta, Georgia, *Organizer*
- 1998 First International Conference on Site Characterization, Atlanta, Georgia, *A Member of the Organizing Committee*
- 1998 International Conference on Computational Engineering Science, Atlanta, Georgia *Chair of Fracture I and Fracture II Sessions*
- 1997 Mechanisms of Hydraulic Fracturing, Technology Transfer Workshop, Norman, Oklahoma, *Organizer (jointly with Dr. J.-C. Roegiers)*
- 1996 Borehole Stability, Technology Transfer Workshop Norman, Oklahoma, *Organizer (jointly with Dr. J.-C. Roegiers)*
- 1995 Second International Conference on Mechanics of Jointed and Faulted Rock, Vienna, Austria, *Chair of Rock Fracture Session and International Board Member*
- 1994 *Fundamentals of Rock Fracture Mechanics*, The University of Texas at Austin, *Short Course*
- 1993 *Applied Rock Fracture Mechanics*, Short Course at the University of Western Australia, Perth

Reviews

- 2003–2006 *Associate Editor*, Journal of Geophysical Research, Solid Earth
- 1991–present *Journals*: International Journal of Fracture, International Journal of Solids and Structures, Engineering Fracture Mechanics, International Journal for Numerical and Analytical Methods in Geomechanics, Advances in Water Resources, ASCE Journal of Engineering Mechanics, ASCE Journal of Geotechnical Engineering, ASCE Journal of Hydrologic Engineering, Composite Science and Technology, Geochimica et Cosmochimica Acta,

Geology, Geophysical Research Letters, Geophysical Journal International, International Journal of Rock Mechanics, Journal of Geodynamics, Journal of Geophysical Research, Journal of Petroleum Science and Engineering, Journal of Petroleum Technology, Rock Mechanics and Rock Engineering

1991–present *Proposals*: National Science Foundation, Department of Energy, US Geological Survey, Petroleum Research Fund, Binational Science Foundation (Israel)

B. CAMPUS CONTRIBUTIONS

2015-2016	CEE Awards Committee
2013-2015	CEE Committee on the Graduate Applied Mathematics course, chair
2012	CEE Committee for Hiring Teaching Assistants, chair
1997 – present	Adjunct Professor, School of Earth and Atmospheric Sciences, Georgia Tech
2004 – present	Research Director
1998 – present	Co-founder and co-director Center for Applied Geomaterials Research, Georgia Tech
2010–2012	Geosystems Comprehensive Exam Coordinator
2000–2009	Geosystems Comprehensive Exam Coordinator
2001–2004	CEE 3i Committee
1999–2006	CEE Undergraduate Committee
1998–1999, 2004	Geosystems Seminar Series Coordinator
2003–2007	CEE Computer Committee
1997–1999	CEE Computer Committee
1995–1997	Special Member of the Graduate Faculty, School of Petroleum and Geological Engineering, The University of Oklahoma, Norman, Oklahoma
1996–1997	Special Member of the Graduate Faculty, School of Geology and Geophysics, The University of Oklahoma, Norman, Oklahoma

C. OTHER CONTRIBUTIONS

Professional Societies

1990–present	American Geophysical Union
1991–present	International Society for Rock Mechanics
1995	A Founder of the American Rock Mechanics Association
2000–2001	American Society of Civil Engineers
1999–2002	Society of Petroleum Engineers
2013–2014	Society of Petroleum Engineers

VI. GRANTS AND CONTRACTS

A. AS PRINCIPAL AND CO-PRINCIPAL INVESTIGATOR

40 government and industrial grants and contracts totaling \$7.9M

1. *Robust In Situ Strain Measurements to Monitor CO₂ Storage*, DOE (via subcontract to Clemson University), 2016 –2019, \$ 313,152, PI
2. *Schlumberger Foundation for Rock Mechanics Research*, 2016, \$45,000, PI
3. *Characterizing and Interpreting the In Situ Strain Tensor During CO₂ injection*, DOE (via subcontract to

- Clemson University), 2014–2018, \$200,515, PI
4. *Serpentinization of oceanic crust: Integrated modeling of deformation, fracture, fluid flow, and heat transfer*, 2011–2014, \$211,269, NSF, PI
 5. *Fracture Processes in Soft Rocks*, 2011–2015, Schlumberger, \$105,000, PI
 6. *Earthquake Rupture Experiment at DUSEL Homestake*, 2010–2012, \$129,123, NSF, PI
 7. *Feasibility of Using Well Bore Deformation as a Diagnostic Tool to Improve CO₂ sequestration*, DOE (via subcontract to Clemson University), 2010–2013, \$102,830, PI
 8. *Workshop for Development of a Fracture Processes Facility at DUSEL*, 2010–2012, \$49,935, NSF, PI
 9. *Development of a Fracture Processes Facility at DUSEL Homestake*, 2009–2013, \$186,453, NSF, PI
 10. *Device for measuring fluid flow in seafloor hydrothermal environments*, 2009–2012, \$186,453, NSF, PI
 11. *Fracture Mechanisms in Unconsolidated Sand in the Water Flood Conditions*, 2006–2013, Shell Corporation, \$312,787, PI
 12. *Fracture Processes in Soft Rocks*, 2006–2013, Schlumberger, \$151,514, PI
 13. *Effects of Hydrologic Processes on In Situ Stress*, 2009–2013, \$150,881, PI
 14. *Characterization of Fractured Rock Aquifers Using Hydromechanical Well Tests*, 2006–2008, \$153,956, NSF, PI
 15. *Rock Mechanics Research*, 2006–2010, \$210,000, Schlumberger-GTF, PI
 16. *Physical modeling of 3D Tsunami Evolution Using a Landslide Tsunami Generator*, 2004–2007, \$450,019, NSF, Co-PI (jointly with Profs. H. Fritz and A. Puzrin)
 17. *Fracture Processes in Soft Sediments*, 2004–2005, Dowell-Schlumberger, \$74,000, PI
 18. *Modeling Dissociation of Gas Hydrates in Marine Sediments and Processes Related to Methane Transport in Faults and Fractures*, 2003–2005, NSF, \$228,124, Co-PI (jointly with Drs. W. Xu and R. P. Lowell)
 19. *Fracture Processes in Soft Sediments*, 2003–2004, Dowell-Schlumberger, \$230,090, PI
 20. *Continued Mathematical Modeling of Seafloor Hydrothermal Systems: Fracture Mechanics, Heat Transfer, and the Evolution of Permeability*, 2002–2005, NSF, \$481,806, Co-PI (with Dr. R. P. Lowell)
 21. *Fracture Processes on Small Extraterrestrial Bodies in the Solar System*, NSF, 2002–2004, \$53,017
 22. *Mechanics of Sand Production from Hydrocarbon Reservoirs*, 2002–2003, Dowell-Schlumberger, \$100,000, PI
 23. *Hydraulic Fractures in Uncemented Particulate Materials* (continuation), 2001–2003, Shell, \$159,749, PI
 24. *Visualization of Transport Phenomena and Fracture Evolution in Fracture Networks*, 2001–2002, NSF, \$52,178, Co-PI (jointly with Prof. R. P. Lowell and Dr. P. E. Dijk)
 25. *Hydraulic Fractures in Uncemented Particulate Materials*, 2000, Shell, \$30,094, PI
 26. *Feasibility of Analytical Modeling of Cold Drawing Process*, 2000, Enventure Global Technology, \$10,040, PI
 27. *Dynamic Fracturing of Rocks*, 1999–2002, Binational Science Foundation (Israel), \$150,000, PI
 28. *Fault Slip and Seismicity Induced as a Result of Fluid Withdrawal*, 1999–2000, Shell, \$58,978, PI
 29. *Feasibility of Modeling Sand Production from Petroleum Formation*, 1999–2000, Dowell-Schlumberger, \$15,000, PI
 30. *Petroleum Geomechanics Research*, 1999–2000, Dowell-Schlumberger, \$30,000, PI
 31. *Fracture Processes in Geomaterials*, 1999–2000, Shell, \$145,000, PI
 32. *Three-Dimensional Fractures in Heterogeneous Marine Sediments*, 1999–2000, Shell, \$150,199, PI
 33. *Modeling Multisegmented Hydraulic Fractures in Reservoir Rocks*, 1998–1999, Shell, \$70,000, PI
 34. *Fault Reactivation as a Result of Reservoir Depletion*, 1998–1999, Shell, \$54,384, PI
 35. *Three-Dimensional Crack Initiation and Propagation in Transparent Rock-Like Materials Subjected to Compression*, 1997–2001, NSF (CMS-9896136; CMS-9622136 transfer), \$150,000, PI
 36. *Towards an Integrated Mathematical Model of Seafloor Hydrothermal Systems Involving Fracture Mechanics, Chemistry, and the Evolution of Crustal Permeability*, 1997–2001, NSF (OCE-9896021; OCE-9626939 transfer), \$200,000, PI
 37. *Research Support/Matching*, 1996–2000, The University of Oklahoma and Georgia Tech, \$114,000, PI

38. *Rock Mechanics Research Center*, 1995-2000, NSF (EEC-9209619) and State of Oklahoma (OCAST 5133), \$3,000,000, Co-PI (jointly with Drs. Y. Abousleiman, M. Bai, J.-C. Roegiers, T.G. Scott, D. Stearns, and M. Zaman)
39. *Percolation Theory, Fracture Mechanics, and Magma/Hydrothermal Processes at Ocean Ridge Crests* (supplemental funding), 1995-1996, NSF, \$10,050, PI
40. *Percolation Theory, Fracture Mechanics, and Magma/Hydrothermal Processes at Ocean Ridge Crests*, 1993-1995, NSF (OCE-9221349), \$87,000, PI

B. AS INVESTIGATOR (FUNDED)

1. *Modeling Brain Tissue*, 2004-2006, \$80,000, NIH, PI Prof. A. Puzrin
2. *Rock Mechanics Research Center*, 1992-1995, NSF (EEC-9209619), \$900,000, Leader of Project "Deformation and Fracture of Cracked and Porous Rocks", PIs: Profs. J.-C. Roegiers, D. Stearns, and M. Zaman
3. *Rock Mechanics Consortium*, 1991-1997, Shell, Exxon, Philips, Schlumberger, Halliburton, Union Pacific Resources, ARCO, Mobil, Leader of Projects "Fracture Propagation Criteria" and "Borehole Stability", \$2,800,000, PI: Prof. J.-C. Roegiers

VII. INDUSTRIAL EXPERIENCE

Aramco
 BP
 Chevron
 Conoco Phillips
 Eni
 ExxonMobil
 Grand Abyss
 Grand Directions
 Grand Resources
 Halliburton
 Maersk Oil
 Schlumberger
 Statoil
 Total
 Weatherford

VIII. RECOGNITION

A. HONORS AND AWARDS

- | | |
|------|--|
| 2003 | Award for Research in Rock Mechanics from the American Rock Mechanics Association |
| 2002 | Georgia Tech Sigma Xi Best Paper Award |
| 2001 | CEE Best Paper Award |
| 2000 | Basic Research Award for Significant Original Contribution from the U.S. National Committee for Rock Mechanics |
| 1999 | Dowell-Schlumberger Petroleum Geomechanics Grant |
| 1999 | CEE Outstanding Interdisciplinary Activity Award |
| 1996 | Elected as a Foreign Fellow by the Russian Academy of Natural Sciences |

B. KEYNOTE AND GUEST LECTURES

- 2016 Guest Lecture "Gravity-Assisted Hydraulic Fracturing", Schlumberger Client Advisory Board, Houston, Texas
- 2012 Keynote Lecture, Gordon Research Conference "Feedback Processes in Rock Deformation", Andover, New Hampshire
- 2011 Keynote Lecture, Symposium "Physics of the Seismic Process: from Laboratory Studies to Field Observations" at the XXV International Union of Geodesy and Geophysics General Assembly, Melbourne Australia (July 2, 2011)
- 2009 Keynote Lecture, Scientific Conference "From Shear Bands to Rapid Flow," Monte Verità, Switzerland
- 2008 Keynote Speaker, 5th International Conference on Flow Dynamics, Sendai, Japan
- 2007 Guest Lecture, Schlumberger Client-Advisory Board, Anaheim, California
- 2005 Guest Lecture, Symposium "Homogenization and Effective Characteristics" at the 8th U.S. National Congress on Computational Mechanics, Austin, 2005
- 2004 Keynote Lecture, Fairhurst Colloquium, Minneapolis, October 2004
- 2004 Guest Lecture, SPE Forum Tight Gas Reservoirs, Nice, France, September 2004
- 2002 Keynote Lecture, International Conference on Structural Integrity and Fracture, Perth, Australia
- 2002 Keynote speaker, "Drilling Active Faults in South Africa Mines," Workshop, Johannesburg, South Africa
- 2001 Keynote Lecture "Modes and Mechanisms of Hydraulic Fractures," Hydraulic Fracturing Workshop, Washington, D.C.
- 1997 Invited Keynote Lecture "Thermal Spalling of Rock," 9th International Conference on Fracture, Sydney, Australia

B. INVITED CONFERENCE PAPERS

- 2014 Invited paper "Large-Scale Deformation and Uplift Associated with Serpentinization", American Geophysical Union Fall Meeting, 2014, San Francisco
- 2013 Invited paper "Multiple Fractures and Segmentation", SPE Workshop "Hydraulic Fracture Mechanics Considerations for Unconventional Reservoirs, Rancho Palos Verdes, California, Terranea Resort, September 11, 2013
- 2012 Invited paper "Injection-Induced Seismic Slip: Nucleation and Arrest of Dynamic Slip on a Pressurized Fault", US/NZ Joint Geothermal Workshop, Rotorua, New Zealand, April 18, 2012
- 2011 Invited Paper "Toughness-dominated regime of hydraulic fracturing in cohesionless materials," American Geophysical Union Fall Meeting, December 5, 2011, San Francisco
- 2011 Invited Paper "Earthquake nucleation and fault slip: possible experiments on a natural fault," American Geophysical Union Fall Meeting, December 6, 2011, San Francisco
- 2008 Discussion Leader and Speaker, SPE Forum "Reservoir Geomechanics," Colorado Springs, Colorado USA
- 2006 Invited Paper, American Geophysical Union Fall Meeting, December, San Francisco
- 2004 Discussion Leader, SPE Applied Technology Workshop "Where is the Risk in Hydraulic Fracturing?", Moscow, Russia, November 2004
- 2003 Invited Lecture, Soft Rock Workshop, Schlumberger, Moscow State University, Russia,

December 2003

- 2001 Invited Paper "Fracture Closure in Extension and Stress Dependent Permeability of Jointed Rock," The 9th Annual David S. Snipes/Clemson Hydrogeology Symposium, Clemson University, South Carolina, April 12-13, 2001
- 2000 Invited Paper "Visualization of Brittle Fracture Propagation in Uniaxial Compression," American Geophysical Union Fall Meeting, December 15-19, San Francisco
- 1998 Invited Paper "Pressure Dependent Permeability in Jointed Rock," American Geophysical Union Fall Meeting, San Francisco
- 1997 Invited Paper "Formation of Event Plumes at Ocean Ridges Resulting from Dike Injection," American Geophysical Union Fall Meeting, San Francisco
- 1994 Invited Panel Discussion Member, Asia-Pacific Forum Series of the Society of Petroleum Engineers, Bali, Indonesia