

Awards and Honors

2024	OPEA Engineering medal – Entrepreneurship
2019	Canadian Geotechnical Society’s John A. Franklin Award in Rock Mechanics
2019	Outstanding-Outstanding-Outstanding score in NSERC Discovery Grant competition (<i>top 1%</i>)
2017	NSERC/Energi Simulation Industrial Research Chair - Fundamental Rock Physics & Rock Mechanics
2016	Foundation CMG Chair in Fundamental Petroleum Rock Physics and Rock Mechanics
2012	NSERC Discovery Accelerator Supplement Award (<i>top 2% applicants across all disciplines</i>)
2004	Rocha Medal Award of the International Society for Rock Mechanics for 2004. <i>It recognizes the most outstanding doctoral thesis in rock mechanics for the year.</i>
2004	Sandia Spot Recognition Award for the contribution to the Geophysical Technology Department
2000	Swiss National Science Foundation fellowship to support eight months research at Lawrence Berkeley National Laboratory, USA (4.2000-12.2000)

Major HQP Awards and Honors

2019	Dr. Zhao (graduated with me in 2017) was awarded with the 2019 OeGG Leopold Müller Award and the ARMA 2020 Dr. N.G.W. Cook Ph.D. Dissertation Award
2017	Dr. Tatone (graduated with me in 2014) was awarded the 2017 ISRM Rocha Medal Award
2015	Dr. Lisjak (graduated with me in 2013) was awarded the 2015 ISRM Rocha Medal Award

Academic Appointments

1.2006- to date	Assistant, Associate (2014) and then Full (2016) Professor at the University of Toronto
4.2013-6.2013	Visiting faculty at the ERDW at the ETHZ, Switzerland
1.2013-3.2013	Host faculty at the LMS/LMR at the EPFL, Switzerland
10.2012	Visiting faculty at the Civil Engineering Department at the University of Newcastle, Australia
1.2007-12.2009	Adjunct Professor at the School of Engineering at Laurentian U., Sudbury, ON, Canada

Professional Positions

6.2018- to date	Director of the Transparent Lab at the University of Toronto
10.2010-1.2016	President & Founder of Geomechanica Inc. (former 2261939 Ontario Inc.)
1.2007-9.2009	Associate Director of the Lassonde Institute at the University of Toronto
1.2005-12.2005	Associate Director of the Geomechanics Research Center at Mirarco, Sudbury, ON, Canada
1.2003-5.2003	Rock Mechanics specialist – Fondazioni Speciali, Italy

Professional Registrations

Professional Engineer in Ontario (PEO) since 2009 and in Italy (Section of Parma) since 1996

Education

6.2003-12.2004	PostDoc in Rock Physics - Sandia National Laboratories - Albuquerque, USA supervisor Dr. Fredrich J.T.
10.2001-5.2003	PostDoc in Rock Mechanics - Imperial College London – London, UK supervisor Prof. Zimmerman R.W.
5.1998-6.2001	Ph. D. in Rock Mechanics – EPFL - Lausanne, Switzerland ” <i>Shear Strength of Rock Joints Based on Quantified Surface Description</i> ” advisors Prof. Descoedres F. & Prof. Egger P. (thesis awarded with 2004 ISRM Rocha Medal)
9.1990-12.1995	Laurea in Civil Engineering - Università degli studi di Parma - Parma, Italy ” <i>Comportamento meccanico di masse rocciose discontinue rinforzate con bulloni passivi</i> ” advisors Prof. Giani G.P. & Prof. Egger P.

Postgraduate Degrees

- 3.2001-6.2001 Entrepreneurship Diploma CREATE - EPFL, Switzerland
4.1999-10.2000 Risk Management Diploma - EPFL – ETHZ – University of St. Gallen, Switzerland

Membership on Committees and Boards

- 10.2022- to date Member of the Editorial Board of the journal “G4”
11.2021- to date Member of the Editorial Board of the “Journal of Rock Mechanics and Geotechnical Engineering”
7.2016- to date Associate Editor of the journal “Tunnelling and Underground Space Technology”
8.2015- 4.2018 Member of and Group Section Chair for the NSERC Evaluation Group 1509
4.2017- 5.2017 Program Reviewer, Université Laval - Reviewer of the graduate programs for the department of Material and Mining Engineering
4.2016- 6.2016 External Reviewer, Chalmers University of Technology - External evaluation for their academic hiring process of a professors in geomechanics
3.2016- 5.2016 External Reviewer, University of Texas at Austin - Review and quality assessment of the research activities for the renew of the Foundation CMG research Chair
9.2013- to date Member of the Editorial Board of the journal “Tunnelling and Underground Space Technology”
2013 Chair and organizer for the RockEng13 Symposium, Toronto, Dec 6, 2013
2009 Chair and organizer for the RockEng09 Symposium, Toronto, May 10-14, 2009
7.2007- 8.2011 Secretary and Treasurer of CARMA
7.2007- 8.2011 Member at large of the executive committee of the Rock Mechanics Division of CGS
1.2007- to date Member of the Editorial Board of the journal “Rock Mechanics and Rock Engineering”

Other Scholarly and Professional Activities

- Member of the International Advisory Committee, DEM6 - Delft Netherlands.
Member of the International Advisory Committee, ARMS10 - 10th Asian Rock Mechanics Symposium, Singapore.
Session Co-Chair, 52nd U.S. Rock Mechanics/ Geomechanics Symposium, Seattle, United States.
Academic lead for the 2015 Petro-Challenge organized in conjunction with NeXT-Schlumberger and Shawcor – 28-29 November 2015
Member of the International Advisory Committee for EUROCK2012 - Stockholm, Sweden – 28-30 May 2012.
Member of the Organizing Committee for the 46th US Rock Mechanics Symposium - Chicago, USA- 24-27 June 2012.
Member of the Organizing Committee for the RockEng12 Symposium - Edmonton, Canada – 6-9 May 2012.
Member of the 2011 review panel for the Geomechanics and Geomaterials Program and the Geotechnical Engineering Program at the US National Science Foundation
Member of the DUSEL Transparent Earth team
Contributor to the International Fault Slip Research Initiative (IFSRI) by Center of Excellence in Mining Innovation (CEMI)
Member of the ISRM international working group for the revision of the ISRM suggested standards for direct shear tests
Member of the ISRM international working group on Fracture Dynamics
Member of the ISRM international working group on Spalling
Member of the seismicity advisory board at Mirarco, Laurentian University, ON, Canada (2007-2009)
Member of the International Advisory Committee for the 2009 International Conference on Rock Joints and Jointed Rock Masses
Chair or co-Chair of Technical Sessions at international conferences (i.e., ARMS2006, 2007 Canada-US Rock Mechanics Conference, 2007 Euroconference in Rock Physics, 2009 International Conference on Rock Joints and Jointed Rock Masses, 2010 Eurock).
Reviewer for several international journals (e.g., e.g., Rock Mechanics and Rock Engineering, Physics Letter A, International Journal of Rock Mechanics and Mining Sciences, Geomechanics and Geoengineering, Water Resources Research, Engineering Geology, Acta Geotechnica, International Journal of Numerical and Analytical Methods in Geomechanics)

Reviewer for research grants submitted to OCE (Ontario collaborative program) NSERC (Discovery Grant program), US Department of Energy (DEO), US Science National Foundation (SNF), and Swiss National Science Foundation (SNSF)

One of the few non-US citizen members of the collaborator team for the HUSEP-DUSEL project (2006-2008)

Selected Consulting Activities

Geomechanica Inc., DS experiment: numerical simulation of fluid-pressure-driven fractures in jointed rock formations. Mont Terri Project, *Technical Note TN 2014-26, St-Ursanne (Switzerland)*

Geomechanica Inc., Extent and shape of the EDZ around underground structures of a geological repository for radioactive waste - A sensitivity study for the candidate host rocks in the proposed siting regions in Northern Switzerland. NAGRA, *Technical Report NAB 13-78, Wettingen (Switzerland)*

Geomechanica Inc., The excavation of a circular tunnel in a bedded argillaceous rock (Opalinus Clay): short-term rock mass response and numerical analysis using FEM/DEM. NAGRA, *Technical Report NAB, (Switzerland)*

Geomechanica Inc., RA experiment: 2D FEMDEM modelling of the excavation of circular tunnels in Opalinus Clay. Mont Terri Project, *Technical Note TN 2012-06, St-Ursanne (Switzerland)*

Caving Project Parameters Phase II: Block Cave Subsidence Modeling Benchmark Study – *Centre for Excellence in Mining Innovation (CEMI), Canada*

Review of stress-driven dynamic failure during tunnel excavation - *SEA Consulting s.r.l., Italy*

Keynotes, Invited Lectures, and Scientific publications

Moving Past Simplified Assumptions and Classification Systems in Rock Engineering: Enhancing Understanding of Deformation and Failure Processes through Advanced Hybrid Numerical Models – ChinaRock 2024, Chengdu, China – 2 November 2024 [Keynote]

Modelling failure in layered geological formations - FDEM: a micro-mechanical approach that bridges across scales. – At IACMAG 2022 – Turin, Italy – 2 September 2022 [Keynote]

Advanced numerical modeling in engineering - FDEM: a micro-mechanical approach that bridges across scales. At ICCSTE'19 - Carleton University, Ottawa, Canada – 11 June 2019 [Keynote]

Advancements in experimental and numerical methods in rock physics and rock mechanics. China Lecture Tour - Invited lectures at six main Chinese research institutions: Tonji U.; Wuhan U.; Three Gorges U.; China U. of Geoscience; Southwest Petroleum U.; Chinese Academy of Science - Beijing, China – May 2018 [Invited]

Microseismicity and hydraulic fracturing through geomechanical modelling - Advanced 3D and 4D FDEM technology, CSUR Workshop on Hydraulic Fracturing, Calgary – 1 May 2017 [Invited]

An improved understanding of hydraulic fracturing through geomechanics - Advanced 3D and 4D FDEM modelling. At SPE Forum: The Role of Geomechanics in Conventional and Unconventional Reservoir Performance and Management – Kuala Lumpur, Malaysia – May 23, 2016 [Keynote]

Unveiling Hydraulic Fracturing Processes in Shale: from the Lab to the Reservoir Scale – The Geomechanics Perspective. At Microseismic Industry Consortium Meeting – Calgary, Canada – February 27, 2015 [Keynote]

Unveiling Hydraulic Fracturing Processes in Shale: from the Lab to the Reservoir Scale - The Geomechanics Perspective. At Fifth EAGE Passive Seismic Workshop – Lisbon, Portugal – Sept. 30, 2014 – [Keynote]

Physical-chemical response to geomechanical processes during geologic sequestration of scCO₂. At Five in Five Challenge at CMC Annual Conference – Calgary – June 3-5, 2013. [Invited lecture]

Bringing FDEM to practice - Study of the mechanism that contributes to the development of a damaged area around excavations in a layered rock formation. At DEM6 – Boulder, Colorado – August 5-6, 2013 [Keynote]

Numerical simulation of acoustic emissions in rock using FEM/DEM. At RocDyn – Lausanne, Switzerland – June 6-8, 2013 [Keynote]

Physical-chemical response to geomechanical processes during geologic sequestration of scCO₂. At Five in Five Challenge. Carbon Management Canada (CMC) Annual Conference – Calgary, Canada – June 3-5, 2013 [Invited]

Publications¹

Articles Published in Peer Reviewed Journals

1. Sun, L., X. Tang, B. Zeeman, Q. Liu, and G. Grasselli. 2025. 'Numerical investigation of the path-dependent frost heave process in frozen rock under different freezing conditions', *Journal of Rock Mechanics and Geotechnical Engineering*, 17: 637-51.

¹ Authors in bold are mentored HQP by the applicant; authors underlined were PhD and PostDoc supervisors of the applicant.

2. Liu, T., N. Du, T. Lei, K. Wang, B. He, P. Tong, G. Grasselli, and Q. Liu. 2025. 'Seismic wavefield injection based on interface discontinuity: theory and numerical implementation based upon the spectral-element method', *Geophysical Journal International*, 241: 658-73.
3. Sun, L., G. Grasselli, Q. Liu, K. R. Aboyanah, S. Huang, and X. Tang. 2025. 'Investigating the frost cracking mechanism and the related shallow alpine rockfall initiation process using three-dimensional FDEM', *Engineering Geology*, 348.
4. Abdelaziz, A., and G. Grasselli. 2024. 'Crack Opening and Slippage Signatures During Stimulation of Bedded Montney Rock Under Laboratory True-Triaxial Hydraulic Fracturing Experiments', *Rock Mechanics and Rock Engineering*, 57: 9827-45.
5. Aboyanah, K. R., E. Ossetchkina, A. Abdelaziz, L. Sun, K. Peterson, and G. Grasselli. 2024. 'Effect of Thermal Pre-treatment on Thermal Gradient Response of Granitic Rocks: Insights from Optical Microscopy and Digital Image Correlation', *Rock Mechanics and Rock Engineering*, 57: 10805-30.
6. Kondrachova, T., W. Broere, G. Gaspari, and G. Grasselli. 2024. "Does Common Infrastructure Planning Support Better Urban Sustainability? Analysis of Mass-Transit Projects on Short-Term and Long-Term Sustainability Impacts." In *Lecture Notes in Civil Engineering*, 397-402.
7. Liu, T., K. Wang, Y. Xie, B. He, T. Lei, N. Du, P. Tong, Y. Yang, C. A. Rychert, N. Harmon, G. Grasselli, and Q. Liu. 2024. 'Cube2sph : A toolkit enabling flexible and accurate continental-scale seismic wave simulations using the SPEC-FEM3D_Cartesian package', *Computers and Geosciences*, 190.
8. Lu, A., P. Yan, W. Lu, X. Li, X. Liu, S. Luo, S. Huang, and G. Grasselli. 2024. 'Crack propagation mechanism of smooth blasting holes for tunnel excavation under high in-situ stress', *Engineering Fracture Mechanics*, 304.
9. Sun, L., X. Tang, K. R. Aboyanah, X. Xu, Q. Liu, and G. Grasselli. 2024. 'Coupled hydro-mechanical two-phase flow model in fractured porous medium with the combined finite-discrete element method', *Engineering with Computers*, 40: 2513-35.
10. Sun, L., S. Tao, X. Tang, Q. Liu, and G. Grasselli. 2024. 'A TOUGH-FEMM based cryogenic THM coupled model and its application to cold-region tunnels', *Engineering Analysis with Boundary Elements*, 169.
11. Sun L*, Tang X, Zhao Q, Liu Q, Grasselli G. A coupled cryogenic thermo-hydro-mechanical model for frozen medium: theory and implementation in FDEM. *Journal of Rock Mechanics and Geotechnical Engineering*, 2023.
12. Sun L, Li M, Abdelaziz A, Tang X, Liu Q, Grasselli G. An efficient 3D cell-based discrete fracture-matrix flow model for digitally captured fracture networks. *International Journal of Coal Science & Technology*, 2023, 10, 70.
13. Sun L*, Tang X, Li M, Liu Q et al. Flow simulation in 3D fractured porous medium using a generalized pipe-based cell-centered finite volume model with local grid refinement. *Geomechanics for Energy and the Environment* 2023;51(9):100505.
14. Sun L*, Tang X, Abdelaziz A, Liu Q, Grasselli G. Stability analysis of reservoir slopes under fluctuating water levels using the combined finite-discrete element method. *Acta Geotechnica* 2023;52(3):561.
15. Sun L*, Tao S, Liu Q. Frost Crack Propagation and Interaction in Fissured Rocks Subjected to Freeze–thaw Cycles: Experimental and Numerical Studies. *Rock Mechanics and Rock Engineering* 2023;107(4):59.
16. Abdelaziz A, Ha J, Li M, Magsipoc E, Sun L*, Grasselli G. Understanding hydraulic fracture mechanisms: From the laboratory to numerical modelling. *Advances in Geo-Energy Research* 2023;7(1):66–8
17. Magsipoc, E. and Grasselli, G., A local surface roughness mapping method for post-failure interpretation of brittle fracture propagation. *International Journal of Rock Mechanics and Mining Sciences*
18. Haile B. F, Gili Lifshitz Sherzer, Karl Peterson, Giovanni Grasselli, Progressive highly stressed volume for size effect analysis, *Construction and Building Materials*, Volume 400, 2023, 132600,
19. Aboyanah, K.R., Abdelaziz, A., Haile, B.F., Zhao, Q. and Grasselli, G. 2024. Evaluation of Damage Stress Thresholds and Mechanical Properties of Granite: New Insights from Digital Image Correlation and GB-FDEM. *Rock Mech Rock Eng*. <https://doi.org/10.1007/s00603-024-03789-7>
20. Sun, L., Tang, X., Aboyanah, K.R., Xu X., Liu Q., Grasselli. G. 2024. Coupled hydro-mechanical two-phase flow model in fractured porous medium with the combined finite-discrete element method. *Engineering with Computers*. <https://doi.org/10.1007/s00366-023-01932-6>
21. Abdelaziz, Aly, Johnson Ha, and Giovanni Grasselli. "Novel Sub-Core Extraction Method Using Cnc Milling for Water-Sensitive and Fragile Rock.2024. *Rock Mechanics and Rock Engineering* (2024/04/12 2024). <https://doi.org/10.1007/s00603-024-03860-3>.
22. Aboyanah, Kareem Ramzy, Aly Abdelaziz, Bezawit Fekadu Haile, Qi Zhao, and Giovanni Grasselli. 2024. Evaluation of Damage Stress Thresholds and Mechanical Properties of Granite: New Insights from Digital Image Correlation and GB-FDEM. *Rock Mechanics and Rock Engineering*. <https://doi.org/10.1007/s00603-024-03789-7>.
23. Abdelaziz, Aly, Greg Baniak, Thomas F. Moslow, Alessandro Terzuoli, and Giovanni Grasselli. 2023. A Novel Method for Digitizing Sedimentological Graphic Logs and Exporting into Reservoir Modelling Software." *AAPG Bulletin* . <https://doi.org/10.1306/10182321114>
24. Ding, Liang, Gang Yang, Edouard Kravchinsky, Afeez Popoola, Sebastian Goodfellow, Qinya Liu, and Giovanni Grasselli. 2023. Systematic Uncertainty Quantification of First-Polarity-Based Moment Tensor Inversion Due to Sparse Coverage of Sensor Arrays in Laboratory Acoustic Emission Monitoring. *Pure and Applied Geophysics* 180, no. 11 (2023): 3733-52. <https://doi.org/10.1007/s00024-023-03366-z>.
25. Tatone, Bryan Stanley Anthony, Aly Abdelaziz, and Giovanni Grasselli. 2023. Example Framework for Evaluation of Synthetic Rock-Like Materials as Applied to a Commercial Gypsum Cement. *International Journal of Rock Mechanics and Mining Sciences* 169 (2023). <https://doi.org/10.1016/j.ijrmms.2023.105445>.

26. Zhao, Qi, Nicola Tisato, Aly Abdelaziz, Johnson Ha, and Giovanni Grasselli. 2023. Numerical Investigation of Progressive Damage and Associated Seismicity on a Laboratory Fault. *International Journal of Rock Mechanics and Mining Sciences* 167, no. 105392 (2023). <https://doi.org/10.1016/j.ijrmms.2023.105392>.
27. A Lu, P Yan, W Lu, X Li, X Liu, S Luo, S Huang, G Grasselli. Crack propagation mechanism of smooth blasting holes for tunnel excavation under high in-situ stress. *Engineering Fracture Mechanics*, 110144
28. **Sun, L., Liu, Q., Abdelaziz, A., Tang, X., & Grasselli, G.** 2022. Simulating the entire progressive failure process of rock slopes using the combined finite-discrete element method. *Computers and Geotechnics*, 141, 104557
29. **Li, M., Magsipoc, E., Abdelaziz, A., Ha, J., Peterson, K., Grasselli, G.** 2021. Mapping Fracture Complexity of Fractured Shale in Laboratory: Three-dimensional Reconstruction From Serial-section Images. *Rock Mechanics and Rock Engineering*
30. **Chen Y., Ma G., Zhou W., Wei D., Zhao Q., Zou Y., Grasselli G.** 2021. An enhanced tool for probing the microscopic behavior of granular materials based on X-ray micro-CT and FDEM. *Computers & Geotechnics*, 132, 103974.
31. **Ha, J., Tatone, B. S. A., Gaspari, G. M., & Grasselli, G.** 2021. Simulating tunnel support integrity using FEM and FDEM based on laboratory test data. *Tunnelling and Underground Space Technology*, 111, 103848
32. **Zhao, X., Huang, B., & Grasselli, G.** (2021). Numerical Investigation of the Fracturing Effect Induced by Disturbing Stress of Hydrofracturing. *Frontiers in Earth Science*, 9(838)
33. **Magsipoc, E., Zhao, Q., & Grasselli, G.** 2020. 2D and 3D Roughness Characterization. *Rock Mechanics and Rock Engineering*.
34. Ay, B., Parolia, K., Liddell, R. S., **Qiu, Y.,** Grasselli, G., Cooper, D. M. L., & Davies, J. E. 2020. Hyperglycemia compromises Rat Cortical Bone by Increasing Osteocyte Lacunar Density and Decreasing Vascular Canal Volume. *Communications Biology*, 3(1), 20.
35. **Abdelaziz, A.,** Grasselli, G. 2020. How believable are published laboratory data? A deeper look into system-compliance and elastic modulus. *Journal of Rock Mechanics and Geotechnical Engineering*.
36. **Zhao, Q., Glaser, S. D., Tisato, N.,** Grasselli, G. 2020. Assessing Energy Budget of Laboratory Fault Slip Using Rotary Shear Experiments and Micro-Computed Tomography. *Geophysical Research Letters*, 47(1).
37. **Sun, L., Q. Liu, G. Grasselli, & X. Tang,** 2020. Simulation of thermal cracking in anisotropic shale formations using the combined finite-discrete element method. *Computers and Geotechnics*, 117, 103237
38. **Sun, L.,** Grasselli, G., Liu, Q., & Tang, X. 2019. Thermal cracking simulation of functionally graded materials using the combined finite-discrete element method. *Computational Particle Mechanics*. doi:10.1007/s40571-019-00290-9
39. **Wei, W., Zhao, Q., Jiang, Q., & Grasselli, G,** 2019. A New Contact Formulation for Large Frictional Sliding and Its Implement in the Explicit Numerical Manifold Method. *Rock Mechanics and Rock Engineering*.
40. Kalogerakis, G.C., **Q. Zhao,** G. Grasselli, B.E. Sleep, 2018. In situ chemical oxidation processes: 4D quantitative visualization of byproduct formation and deposition via micro-CT imaging. *The Leading Edge*. 37(6): p. 462-467.
41. **Zhao, Q., N. Tisato, O. Kovaleva,** G. Grasselli, 2018. Direct Observation of Faulting by Means of Rotary Shear Tests Under X-Ray Micro-Computed Tomography. *Journal of Geophysical Research: Solid Earth*. 123(9): 7389-7403.
42. **Zhao, Q., T.-M. He, J. Ha, K. Xia, G. Grasselli,** 2018. Dataset for time-lapse ultrasonic tomography of a granite slab under uniaxial compression test. *Data Brief*. 20: p. 614-616.
43. **Abdelaziz, A., Q. Zhao,** G. Grasselli, 2018. Grain based modelling of rocks using the combined finite-discrete element method. *Computers and Geotechnics*. 103: p. 73-81.
44. Lisjak A, Mahabadi OK, HE L, Tatone BSA, Kaifosh P, Haque SA, Grasselli G. 2017. Acceleration of a 2D/3D finite-discrete element code for geomechanical simulations using General Purpose GPU computing. *Computers and Geotechnics*. 100: 84-96
45. **Wei, W., Q. Zhao,** Q. Jiang, G. Grasselli, 2018. Three new boundary conditions for the seismic response analysis of geomechanics problems using the numerical manifold method. *International Journal of Rock Mechanics and Mining Sciences*. 105: p. 110-122.
46. He, T.-M., **Q. Zhao, J. Ha, K. Xia,** and G. Grasselli, 2018. Understanding progressive rock failure and associated seismicity using ultrasonic tomography and numerical simulation. *Tunnelling and Underground Space Technology*. 81: p. 26-34.
47. **Zhao Q, Tisato N,** Grasselli G. 2017. Rotary shear experiments under X-ray micro-computed tomography. *Review of Scientific Instruments*. 88, 015110 (2017); doi: 10.1063/1.4974149
48. **Miglietta P.,** Bentz E., Grasselli G. 2017. Finite/discrete element modelling of reversed cyclic tests on unreinforced masonry structures. *Engineering Structures* 138, pp. 159-169.
49. **Lisjak A,** Kaifosh P, He L, **Tatone BSA,** Mahabadi OK, Grasselli G. 2017. A 2D, fully-coupled, hydro-mechanical, FDEM formulation for modelling fracturing processes in discontinuous, porous rock masses. *Computers and Geotechnics*. 81: 1-18
50. Huang X, **Zhao Q,** Qi S, Xia K, Grasselli G, Chen X. 2017. Numerical Simulation on Seismic Response of the Filled Joint under High Amplitude Stress Waves Using Finite-Discrete Element Method (FDEM). *Materials*, 10, 13; doi:10.3390/ma10010013
51. Alcolea A, Kuhlmann U, Marschall P, **Lisjak A,** Grasselli G, Mahabadi O, de La Vaissière R, Leung H, Shao H. 2016. A pragmatic approach to abstract the excavation damaged zone around tunnels of a geological radioactive waste repository: application to the HG-A experiment in Mont Terri. *Geological Society, London, Special Publications*. 443: SP443. 8

52. **Biryukov A, Tisato N**, Grasselli G. 2016. Attenuation of elastic waves in bentonite and monitoring of radioactive waste repositories. *Geophysical Journal International*. 205(1): 105-121. (CMC)
53. **Miglietta P.**, Grasselli G., Bentz E. 2016. Finite/Discrete Element Model of Tension Stiffening in GFRP Reinforced Concrete. *Engineering Structures* 111: 494-504.
54. **Lisjak A, Tatone BSA, Mahabadi OK**, Grasselli G, Marschall P, Lanyon GW, Vaissière RDL, Shao H, Leung H, Nussbaum C. 2015. Hybrid finite-discrete element simulation of the EDZ formation and mechanical sealing process around a microtunnel in Opalinus Clay. *Rock Mechanics and Rock Engineering*. 49, 5, 1849–1873.
55. **Zhao Q, Tisato N, Mahabadi OK, Lisjak A**, Liu Q, Grasselli G. 2015. Influence of in-situ stress variations on acoustic emissions: a numerical study, *Geophysical Journal International*. 203 (2): 1246-1252. doi: 10.1093/gji/ggv370
56. **Tatone BSA**, Grasselli G. 2015. A calibration procedure for two-dimensional laboratory-scale hybrid finite-discrete element simulations. *International Journal of Rock Mechanics and Mining Sciences*. 75(0), 56-72. DOI: 10.1016/j.ijrmms.2015.01.011 (NSERC)
57. **Lisjak A**, Garitte B, Grasselli G., Müller HR, Vietor T. 2015. The excavation of a circular tunnel in a bedded argillaceous rock (Opalinus Clay): short-term rock mass response and numerical analysis using FEM/DEM. *Tunnelling and Underground Space Technology*. 45, 227-248. doi:10.1016/j.tust.2014.09.014 (NSERC)
58. **Tatone B.S.A.**, Grasselli G. 2015. Characterization of the effect of normal load on the discontinuity morphology in direct shear specimens using X-ray micro-CT. *Acta Geotechnica*. 10(1), 31-54. doi:10.1007/s11440-014-0320-5 (NSERC, CMC)
59. **Lisjak A, Figi D**, Grasselli G. 2014. Fracture development around deep underground excavations: insights from FDEM modelling. *Journal of Rock Mechanics and Geotechnical Engineering*. 6(6), 493-505.
60. **Biryukov A, Tisato N**, Grasselli G. 2014. Workflow to numerically reproduce laboratory ultrasonic datasets. *Journal of Rock Mechanics and Geotechnical Engineering*. 6(6), 582-590. (CMC)
61. **Zhao Q, Lisjak A, Mahabadi OK**, Liu Q, Grasselli G. 2014. Numerical simulation of hydraulic fracturing and associated microseismicity using FDEM. *Journal of Rock Mechanics and Geotechnical Engineering*. 6(6), 574-581. (NSERC, CMC)
62. **Mahabadi OK, Tatone BSA**, Grasselli G. 2014. Influence of microscale heterogeneity and microstructure on the tensile behavior of crystalline rocks. *Journal of Geophysical Research: Solid Earth* 119 (7), 5324-5341. (NSERC)
63. **Tisato N.**, Quintal B., Grasselli G., Madonna C., Chapman S., Subramaniyan S., Frehner M., Saenger E.H. 2014. Seismic attenuation in partially saturated rocks: recent advances and future directions. *The Leading Edge*. June, pp. 640-648 (CMC)
64. Grasselli G., **Lisjak A, Mahabadi OK, Tatone BSA**. 2015. Influence of pre-existing discontinuities and bedding planes on hydraulic fracturing initiation. *European Journal Environmental and Civil Engineering*. 19 (5), pp. 580-597 doi:10.1080/19648189.2014.906367 (NSERC)
65. **Lisjak A.**, Grasselli G. 2014. A review of discrete modelling techniques for fracturing processes in discontinuous rock masses. *Journal Rock Mechanics Geotechnical Engineering*. doi:10.1016/j.jrmge.2013.12.007 (NSERC)
66. Zheng L., **Zhao Q.**, Milkereit B., Grasselli G., Liu Q. 2014. Spectral-element simulations of elastic wave propagation in exploration and geotechnical applications. *Earthquake Science*. doi:10.1007/s11589-014-0069-9
67. **Lisjak A.**, Grasselli G., Vietor T. 2014. Continuum-discontinuum analysis of failure mechanisms around unsupported circular openings in anisotropic clay shales. *International Journal of Rock Mechanics and Mining Sciences*. doi: 10.1016/j.ijrmms.2013.10.006 (NSERC)
68. **Lisjak A., Tatone B.S.A.**, Grasselli G., Vietor T., 2014. Numerical modelling of the anisotropic mechanical behaviour of Opalinus Clay at the laboratory-scale using FEM/DEM. *Rock Mechanics and Rock Engineering* 47(1), 187-206 doi: 10.1007/s00603-012-0354-7 (NSERC)
69. Muralha J., Grasselli G., **Tatone B.**, Blümel M., Chrystanthakis P., Yujing J. 2014. ISRM suggested method for laboratory determination of the shear strength of rock joints: Revised version (2013) *Rock Mechanics and Rock Engineering*, 47 (1), pp. 291-302. doi: 10.1007/s00603-013-0519-z
70. **Lisjak A., Liu Q., Zhao Q., Mahabadi O. K.**, Grasselli G., 2013, Numerical simulation of acoustic emission in brittle rocks by two-dimensional finite-discrete element analysis – *Geophysical Journal International*, 195/1:423-443, doi:10.1093/gji/ggt221
71. **Lisjak A., Tatone B.S.A.**, Grasselli G., Vietor T., 2013. Numerical modelling of the anisotropic mechanical behaviour of Opalinus Clay at the laboratory-scale using FEM/DEM – *Rock Mechanics Rock Engineering*, doi:10.1007/s00603-012-0354-7
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