

ABBAS TAHERI

Chair in Mine Design, Associate Professor

Education

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| • PhD (2008) | Geotechnical Engineering | Yokohama National University, Japan |
| • M.Sc (2002) | Mining - Rock Mechanics | AmirKabir University of Technology, Iran |
| • B.Eng (1999) | Mining Engineering | AmirKabir University of Technology, Iran |

Work Experience

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|----------------|------------------------------|-----------------------|
| • 2021-Present | Queen's University | Associate Professor |
| • 2016-2021 | The University of Adelaide | Senior Lecturer |
| • 2011-2015 | The University of Adelaide | Lecturer (Level B) |
| • 2008-2011 | Tokyo University of Science | Postdoctoral Fellow |
| • 2005-2008 | Yokohama National University | PhD Researcher |
| • 2003-2005 | ZAFA Consulting Engineers | Geotechnical Engineer |
| • 2001-2003 | Itok Consulting Engineers | Geotechnical Engineer |

Research Expertise

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| • Damage Mechanisms and Post-peak Response of Rocks | • Performance of Drilling Operations |
| • Advanced Laboratory and In-situ Testing Methods for Geomaterials, | • Slope and Underground Opening Stability and Design using Numerical, Analytical and Empirical Methods |
| • Measuring and Simulating Behaviour of Cement Paste Backfill Material | • Chemical, Mechanical, and Biological Soil Improvement Methods |
| • Rock Mass Characterization | • Borehole Stability in Difficult Ground Condition |

Research Awards

- Minerals 2020 Best Paper Award (a certificate, a cash award of 2300 CHF)
- 2019 Editorial Board Member Award of *Soils and Foundations*, which is the official journal of the Japanese Geotechnical Society.
- Runner up certificate award (Proxime Accessit) of "ISRM Rocha Medal 2010" from International Society for Rock Mechanics and Rock Engineering (ISRM). (2010) <http://www.isrm.net/gca/?id=288>
- Postdoctoral fellowship award from Japan Society for the Promotion of Science (JSPS) (2008-2010)
- PhD scholarship from Ministry of Education, Culture, Sports, Science and Technology (Monbukagakusho) of Japan (2005-2008)

Memberships

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| • Member | Canadian Institute of Mining, Metallurgy and Petroleum | Since 2022 |
| • Member | Canadian Rock Mechanics Association | Since 2022 |
| • Member | The Canadian Geotechnical Society | Since 2022 |
| • Member | International Society for Rock Mechanics (ISRM) | Since 2001 |
| • Board Member | South Australia and Northern Territory Chapter, AGS | 2016-2020 |
| • Member | Australian Institute of Mining and Metallurgy (AusIMM) | 2012-2020 |
| • Member | The Australian Geomechanics Society (AGS) | 2015-2022 |
| • Member | Eastern Australian Ground Control Group (EAGCG) | 2013-2021 |

Certificates

- Advancing Leadership Program, 2022-2023, Queen's University, Canada
- Peer-Assisted Reflection and Development Program (PAR-D-P), 2018, The University of Adelaide, Australia
- Teaching @ University, 2012, The University of Adelaide, Australia

Research Collaborations with Industry

- Research contract of \$22,000 with Stornoway Diamonds to characterize rock mass in the mine (May-Sep 2023).
- Sole Chief Investigator (CI) of an MITACS-NSERC application on diamond cave mining. The industry partner, Stornoway Diamond, provided a \$495,000 cash contribution. The total application is valued at \$1.3M.
- Sole Chief Investigator (CI) of an MITACS-NSERC application on performance assessment of rock bolts. The industry partner, Normet Canada Ltd, provided a \$140,000 cash contribution. The total application is valued at \$480,000.
- Collaboration with the University of New South Wales and Monash University (Australia) on an ARC Linkage Application. The value of the grant is \$560,000.
- Sole Chief Investigator (CI) of an MITACS-NSERC application on diamond cave mining. The industry partner provided a \$495,000 cash contribution. The total application is valued at \$1.3M.
- Chief Investigator (CI) of an ARC-Linkage project with a total funding of \$716,000 with a partner investigator from OZ Minerals for research on flow modeling in cave mining in Australia (2021-2025).
- Sole CI of a project on road subgrade stabilization in the city of Adelaide, Australia, using rubber in collaboration with the City of Charles Sturt and Downer Group. \$110,000 was funded for the project by Green Industries SA, Australia.
- Collaborating with the Australian Centre for Geomechanics (ACG) and a group of Participant Australian Mine Sites (PAMS) in WA, SA, and QLD (Australia) on a project about rock characterization to investigate strain bursts and stability of deep underground mines. Total budget is over \$2,000,000 (2017-2021).
- CI of two ACARP projects with a total funding of \$380,000 to research coal bursting (2018-2021).
- CI of an ARC-Linkage project with total funding of \$244,000 with a partner investigator from OZ Minerals for research on deep underground mine stability (2016-2018).
- Leader of a project supported by Deep Drilling Exploration (DEC) CRC to investigate borehole stability in fractured rocks with a total funding of \$123,000 (2012-2016). Actively being involved in two other DET-CRC projects on borehole stability in poorly cemented layers and rock characterization for deep drilling performance optimization. Several industry partners were involved in this CRC.
- Lead-CI of two Mining Education Australia (MEA) Collaborative Research projects, with a total funding of \$130,000 with the collaboration of OZ Mineral (2016-2018). The first project involved the optimization of Cemented Paste Backfill (CBP). In this project, liaised with the industry partner to ensure the proposed backfill design meets underground mining requirements. OZ Mineral is also involved in the second project, which includes the effect of blasting load on backfill stability.

Professional Activities

International Community:

President of the International Society for Rock Mechanics & Rock Engineering (ISRM) Commission on Deep Mining (2020-present)

Member the ISRM Commission on Testing Methods (2019-present)

Board Member of the International Committee on Mine Safety Science and Engineering (ICMSSE) (2020-present)

Refereed Journal Editorship:

Associate Editor, *Geological and Geotechnical Engineering Journal* (2023-present)

Associate Editor in *Arabian Journal of Geosciences Journal* (2020-2023)

Editorial Board Member in *International Journal of Rock Mechanics and Mining Sciences Journal* (2023-present)

Editorial Board Member in *Geotechnics Journal* (2021-present)

Editorial Board Member in *Bulletin of Engineering Geology and the Environment Journal* (2020-present)

Editorial Board Member in *International Journal of Mining Science and Technology Journal* (2019-present)

Editorial Board Member in *Soils and Foundations Journal* (2016-2020)

Editorial Board Member in *Minerals Journal* (2016-present)

Guest Editor, Special issue on “Backfilling Material for Underground Mining (Volume II)” in *Minerals Journal* (2021)

Guest Editor, Special issue on “Clay Materials in Engineering Projects: Behaviour, Hazards and Solutions” in *Minerals journal* (2019)

Guest Editor, Special issue on “Backfilling Material for Underground Mining” in *Minerals Journal* (2018)

Panel member, *Research Project Review Journal* published by Australian Institute of Mining and Metallurgy (AusIMM) (2013-2014)

Conference and Workshop Organisation:

- Chair and Organiser of a workshop in the 15th International ISRM Congress 2023 held in conjunction with the 72nd Geomechanics Colloquium in Salzburg, Deep Mining Geomechanics.
- Chair of Symposium – Tunnelling Under Adelaide Symposium, 28 October 2019, Adelaide, Australia
- Chair and Organiser of a workshop in Asian Rock Mechanics Symposium (ARMS) in Singapore 2018 (main ISRM event in 2018), Rock Mass Testing by In-situ Methods.
- Organiser of the Australian Society of Geomechanics (AGS) SA-NT Chapter Seminar 2017, In situ testing of soil and rock.
- Organiser and member of the selection panel of Richard Cavagnaro Award (SA/NT) presentation night.
- Member of organisation committee of Tailings and Mine Waste Management for the 21st Century, Sydney, Australia, 27–28 July 2015

Keynote Speeches:

- 8th Iranian Rock Mechanics Conference keynote speaker: “Rock Failure Behavior and Its Engineering Application”, May 10, 2022
- Australian Geomechanics Society (AGS) Invited Presentation: “Application of Empirical Approaches to Design Rock Slopes in Mining and Civil Engineering Projects”. 20 February 2017.
- Invited as a keynote speaker for ICREMER (International Centre for Research and Education on Mineral and Energy Resources) symposium held at Akita and Tokyo (Japan) on 14th and 16th of February 2017: “Pre-peak and Post-peak Rock Characterization to Investigate Deep Drilling Operations and Deep Excavations”.
- Keynote speaker in AGS SA-NT Seminar 2017, In-Situ Testing of Soil and Rock.

International Conference Committees Membership:

- The International Scientific Committee of the 2024 ISRM European Symposium (EUROCK 2024)
- The Scientific Committee of EUROCK 2022, European Rock Mechanics Symposium, September 12-15, Helsinki, Finland
- The Scientific Committee of The IX Latin America Rock Mechanics Symposium, an ISRM International Symposium, October 16-19 2022, Asuncion, Paraguay
- The International Scientific Committee of The Fifth International Symposium on Mine Safety Science and Engineering (ISMSSE2021), 21-25 November 2021, Katowice, Poland
- The Scientific Committee of 10th Australasian Congress on Applied Mechanics (ACAM10), 1-3 December 2021, Adelaide, Australia
- The Organizing Committee of Australian Geomechanics Society (AGS) & Australian Tunnelling Society (ATS) Symposium, Tunnelling Under Adelaide, 28 October 2019, Adelaide, Australia
- The International Scientific Committee of 1st Conference of the Arabian Journal of Geoscience, Hammamet, Tunisia, 12 - 15 November 2018
- The Scientific Committee of IC3G 2018, International Conference on Geo-mechanics, Geo-energy and Geo-resources, Chengdu, China, September 21-24, 2018
- The Scientific Committee of IMCET 2017, 25th International Mining Congress and Exhibition of Turkey 11-14 April 2017
- The Scientific Committee of IC3G 2016, International Conference on Geo-mechanics, Geo-energy and Geo-resources, Melbourne, 28-29 September 2016
- 1 The Scientific Committee of 0th International Conference on Structural Integrity and Failure (SIF-2016): Adelaide, 12–15 July 2016
- The Scientific Committee of IMCET 2015, 24th International Mining Congress and Exhibition of Turkey, 14-17 April 2015

International Conference Session Chair:

- 2019 Rock Dynamic Summit in Okinawa, Japan
- RocDyn – 2: 2nd International Conference on Rock Dynamics and Applications, 2016, Suzhou, China
- ARMS9: 9th Asian Rock Mechanics Symposium, 18th-20th October 2016 in Bali, Indonesia

Competitive Grant Proposal Assessor:

- Member of Industrial Technologies Panel for the Ontario Research Fund - Research Excellence program
- Australian Research Council (ARC)
- FUTURE initiative's scientific project, France
- Czech Science Foundation
- Austrian Science Fund (FWF)

Examination of Thesis:

- Royal Military College (Canada): 1 PhD Thesis (2023)
- Queen's University (Canada): 1 PhD Thesis (2022)
- McGill University (Canada): 1 PhD Thesis (2022)
- University of Melbourne (Australia): 3 PhD Thesis (2022, 2023)
- University of Southern Queensland (Australia): 1 PhD Thesis (2022)
- University of New South Wales (Australia): 2 PhD Thesis (2022, 2023); 1 MSc Thesis (2020)
- Curtin University of Technology (Australia): 3 PhD Thesis (2013, 2016, 2020)
- University of Wollongong (Australia): 1 MSc Thesis (2019)
- Monash University (Australia): 1 PhD Thesis (2018)
- The University of Adelaide (Australia): 1 MSc Thesis (2018)
- Birla Institute of Technology (India): 1 PhD Thesis (2023)
- Indian Institute of Technology (India): 1 PhD Thesis (2023)

Technical Report Review Experience:

- Reviewer for the International Tunnelling and Underground Space Association (ITA)
- Reviewers for the Government of Nova Scotia (Canada)
- Reviewer the progress of the research projects for the University Mohammed Vi Polytechnic (Morocco)

Invited Talks/Public Seminars:

- Challenges in Measuring Post-Peak Behaviour of Rocks, Talk during CIM2023, Montreal, Canada, May 03, 2023.

- Geomechanics Research at Queen's University, Invited speaker by The Institute of Mine Engineers of Peru at Embassy of Canada in Peru, March 30, 2022
- Biopolymer Stabilization: A Sustainable Solution for Mine Waste, Queen's Engineering Research Networking Day, Oct 12, 2022
- Rock Brittleness, its Measurement and Application, Centre of Geoengineering at Queen's and RMC, Nov 13, 2021
- Rock Strain Field Investigation and Brittleness Index Development to Characterize Rock Failure Behaviour, University of Toronto, Canada, April 30, 2018.
- Study on Localized Behaviour of Rock Using Digital Image Correlation, University of Ottawa, Canada, 26 April 2018.
- Rock Strain Field Investigation and Brittleness Index Development to Characterize Rock Failure Behaviour, University of McGill, Canada, April 23, 2018.
- Rock Mechanics and its Application in Mining and Civil Engineering, Akita University, Japan, April 17, 2018.
- Pre-peak and Post-Peak Rock Characterization to Investigate Deep Drilling Operations and Deep Excavations, Hokkaido University, Japan, April 02, 2018.
- Current Researches on Cement Paste Backfill in the University of Adelaide, China University of Mining and Technology, Xuzhou, China, March 26, 2018.
- Study on Drilling Performance Using Rock Stress-strain Relations, China University of Mining and Technology, Beijing, China, March 22, 2018.
- Optimization of Cement Paste Backfill Using Binders to Reduce Cost, EAGCG Workshop, Melbourne, 24 November 2017.
- Pre-peak and Post-Peak Rock Characterization to Investigate Deep Drilling and Deep Excavations, University of Innsbruck, Austria, April 25, 2016.
- Pre-peak and Post-Peak Rock Characterization to Investigate Deep Drilling and Deep Excavations, Technical University of Madrid, April 18, 2016.
- Study on Mechanical Properties of Intact Rocks Subjected to Cyclic Loading, EAGCG Workshop, Launceston, March 20, 2015.

Industry Presentations:

- Vale, Nov 2021

Visitor Professors

- 2023: Dr Amin Soltani, Federation University Australia
- 2020: Prof Kurosch Thuro, The Technical University of Munich, Germany
- 2019: Prof Xiaohua Yang and Dr Peijie Yin, Chan'an University, China
- 2017: Prof Kazou Tani, Tokyo University of Marine Science and Technology, Japan
- 2016: Prof Tsuyoshi Ishida, Kyoto University, Japan
- 2015–2016: Dr Yongyin Wang, Guizhou University, China

Refereed Journal Reviewer

Soils and Foundations; Canadian Geotechnical Journal; International Journal of Rock Mechanics and Mining Sciences; Rock Mechanics and Rock Engineering; Engineering Geology; Tunnelling and Underground Space Technology; Computers and Geotechnics, Geotechnical Testing Journal; Mining Technology IMM Transactions, Section A; International Journal of Rock Mechanics and Geotechnical Engineering; International Journal of Mining Reclamation and Environment; Structural Health Monitoring, Journal of Natural Gas Science & Engineering; Journal of Cold Regions Engineering; Construction and Building Materials; Journal of Petroleum Science and Engineering; International Journal of Mining Science and Technology; Minerals; Environmental Engineering Science; Proceedings of ICE journal - Geotechnical Engineering; Geomechanics and Geophysics for Geo-energy and Geo-Resources; The Arabian Journal for Science and Engineering; Journal of the Southern African Institute of Mining and Metallurgy; AusIMM Journal of Research Projects Review; Advances in Materials Science and Engineering; Materials; Materials Research Innovations; Australian Geomechanics Journal; Journal of Civil Engineering and Architecture; Arabian Journal of Geosciences; IEEE Access; Journal of Central South University; Energies; European Journal of Environmental and Civil Engineering; International Journal of Distributed Sensor Networks, Engineering Fracture Mechanics; Engineering with Computers; Structural Geology; International Journal of Damage Mechanics; Journal of Materials in Civil Engineering, Environmental Earth Sciences; Cement and Concrete Composites; Journal of Central South University; Bulletin of Engineering Geology and the Environment; Sensors; Shock and Vibration, Frontiers Physics.

Refereed Conference Reviewer

ISRM International Symposium: EUROCK 2020; ISRM 14th International Congress of Rock Mechanics; 13th Australia New Zealand Conference on Geomechanics (ANZ2019); 19th International Conference on Soil Mechanics and Geotechnical Engineering; 1st Conference of The Arabian Journal of Geosciences (CAJG); 25th International Mining Congress and Exhibition of Turkey; IC3G, International Conference on Geo-mechanics, Geo-energy and Geo-resources; 11th Australia and New Zealand Young Geotechnical Professionals Conference; IMCET 2015, 24th International Mining Congress and Exhibition of Turkey; Tailings and Mine Waste Management for the 21st Century; 18th International Conference on Soil Mechanics and Geotechnical Engineering; International Conference on Ground Improvement and Ground Control (ICGI 2012).

GRANT FUNDING

Successful National Competitive Research Grants:

1. 2023: Canada Foundation for Innovation Grant; **\$450,000**; **Taheri A**, Time-dependent Rock and Joint Behavior in Deep Underground Environments.
2. 2022-2026: NSERC Discovery Grant; **\$215,000**; **Taheri A**, Investigating Violent Rock Failure in Deep Underground by Experimental and Numerical Modeling
3. 2021-2025: ARC Linkage Project Grant; **\$716,000**; Karakus M, Nguyen G, Qingeng J, Ciobanu K, Bui H, **Taheri A**, A novel solution to cave flow modelling from micro to block scale.
4. 2019-2021: ACARP Grant, **\$123,000**; M. Karakus, G. Nguyen, **A. Taheri**, H. Bui; Management of coal bursts and pillar burst in deep coal mines.
5. 2018-2020: ACARP Grant, **\$257,240**; M. Karakus, G. Nguyen, **A. Taheri**, H. Bui; Coal bursts and pillar burst in deep mines.
6. 2016-2018: ARC LIEF Grant; **\$800,000**; Williams D, Scheuermann A, Fernando N, Martin D, Heitzmann M, Bouazza A, Wang C, Mouritz A, Villaescusa E, Cassidy M, Buzzi O, Russell A, Hadi M, Gratchev I, **Taheri A**; National rock, concrete and advanced composite testing capability.
7. 2015-2018: ARC Linkage Project Grant; **\$244,000**; Karakus M, Nguyen G, **Taheri A**, Goodchild D (industry partner); A new damage model for rock burst in hard rocks during deep mining.
8. 2014-2018: An nt, **\$225,000**; Deng A, Nikraz H, **Taheri A**; Measuring and modelling the mechanical response of soils incorporating recycled tyres.
9. 2008-2010: Japan Society for the Promotion of Science (JSPS) Grant; **\$200,000**; **Taheri A**, Tatsuoka F; Study on time-dependant properties of soft rocks for deep underground repositories and openings.

Other Successful Competitive Research Grants:

1. 2019-2020: Circular Economy Market Development Grants, **110,000**, **Taheri A** (with Charles Stuart Council); Use of rubber crumb for road subgrade stabilisation.
2. 2019-2021: Mitsubishi Materials, Japan; **\$20,000**, Kawamura Y, **Taheri A**; An innovative method to predict drilling performance and rock properties during drilling.
3. 2018-2021: Australian Centre for Geomechanics (ACG) research funding, **\$125,000**; **Taheri A**; Failure mechanism and true post-peak response of Rocks.
4. 2017-2018: Mining Education Australia (MEA) Collaborative Research Scheme Grant; **\$28,400**; **Taheri A**, Ferdosi B, Karakus M; Stability analysis of cement paste backfill (CPB) material under blasting loading.
5. 2016-2017: Mining Education Australia (MEA) Collaborative Research Scheme Grant, **\$42,167+\$20,000** (OZ Minerals cash contribution); **Taheri A**, Karakus M, Chen Z; Optimization of cemented paste backfill (CPB) using various fly ash additives to reduce CPB cost.
6. 2015: Priority Partner University Grant (Nagoya University); **\$3,000**; **Taheri A**,
7. 2014: ECMS Research Support Scheme, **\$60,000**; Nguyen G, Kotousov A, Bennett T, Jaksa M, Visintin P, Sheikh A, Deng A, **Taheri A**, Ali A, Scott B; Establishment of a cross-disciplinary facility for analysis of engineering materials and structures using 3D Digital Image Correlation technique.
8. 2014-2015: Mining Education Australia (MEA) Research Grant, **\$16,300**; **Taheri A**, Sharifzadeh M; New methodologies to characterise rock mass behaviour for developing deep earth resources.
9. 2014-2015: Mining Education Australia (MEA) Research Grant, **\$19,300**; Sharifzadeh M, Masoumi A, **Taheri A**; Failure prediction in underground mine excavations using the combination of critical strain and Ground Reaction Curve (GRC).
10. 2014: Faculty and CEME School Equipment and Infrastructure Funding, **\$103,200**; Deng A, **Taheri A**. Establishment of unsaturated triaxial compression and permeability measurement testing facilities for soil and soft rocks.
11. 2013: CEME School Equipment and Infrastructure Funding, **\$34,000**; **Taheri A**. Establishment of a confining pressure control system and on-sample measurement devices.

Non-competitive Research Funding:

1. 2022-2026: Queen's Start-up Grant; **\$150,000**, **Taheri A**.
2. 2012-2016: Deep Drilling Exploration Cooperative Research Centre (DET-CRC) Grant, **\$123,000**; **Taheri A**; Study on borehole stability in deep drilling.
3. 2011-2013: University of Adelaide start-up Grant; **\$10,000**; **Taheri A**; Study on shear strength and deformability properties of rock mass by site investigations and laboratory testing.

PUBLICATIONS

[num]p: Number of pages) Total number of citations: 3678 (Scopus, h-index: 38), 4423 (Google Scholar, h-index: 41) [October 20, 2023]

Total number of publications: 1 Patent, 1 Book chapter, 4 edited special issues, 113 journal papers and 68 conference publications.