# MICHAEL G. GOMEZ

*Curriculum Vitæ*

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## EDUCATIONAL HISTORY

University of California, Davis, CA
Civil and Environmental Engineering, Ph.D.
March 2017
Dissertation: *"Up-scaling of Microbially-Induced Calcite Precipitation Using Native Soil Microorganisms"*

University of California, Davis, CA
Civil and Environmental Engineering, M.S.
June 2013
Thesis: *"Field Scale Bio-cementation for the Improvement of Loose Sands"*

University of California, Davis, CA
Civil and Environmental Engineering, B.S.
December 2011

## EMPLOYMENT HISTORY

University of Washington
Seattle, WA, USA
Associate Professor, 2024 to Present

University of Washington
Seattle, WA, USA
Assistant Professor, 2017 to Present

University of California
Davis, CA, USA
Graduate Researcher, 2013 to 2017

Geosyntec Consultants
Oakland, CA, USA
Geotechnical Engineering Intern, 2012

USDA Forest Service
Bend, OR, USA
Project Engineering Intern, 2009 to 2011

## AWARDS AND HONORS

- Springer Nature Editor of Distinction Award: Author Service Award (*Scientific Reports*), 2025, Springer Nature
- "Rising Star in Geotechnical Engineering" Award, *Frontiers in Built Environment*, 2025
- Arthur Casagrande Professional Development Award, 2025, American Society of Civil Engineers
- Faculty Appreciation for Career Education & Training (FACET) Award, 2022, UW COE
- Outstanding Reviewer, 2022, *Canadian Geotechnical Journal*
- UW CEE Department Teaching Award, 2021, UW Dept. of Civil and Env. Engineering
- Faculty Early Career Development Program (CAREER) Award, 2020, National Science Foundation
- Exception Peer Reviewer, 2020, *Geotechnical and Geological Engineering* Journal
- Faculty Appreciation for Career Education & Training (FACET) Award, 2020, UW COE
- Zuhair A. Munir Best College of Engineering Dissertation Honorable Mention, 2018, UC Davis College of Engineering
- Outstanding Outreach Volunteer Award, 2016, NSF Center for Bio-mediated and Bio-inspired Geotechnics
- Telford Premium Journal Prize, 2016, Institution of Civil Engineers (UK)
- I.M. Idriss Award for Excellence in Geotechnical Engineering, 2014, UC Davis
- Graduate Fellowship, 2013, Fugro Consultants
- Certificate of Merit, 2011, USDA Forest Service, Deschutes National Forest
- The First Tee Achiever of the Year Award, 2004, Royal Bank of Scotland (RBS)

## PUBLICATIONS

**Refereed archival journal publications**

*Note: My graduate students[1], My undergraduate students[2].*

1. Gomez, M. G., Martinez, E. M., Ribeiro, B. G., & Tai, C. E. (2025). Investigating air entrapment in biocemented composites for geotechnical ground improvement. *Frontiers in Built Environment*, *11*, 1662269. https://www.frontiersin.org/journals/built-environment/articles/10.3389/fbuil.2025.1662269/full Citations: 0, Impact Factor: 2.7, Contribution: M.G.G. is the corresponding author and led conceptualization and design of research program, oversaw all analyses and research work by M.L., and wrote the paper and prepared figures with E.M.M.

2. Shivaprakash, S. H., Yanez, V. R., Graddy, C. M., **Gomez, M.G**., DeJong, J. T., & Burns, S. E. (2025). Effect of natural carbonates on microbially induced calcite precipitation process. *Scientific Reports*, *15*(1), 13290. https://www.nature.com/articles/s41598-025-97737-2 Citations: 9, Impact Factor: 3.8, Contribution: M.G.G. contributed to development of the employed testing protocols as well as paper editing and revisions.

3. Raymond, A.J., Kendall, A., DeJong, J.T., **Gomez, M.G.**, San Pablo, A.C.M., Lee, M.[1], Graddy, C.M.R., & Nelson, D.C. (2024). Life Cycle Sustainability Assessment of Microbially Induced Calcium Carbonate Precipitation (MICP) Soil Improvement Techniques. *Applied Sciences*, *15*(3), 1059, https://www.mdpi.com/2076-3417/15/3/1059 Citations: 9, Impact Factor: 2.5, Contribution: M.G.G. contributed to the performance of the large-scale tests, compilation of byproduct generation and energy and material usage data needed for the LCSA, oversight of LCSA analyses by A.J.R. along with co-

investigators J.T.D. and A.K., as well as contributed towards writing the first draft of the paper, editing, and revisions.

4. Lee, M.[1], **Gomez, M.G.** (2023b). Removal of Ammonium By-products Produced During Biocementation Soil Improvement Using Rinse Injection Strategies., *Soil Use and Management,* https://doi.org/10.1111/SUM.12984, Citations: 4, Impact Factor: 3.672, Contribution: M.G.G. is the corresponding author and led conceptualization and design of research program, oversaw all analyses and research work by M.L., and co-wrote the paper and prepared figures with M.L.

5. Lee, M.[1], **Gomez, M.G.** (2023a). Liquefaction Triggering and Post-triggering Behavior of Biocemented Loose Sand., *Canadian Geotechnical Journal*, https://doi.org/10.1139/cgj-2023-0132, Citations: 3, Impact Factor: 4.167, Contribution: M.G.G. is the corresponding author and led conceptualization and design of the research program, oversaw all analyses and research work by M.L., and co-wrote the paper and prepared figures with M.L.

6. **Gomez, M.G.**, Muchongwe, S.[1], Graddy, C.M.R. (2023). Biomediated Control of Colloidal Silica Grouting Using Microbial Fermentation., *Scientific Reports*, https://doi.org/10.1038/s41598-023-41402-z, Citations: 2 (Google Scholar), Impact Factor: 4.996, Contribution: M.G.G. is the corresponding author and led the conceptualization and design of the research program, oversaw all analyses and research work by S.M. and C.M.R.G. (a Ph.D. student in microbiology at UC Davis), wrote the first draft of the paper, prepared all final figures, and edited and revised the final draft with S.M. and C.M.R.G.

7. Ribeiro, B.G.O.[1], Lee, M.[1], **Gomez, M.G.** (2023). An Examination of the Effect of Chemically Induced Damage on the Monotonic and Cyclic Shearing Behavior of Biocemented Sands., *Geotechnical Testing Journal, 47(2)*, https://doi.org/10.1520/GTJ20230302, Citations: 3 (Google Scholar), Impact Factor: 1.820, Contribution: M.G.G. is the corresponding author and led conceptualization and design of the research program, oversaw all analyses and research work by B.G.O.R and M.L., and co-wrote the paper and prepared figures with B.G.O.R and M.L.

8. Ribeiro, B.G.O.[1], **Gomez, M.G.** (2023). Dissolution Behavior of Ureolytic Bio-cementation: Physical Experiments and Reactive Transport Modeling., *Journal of Geotechnical and Geoenvironmental Engineering*, *149*(9), 04023071. https://doi.org/10.1061/JGGEFK.GTENG-11275, Citations: 8 (Google Scholar), Impact Factor: 4.106, Contribution: M.G.G. is the corresponding author and led conceptualization and design of research program, oversaw all analyses and research work by B.G.O.R., and co-wrote the paper and prepared figures with B.G.O.R.

9. Lee, M.[1], **Gomez, M.G.**, Graddy, C.M.R., San Pablo, A.C.M., DeJong, J.T., & Nelson, D.C. (2023). Improving the Spatial Control of Soil Biocementation using Indigenous Microorganisms: Column Experiments and Reactive Transport Modeling., *Engineering Geology, 318*, 107104, https://doi.org/10.1016/j.enggeo.2023.107104, Citations: 13 (Google Scholar), Impact Factor: 6.902, Contribution: M.G.G. is the corresponding author and led conceptualization and design of research program, designed and completed all numerical modeling presented in the paper, oversaw and completed all analyses and research work with M.L., and co-wrote the paper and prepared all figures with M.L. All other co-authors are from the NSF Center for Bio-mediated and Bio-inspired Geotechnics

(C.M.R.G., A.C.M.S.P., J.T.D., & D.C.) and contributed with conceptualization, editing, and review of the final paper.

10. Burdalski, R.J.[1], Ribeiro, B.G.O.[1], **Gomez, M.G.**, & Gorman-Lewis, D. (2022). Mineralogy, Morphology, and Reaction Kinetics of Ureolytic Bio-cementation in the Presence of Seawater Ions and Varying Soil Materials., *Scientific Reports*, *12*(1), 1-24. https://www.nature.com/articles/s41598-022-21268-3, Citations: 24 (Google Scholar), Impact Factor: 4.996, Contribution: M.G.G. is the corresponding author and led conceptualization and design of the research program, oversaw all analyses and research work by R.J.B. and B.G.O.R., and co-wrote the paper and prepared figures with R.J.B. D.G.L. aided with microbiological cell counts and review of the paper.

11. Humire, F., Lee, M.[1], Ziotopoulou, K., **Gomez, M.G.**, & DeJong, J.T. (2022). Development and Evaluation of Preconditioning Protocols for Sand Specimens in Constant-Volume Cyclic Direct Simple Shear Tests., *ASTM Geotechnical Testing Journal (GTJ)*, https://www.astm.org/gtj20210028.html, Citations: 8 (Google Scholar), Impact Factor: 1.820, Contribution: M.G.G. was involved in the conceptualization and the design of the research program used to develop the pre-conditioning protocol presented, oversaw all analyses and research work completed by M.L. that was included in the paper, and co-wrote the paper with all other authors.

12. Lee, M.[1], **Gomez, M.G.,** El Kortbawi, M., Ziotopoulou, K. (2022). Effect of Light Biocementation on the Liquefaction Triggering and Post-Triggering Behavior of Loose Sands., *Journal of Geotechnical and Geoenvironmental Engineering*, 148(1), 04021170. https://ascelibrary.org/doi/full/10.1061/%28ASCE%29GT.1943-5606.0002707, Citations: 51 (Google Scholar), Impact Factor: 4.106, Contribution: M.G.G. is the corresponding author and led conceptualization and design of research program, oversaw all analyses and research work by M.L., and co-wrote the paper and prepared all figures with M.L. All other co-authors are from the NSF Center for Bio-mediated and Bio-inspired Geotechnics (M.E.K., & K.Z.) and contributed with conceptualization, editing, and review of the final paper draft.

13. Graddy, C.M.R., **Gomez, M.G.**, DeJong, J.T., & Nelson, D.C. (2021). Native Bacterial Community Convergence in Augmented and Stimulated Ureolytic MICP Biocementation., *Environmental Science & Technology*. DOI: 10.1021/acs.est.1c01520. https://pubs.acs.org/doi/10.1021/acs.est.1c01520, Citations: 63 (Google Scholar), Impact Factor: 11.357, Contribution: M.G.G. helped perform experiments reported in this work, aided with the conceptualization and design of the experimental program and the methodology used in the study as well as helped co-write the paper with all other authors.

14. San Pablo, A.C.M, Lee, M.[1], Graddy, C.M.R., Kolbus, C.M.[2], Khan, M., Zamani, A., Martin, N., Acuff, C., DeJong, J.T., **Gomez, M.G.**, & Nelson, D.C. (2020). Meter-scale Bio-cementation Experiments to Advance Process Control and Reduce Impacts: Examining Spatial Control, Ammonium By-product Removal, and Chemical Reductions., *Journal of Geotechnical and Geoenvironmental Engineering,* https://ascelibrary.org/doi/10.1061/%28ASCE%29GT.1943-5606.0002377, Citations: 70 (Google Scholar), Impact Factor: 4.106, Contribution: M.G.G. helped perform experiments reported in this work, was involved in the conceptualization and design of the research program, oversaw all analyses and research work by a large team of undergraduate and graduate students from the NSF Center for Bio-mediated and Bio-inspired Geotechnics

(A.C.M.S.P., M.L., C.M.R.G., C.M.K., M.K., A.Z., N.M., & C.A.) along with J.T.D. and D.C.N., and helped co-write the paper and design figures.

15. Lee, M.[1], **Gomez, M.G.**, San Pablo, A.C.M., Kolbus, C.M.[2], Graddy, C.M.R., DeJong, J.T., & Nelson, D.C. (2019). Investigating Ammonium By-product Removal for Ureolytic Bio-cementation Using Meter- scale Experiments., *Scientific Reports*, *9*(1), 1-15. https://www.nature.com/articles/s41598-019-54666-1, Citations: 82 (Google Scholar), Impact Factor: 4.996, Contribution: M.G.G. is the corresponding author and helped perform experiments reported in this work, led conceptualization and design of this research program, oversaw all analyses and research work by M.L. related to byproduct generation and removal, and co-wrote paper and prepared figures with M.L. All other co-authors are from the NSF Center for Bio-mediated and Bio-inspired Geotechnics (A.C.M.S.P., C.M.K., C.M.R.G., J.T.D., D.C.N.) and contributed towards developing the methodology used in this study.

16. **Gomez, M.G.**, Graddy, C.M.R., DeJong, J.T., & Nelson, D.C. (2019). Biogeochemical Changes During Bio-cementation Mediated by Stimulated and Augmented Ureolytic Microorganisms., *Scientific Reports*, *9*(1), 1-15. https://www.nature.com/articles/s41598-019-47973-0, Citations: 87 (Google Scholar), Impact Factor: 4.996, Contribution: M.G.G. is the corresponding author and contributed to the conceptualization and design of the research program, aided with performing experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

17. Darby, K.M., Hernandez, G.L., DeJong, J.T., Boulanger, R.W., **Gomez, M.G.**, & Wilson, D.W. (2019). Centrifuge Model Testing of Liquefaction Mitigation via Microbially induced Calcite Precipitation., *Journal of Geotechnical and Geoenvironmental Engineering*, *145*(10), 04019084. https://ascelibrary.org/doi/full/10.1061/%28ASCE%29GT.1943-5606.0002122, Citations: 101 (Google Scholar), Impact Factor: 4.106, Contribution: M.G.G. contributed to the conceptualization and design of this research program, the analysis of the obtained data, and contributed to the writing and editing of this paper.

18. Martinez, A., Huang, L., & **Gomez, M.G.** (2018). Thermal Conductivity of MICP-treated Sands at Varying Degrees of Saturation., *Géotechnique Letters*, 1-7. https://www.icevirtuallibrary.com/doi/abs/10.1680/jgele.18.00126, Citations: 46 (Google Scholar), Impact Factor: 1.890, Contribution: M.G.G. contributed to the conceptualization and design of this research program, the analysis of the obtained data, and contributed to the writing and editing of this paper.

19. **Gomez, M.G.**, DeJong, J.T., Anderson, C.M. (2018). Effect of Bio-cementation on Geophysical and Cone Penetration Measurements in Sands., *Canadian Geotechnical Journal.* http://www.nrcresearchpress.com/doi/10.1139/cgj-2017-0253, Citations: 72 (Google Scholar), Impact Factor: 4.167, Contribution: M.G.G. is the corresponding author and contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

20. Graddy, C. M., **Gomez, M. G.**, Kline, L. M., Morrill, S. R., DeJong, J. T., & Nelson, D. C. (2018). Diversity of Sporosarcina-like Bacterial Strains Obtained from Meter-Scale Augmented and Stimulated Biocementation Experiments., *Environmental Science & Technology*, *52*(7), 3997-4005. https://pubs.acs.org/doi/abs/10.1021/acs.est.7b04271,

Citations: 79 (Google Scholar), Impact Factor: 11.357, Contribution: M.G.G. contributed to the conceptualization and design of this research program, helped perform experiments and analyses reported in this work, and contributed to the writing and editing of this paper.

21. Nassar, M. K., Gurung, D., Bastani, M., Ginn, T. R., Shafei, B., **Gomez, M.G.**, Graddy, C. M. R., Nelson, D. C., DeJong, J. T. (2018). Large-scale Experiments in Microbially Induced Calcite Precipitation (MICP): Reactive Transport Model Development and Prediction., *Water Resources Research*, 54. http://onlinelibrary.wiley.com/doi/10.1002/2017WR021488/full, Citations: 108 (Google Scholar), Impact Factor: 6.159, Contribution: M.G.G. contributed to the conceptualization and design of the modeling activities reported in this study, performance of the independent calibration experiments needed to develop the numerical model, and contributed to the writing and editing of this paper.

22. **Gomez, M.G.,** Graddy, C.R.M., DeJong, J.T., Nelson, D.C., Tsesarsky, M. (2018). Stimulation of Native Microorganisms for Bio-cementation at Field Scale Treatment Depths., *Journal of Geotechnical and Geoenvironmental Engineering,* 144(1). https://ascelibrary.org/doi/abs/10.1061/%28ASCE%29GT.1943-5606.0001804, Citations: 154 (Google Scholar), Impact Factor: 4.106, Contribution: M.G.G. contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

23. **Gomez, M.G.,** Anderson, C. M., Graddy, C. M., DeJong, J. T., Nelson, D. C., & Ginn, T. R. (2016). Large-scale Comparison of Bioaugmentation and Biostimulation Approaches for Biocementation of Sands., *Journal of Geotechnical and Geoenvironmental Engineering*, *143*(5), 04016124. https://ascelibrary.org/doi/full/10.1061/%28ASCE%29GT.1943-5606.0001640, Citations: 271 (Google Scholar), Impact Factor: 4.106, Contribution: M.G.G. contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

24. **Gomez, M.G.,** Martinez, B.C., DeJong, J.T., Hunt, C.E., deVlaming, L.A., Major, D.W., and Dworatzek, S.M. (2015)., Field scale Bio-cementation Tests to Improve Sands. *Ground Improvement*, 168(3), pp. 206-216. http://www.icevirtuallibrary.com/doi/pdf/10.1680/grim.13.00052, Citations: 318 (Google Scholar), Impact Factor: 1.345, Contribution: M.G.G. contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

**Conference proceedings and other non-journal articles**

***Fully refereed publications***

*Note: My graduate students[1], My undergraduate students[2].*

1. Luna, L.M.C., Lee, M.[1], deJager M., DeJong, J.T., **Gomez, M.G.**, Ziotopoulou, K. (2024). "A Liquefaction Triggering Surface for Ottawa F65 Sand: Cyclic DSS Results and PM4Sand Calibration", *GeoCongress 2024 Technical Papers*, Vancouver, B.C., Canada. Accepted. https://ascelibrary.org/doi/abs/10.1061/9780784485316.035, Citations: 3,

Contribution: M.G.G. led part of the DSS testing program reported in this work, oversaw all analyses and research work by M.L., and edited the final paper.

2. Shepherd, T.A.[1], **Gomez, M.G.**, (2024). "Microbially Induced Calcite Precipitation (MICP) via Oxidation of Organic Carbon", *GeoCongress 2024 Technical Papers*, Vancouver, B.C., Canada. Accepted. https://ascelibrary.org/doi/abs/10.1061/9780784485330.030, Citations: 1, Contribution: M.G.G. led the conceptualization and design of the research program, oversaw all analyses and research work by T.A.S., and co-wrote paper and prepared figures with T.A.S.

3. Lee, M.[1], **Gomez, M.G.,** San Pablo, A.C., Graddy, C.M.R., DeJong, J.T., Nelson, D.C. (2022). Enhancing the Uniformity and Extent of Bio-cementation Soil Improvement: Physical Experiments and Reactive Transport Modelling., *Proceedings of the 20th International Conference on Soil Mechanics and Geotechnical Engineering, Sydney 2022*. Accepted. https://www.researchgate.net/publication/369295859, Citations: 0, Contribution: M.G.G. led the conceptualization and design of research program, designed and completed all numerical modeling presented in the paper, oversaw and completed all analyses and research work with M.L., and wrote the paper and prepared all figures. All other co-authors are from the NSF Center for Bio-mediated and Bio-inspired Geotechnics (A.C.M.S.P., C.M.R.G., J.T.D., & D.C.) and contributed with conceptualization and editing and review of the final draft.

4. Ribeiro, B.G.O.[1], **Gomez, M.G.** (2022). Investigating the Dissolution Behavior of Calcium Carbonate Based Bio-cemented Sands., *GeoCongress 2022 Technical Papers*. (pp. 385-395). https://ascelibrary.org/doi/abs/10.1061/9780784484012.040, Citations: 3 (Google Scholar), Contribution: M.G.G. led the conceptualization and design of the research program, oversaw all analyses and research work by B.G.O.R., and co-wrote paper and prepared figures with B.G.O.R.

5. Martinez, A., Huang, L., & **Gomez, M.G.** (2020). Enhancement of the Thermal Conductivity of Sands via Microbially-induced Calcite Precipitation., *E3S Web of Conferences* (Vol. 205, p. 09011). EDP Sciences. https://www.e3s-conferences.org/articles/e3sconf/pdf/2020/65/e3sconf_icegt2020_09011.pdf, Citations: 10 (Google Scholar), Contribution: M.G.G. contributed to the conceptualization and design of the research program, the analysis of the obtained data, and contributed to the writing and editing of this paper.

6. Lee, M.[1], El Kortbawi, M., **Gomez, M.G.**, Ziotopoulou, K., (2020). Examining the Liquefaction Resistance of Lightly Cemented Sands Using Microbially Induced Calcite Precipitation (MICP)., *GeoCongress 2020 Technical Papers*, 13 pp. https://ascelibrary.org/doi/pdf/10.1061/9780784482834.007, Citations: 22 (Google Scholar), Contribution: M.G.G. led conceptualization and design of research program, oversaw all analyses and research work by M.L., and co-wrote paper and prepared all figures with M.L. All other co-authors are from the NSF Center for Bio-mediated and Bio-inspired Geotechnics (M.E.K., & K.Z.) and contributed with conceptualization and editing and review of the final draft.

7. Burdalski, R.J.[1], **Gomez, M.G.** (2020). Investigating the Effect of Microbial Activity and Chemical Concentrations on the Mineralogy and Morphology of Ureolytic Bio-cementation., *GeoCongress 2020 Technical Papers*, 13 pp. https://ascelibrary.org/doi/pdf/10.1061/9780784482834.010, Citations: 19 (Google

Scholar), Contribution: M.G.G. led conceptualization and design of research program, oversaw all analyses and research work by R.J.B., and co-wrote paper and prepared figures with R.J.B.

8. San Pablo, A.C., Lee, M.[1], Graddy, C.M.R., Kolbus, C.M.[2], Zamani, A., Khan, M., Acuff, C., Martin, N., **Gomez, M.G.,** DeJong, J.T., Nelson, D.C. (2020). Examining Spatial Control, Ammonium By-Product Removal, and Chemical Reductions for Bio-Cementation Soil Improvement Using Meter-Scale Experiments., *GeoCongress 2020 Technical Papers*, 11 pp. https://ascelibrary.org/doi/10.1061/9780784482780.044, Citations: 3 (Google Scholar), Contribution: M.G.G. helped perform experiments reported in this work, was involved in the conceptualization and design of the research program, oversaw all analyses and research work by a large team of undergraduate and graduate students (A.C.M.S.P., M.L., C.M.R.G., C.M.K., M.K., A.Z., N.M., & C.A.) along with J.T.D. and D.C.N., and helped co-write the paper and design final figures.

9. Lee, M.[1], Kolbus, C.M.[2], Yepez, A.D[2], **Gomez, M.G.** (2019). Investigating Ammonium By-Product Removal Following Stimulated Ureolytic Microbially-Induced Calcite Precipitation., *Geo-Congress 2019: Earthquake Engineering and Soil Dynamics Technical Papers*, 12 pp. https://ascelibrary.org/doi/abs/10.1061/9780784482100.021 , Citations: 20 (Google Scholar), Contribution: M.G.G. led conceptualization and design of research program, oversaw all analyses and research work by M.L., C.M., & A.D.Y., and co-wrote paper and prepared figures with M.L.

10. El Kortbawi, M., Ziotopoulou, K., Lee, M.[1], **Gomez, M.G.** (2019). Validation of a Bounding Surface Plasticity Model against the Experimental Response of (Bio-) Cemented Sands., *Geo-Congress 2019: Earthquake Engineering and Soil Dynamics Technical Papers*, 10 pp. https://ascelibrary.org/doi/abs/10.1061/9780784482100.021, Citations: 7 (Google Scholar), Contribution: M.G.G. aided with the analysis of results presented in this paper and contributed to writing the first draft of this paper and review and editing of the final paper.

11. Darby, K.M., Hernandez, G.L., **Gomez, M.G.**, DeJong, J.T., Wilson, D.M., Boulanger, R.W. (2018). Centrifuge Model Testing of Liquefaction Mitigation via Microbially Induced Calcite Precipitation., *Geotechnical Earthquake Engineering and Soil Dynamics V Technical Papers*, 11 pp. https://ascelibrary.org/doi/10.1061/9780784481455.012, Citations: 0, Contribution: M.G.G. contributed to the conceptualization and design of this research program, the analysis of the obtained data, and contributed to the writing and editing of this paper.

12. **Gomez, M.G.**, & DeJong, J.T (2017). Engineering Properties of Bio-cementation Improved Sandy Soils., *Grouting 2017 Technical Papers*, 11 pp. https://ascelibrary.org/doi/abs/10.1061/9780784480793.003, Citations: 55 (Google Scholar), Contribution: M.G.G. contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

13. DeJong, J.T, **Gomez, M.G.,** Waller, J.T., Viggiani G. (2017). Influence of Bio-Cementation on Shearing Behavior of Sand using X-ray Computed Tomography., *GeoFrontiers 2017 Technical Papers*, 12 pp. http://ascelibrary.org/doi/abs/10.1061/9780784480472.093, Citations: 24 (Google

Scholar), Contribution: M.G.G. aided with analyses reported in this work and led the writing of this paper and the preparation of all figures.

14. **Gomez, M.G.,** DeJong, J.T., Anderson, C.M., Nelson, D.C., Graddy, C.M. (2016). Large-Scale Bio-cementation Improvement of Sands., *Geotechnical and Structural Engineering Congress 2016 Technical Papers*, 9 pp. http://ascelibrary.org/doi/abs/10.1061/9780784479742.079, Citations: 19 (Google Scholar), Contribution: M.G.G. contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

15. DeJong, J.T., Proto, C., Kuo, M., and **Gomez, M.G.** (2014). Bacteria, Bio-films, and Invertebrates… the Next Generation of Geotechnical Engineers?., *GeoCongress 2014 Technical Papers*, pp. 3959-3968. http://ascelibrary.org/doi/abs/10.1061/9780784413272.384, Citations: 35 (Google Scholar), Contribution: M.G.G. contributed to the development of content presented in this paper including writing and editing.

16. **Gomez, M.G.,** Anderson, C.M., DeJong, J.T., Nelson, D.C., and Lau, X.H. (2014). Stimulating In-Situ Soil Bacteria for Bio-Cementation of Sands., *GeoCongress 2014 Technical Papers*, pp. 1674-1682. http://ascelibrary.org/doi/abs/10.1061/9780784413272.164, Citations: 97 (Google Scholar), Contribution: M.G.G. contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

17. **Gomez, M.G.**, DeJong, J.T., Martinez, B.C., Hunt, C.E., deVlaming, L.A., Major, D.W., and Dworatzek, S.M. (2013). Bio-mediated Soil Improvement Field Study to Stabilize Mine Sands., *Géo-Montréal 2013 Technical Papers*, 8 pp. https://www.researchgate.net/publication/272090556_Bio-mediated_Soil_Improvement_Field_Study_to_Stabilize_Mine_Sands, Citations: 19 (Google Scholar), Contribution: M.G.G. contributed to the conceptualization and design of this research program, performed all experiments and analyses reported in this work, and led the writing of this paper and the preparation of all figures.

***Refereed by abstract only***

*Note: My graduate students[1], My undergraduate students[2].*

1. **Gomez, M.G.,** Graddy, C.M.R., DeJong, J.T., Nelson, D.C. (2018). "Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation at Field Scale Treatment Depths", Proceedings of the International Society for Porous Media (Interpore) Annual Conference 2018, New Orleans, LA.

2. **Gomez, M.G.,** Lee, M. [1], Kolbus, C.M. [2], Yepez, A.D. [2] (2018). "Examining Nitrogen By-Product Management for Microbially-Induced Calcite Precipitation via Stimulated Microbial Ureolysis", Proceedings of the International Society for Porous Media (Interpore) Annual Conference 2018, New Orleans, LA.

3. **Gomez, M.G.,** Graddy, C.M.R., DeJong, J.T., Nelson, D.C. (2018). "Investigating Treatment Techniques for Stimulated Ureolytic Microbially-Induced Calcite Precipitation

at Field Scale Treatment Depths", Proceedings of the International Society for Porous Media (Interpore) Annual Conference 2018, New Orleans, LA.

4. San Pablo, A.C., Graddy, C.M.R., **Gomez, M.G.,** DeJong, J.T., Nelson, D.C. (2018). "Optimization of Treatment Techniques for Up-scaling of Stimulated Ureolytic Microbially-Induced Calcite Precipitation", Proceedings of the International Society for Porous Media (Interpore) Annual Conference 2018, New Orleans, LA.

5. Graddy, C.M.R., **Gomez, M.G.**, DeJong, J.T., Nelson, D.C. (2018). "High Phylogenetic and Physiological Diversity of Ureolytic Bacteria in Native Soils Bio-stimulated for MICP", Proceedings of the International Society for Porous Media (Interpore) Annual Conference 2018, New Orleans, LA.

6. **Gomez, M.G.**, & DeJong, J.T. (2017). "Influence of Soil Microorganisms on Biogeochemical Reaction Rates and Calcite Precipitation Microstructure in Bio-cemented Sands", Proceedings of the ASCE Engineering Mechanics Institute (EMI) Conference 2017, San Diego, CA.

7. Nassar, M.K., Gurung, D., Bastani, M., **Gomez, M.G.**, Graddy, C. M. R., Nelson, D. C., & Ginn, T. R. (2016). "Mathematical Modeling of MICP in Meter-Scale 2-D Transient Reactive Transport Experiments", Proceedings of the European Association of Geochemistry and of the Geochemical Society 2016 Goldschmidt Conference, Yokohama, Japan.

**Technical Reports**

1. **Gomez, M.G.,** DeJong, J.T., Martinez, B.C., Hunt, C.E., deVlaming, L.A., Major, D.W., and Dworatzek, S.M. (2013). "Final Report: Cameco MICP Field Trials." Geosyntec Consultants, Oakland, CA, 61 pp.

**Theses & Dissertations**

1. Ribeiro, B.G.O.[1] (2026). *Permanence and Life Cycle Performance of Biocementation Soil Improvement.* University of Washington, 396 pp., Doctoral Dissertation, https://digital.lib.washington.edu/researchworks/items/0e345554-a842-4cae-867a-3652eae6c7a2 Citations: 0

2. Martinez, E.M.[1] (2024). *Investigating Gas Entrapment Within Biocemented Composites.* University of Washington, 119 pp., M.S. Thesis, https://digital.lib.washington.edu/researchworks/items/5437c23c-374b-414b-b3ef-f60fd2c78d4c, Citations: 0

3. Shepherd, T.A.[1] (2023). *Microbially Induced Calcite Precipitation via Microbial Organic Acid Oxidation*. University of Washington, 138 pp., M.S. Thesis, https://digital.lib.washington.edu/researchworks/items/5437c23c-374b-414b-b3ef-f60fd2c78d4c, Citations: 1

4. Lee, M.[1] (2022). *Biocementation for Liquefaction Mitigation: Examining Response, Development, and Deployment*. University of Washington, 396 pp., Doctoral Dissertation, https://digital.lib.washington.edu/researchworks/handle/1773/49642, Citations: 1

5. Muchongwe, S.[1] (2021). *Controlling Colloidal Silica Grouts using Microbial Fermentation Activity*. University of Washington, 131 pp., M.S. Thesis, https://www.proquest.com/docview/2566226653?pq-origsite=gscholar&fromopenview=true, Citations: 1 (Google Scholar)

6. Burdalski, R.J., II.[1] (2020). *Investigating the Effect of Biological and Chemical Factors on the Reaction Kinetics and Mineralogy of Ureolytic Bio-cementation*. University of Washington, 163 pp., M.S. Thesis, https://www.proquest.com/docview/2438697714?pq-origsite=gscholar&fromopenview=true, Citations: 5 (Google Scholar)

7. **Gomez, M.G.** (2017). *Up-scaling of Bio-cementation Soil Improvement Using Native Soil Microorganisms.* University of California, Davis, 335 pp., Doctoral Dissertation, https://www.proquest.com/docview/1906984165?pq-origsite=gscholar&fromopenview=true, Citations: 7 (Google Scholar)

8. **Gomez, M.G.** (2013). *Field Scale Bio-cementation for the Improvement of Loose Sands.* University of California, Davis, 63 pp., M.S. Thesis, https://www.proquest.com/docview/1449817738?pq-origsite=gscholar&fromopenview=true, Citations: 6 (Google Scholar)

**Other Significant Research Dissemination**

1. DeJong, J.T., **Gomez, M.G.,** San Pablo, A.C., Graddy, C.M.R., Nelson, D.C., Lee, M.[1], Ziotopoulou, K., Montoya, B., Kwon, T.H. (2022). State of the Art: MICP Soil Improvement and its Application to Liquefaction Hazard Mitigation., *Proceedings of the 20th International Conference on Soil Mechanics and Geotechnical Engineering, Sydney 2022*. 105 pp., Accepted. https://www.researchgate.net/publication/368398250, Citations: 50 (Google Scholar), Contribution: M.G.G. and J.T.D. led a large international research team in the writing and development of a comprehensive state-of-the-art review on biocementation for the International Society on Soil Mechanics and Geotechnical Engineering (ISSMGE). M.G.G. and J.T.D. were the lead authors of the paper and co-presented the paper at the ICSMGE 2022 conference as one of only eight state-of-the-art lectures. M.G.G. contributed towards developing the outline and vision for the review, led the writing of various sections of the paper, providing research data and figures from the Gomez Lab research group, and co-leading the organization, review, and presentation of this paper with J.T.D.

2. **Gomez, M.G.** (2019). Bio-mediated Geotechnical Technologies for Natural Hazards Engineering., *Proceedings of the International Workshop to Develop Research Campaigns, Interdisciplinary Teams and Disruptive Technologies for the NHERI 5-Year Science Plan for Natural Hazards*, Alexandria, VA. https://www.researchgate.net/publication/369192199, Citations: 0 (Google Scholar), Contribution: M.G.G. wrote this publication, which provides an overview of biomediated soil improvement, for the *International Workshop to Develop Research Campaigns, Interdisciplinary Teams and Disruptive Technologies for the NHERI 5-Year Science Plan for Natural Hazards* to accompany an oral presentation at the workshop.

3. Savenye, W., Larson, J., Zapata, C., Kavazanjian, E., Elwood, K., Reed, A., Mitchel, M., Brown, S., Bronner, C., Saenz, D., Newstetter, W., Benton-Johnson, F., Dalal, M., **Gomez, M.G.,** and Delgado, N. (2016). The Ultimate Higher Education Start-Up: Building Education, Outreach, and Diversity for an NSF Engineering Research Center., Association for Educational Technology and Communications (AETC), 10.

https://www.researchgate.net/publication/309491521, Citations: 0, Contribution: M.G.G. contributed to the development of educational resources and modules reported on in this work, performed outreach activities, and collaborated with authors through involvement in the CBBG IDEA team.

## OTHER SCHOLARLY ACTIVITY

**Invited lectures and seminars.**

1. U.S. Coast Guard (USCG) Invited Talk, Teams Presentation, *"Biocementation Soil Improvement for Liquefaction Mitigation: Processes, Performance, and Opportunities"*, April 12th, 2026.

2. National Institute of Standards and Technology (NIST), Materials and Structural Systems Division (MSSD) Seminar Series, Zoom Presentation, *"Bio-cementation Soil Improvement for the Mitigation of Earthquake-induced Soil Liquefaction"*, February 6th, 2025.

3. Nanyang Technological University Singapore, Centre for Urban Solutions (CUS) Biogeotechnics Seminar, Zoom Presentation, *"State of the Art: MICP soil improvement and its application to liquefaction hazard mitigation"*, co-presented with J.T. DeJong, July 13th, 2023.

4. Transportation Research Board (TRB) Annual Meeting 2023, Invited Talk for Bio-mediated Soil Improvement for Infrastructure Applications Workshop, Washington, D.C., *"Biocementation for Mitigation of Soil Liquefaction"*, January 8th, 2023.

5. NSF Center for Bio-mediated and Bio-inspired Geotechnics Invited Talk, Zoom Presentation, *"Biocementation for Liquefaction Mitigation: Response, Development, and Permanence"*, November 4th, 2022.

6. State of the Art Lecture on Bio-mediated & Bioinspired Geotechnics, 20th International Conference on Soil Mechanics and Geotechnical Engineering (ICSMGE), Sydney, Australia, *"State of the Art: MICP soil improvement and its application to liquefaction hazard mitigation"*, in-person & co-presented with J.T. DeJong, May 4th, 2022. YouTube Recording

7. ASCE GeoCongress 2022**,** Invited Talk for Panel Session on "Recent Developments in Bio-mediated Soil Improvement Methods", Charlotte, NC., "*Biocementation for Liquefaction Mitigation: Recent Developments Regarding Behaviors, Deployment Methods, and Permanence*", March 22nd, 2022.

8. University of Southern California Astani CEE Department Seminar, Zoom Presentation, *"Bio-cementation Soil Improvement for the Mitigation of Earthquake-induced Soil Liquefaction"*, March 10th, 2022.

9. Vancouver Geotechnical Society (VGS) Invited Lecture, Vancouver, B.C., Canada, Zoom Presentation, "*Bio-cementation for Mitigation of Earthquake-induced Soil Liquefaction.*", February 10th, 2021. YouTube Recording

10. International Conference on Microbial Biotechnology in Construction Materials and Geotechnical Engineering (MBCMG2020), Southeast University, Nanjing, China., Zoom Presentation, "*Effect of Biogeochemical Factors on the Mineralogy of Ureolytic Bio-cementation."*, November 7th, 2020.

11. Northwest EcoBuilding Guild Educational Session: Managing Soil Carbon, Seattle, WA., Zoom Presentation, *"Biogeotechnical Solutions for Sustainable Civil Infrastructure."*, September 24th, 2020.

12. Oregon State University, Corvallis, OR., "*Bio-cementation for Mitigation of Earthquake-induced Soil Liquefaction.*", January 31st, 2020.

13. NHERI Science Workshop for Natural Hazards IDEA Presentation, Washington, D.C., "*Bio-mediated Geotechnical Technologies for Natural Hazards Engineering.*", March 18th, 2019.

14. University of Strathclyde, Glasgow, Scotland, UK., *"Up-scaling of Bio-cementation Soil Improvement using Native Soil Microorganisms."*, June 8th, 2018.

15. ASCE Seattle Geo-Institute Chapter 34th Annual Spring Seminar on Ground Improvement, Seattle, WA., "*Up-scaling Bio-mediated Calcite Precipitation for Improvement of Granular Soils.*", April 22nd, 2017.

16. ASCE Geotechnical Frontiers 2017, In Situ Modification of Soil Properties using Biological Mechanisms Panel Discussion, Orlando, FL., "*Role of Native Soil Microorganisms in Bio-mediated Soil Improvement.*", March 14th, 2017.

**Presentations given at conferences.**

1. Shepherd, T.A.[1], **Gomez, M.G.** (2024). "Microbially Induced Calcite Precipitation via Microbial Organic Acid Oxidation", *GeoCongress 2024,* Vancouver, BC, Canada. March 27th, 2024.

2. **Gomez, M.G.** (2023). "Mitigation of Earthquake-induced Soil Liquefaction Using Biocementation", *ASCE Geo-Institute 8th Annual Web Conference: Technical Session on Ground Improvement for Liquefaction Mitigation*, Zoom Presentation, December 7th, 2023.

3. Ribeiro, B.G.O.[1], Lee, M.[1], **Gomez, M.G.** (2023). "Effect of Chemically-induced Damage on the Shearing Behavior of Biocemented Sands", *8th International Symposium on Deformation Characteristics of Geomaterials,* Porto, Portugal. September 5th, 2023.

4. **Gomez, M.G.** (2022). "Enhancing the uniformity and extent of bio-cementation soil improvement: physical experiments and reactive transport modelling", *20th International Conference on Soil Mechanics and Geotechnical Engineering,* Sydney, Australia, TC307 Virtual Session, May 5th, 2022. YouTube Recording

5. Ribeiro, B.G.O.[1], **Gomez, M.G.** (2022). "Investigating the Dissolution Behavior of Calcium Carbonate Based Bio-cemented Sands", *GeoCongress 2022,* Charlotte, NC. March 23rd, 2022. Poster.

6. Lee, M.[1], El Kortbawi, M., **Gomez, M.G.**, Ziotopoulou, K., (2020). "Examining the Liquefaction Resistance of Cemented Sands Using Microbially Induced Calcite Precipitation (MICP) and Gypsum", *ASCE GeoCongress 2020*, Minneapolis, MN. February 27th, 2020.

7. Burdalski, R.[1], **Gomez, M.G.** (2020). "Investigating the Effects of Biogeochemical Conditions During Microbially Induced Calcite Precipitation (MICP) Soil Improvement", *ASCE GeoCongress 2020*, Minneapolis, MN. February 27th, 2020.

8. Lee, M.[1], Kolbus, C.M.[2], Yepez, A.D.[2], **Gomez, M.G.**, "Investigating Ammonium By-Product Removal Following Stimulated Ureolytic Microbially-Induced Calcite Precipitation", *ASCE GeoCongress 2019*, Philadelphia, PA. March 26th, 2019.

9. **Gomez, M.G.,** Graddy, C.M.R., DeJong, J.T., Nelson, D.C., "Stimulation of Native Microorganisms for Bio-cementation at Field Scale Treatment Depths", *International Society for Porous Media (Interpore) Annual Conference 2018*, New Orleans, LA. May 16th, 2018.

10. **Gomez, M.G.** and DeJong, J.T., "Effect of (Bio-)cementation on Vs & Cone Penetration Measurements in Sands.", *Performance Based Design (PBD) III Conference 2017*, Vancouver, BC, Canada. July 17th, 2017.

11. **Gomez, M.G.** and DeJong, J.T., "Engineering Properties of Bio-cementation Improved Sandy Soils.", *ASCE Grouting Conference 2017*, Honolulu, HI. July 10th, 2017.

12. **Gomez, M.G.**, "Influence of Soil Microorganisms on Engineering Properties, Reaction Rates, and Microstructure of Bio-cemented Sands.", *ASCE Engineering Mechanics Institute Conference 2017*, San Diego, CA. June 7th, 2017.

13. DeJong, J.T, **Gomez, M.G.**, Waller, J.T., Viggiani G., "Influence of Bio-Cementation on Shearing Behavior of Sand using X-ray Computed Tomography." *Geotechnical Frontiers 2017*, Orlando, FL. March 14th, 2017.

14. **Gomez, M.G.**, DeJong, J.T., Anderson, C.M., Nelson, D.C., Graddy, C.M. "Large Scale Bio-Cementation Improvement of Sands." *Geotechnical and Structural Engineering Congress 2016*, Phoenix, AZ. February 16th, 2016.

15. **Gomez, M.G.**, and DeJong, J.T. "Recent Developments in Microbially-Induced Calcite Precipitation for Soil Improvement.", *BioGeoCivil Engineering Summit 2015*, Delft University of Technology, Delft, Netherlands. November 18th, 2015.

16. **Gomez, M.G.**, Anderson, C.M., DeJong, J.T., Nelson, D.C., and Lau, X.H. "Stimulation of Native Bacteria for Bio-Cementation of Sands", *GeoCongress 2014*, Atlanta, GA. February 23rd, 2014.

**Other presentations.**

1. **Gomez, M.G.** *"Biogeotechnics Research at UW"*, *Presentation to select research area leads at the Norwegian Geotechnical Institute (NGI)*, Zoom Presentation, September 9th, 2021.

2. **Gomez, M.G.** *"Bio-cementation Soil Improvement for the Mitigation of Earthquake-induced Soil Liquefaction"*, *UW CEE 500 Seminar,* Zoom Presentation, April 15th, 2021.

3. Ribeiro, B.G.O.[1], Lee, M.[1], Muchongwe, S.[1], Gregovich, A.[1], **Gomez, M.G.** *"Biogeotechnics and Graduate School Panel Discussion"*, *Yakima Valley Community College STEM Club,* Zoom Presentation, January 14th, 2021.

4. **Gomez, M.G.** *"The Emerging Field of Biogeotechnics"*, *UW "Research Exposed!" Course (GEN 391I),* Zoom Presentation, October 21st, 2020.

5. **Gomez, M.G.** *"The Emerging Field of Biogeotechnics: UW Biogeotechnics Laboratory."*, *UW College of Engineering SEEDS Program,* Zoom Presentation, September 17th, 2020.

6. **Gomez, M.G.** *"Bio-mediated Geotechnical Technologies for Soil Improvement."*, *Landau Associates*, Edmonds, WA. January 24th, 2020.

7. **Gomez, M.G.** "*Bio-mediated Soil Improvement Technologies for Environmentally-Conscious Geotechnical Ground Improvement*.", *Shannon & Wilson, Inc.*, Seattle, WA June 20th, 2019.

8. **Gomez, M.G.** "*Bio-cementation for Mitigation of Earthquake-induced Soil Liquefaction*.", *Golder Associates*, Vancouver, B.C. May 30th, 2019.

9. **Lee, M.**[1], Gomez, M.G. "*Investigating Ammonium By-Product Management for Bio-Cementation Soil Improvement*.", *Pacific Northwest Geotechnical Graduate Student Symposium*, Seattle, WA. April 12th, 2019.

10. **Gomez, M.G.** "Up-scaling of Bio-cementation Soil Improvement using Native Soil Microorganisms.", *Ph.D. Exit Seminar*, Davis, CA. March 9th, 2017.

11. **Gomez, M.G.** "Biogeochemical Changes during Bio-Cementation via Microbial Ureolysis in Sands." *Center for Bio-mediated and Bio-Inspired Geotechnics (CBBG) Invited Webinar*, Davis, CA. February 17th, 2017.

12. **Gomez, M.G.** "Stimulation of Native Microorganisms for MICP at Field Scale Treatment Depths." *Geotechnical Graduate Student Society (GGSS) at UC Davis Lunchtime Seminar*, Davis, CA. March 10th, 2016.

13. **Gomez, M.G.,** and DeJong, J.T. "Large-scale Comparison of Approaches to Bio-Cementation Improvement of Sands.", *Geotechnical Graduate Student Society (GGSS) at UC Davis Round Table 2015 Event*, Davis, CA. April 10th, 2015.

14. **Gomez, M.G.,** Anderson, C.M., and DeJong, J.T. "Large-scale Comparison of Approaches to Bio-Cementation Improvement of Sands.", *San Francisco ASCE Geo-Institute Graduate Student Research Presentation Event,* Oakland, CA. March 24th, 2015.

15. **Gomez, M.G.,** and DeJong, J.T. "Field Scale Bio-Cementation for Improvement of Sands at a Mine Site", *Geotechnical Graduate Student Society (GGSS) at UC Davis Lunchtime Seminar*, Davis, CA. November 8th, 2012.

**Professional society memberships.**

- Canadian Geotechnical Society (2019 – Present)
- Clay Minerals Society (2019 – Present)
- International Society for Soil Mechanics and Geotechnical Engineering (2019 – Present)
- American Geophysical Union (AGU) (2018 – Present)
- International Society of Porous Media (2018 - Present)
- United States Society on Dams (2016 - Present),
- Center for Bio-mediated and Bio-inspired Geotechnics (2015 - Present)
- ASCE Geo-Institute (2014 - Present)

**Other.**

- Technical journal paper reviewer for:
  - *Acta Geotechnica*
  - *Applied and Environmental Microbiology*
  - *Applied Microbiology and Biotechnology*
  - *ASCE Journal of Materials in Civil Engineering*
  - *ASCE Journal of Geotechnical and Geoenvironmental Engineering*
  - *ASTM Geotechnical Testing Journal*
  - *Canadian Geotechnical Journal*
  - *Computers and Geotechnics*
  - *Engineering Geology*
  - *Environmental Science and Technology*
  - *Environmental Geotechnics*
  - *Geomicrobiology Journal*
  - *Géotechnique*
  - *Géotechnique Letters*
  - *Geophysical Journal International*
  - *Geotechnical and Geological Engineering*
  - *Geomechanics for Energy and the Environment*
  - *International Journal of Geomechanics*
  - *International Journal of Geotechnical Engineering*
  - *Marine Georesources & Geotechnology*
  - *Soils and Foundations*
  - *Scientific Reports*
  - *Water Research*
  - *Water, Air, & Soil Pollution*

- Technical conference paper reviewer for:
  - *1st International Conference on Bio-mediated and Bio-inspired Geotechnics (ICBBG)* (2 papers)
  - *ASCE GeoCongress 2024* (3 papers)
  - *ASCE GeoCongress 2023* (2 papers)
  - *20th ICSMGE, Sydney, Australia* (1 paper)
  - *ASCE GeoCongress 2022* (4 papers)
  - *ASCE International Foundations Conference and Equipment Expo 2021 (3 papers)*
  - *ASCE GeoCongress 2020* (2 papers)
  - *ASCE GeoCongress 2019* (4 papers)
  - *ASCE International Foundations Congress and Equipment Expo (IFCEE 2018)* (3 papers)

- *ASCE Geotechnical Earthquake Engineering and Soil Dynamics V (GEESDV)* (5 papers)
- *ASCE & CGJ 3rd International Conference on Performance-based Design in Earthquake Geotechnical Engineering (PBD-III)* (1 paper)
- *ASCE Geotechnical Frontiers 2017* (1 paper)
- *ASCE 2nd Pan-American Conference on Unsaturated Soils* (PanAm-UNSAT 2017) (1 paper)

## GRADUATE STUDENTS

**Chaired Doctoral Degrees**

- Minyong Lee, Chair, Research Topic: "Bio-cementation for Liquefaction Mitigation: Examining Response, Development, and Deployment.", Graduated December 15th, 2022, Current Position: Staff Engineer at Haley Aldrich, Seattle, WA.
- Bruna G.O. Ribeiro, Chair, Research Topic: "Permanence and Life Cycle Performance of Biocementation Soil Improvement.", Graduated March 20th, 2026, Current Position: Staff Engineer at Shannon & Wilson, Seattle, WA.

**Current Doctoral Students**

- Chung-En (Daniel) Tai, Chair, Research Topic: "Engineering Controls for Improved Load Transfer in Carbonate-Bearing Soils: Stress Application, Precipitation, & Dissolution.", Status: Started Ph.D. Program in September 2023.

**Chaired Masters Degrees**

- Erick Martinez, Chair, Research Topic: "Bio-inspired Bio-cemented Composites for Multifunctional and Resilient Ground Improvement.", M.S. Thesis, Graduated September 2024, Current Position: Staff Engineer at Geoengineers, Seattle, WA.
- Trent Shepherd, Chair, Research Topic: "Biocementation Using Microbial Acetate Oxidation & Dynamic Properties of Cemented Sands.", M.S. Thesis, Graduated December 2023, Current Position: Staff Engineer at HNTB Co., Kansas City, MO.
- Alexander Ong, Chair, Research Topic: "Evaluation of Biocemented Composites for Ground Improvement", M.S. Project, Graduated May 2022, Current Position: Staff Engineer at Nelson Geotechnical Associates, Inc., Woodinville, WA.
- Andrew Gregovich, Chair, Research Topic: "Leveraging Microbial Citrate Degradation for Geotechnical Soil Improvement", M.S. Project, Graduated March 2022, Current Position: Mapping Geologist at Ambler Metals LLC, Fairbanks, AK.
- Samantha Muchongwe, Chair, Research Topic: "Controlling Colloidal Silica Grouts using Microbial Fermentation Activity.", M.S. Thesis, Graduated June 2021, Current Position: Staff Geotechnical Engineer at Aspect Consulting LLC, Seattle, WA.
- Robert Burdalski, Chair, Research Topic: "Investigating the Effect of Biological and Chemical Factors on the Reaction Kinetics and Mineralogy of Ureolytic Bio-cementation.", M.S. Thesis, Graduated June 2020, Current Position: Staff Engineer at HDR, Olympia, WA.

**Current Masters Students**

- Zongheng Li, Chair, Research Topic: "Effect of Controlled Diagenetic Processes on Pile End Bearing Resistances in Carbonate Bearing Soils.", M.S. Thesis, Status: Transitioning from Independent Research to M.S. Thesis Program In Summer 2026

**Other significant student supervision**

- Hanieh Babaeizad, Collaboration on Biocementation with Student & Advisor Dr. Baille (September 2023 – Present), Current Position: PhD Student in Civil & Environmental Engineering at Ruhr University Bochum, Germany.
- Kelly Hillard, Undergraduate Research Advisor (June 2023 – Present), Current Position: Undergraduate Student in Civil & Environmental Engineering at Univ. of Washington.
- Andrew Shumway, Doctoral Dissertation and General Exam Committee Member (March 2023 - Present), Current Position: Ph.D. Student in Earth and Space Sciences at Univ. of Washington (Advisor: David C. Catling).
- Autum Downey, Doctoral Dissertation and General Exam Committee Member (Feb. 2023 - Present), Current Position: Ph.D. Student in Earth and Space Sciences at Univ. of Washington (Advisor: Drew Gorman-Lewis).
- Aldulqader Saeed Alshahrani, Graduate Research Project Co-advisor with Brett W. Maurer (January 2023 – August 2023), Current Position: Teaching Assistant at King Abdulaziz University in Jeddah, Saudi Arabia.
- Andrea Mattson, Undergraduate Research Advisor (January 2022 – September 2022), Current Position: M.S. Student in Geotechnical Engineering at Univ. of Washington.
- Dellen Behrend, Undergraduate Research Advisor (June 2020 – August 2022), Current Position: M.S. Student in Geotechnical Engineering at UC Berkeley.
- Qinlin Yu, Master's Supervisory Committee Member (August 2021), Current Position: Ph.D. Student in Geotechnical Engineering at CU Boulder.
- Carson Cheung, Graduate Research Advisor (January 2020 – June 2020), Current Position: Senior Geotechnical Engineer at City of Seattle, Seattle, WA.
- Tyler Wilcox, Graduate Research Co-advisor with Steve L. Kramer (September 2019 – June 2020), Current Position: Staff Geotechnical Engineer at Geotechnical Resources Inc., Seattle, WA.
- Lucas Lindberg, Undergraduate Research Advisor (July 2019 – June 2020), Current Position: Field Engineer at American Bridge Company, Seattle, WA.
- Tyler Wilcox, Undergraduate Research Advisor (December 2019 – June 2019), Current Position: Staff Geotechnical Engineer at Geotechnical Resources Inc., Seattle, WA.
- Thao (Mita) Ngyuen, Undergraduate Research Advisor (January 2019 – March 2019), Co-advised with Brett Maurer, Current Position: Staff Geotechnical Engineer at Langan Engineering, Daly City, CA.
- Carson Valente, Undergraduate Research Advisor (June 2018 - Present), Current Position: Staff Engineer at Saiful Bouquet Structural Engineers, Pasadena, CA.
- Andres Yepez, Undergraduate Research Advisor (Oct. 2017 – June 2018), Current Position: Structural Engineer at Royal HaskoningDHV, Rotterdam, Netherlands.
- Colin Kolbus, Undergraduate Research Advisor (Sept. 2017 - Sept. 2019), Current Position: Environmental Engineer at Prometheus Fuels, Santa Cruz, CA & Part-time Lecturer at Cabrillo College in Santa Cruz, CA.
- Alexander Baird, Master's Supervisory Committee Member (March 2019), Current Position: Staff Geotechnical Engineer at Shannon & Wilson Inc., Seattle, WA.
- Andrew Makdisi, Doctoral Qualifying Exam Committee Member (December 2019), Current Position: Research Civil Engineer at the Geologic Hazards Science Center at USGS, Golden, CO.
- William Pollock, Doctoral Qualifying Exam Committee Member (November 2017), Current Position: Staff Geotechnical Engineer at Shannon & Wilson Inc., Seattle, WA.

- Charles M.R. Graddy, Graduate Research Mentor with Douglas C. Nelson & Jason T. DeJong (September 2017 - Present), Current Position: Ph.D. Student in Microbiology at UC Davis, Davis, CA.
- Alexandra C.M. San Pablo, Graduate Research Mentor with Jason T. DeJong & Douglas C. Nelson (September 2017 - Present), Current Position: Ph.D. Student in Civil and Env. Engineering at UC Davis, Davis, CA.

## RESEARCH ACTIVITIES

**Total Amount:** $1,729,896 [$1,544,790 for research; $185,106 for equipment]

**My Amount:** $1,597,896 [$1,412,790 for research; $185,106 for equipment]

**Funded Research**

| **Funding Agency** | ***Title*** | **Your role with other PI's and co-PI's** | **Total Amount** | **My Amount** | **Dates (start - finish)** |
|---|---|---|---|---|---|
| WSDOT | *Right Sizing Low Impact Development (LID) Best Management Practices (BMPs) to Aid in Reducing 6PPD in Stormwater Runoff* | $189,000 | $63,000 | Co-PI (PI Maurer and Co-PI Arduino) | Sept 2026 – June 2027 |
| NSF (ECI Program) | *REU Supplemental: CAREER: Mollusk and Arthropod-inspired Bio-cemented Composites for Sustainable, Resilient, and Multifunctional Ground Improvement* | Sole PI | $8,000 | $8,000 | 7/2023 to 7/2024 |
| NSF (ECI Program) | *REU Supplemental: CAREER: Mollusk and Arthropod-inspired Bio-cemented Composites for Sustainable, Resilient, and Multifunctional Ground Improvement* | Sole PI | $8,000 | $8,000 | 7/2022 to 7/2023 |

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|---|---|---|---|---|---|
| NSF (ECI Program) | *REU Supplemental: Investigating the Life Cycle Performance of Bio-cementation Soil Improvement: Synthesis, Degradation, and Repair* | Sole PI | $8,000 | $8,000 | 6/2021 to 6/2022 |
| NSF (ECI Program) | *REU Supplemental: CAREER: Mollusk and Arthropod-inspired Bio-cemented Composites for Sustainable, Resilient, and Multifunctional Ground Improvement* | Sole PI | $8,000 | $8,000 | 7/2021 to 7/2022 |
| NSF (ECI Program) | *CAREER: Mollusk and Arthropod-inspired Bio-cemented Composites for Sustainable, Resilient, and Multifunctional Ground Improvement* | Sole PI | $500,000 | $500,000 | 7/2021 to 6/2026 |
| UW STF | *Resonant Column Device for Education and Research in Biogeotechnics and Earthquake Engineering (Equipment only)* | PI (co-PI, Brett Maurer) | $108,553 (Equipment Only) | $108,553 | 3/2021 |
| NSF (ECI Program) | *REU Supplemental: Investigating the Life Cycle Performance of Bio-cementation Soil Improvement: Synthesis, Degradation, and Repair* | Sole PI | $8,000 | $8,000 | 6/2020 to 6/2021 |

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|---|---|---|---|---|---|
| Geotechnical Women Faculty (GTWF) Seed Funding / National Science Foundation | *Collaboration for Geotechnical Lab Testing, Earthquake Engineering, and Bio-geotechnics* | Co-PI (PI, Diane Moug, PSU; Co-PI, Katerina Ziotopoulou, UC Davis) | $6,000 | $0 (Travel not completed due to COVID-19) | 1/2020 to 1/2021 |
| NSF CBBG (ERC Program) | *Up-scaling of Stimulated Ureolytic Bio-cementation* | Co-PI (PI, DeJong) | $344,902 | $344,902 | 7/2017 to 7/2023 |
| UW STF | *Earthquake Ground-Motion Prediction via Field and Laboratory Measurement of Seismic-Wave Velocities (Equipment only)* | Co-PI (PI, Brett Maurer) | $76,553 (Equipment Only) | $76,553 | 3/2019 |
| NSF (ECI Program) | *Investigating the Life Cycle Performance of Bio-cementation Soil Improvement: Synthesis, Degradation, and Repair* | Sole PI | $425,000 | $425,000 | 8/2018 to 7/2022 |
| UW RRF | *Investigating the Liquefaction Resistance of Bio-cemented Sands During Earthquake-Induced Cyclic Loading* | Sole PI | $39,888 | $39,888 | 3/2018 to 3/2019 |

**Other Awards**

| **Funding Agency** | **Purpose** | **Total Amount** | **My Amount** | **Date** |
|---|---|---|---|---|
| Golder Associates | *Travel support for pending biocementation field trial in Vancouver, B.C.* | $1,597 | $1,597 | 07/2019 |

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|---|---|---|---|---|
| NSF (NHERI) | *Travel support to attend NHERI Science Workshop in Washington, D.C. for Natural Hazards IDEA Presentation* | $1,000 | $1,000 | 3/2019 |

## SERVICE

**Departmental Service**

- Community Committee Member (Sept. 2026 – Present).
- CEE Representative for IEB Space Committee (Dec. 2024 – Present).
- Education Committee Member (Sept. 2023 – Sept. 2026).
- Geotechnical Area Lead (Sept. 2023 – Present).
- CEE Laboratory Facilities Committee Member (Feb. 2023 – Present).
- Search Committee Member for UW CEE Budget Analyst (Feb 2024 – March 2024).
- Geotechnical Graduate Program Adviser (Sept. 2022 – Sept. 2023).
- Diversity, Equity, and Inclusion Committee Member (Sept. 2021 – Sept. 2023).
- Valle Scholarship & Scandinavian Exchange Program Committee Member (Sept. 2019 – Sept. 2023).
- Search Committee Member for UW CEE Technician (April 2023 – May 2023).
- Blended BSCE Implementation Committee Member (Sept. 2021 – June 2022).
- Search Committee Member for UW CEE Faculty Search. Resulted in successful hire of Dr. Bethany Gordon (Jan. 2021 – June 2021).
- Undergraduate Education Committee Member (Sept. 2020 – Sept. 2021).
- Justice, Equity, Diversity, and Inclusion Committee Member (Sept. 2018 – Sept. 2020).
- Search Committee Member for UW CEE Technician (Oct. 2019 – Dec. 2019).
- Undergraduate Admissions Committee Member (July 2018).
- Departmental Affairs Committee Member (Sept. 2017 – June 2018).
- Search Committee Member for UW CEE Env. Faculty Search. Resulted in successful hire of Dr. Jessica Ray (Dec. 2017 – Mar. 2018).
- Presenter for CEE Undergraduate Advising Welcome and Orientation (Sept. 2017).

**Professional society and other service**

- Chair Nominated Member of International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE) Technical Committee TC223 (Bio-geotechnics) (one of four "Chair Nominated" positions) (May 2026 – Present).
- Associate Editor for ASCE *Journal of Geotechnical and Geoenvironmental Engineering* (March 2026 – Present).
- Editorial Board Member for *Scientific Reviews* (May 2026 – Present).
- Editorial Board Member for *Scientific Reports* (June 2023 – Present).
- Proceedings editor and member of the organizing committee for the 1st International Conference on Bio-mediated and Bio-inspired Geotechnics (ICBBG) to occur in May 2025.
- Session co-chair for the "Ground Improvement" Technical Session at ASCE GeoCongress 2023 (March 2023).
- Associate Editor for *Biogeotechnics* Journal (January 2023 – Present).

- Session co-chair for the "Innovative Geomaterials & Geosynthetics" Technical Session for ASCE GeoCongress 2022 (March 2022).
- Participant in the National Academies of Sciences, Engineering, and Medicine Committee on the Corrosion of Buried Steel at New and In-Service Infrastructure "*Laboratory and Field Geotechnical Characterization for Improved Steel Corrosion Modeling*" Virtual Workshop (March 2021).
- Editorial Board Member for *Canadian Geotechnical Journal* (January 2020 – Present).
- Scientific Committee Member for First International Conference on Microbial Biotechnology in Construction Materials and Geotechnical Engineering (MBCMG2020) (November 2020).
- Co-organizer of "Biogeotechnics Symposium" Technical Session for GeoCongress 2020 (March 2020).
- Co-chair of the "Biopolymers" Technical Session for GeoCongress 2019 (March 2019).
- Co-organizer of the "Applications of Biochemical Modification of Porous Media" mini symposium for International Society for Porous Media (Interpore) 10$^{th}$ Annual Conference (May 2018).
- Member of American Society of Civil Engineers (ASCE) Geo-Institute "Soil Properties and Modelling" Technical Committee (March 2017 – Present).

**All other service**

- UW Royalty Research Fund Review Committee Member (Sept. 2024 to Present).
- Session moderator for the 2023 UW Undergraduate Research Symposium on "Sustainability, Equity, & the Environment: Interfaces between Society & Environmental Challenges" (May 2023).
- Faculty mentor to Andrea Mattson who was awarded an International Association of Foundation Drilling Scholarship in 2022 ($3,000 total).
- Outreach to Yakima Valley Community College STEM Club to recruit URM students to STEM fields. Activities involved a presentation on biogeotechnics and a graduate student Q&A panel discussion (January 2021).
- Outreach to high achieving URM students through UW College of Engineering Summer Early Enrichment in Engineering for Dean's Scholars (SEEDS) Program including presentation on biogeotechnics and a virtual lab tour (September 2020).
- Outreach to undeclared undergraduate students through presentation to "Research Exposed!" course (GEN 391I) intended to inspire students to pursue STEM careers (October 2020).
- Washington State Academic Red Shirt Program (STARS) Faculty Mentor to Jair Lopez. STARS program aims to support first-generation and low-income students in their pursuit of STEM careers. Mentorship meetings aimed to help Jair prepare to transfer into civil engineering (from mechanical engineering) and provided academic support and career guidance (January 2019 – March 2021).
- Participant in the 2019 International Geosynthetic Society Educate the Educators Workshop at UC San Diego to educate early career faculty about geosynthetics, their engineering applications, related theory, and how to effectively teach this content at the undergraduate and graduate levels (December 2019).
- UW Engineering Discovery Days Exhibit Organizer – Developed and coordinated an exhibit entitled: "Geotechnical Engineering: Exploring Earthquakes, Microbes, and Quicksand!" with Brett W. Maurer. The exhibit provided information related to geotechnical earthquake engineering, biomediated and sustainable soil improvement and various activities including a liquefaction tank demonstration and microscope imaging of biocemented sand samples (April 2018 & 2019).

- Faculty mentor to Colin Kolbus who was awarded a Mary Gates Research Scholarship in 2019 ($5,000 total).