Megan E. Elwood Madden

Center for Faculty Excellence & School of Geosciences
University of Oklahoma

2020-Present	Director, Center for Faculty Excellence, University of Oklahoma (OU)
2019-Present	Professor, School of Geosciences, OU Robert E. and Doris Klabzuba Chair in Geology and Geophysics Core Affiliate Faculty, Women's and Gender Studies, OU
2013-present	Stubbeman-Drace Presidential Professor, OU
2013-2019	Associate Professor, School of Geology and Geophysics, OU
2007-2013	Assistant Professor, School of Geology and Geophysics, OU
2005-2007	Wigner Fellow, Oak Ridge National Laboratory
2005	Ph.D., Geochemistry, Virginia Tech
2000	B.S. Geology, University of Illinois, Urbana-Champaign

Administrative experience and accomplishments:

Director of Center for Faculty Excellence (2020-present), 0.5 FTE Provost-direct

I lead a team of ten staff, four faculty fellows, and 16 students tasked with providing comprehensive professional development for all faculty to advance strategic goals across the university, including advancing student success, recruiting and retaining excellent faculty, and expanding the impact of our work. CFE activities focus on developing effective and teaching practices, proposal development, coaching to support scholarly writing, community engagement, and leadership development, across all stages of career development. During my four years as director, I have grown the size and impact of the Center significantly by establishing a faculty fellow program (4/yr) and nearly doubling the Center's staff through new full-time positions. During the same period, the rate of faculty participation in our professional development programs has also doubled across.

Duties as Director:

- Develop and carry-out the Center's Strategic Plan in support of the University's *Lead On* strategic plan. Includes developing and implementing an annual budget of ~$1.6M, as well as an ambitious 6-yr strategic budget plan.
- Expand our professional development resources to meet the needs of OU faculty. Over the past three years I've grown the team by four new full-time positions, with an additional hire planned in 2024.
- Organize and lead OU's 2-day New Faculty Orientation
- Lead four promotion-focused workshops for early assistant professors, folks planning to present their tenure/associate dossiers within 1-2 years, and associate professors working towards promotion to full.
- Collaborate and communicate frequently with administrative leaders across campus, including the Senior Vice President and Provost; Vice President for Research and

Partnerships; Vice President for Diversity, Equity, and Inclusion; Graduate College Leadership; Faculty Senate Executive Committee; Dean's Council; Chairs and Directors; Research Council; Inclusivity Council; OU Elevate ADVANCE team.
- Develop and share our annual assessment report with CFE's Advisory Board and other stakeholders; meet with the Advisory Board regularly to share plans and seek feedback.
- Recruit and select CFE Faculty Fellows and NCFDD Faculty Success Program participants through a peer-reviewed proposal process.

In addition to these general duties, I also
- Led efforts to develop and offer a suite of targeted professional development workshops for departments (2023- present)
- Contributed to OU's assurance document and site visit for our 10-yr re-accreditation (2023)
- Co-sponsored and co-organized the Teaching, Learning, and Assessment week of workshops with the Office of Assessment (2022)
- Contributed to the Quality Improvement Plan committee efforts to benchmark faculty evaluation systems at aspirational peer institutions as part of our accreditation efforts (2022)
- Served on the Law Dean Search Committee (2021)
- Provided targeted support to help launch OU's Gateway to Belonging course and teaching team (2020)
- Served on the Writing Center Advisory Board, conducting annual evaluations and a successful tenure process for the Director (2023-present)

School of Geosciences Committee A (2013-2014, 2019-2020. 2022-present)
I have served three terms on this committee of two elected faculty who advise the Director (weekly) and Dean (as needed) regarding administrative decisions and strategic planning, including faculty hiring priorities, budget decisions, student recruitment, and support. We also conduct annual evaluations for faculty. During my time on Committee A, I have
- Led efforts to realign our faculty evaluation methods, criteria, and tenure/promotion criteria with the School's goals and priorities.
- Worked with fellow faculty to establish and promote cross-disciplinary focus areas for prioritizing new faculty hires.
- Chaired an ad hoc committee which developed bylaws to document shared governance policies and procedures for the School, including faculty hiring practices, tenure and promotion criteria, and evaluation processes.
- Evaluated faculty and identified candidates for unfilled endowed chair positions.
- Worked with the Dean's office to facilitate selection of a new Director of the School.
- Led an ad hoc committee of faculty and graduate students in developing "Expectations for Graduate Education in the University of Oklahoma School of

Geosciences" to clearly communicate rights and responsibilities for graduate students, as well as faculty and staff in the School of Geosciences.
- Represented the School of Geosciences at the Diversity, Equity, and Inclusion in the Earth and Environmental Sciences: Supporting the Success of All Students Workshop (Chicago, 2019) and the Summit on Improving Geoscience Graduate Student Preparedness for the Future Workforce Department Head, Chairs& Graduate Program Directors (Austin, 2019).

Chair of Faculty Senate (2018-2019), Faculty Senate Executive Committee (2015-2022)
As a member-at-large, secretary, chair-elect, and then chair, I represented ~1200 faculty on OU's Norman campus, interacting with administrators and the Board of Regents on behalf of the faculty. During my tenure on the executive committee and as chair I

- Advised OU's President and Provost (monthly) on issues impacting faculty, including short-and long-term challenges and opportunities for the university community.
- Negotiated with the upper administration to develop and implement the first merit-based faculty raise program in over a decade, including methods to address inversion, compression, and other equity issues across campus.
- Lead campus efforts to evaluate long-term faculty recruitment and retention data; promote administrative actions that would increase the diversity of our applicant pools, value candidates that demonstrate cultural competency; and reward faculty who's actions positively impact OU's strategic goals.
- Completed benchmarking and analysis of OU's tenured/non-tenured faculty balance within the context of public AAU aspirational peers
- Collaborated with OU's Budget Director to evaluate and transparently communicate OU's finances within the context of peer institutions.
- Worked with the Vice President for Research and Partnerships to develop cross-disciplinary research centers that support and amplify high impact research across campus.
- Developed and passed a comprehensive Faculty Senate Diversity, Equity, Inclusion, and Belonging Resolution calling for wide-spread and concrete action towards improving diversity, equity, and inclusion on campus.
- Collaborated with the administration to revise OU's faculty awards guidelines and nomination process to increase nominations and awards.
- Created a joint Teaching Evaluation Working Group with the provost's office to revise the processes, tools, and methods we use to evaluate faculty teaching, aimed at valuing and rewarding effective and inclusive teaching practices. Work included replacing student evaluations of teaching (SET) with the Course Reflection Survey (CRS) that asks students about observable behaviors and course attributes that supported their growth, including inclusive teaching practices, skill development, and organization.
- Established an ad hoc faculty advisory committee to consider proposed budget cuts, evaluate their impact on OU's academic mission, and make recommendations to the President during a period of fiscal austerity.

- Worked with the administration and the faculty advisory committee to articulate OU's academic goals and vision, through development of OU's *Lead On* strategic plan that was approved by the Board of Regents spring 2020.
- Interviewed candidates for open Dean and Vice President positions across campus and provided feedback to the upper administration.

Courses Taught

Physical Geology for Science and Engineering Majors, GEOL1114
Deep Space, Deep Time, Honors Colloquia
Exploring Planetary Worlds, GEOL 3063
Principles of Geochemistry, GEOL 4223/5223
Geowriting, GEOL 3333
Exploring Planetary Geology, GEOL 4970/6970
History of Water on Mars, GEOL 6970
Planetary Geology in the Field, GEOL 4970
Gender and Identity in STEM, WGS 3393

Research Advising:

4 PhD students (including 1 current)
14 MS degrees (1 current)
6 Postdocs (1 current)
23 Undergraduate Researchers (1 current).
28 Additional graduate committees

Honors and Awards:

Professional Societies

- Elected GSA Fellow (2023)

at University of Oklahoma

- Robert E. and Doris Klabzuba Chair in Geology and Geophysics (2019)
- Stubbeman-Drace Presidential Professor (2013)
- OU Junior Faculty Research Program ($6K- 2008)
- ORAU Powe Junior Faculty Award ($10K-2008)

at ORNL

- Eugene P. Wigner Fellowship, 2005-2007

Administrative Leadership experience:

- Director, Center for Faculty Excellence (2020-present)
- Faculty Senate Chair (2018-2019)
- Faculty Senate Executive Committee (2015-2020)
- Chair, Committee on Committees (2017-2018)
- Faculty Senate Representative for Dean's Council (2017-2019)
- Provost's Advisory Committee for Women's Issues (2010-2012, Co-Chair 2010-2011, Faculty Senate liaison 2016-2018)

- School of Geosciences Committee A (2013-2014, 2019-present)

Professional Development and Service:

- Faculty Leadership Program Committee (2024-present)
- Faculty Awards and Honors Committee (2023-2026)
- Co-led NAGT Webinar "Developing evaluation systems that value diversity, equity, and inclusion efforts: an active workshop for the geosciences" (May 2023)
- OU Writing Center Committee A (2020-2022, 2023-present)
- CIMER Faculty Entering Mentoring Facilitator Training, week-long training workshop (November 2022)
- Advancing IDEA in Planetary Science- conference participant and speaker (April 2022)
- Faculty Senate-Provost Office Teaching Evaluation Working Group (2018-2022)
- URGE participant- OU Geosciences pod member (2021)
- Chair, Critical Zone Geoscience faculty search committee (2020-2021)
- Member, College of Fine Arts Assoc. Dean search committee (2021-2022)
- Member, Law School Dean search committee (2020-2021)
- Vice President for Research and Partnerships Strategic Planning Committee (2019-2020)
- Co-Chair OU Writing Center Director Search (2019-2020)
- Committee on Committees member (2019-present)
- Diversity, Equity, and Inclusion in the Earth and Environmental Sciences: Supporting the Success of All Students Workshop participant (2019)
- Summit on Improving Geoscience Graduate Student Preparedness for the Future Workforce Department Head, Chairs& Graduate Program Directors (2019)
- OU's representative to the Universities Space Research Association (USRA, 2016-2018)
- Faculty Senate Geology and Geophysics elected representative (2015-2018)
- Inclusive Teaching in STEM, workshop organizer (2017)
- Faculty Diversity Ally Program, pilot program participant (2016-2017)
- Provost's Advisory Committee for STEM (2014-2015)
- Becoming an Inclusive Teacher, Faculty Learning Group (2014)
- Undergraduate Research Advisory Council (2013-2015)
- Associate editor for Geosphere (2008-2013)
- How People Learn, Faculty Learning Group (2013)
- CPSGG Graduate Affairs Committee (2007-2013, Chair 2009-2013)
- AACU Next Generation STEM Learning: Investigate, Innovate, Inspire (2012)
- Mentor for five middle school teachers, Creating Critical Connections in Math and Science project at OU http://www.c3ms.org/ (summer 2011)
- CPSGG Graduate Liaison (2008-2011) CPSGG
- CPSGG Graduate Affairs Committee (2007-2013)
- AWG Faculty Advisor (2007-2009)
- Co-Convener for Gas Hydrates Session at Goldschmidt 2010 Conference
- Panel member for NASA 2009, 2011, 2016, 2017, 2018; NSF 2017

- Reviewer for NASA Planetary Sciences Program, NASA Mars Fundamental Research Program, NSF Biogeochemistry program.
- Manuscript reviewer for Science, Astrobiology, Geochimica et Cosmochimica Acta, Chemical Geology, Journal of Crystallography, Earth Interactions, Energy and Fuels, Energies, Marine and Petroleum Geology, Geofluids. Earth and Planetary Science Letters, Icarus, Journal of Geophysical Research, ACS Earth and Space Chemistry
- Invited Presentation on Dual Career Job Search for Cutting Edge pre-faculty workshop (2008)
- Selected Participant in the Earth Science Women's Network Leadership Workshop (2008)
- Selected Participant Planetary Science Summer School, 2006 JPL

Media Interviews:
Chronicle of Higher Education (2018, 2019)
Norman Transcript (2018, 2019)
The Oklahoman (2018)
The Tulsa World (2019)
Planetary Radio Podcast with Bill Nye (2019)
Science (2020)

Current Grant Funding (>$4.4M):
ADVANCE IT: OU-ELEVATE: Assessing and Re-envisioning Faculty Evaluations and Workload Distributions $3M (PI L. Snyder, Co-I Elwood Madden). NSF ADVANCE (2022-2026).

Salts and Clays- Investigating clay formation and alteration in high salinity brines, $574k (PI, Co-Is A. Elwood Madden and Caitlin Hodges). NASA Solar System Workings, 2022-2025.

Efficiency Of Geophysical Methods for Assessment of Biogeochemical and Mineralogical Subsurface Variation in Extreme Redox Gradients - Advancing Tools To Predict Habitability In The Subsurface, $596k (Co-I, PI Saneiyan, OU). NASA Habitable Worlds, 2023-2026

Characterizing Ammonium-Bearing Materials to Constrain Ammonium in the Regoliths of Rocky Bodies in our Solar System, $75K to OU (Co-I, PI Janice Bishop, SETI) (2024-2027)

SQM Raman Brines partnership, $200K to OU (PI, 2024-2025)

Past Grant Funding (>$2.9M):
EAGER GOLD-EN Rewards: Removing barriers and supporting geoscience diversity leaders by revising evaluation and reward systems $300K (PI Elwood Madden). NSF Geopaths Program (2021-2023)

Characterizing the Geochemical Conditions Governing Formation and Reaction of Jarosite and Alunite Outcrops on Mars in the Context of Lab Experiments and Field

Observations $75k to OU (PI Bishop- SETI NASA Ames, Co-I Elwood Madden). NASA MDAP (2019-2022)

Quantifying Surface Area in Muds from the Antarctic Dry Valleys: Implications for Weathering in Glacial Systems $352k (PIs: Soreghan and Elwood Madden, U. of Oklahoma) NSF Polar Programs (2016-2021)

Raman Spectral Database of Aqueous Solutions for Planetary Science $380k (PI Elwood Madden) NASA PDART (2018-2021).

Mars Brine Attacks: Investigating mineral weathering reactions in near-eutectic brines, $280K (PI, A. Madden and B. Pritchett Co-I) NASA Mars Fundamental Research (2013-2017)

Assessing Weathering as a Climatic Indicator in Proximal Alluvial Sediments $240 K (Co-I, L. Soreghan PI) NSF Sedimentary Geology and Paleobiology (2012-2016)

MRI: Acquisition of a High Resolution Mapping Raman Microprobe for Research and Teaching (PI, L. Soreghan, A. Callaghan, M. Nanny, J. Volz Co-Is) NSF Major Research Infrastructure program $230K from NSF (2014-2016)

Pathways to Mars analogue hematite through nanoparticle aggregation, $368 K (Co-I, A. Madden PI) NASA Mars Fundamental Research Program

Measuring jarosite dissolution rates: Constraints on the duration of aquoeus processes on Mars. $235K (PI, A.Madden Co-I) NASA Mars Fundamental Research Program

Pilot: Development of Quantitative Weathering Indicators in Proximal Alluvial Sediments to Assess Glacial Activity in the Rock Record. $77K (Co-I, L. Soreghan PI) NSF Geology-Paleo / Low-Temp Geochemistry / OPP

Calcium-Based Stabilizer Induced Heave in Oklahoma Sulfate-Bearing Soils. $204 K (Co-I, PI A. Cerato) ODOT

Water and Carbon Reservoirs: Combining thermodynamics and kinetics to develop geologic models of gas hydrate distribution and flux on Mars. $237K (PI) NASA Planetary Geology and Geophysics

Publications *Italics indicate student authors*

49. Demirel-Floyd C, Soreghan GS, Webb NDS, Roche A, Joo YJ, Hall B, Levy JS, Elwood Madden AS, and Elwood Madden ME (2023). Investigating weathering signatures in terrestrial muds: Can climatic signatures be separated from provenance? *GSA Bulletin*.
48. *Bonar AL*, Soreghan GS, and Elwood Madden ME, (2023) Assessing silt generation and origins in granitoid-hosted soils: implications for loess formation, *Journal of Geophysical Research: Earth Surface Processes*. **https://doi.org/10.1029/2023JF007095**
47. *Geyer C.,* Elwood Madden A., *Rodriguez A.,* Bishop J., *Mason D.,* Elwood Madden, M. (2023). The role of sulfate in cation exchange reactions: applications to clay-brine interactions on Mars. *Planetary Science Journal*.
46. *Westrop, J.P., Tomlinson, Z.D., Maples, B.M.,* Dee, K.T., Swindle, A.L., Elwood Madden, M.E., Hu, Q. and Elwood Madden, A.S.2 (2022). Dissolution of Mn-bearing dolomite

drives elevated Cr (vi) occurrence in a Permian redbed aquifer. *Environmental Science: Processes & Impacts*, *24*(12), 2419-2436.

45. *Rodriguez, A.,* Elwood Madden A.S., Phillips-Lander, C.M., and Elwood Madden, M.E. (2022) Mars analogous basalt dissolution in near-saturated brines and the observation of secondary mineral precipitation with Raman spectroscopy. *Icarus.*
44. *Webb, N.,* N. Regmi,, G. Soreghan, A. Elwood Madden, *Sylvester, J.; Cartagena Colon, F.; Demirel-Floyd, C.*; Elwood Madden, M.E. (2022) Effects of mass wasting on fluvial sediments in Puerto Rico following Hurricane Maria. *JGR- Earth Surface Processes*, http://dx.doi.org/10.1029/2021JF006509
43. Joo, Y.J. Sim, M.S., Elwood Madden, M.E., Soreghan, G.S. Significance of the terrestrial sink in the biogeochemical sulfur cycle. (2022) *Geophysical Research Letters*, e2021GL097009.
42. *Mason, D.* and Elwood Madden, M. (2022) Raman Spectroscopy of High Salinity Brines and Ices, *Icarus*, https://doi.org/10.1016/j.icarus.2021.114759
41. *Demirel-Floyd, C.,* G. Soreghan, M. Elwood Madden (2021) Cyanobacterial weathering in warming periglacial sediments: implications for nutrient cycling and potential biosignatures. *Permafrost and Periglacial Processes*, http://doi.org/10.1002/ppp.2133
40. *Cullen, M.* Elwood Madden A.S., Phillips-Lander, C.M., and Elwood Madden, M.E. (2021) Siderite Dissolution in Mars-Analog Brines: Kinetics and Reaction Products. *Planetary Science Journal*, *2* , p. 169 https://doi.org/10.3847/PSJ/ac13a3
39. Phillips-Lander, C., *Miller, J.,* and Elwood Madden, M. (2021) Albite dissolution rates in brines: Implications for weathering on Mars. Icarus, https://doi.org/10.1016/j.icarus.2021.114478
38. Phillips-Lander, C.M., Madden, A.S.E., Hausrath, E.M. and Madden, M.E.E., 2019. Aqueous alteration of pyroxene in sulfate, chloride, and perchlorate brines: Implications for post-Noachian aqueous alteration on Mars. *Geochimica et Cosmochimica Acta*, *257*, pp.336-353. https://doi.org/10.1016/j.gca.2019.05.006
37. *McGraw LM, McCollom NM,* Phillips-Lander CM, Elwood Madden ME (2018) Measuring Sulfate and Perchlorate in High Salinity Planetary Waters using Raman Spectroscopy, *ACS Earth and Space Chemistry*, 2 (10), 1068-1074. DOI: 10.1021/acsearthspacechem.8b00082
36. Joo, Y. J., Elwood Madden, M. E., & Soreghan, G. S. (2018). Anomalously low chemical weathering in fluvial sediment of a tropical watershed (Puerto Rico). *Geology*, *46*(8), 691-694. https://doi.org/10.1130/G40315.1
35. Joo, Y. J., Soreghan, A. M., Madden, M. E. E., & Soreghan, G. S. (2018). Quantification of particle shape by an automated image analysis system: a case study in natural sediment samples from extreme climates. *Geosciences Journal*, 22, 4, 525–532. https://doi.org/10.1007/s12303-018-0025-0
34. Phillips-Lander CM, *Parnell SR, McGraw LE,* Elwood Madden ME (2018) Carbonate dissolution rates in high salinity brines: Implications for post-Noachian chemical weathering on Mars *Icarus, 307, 281-293.* https://doi.org/10.1016/j.icarus.2017.10.024
33. *Legett C, Pritchett BN,* Elwood Madden AS, Phillips-Lander CM, Elwood Madden, ME (2018). Jarosite dissolution rates in perchlorate brine, *Icarus*. doi.10.1016/j.icarus.2017.06.031

32. Phillips-Lander CM, *Legett C*, Elwood Madden AS, Elwood Madden ME. (2017) Can we use pyroxene weathering textures to interpret aqueous alteration conditions? Yes and No. *American Mineralogist 102, 1915-1921*. 10.2138/am-2017-6155 https://doi.org/10.2138/am-2017-6155
31. *Marra K,* Elwood Madden M, Soreghan G, Hall B (2017) Chemical Weathering Trends in Fine-Grained Ephemeral Stream Sediments of the McMurdo Dry Valleys, Antarctica *Geopmorphology 281, 13-30*. doi.org/10.1016/j.geomorph.2016.12.016
32. *Sexton MR,* Elwood Madden ME, Swindle AL, Hamilton VE, Bickmore BR, Elwood Madden AS (*2017*) Considering the formation of hematite spherules on Mars by freezing aqueous hematite nanoparticle suspensions, *Icarus*. doi.org/10.1016/j.icarus.2016.10.014
30. *Steiner MH,* Hausrath EM, Elwood Madden ME, Ehlmann BL, Olsen AA, Gainey SR (*2016*) Dissolution of Nontronite in Low Water Activity Brines and Implications for the Aqueous History of Mars, *Geochimica et Cosmochimica Acta 195,* 259-276. https://doi.org/10.1016/j.gca.2016.08.035
29. YJ Joo, ME Elwood Madden, GS Soreghan (2016) Chemical and physical weathering in a hot-arid, tectonically active alluvial system of Anza-Borrego Desert, CA. *Sedimentology 63*, 1065–1083. doi: 10.1111/sed.12249
28. *Miller, J. L.*, Madden, A. E., Phillips-Lander, C. M., Pritchett, B. N., & Madden, M. E. (2016). Alunite dissolution rates: Dissolution mechanisms and implications for Mars. *Geochimica et Cosmochimica Acta*, *172*, 93-106. https://doi.org/10.1016/j.gca.2015.10.001
27. Gerilyn Soreghan, Young Ji Joo, Megan E Elwood Madden, *Sarah VanDeventer* (*2016*). Silt production as a function of climate and lithology under simulated comminution. *Quaternary International*, 399, 218-227. https://doi.org/10.1016/j.quaint.2015.05.010
26. *Munasinghe PS,* Elwood Madden ME, Brooks SC, Elwood Madden AS (*2015*) Dynamic interplay between uranyl phosphate precipitation, sorption, and phase evolution, *Applied Geochemistry, 58*, 147-160. https://doi.org/10.1016/j.apgeochem.2015.04.008
25. *Dixon E*, Elwood Madden AS, Hausrath E, Elwood Madden ME, (2015) Assessing hydrodynamic effects on jarosite dissolution rates, reaction products, and particle lifetimes, *JGR-Planets* DOI: 10.1002/2014JE004779
24. *Marra, KR,* Elwood Madden, ME, Soreghan, GS, Hall, BL (2015) BET surface area distributions in polar stream sediments: implications for silicate weathering in a cold-arid environment, *Applied Geochemistry* 52, 31-42. https://doi.org/10.1016/j.apgeochem.2014.11.005
23. *Ambuehl D,* Elwood Madden ME (2014) CO_2 Hydrate formation and dissociation rates: Application to Mars. Icarus, v. 234, 45-52. https://doi.org/10.1016/j.icarus.2014.01.037
22. *Marra KR*, Soreghan GS, Elwood Madden ME, *Keiser LJ*, Hall BL (2014) Trends in Grain Size and Surface Area in Cold-Arid vs Warm Semi-Arid Fluvial Systems. Geomorphology, v. 206, 483-491. https://doi.org/10.1016/j.geomorph.2013.10.018

21. *Kendall MR,* Madden AS, Elwood Madden ME, Hu Q (2013) Rates and products of arsenic jarosite dissolution¸ Geochimica et Cosmochimica Acta, v.112, 192-207. https://doi.org/10.1016/j.gca.2013.02.019
20. Zahrai SK, Elwood Madden ME, Madden AS, Rimstidt JD, *Miller MA* (2013) Na-jarosite dissolution rates: The effect of mineral composition on jarosite lifetimes. Icarus, v. 223 438-443. https://doi.org/10.1016/j.icarus.2012.12.020
19. Mousis O, Chassefiere E, Chevrier V, Elwood Madden ME, Lakhlifi A, Lunine JI, Montmessin F, Picaud S, Schmidt F, and Swindle TD (2013) Volatile trapping in Martian clathrates. Space Science Reviews v. 173, 213–250. https://doi.org/10.1007/s11214-012-9942-9
18. *Lin B.,* Cerato, A.B., Madden, A.S., and Elwood Madden, M.E. (2013) Effect of Fly Ash on the Behavior of Expansive Soils: Microscopic Analysis. *Environmental & Engineering Geoscience*, v. 19, p. 85-94, doi:10.2113/gseegeosci.19.1.85
17. Miller MA, Madden AS, Elwood Madden ME, Elmore RD (2012) Laboratory synthesis of iron-rich 10Å clays from nontronite: implications for magnetite authigenesis, Clays and Clay Minerals V. 60, 616-632.
16. Pritchett BN, Elwood Madden ME, Madden AS (2012) Jarosite dissolution rates and maximum lifetimes in high salinity brines: Implications for Earth and Mars. Earth and Planetary Science Letters, v. 357–358, 327–336. https://doi.org/10.1016/j.epsl.2012.09.011
15. *Stumpf AR*, Elwood Madden ME, Soreghan GS, Hall BL, *Keiser LJ, Marra KR* (2012) Glacier meltwater stream chemistry in Wright and Taylor Valley, Antarctica: Significant roles of drift, dust, and biological processes in chemical weathering in a polar climate. Chemical Geology, 322-323, 79-90. https://doi.org/10.1016/j.chemgeo.2012.06.009
14. Elwood Madden ME, Madden AS, Rimstidt JD, *Zahrai SK, Kendall MR, and Miller MA* (2012) Jarosite dissolution rates and nanoscale mineralogy, Geochimica et Cosmochimica Acta, 91, 306-321. http://dx.doi.org/10.1016/j.gca.2012.05.001
13. *Gainey SR* and Elwood Madden ME (2012) Kinetics of Methane Clathrate Formation and Dissociation Under Mars Relevant Conditions. Icarus, 218, 513-524. https://doi.org/10.1016/j.icarus.2011.12.019
12. *Root MJ* and Elwood Madden ME (2012) Potential Effects of Obliquity Change on Gas Hydrate Stability Zones on Mars. Icarus, 218, 534-544. https://doi.org/10.1016/j.icarus.2011.12.024
11. *Leeman JR,* Rawn CJ, *Alford J*, Phelps TJ, Elwood Madden ME Interpreting Temperature Strain Data from Meso-Scale Clathrate Experiments (2012) Computers and Geosciences, v. 38, 62-67. https://doi.org/10.1016/j.cageo.2011.05.004
10. Elwood Madden ME, *Leeman JR., Root MJ, Gainey SR* (2011) Reduced sulfur-carbon-water systems on Mars may yield shallow methane hydrate reservoirs. Planetary and Space Science, doi:10.1016/j.pss.2010.05.016.
9. Rawn CJ, *Leeman JR, Alford JE*, Phelps TJ, Elwood Madden ME, *Ulrich SM* (2011) Fiber Optic Sensing Technology for Detecting Gas Hydrate Formation and Decomposition. Review of Scientific Instruments, v. 59, 203-206. doi: 10.1063/1.3514983.

8. Madden AS, Hamilton VE, Elwood Madden MEE, Larson PR, *Miller MA* (2010) Low-temperature mechanism for formation of coarse crystalline hematite through nanoparticle aggregation, Earth and Planetary Science Letters, 298: 377-384. https://doi.org/10.1016/j.epsl.2010.08.014
7. Elwood Madden ME, Madden AS, Rimstidt JD (2009) How long was Meridiani Planum wet? Applying a jarosite stopwatch to constrain the duration of diagenesis. Geology v. 37; no. 7; p. 635-638 doi:10.1130/G25639A.1
6. Elwood Madden ME, *Szymcek P, Ulrich SM, McCallum S,* Phelps TJ (2009) Experimental formation of massive hydrate deposits from accumulation of CH_4 gas bubbles within synthetic and natural sediments. Marine and Petroleum Geology, v. 26, p 369-378. https://doi.org/10.1016/j.marpetgeo.2008.04.002
5. Elwood Madden ME, *Ulrich SM,* Onstott TC, Phelps TJ (2007) Salinity-induced hydrate dissociation: a mechanism for recent CH_4 release on Mars. Geophysical Research Letters 34, Issue 11, 10.1029/2006GL029156
4. Elwood Madden ME, Kring DA, Bodnar RJ (2006) Shock re-equilibration of fluid inclusions in crystalline basement rocks from the Ries Crater, Germany. Meteoritics and Planetary Sciences 41, n. 2, 247-262. DOI: 10.1111/j.1945-5100.2006.tb00208.x
3. Elwood Madden ME, Kring DA, Bodnar RJ (2006) Shock reequilibration of fluid inclusions in Coconino Sandstone from Meteor Crater, Arizona. Earth and Planetary Science Letters 241, 32-46. https://doi.org/10.1016/j.epsl.2005.10.008
2. Elwood Madden ME, Bodnar RJ, Rimstidt JD (2004) Jarosite as geochemical indicator of water-limited chemical weathering on Mars. Nature, 431, 821-823. DOI:10.1038/nature02971
1. Elwood Madden ME, Horz F, Bodnar R J (2004) Experimental simulation of shock reequilibration of fluid inclusions during meteorite impact. Canadian Mineralogist, 42, 1357-1368.

Manuscripts in review:

Geyer, C., A. Elwood Madden, P. Larson, & M. Elwood Madden (in revision) Microscopic Observations of mectite Cation Exchange in the Absence of Free Water: Implications for the Evolution of Mars Sediments. *Clays and Clay Minerals*

Kotash, A. J. Bhattacharya, A. Cerato, M. Fahes, E. Martin, G. Soreghan, L. Snyder, and M. Elwood Madden (in revision). Raising our expectations for Diversity, Equity, and Inclusion work in Geoscience faculty evaluation systems. *AGU Advances*

Demirel-Floyd, C., G.S. Soreghan, J. G. Floyd and M. E. Elwood Madden (in revision). Limited bioweathering by cyanobacteria in cold, nutrient-limited conditions: Implications for microbe-mineral interactions and aquatic chemistry in cold environments. *Geomicrobiology*

Invited talks

1. Elwood Madden ME (2024) Ohio State University
2. Elwood Madden ME (2023) University of Massachusetts, Lowell
3. Elwood Madden ME (2022) Sam Noble Museum and School of Geosciences

4. Invited Panelist: Exploring Challenges to Diversifying Faculty AGU Workshop (2020)
5. Elwood Madden ME (2020) Sam Noble Museum of Natural History.
6. Elwood Madden ME (2019) University of Oklahoma, Women's and Gender Studies; School of Geosciences
7. Elwood Madden ME (2015) Penn State
8. Elwood Madden ME (2013) University of Kansas
9. Elwood Madden ME (2012) Gas hydrates on Mars: potential reservoirs for water and carbon. Natural Gas Hydrate Systems, Gordon Research Conference, Ventura, Ca. March 2012.
10. Elwood Madden ME, *Leeman JR, Guttery B* (2009) Methane hydrates: A source for slow methane release on Mars? Workshop on Methane on Mars: Current Observations, Interpretation and Future Plans, November 2009.
11. Elwood Madden ME (2009) Water on Mars, Sam Noble Museum of Natural History, Year of Astronomy.

6-10. University of Texas, Arlington (2009), University of Nevada, Las Vegas (2012), Oklahoma State University (2008, 2012), Indiana University (2012).

>100 Presentations and Abstracts 2002-present, full list available upon request