

ELISABETH (LIBBY) HAUSRATH

Associate Professor
Department of Geoscience
University of Nevada, Las Vegas
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EDUCATION

The Pennsylvania State University, University Park, PA 2002 to 2007
Dual-Title Ph.D. Degree Program in Geosciences and Astrobiology
NSF Graduate Research Fellow
NSF-Penn State BRIE Fellow (Penn State Biogeochemical Research Initiative for Education)
Advisor: Dr. Susan Brantley
Thesis title: Basalt weathering on Earth and on Mars

Brown University, Providence, RI Sept. 1996 to May 2000
Sc.B Geology-Chemistry, Honors, Magna Cum Laude

TEACHING EXPERIENCE

University of Nevada, Las Vegas, Las Vegas, NV
Geog 103 Physical Geography of Earth's Environment
Geol 100 Natural Disasters
Geol 110 Global Warming
Geol 330 Introduction to Geochemistry
Geol 425/625 Principles of Geochemistry
Geol 796 Aqueous Biogeochemistry
Geol 703x Topics in Advanced Geochemistry

The Pennsylvania State University, University Park, PA
Teaching Assistant Geosc 40 (The Sea Around Us)
Teaching Assistant Geosc 413 (Techniques in Environmental Geochemistry)

Boise State University, Boise, Idaho
Adjunct Faculty Math 025 (Elementary Algebra)

Brown University, Providence, RI
Laboratory Teaching Assistant Chem 21 (Introductory Chemistry)
Undergraduate Laboratory Teaching Assistant Geo 23 (Geochemistry)

PROFESSIONAL EXPERIENCE

Department of Geoscience, University of Nevada, Las Vegas 2015-present
Associate Professor

Department of Geoscience, University of Nevada, Las Vegas 2009-2015
Assistant Professor

NASA Postdoctoral Program NASA Johnson Space Center
NASA Postdoctoral Fellow Aug. 2007- Dec. 2008
Supervisor: Dr. Douglas Ming

Department of Geosciences, Penn State University, University Park, PA Aug. 2002-July 2007

Graduate Fellow

Advisor: Dr. Susan Brantley

JOURNAL ARTICLES:

* Indicates Hausrath-advised student author

Hausrath, E.M., Liermann, L.J., House, C.H., Ferry, J.G., and Brantley, S.L. (2007) The effect of methanogen growth on mineral substrates: will Ni markers of methanogen-based communities be detectable in the rock record? *Geobiology*, v. 5, p. 49-61.

Liermann, L.J., Hausrath, E.M., Anbar, A.D. and Brantley, S.L. (2007). Assimilatory and dissimilatory processes of microorganisms affecting metals in the environment. *J. Anal. At. Spectrom.* 2007, v. 22, p. 867 - 877.

Hausrath, E.M., Navarre-Sitchler, A.K., Sak, P., Steefel, C. and Brantley, S.L. (2008) Basalt weathering rates on Earth and the duration of liquid water on the plains of Gusev Crater, Mars. *Geology*, v. 36, p. 67-70.

Hausrath, E.M., Treiman, A.H., Vicenzi, E., Bish, D.L., Blake, D., Sarrazin, P., Hoehler, T., Midtkandl, I., Steele, A., and Brantley, S.L. (2008) Short- and long-term olivine weathering in Svalbard: Implications for Mars. *Astrobiology*, v. 8 (6), p. 1079-1092.

Hausrath, E.M., Neaman, A., Brantley, S.L. (2009) Elemental release rates from dissolving basalt and granite with and without organic ligands. *American Journal of Science*, v. 309, p. 633-660

Hausrath, E.M. and Brantley, S.L. (2010) Basalt and olivine dissolution under cold, salty, and acidic conditions: What can we learn about recent aqueous weathering on Mars? *J. Geophys. Res.*, 115(E12): E12001

Hausrath, E.M., Navarre-Sitchler, A.K., Sak, P.B., Williams, J.Z. and Brantley, S.L., (2011). Soil profiles as indicators of mineral weathering rates and organic interactions on a Pennsylvania diabase *Chemical Geology* v. 290 p. 89-100

Hausrath, E.M. and A.A. Olsen (2013) Using the chemical composition of carbonate rocks on Mars as a record of previous interaction with liquid water. *American Mineralogist* v. 98 p. 897-906. This paper was selected by the editors of *American Mineralogist* as a “notable paper”.

Hausrath, E.M., D.C. Golden, R.V. Morris, D.G. Agresti, and D.W. Ming (2013) Acid sulfate alteration of fluorapatite, basaltic glass and olivine by hydrothermal vapors and fluids: Implications for fumarolic activity and secondary phosphate phases in sulfate-rich Paso Robles soil at Gusev Crater, Mars *J. Geophys. Res.* 118 (1): 1-13

Hausrath, E.M. and O. Tschauner (2013) Natural fumarolic alteration of fluorapatite, olivine, and basaltic glass, and implications for habitable environments on Mars *Astrobiology* 13 (11): 1049-1064

*Adcock, C.T., E.M. Hausrath, Forster, P. (2013) Readily available phosphate from minerals in aqueous environments on early Mars *Nature Geoscience* 6: 824-827. This paper was featured in the News and Views section of *Nature Geoscience* and attracted considerable popular press.

*Gainey, S.R., Hausrath, E.M., Hurowitz, J. A. and R.E. Milliken. (2014) Nontronite dissolution rates and implications for Mars *Geochimica et Cosmochimica Acta* 126: 192-211

Devitt, D.A., L.E. Wright, S.A. Shanahan and E. Hausrath (2014) Fate of selenium in a small urban watershed *Environmental Monitoring and Assessment* DOI:10.1007/s10661-013-3609-1

*Tu, V.M., Hausrath, E.M., Tschauner, O., Iota, V. and Egeland, G.W. (2014) Dissolution rates of amorphous Al- and Fe-phosphates and their relevance to phosphate mobility on Mars. *American Mineralogist* 99:1206-1215. This paper was selected by the editors of *American Mineralogist* as a “notable paper”.

*Adcock, C.T., Hausrath, E.M., Forster, P.M. and *Sefein, K.J. (2014) Synthesis and characterization of the Mars-relevant phosphate minerals Fe/Mg-whitlockite and merrillite and a proposed mechanism for whitlockite to merrillite transformation. *American Mineralogist* 99:1221-1232

Olsen, A., Hausrath, E.M., and J.D. Rimstidt (2015) Forsterite dissolution rates in Mg-sulfate-rich Mars-analog brines, and implications for the aqueous history of Mars, *JGR Planets* 120, doi:[10.1002/2014JE004664](https://doi.org/10.1002/2014JE004664)

*Baumeister, J. L., E. M. Hausrath, A. Olsen, O. Tschauer, *C.T. Adcock, and R. V. Metcalf (2015). Biogeochemical weathering of serpentinites: An examination of incipient dissolution affecting serpentine soil formation, *Applied Geochemistry* 54: 74-84

Yesavage, T., Thompson, A., Hausrath, E.M., Liermann, L.J. and Brantley, S.L., (2015), Basalt weathering in an arctic Mars analog site. *Icarus*. doi:[10.1016/j.icarus.2015.03.011](https://doi.org/10.1016/j.icarus.2015.03.011)

Dixon, E., Elwood Madden, M.E., Madden, A., and Hausrath, E.M. (2015) Assessing hydrodynamic effects on jarosite dissolution rates, reaction products, and preservation on Mars, *JGR Planets*, 120, doi:[10.1002/2014JE004779](https://doi.org/10.1002/2014JE004779)

*Adcock, C.T., and Hausrath, E.M. (2015) Weathering profiles in high-P rocks at Gusev Crater, Mars, suggest dissolution of phosphate minerals into near-neutral waters *Astrobiology*, 15(12), 1060-1075.

Schieber, J., Bish, D., Coleman, M., Reed, M., Hausrath, E.M., Cosgrove, J., Sanjeev, G., Minitti, M.E., Edgett, K. and Malin, M. (2016) Encounters with an unearthy mudstone: Understanding the first mudstone Found on Mars. In press in *Sedimentology*

Marsac, K.E., P.C. Burnley, C. T. Adcock, D. A. Haber, R. L. Malchow, and E. M. Hausrath (in press) Modeling background radiation using geochemical data: A case study in and around Cameron, Arizona, in press in the *Journal of Environmental Radioactivity*

BOOK CHAPTER and APPENDIX

Brantley, S. L., Lebedeva, M., and Hausrath, E. M. (2012) A geobiological view of weathering and erosion. In: *Fundamentals of Geobiology* (eds. A. H. Knoll, D.E. Canfield, and K. Konhauser) Blackwell Publishing Limited, 2012

Bandstra J.Z., Buss H.L., Campen R.K., Liermann L.J., Moore J., Hausrath E.M., Navarre-Sitchler A.K., Jang J-H. and Brantley S.L. Appendix: Compilation of Mineral Dissolution Rates. In *Kinetics of Water-Rock Interaction* (eds. S. L. Brantley, J. D. Kubicki and A. F. White). Springer, New York. 2008.

EXTENDED ABSTRACTS:

Adcock, C.T., Tschauer, O. and Hausrath, E.M. (2016) An Investigation of Shock Effects on Mars-Relevant Phosphate Minerals: Shock-Transformation of Chlorapatite, 47th Lunar and Planetary Science Conference. Lunar and Planetary Institute, Houston, p. Abstract #1577.

Bartlett, C.L., Hausrath, E.M. and Adcock, C.T. (2016) Phosphate Release: The Effect of Prebiotic Organic Compounds on Dissolution of Mars-Relevant Minerals, 47th Lunar and Planetary Science Conference. Lunar and Planetary Institute, Houston, p. Abstract #2754.

Beaty, D.W., McSween, H.Y., Goreva, Y.S., Hausrath, E., Herd, C.D.K., Humayun, M., McCubbin, F.M., McLennan, S.M., Pratt, L.M., Sephton, M.A., Steele, A., Weiss, B.P. and Hays, L.E. (2016) Recommended Maximum Temperature for Mars Returned Samples, 47th Lunar and Planetary Science Conference. Lunar and Planetary Institute, Houston, p. Abstract #2662.

Harrold, Z.R., Hausrath, E.M., Bartlett, C.L., Garcia, A.H., Tschauner, O., Murray, A.E. and Raymond, J. (2016) Bioavailability of Mineral-Bound Iron to a Snow Algae Community and Implications for Life in Extreme Environments, 47th Lunar and Planetary Science Conference. Lunar and Planetary Institute, Houston, p. Abstract #2720.

Hausrath, E.M., Goetz, W., Cousin, A., Wiens, R.C., Meslin, P.-Y. and Rapin, W. (2016) Signs of Transport of Chemical Elements and Soil-Forming Processes in Surface Soils at Gale Crater, Mars, 47th Lunar and Planetary Science Conference. Lunar and Planetary Institute, Houston, p. Abstract #2493.

Adcock, C.T., and Hausrath, E.M. (2015) Educational experiences for K-12 in the Earth and planetary sciences. Lunar and Planetary Science Conference XXXXVI, Houston, TX Abstract #2330

*Gainey, S.R., Hausrath, E. M., and Hurowitz, J.A. (2015) Weathering profiles at Mawrth Vallis yield insight into the aqueous history and potential habitability of Mars Lunar and Planetary Science Conference XXXXVI, Houston, TX Abstract 2248

*Schofield, R.E., Hausrath, E.M., and *Gainey, S.R. (2015) Zeolite weathering in laboratory and natural settings, and implications for Mars Lunar and Planetary Science Conference XXXXVI, Houston, TX Abstract # 2160

*Steiner, M.S., Hausrath, E. M., and Elwood Madden, M.E. (2015) Dissolution of nontronite in brines and implications for habitable environments on Mars Lunar and Planetary Science Conference XXXXVI, Houston, TX

*Bartlett, C.L., Hausrath, E. M., and Adcock, C.T. (2015) Phosphate release: The effect of prebiotic organic compounds on dissolution of Mars-relevant phosphate minerals Lunar and Planetary Science Conference XXXXVI, Houston, TX Abstract # 2451

Elwood Madden, M.E., E.M. Dixon, A.S. Elwood Madden, B.R. Pritchett, and E.M. Hausrath (2015) Low temperature anhydrite precipitation in flowing brines: Implications for calcium sulfate phases observed on Mars Lunar and Planetary Science Conference XXXXVI, Houston, TX Abstract # 1505

Adcock, C.T., Hausrath, E.M., Tschauner, O. and A. Udry (2015) Investigations of shock effects on phosphate minerals in extraterrestrial materials Lunar and Planetary Science Conference XXXXVI, Houston, TX Abstract # 2288

Hausrath, E.M., *Adcock, C.T., *Gainey, S.R., *Steiner, M.H., and V.M. *Tu, 2014 Experimental evidence suggests significant aqueous alteration and abundant phosphorus release on Mars International Conference on Mars Abstract # 1310

*Adcock, C.T. and Hausrath, E.M., 2014. Reactive transport modeling of phosphate mineral dissolution in high-P martian rocks, Lunar and Planetary Science Conference XXXXV, Houston, TX, Abstract # 2250.

* Gainey, S.R., Hausrath, E.M., Hurowitz, J.A. and Tschauner, O., 2014. Formation of aqueous minerals: Implications for the past habitability of Mars, Lunar and Planetary Science Conference XXXXV, Abstract # 2356.

Hausrath, E.M., *Adcock, C.T., Elwood Madden, M.E., *Gainey, S.R., Olsen, A.A., and *Steiner, M.H. (2014) Using geochemical kinetics to interpret potential habitability Lunar and Planetary Science Conference XXXXV, Abstract # 2376

*Steiner, M.H., Hausrath, E.M. and *Schofield, R.E., 2014. Dissolution of nontronite by high ionic strength brines and implications for habitable environments on Mars, Lunar and Planetary Science Conference XXXXV, Abstract # 1510.

- *Adcock, C.T. and E.M. Hausrath (2013) Interpretation of phosphate mobility on Mars based on terrestrial Mars-analog basalts and reactive transport modeling Lunar and Planetary Science Conference XXXIV Houston, TX Abstract # 2727
- *Gainey, S.R., E.M. Hausrath, and J.A. Hurowitz (2013) Clay mineral precipitation and implications for Mars Lunar and Planetary Science Conference XXXIV Houston, TX Abstract # 2954
- *Steiner, M.H., Hausrath, E.M., and H.J. Sun (2013) Synthesis of potential phosphate mineral biosignatures under Mars-relevant conditions Lunar and Planetary Science Conference XXXIV Houston, TX Abstract # 2761
- *Tu, V. and E.M. Hausrath (2013) Dissolution of amorphous Al- and Fe-phosphates: Implications for phosphate mobility on Mars Lunar and Planetary Science Conference XXXIV Houston, TX Abstract # 2577
- *Adcock, C.T. and E.M. Hausrath (2012) The dissolution rate of whitlockite and implications for the habitability of early Mars Lunar and Planetary Science Conference XXXIII Houston, TX Abstract # 2466
- *S. R. Gainey, E. M. Hausrath and J. A. Hurowitz (2012) , Kinetics of nontronite dissolution and implications for Mars Lunar and Planetary Science Conference XXXIII Houston, TX Abstract # 2383
- *Tu, V. and E. M. Hausrath (2012) Dissolution rates of amorphous Al- and Fe-phosphates and their relevance to Mars Lunar and Planetary Science Conference XXXIII Houston, TX Abstract # 2609
- Hausrath, E.M., *Adcock, C.T. and *Tu, V. (2012) Phosphate records environmental conditions important to habitability in soils and rocks on Mars Lunar and Planetary Science Conference XXXIII Houston, TX Abstract # 2719
- Golden, D.C., D.W. Ming, E.M. Hausrath, R.V. Morris, P.B. Niles, C.N. Achilles, D.K. Ross, B.L. Cooper, C.P. Gonzalez, and S. A. Mertzman (2012) Dissolution of olivine, siderite and basalt at 80°C in 0.1 M H₂SO₄ in a flow-through process: Insights into acidic weathering on Mars Lunar and Planetary Science Conference XXXIII Houston, TX Abstract # 2521
- Niles, PB, and 51 others including Hausrath (2012) Multiple smaller missions as a direct pathway to Mars sample return. Mars Exploration Workshop, 2012.
- Hausrath, E.M. and *Tu, V., 2011. Reactive transport modeling of phosphate under Mars-like conditions, Lunar and Planetary Science Conference XXXII, Houston, TX, Abstract # 2353.
- *Adcock, C.T., Simon, A. and E.M. Hausrath, 2011. Synthesis of phosphate minerals for use in dissolution experiments, Lunar and Planetary Science Conference XXXII Houston, TX Abstract # 2300
- *Tu, V., *Baumeister, J.L., Metcalf, R., Olsen, A.A., and Hausrath, E. (2011) Serpentinite weathering and implications for Mars. Lunar and Planetary Science Conference, p. 2303, Houston, TX.
- *Adcock, C.T. and Hausrath, E.M. (2010) Kinetic studies of phosphate-containing minerals and implications for Mars Lunar and Planetary Science Conference XXXI Abstract # 2177
- *Cornell, J.W. and Hausrath, E.M. (2010) Phosphate mobility in a Mars analog environment. Lunar and Planetary Science Conference XXXI Abstract # 2141
- Hausrath, E.M. (2010) Characterization of fumarolic products in Nevada Lunar and Planetary Science Conference XXXI Abstract # 2389

Hausrath, E.M., D.C. Golden, C. Galindo, B. Sutter, R.V. Morris, and D.W. Ming (2009) Column experiments to interpret weathering in Columbia Hills Lunar and Planetary Science conference XXXX Abstract # 2423.

Hausrath, E.M., Navarre-Sitchler, A.K., Moore, J., Sak, P.B., Brantley, S.L., Golden, D.C., Sutter, B., Schröder, C., Socki, R., Morris, R.V., Ming, D.W. (2008) Mars sample return: The value of depth profiles. Ground truth from Mars: Science payoff from a sample return mission April 21-23, 2008, Albuquerque, New Mexico

Hausrath, E.M., Golden, D.C., Morris, R.V., and Ming, D.W. (2008) Acid vapor weathering of apatite and implications for Mars. Lunar and Planetary Science Conference XXXIX Abstract #2350

Hausrath, E.M., A.K. Navarre-Sitchler, P.B. Sak, and S.L. Brantley (2007) What can we learn from depth profiles on Mars? Lunar and Planetary Science Conference XXXVIII Abstract #2075

Bish, D.L., D. Blake, P. Sarrazin, A. Treiman, T. Hoehler, E.M. Hausrath, I. Midtkandl, A. Steele (2007) Field XRD/XRF mineral analyses by the MSL CheMin instrument. Lunar and Planetary Science Conference XXXVIII Abstract #1163

Hausrath E. M., Brantley S. L., and AMASE. (2005) Basalt weathering rates in a Mars analog environment: Clues to the duration of water on Mars? Lunar and Planetary Science Conference XXXVI, Abstract #2339

Hausrath E. M., Liermann L. J., and Brantley S. L. (2004) Enhanced dissolution in the presence of methanogens. Water Rock Interactions, 1123-1125.

Hausrath, E.M., Liermann, L.J., and Brantley, S.L. (2003) Enhanced nickel release in the presence of methanogens: Evidence for a nickel binding ligand? 226th meeting of the American Chemical Society, New York City, NY

Barrash, W., Knoll, M.D., Hyndman, D., Clemo, T., and Hausrath, E.M., 2003, Tracer/Time-Lapse Radar Imaging Test at the Boise Hydrogeophysical Research Site: SAGEEP'03 Symposium on the Applications of Geophysics to Environmental and Engineering Problems, April 6-10, 2003, San Antonio, TX, p.163-174.

ABSTRACTS AND OTHER PUBLICATIONS:

Schroder, C., Mao, J., Hausrath, E.M., Morris, R.V., Squyres, S.W., and Haderlein, S.B., (2014) Possible association of ferrous phosphates and ferric sulfates in hydrothermal deposits in Gusev Crater, Mars. 14th European Astrobiology Conference (EANA 2014), Edinburgh, Scotland, October 13-16 2014

Hausrath, E.M., *Downs, B. and Holmden, C. (2014) Ca isotopic composition reflects evapotranspiration and dust inputs in shallow desert soil Mineralogical Magazine 77 (5) 932

Hausrath, E.M., A.A. Olsen, J.L. Baumeister, E. Yardley, M. Bodkin, K. Negrich Biogeochemical weathering of serpentinites: An examination of the first reactions controlling serpentine soil formation Soil Science Society of America Meeting, Cincinnati, OH, October 21-24 2012. (invited)

Hausrath, E.M., C.T. Adcock, S. Gainey, J. Hurowitz, V. Tu. Laboratory experiments on Mars-relevant clay and phosphate minerals yield insights into the aqueous history and potential for habitability on Mars. The American Geophysical Union, San Francisco, CA Dec 3-7 2012. (invited)

Hausrath, E.M., *Adcock, C.T., *Tu, V. (2012) Interpreting phosphate mobility on Mars and the implications for habitability. Goldschmidt Conference, 2012.

Hausrath, E.M. (2011) Hydrothermal and pedogenic carbonates constrain liquid water on Mars. American Geophysical Union Fall Meeting, San Francisco.

*Adcock, C.T., and E.M.Hausrath. (2011) Dissolution rates and mineral lifetimes for phosphate-containing minerals and implications for Mars. American Geophysical Union Fall Meeting, San Francisco.

*Baumeister, J.L., *Tu, V., *Evert, M., Metcalf, R., Olsen, A.A., and Hausrath, E.M. (2011) Chemical weathering of serpentinites in the Klamath Mountains, California. Geological Society of America, St Paul, Minnesota.

*Myers, B., Hausrath, E., and McDonnell, S. (2011) The impact of creosote bush (*Larrea tridentata*) and biological soil crust on Ca distribution in arid soils of the Mojave Desert, Southern Nevada Geological Society of America, St. Paul, Minnesota.

Elwood Madden, Megan. E., Hausrath, Elisabeth M., Olson, Amanda, and Madden, Andrew (2010) From theory to observation: The data driven transition from thermodynamics to kinetics in Mars geochemistry. GSA Annual Meeting, Denver, Colorado.

*Baumeister, J.L., *Tu, V., Olsen, A.A., and Hausrath, E. M. (2010) Chemical weathering rates of olivine and serpentine in natural environments. GSA Annual Meeting, Denver, Colorado

E.M. Hausrath (2010) Fumarolic alteration and implications for Mars. *Geochimica et Cosmochimica Acta* 74 (12 Supplement 1) A387

C. Schröder, E.M. Hausrath, D.C. Golden, D.W. Ming, R.V. Morris, and G. Klingelhöfer (2008) Evidence for ferrous phosphates in Paso Robles soils, Gusev Crater, Mars, GSA Annual Meeting, Houston, TX

Hausrath, E.M., Golden, D.C., Morris, R.V., and Ming, D.W. (2008) Phosphate alteration on Mars Goldschmidt Conference, Vancouver, British Columbia

Hausrath, E.M, Navarre-Sitchler, A.K, Sak, P.B., Steefel, C., and Brantley, S.L. (2007) Basalt weathering rates on Earth and the duration of water on Mars *Geochimica et Cosmochimica Acta* 71 (15S) A387

Fletcher, R., Hausrath, E., Navarre-Sitchler, A., Peightal, B., and Brantley, S. (2007) The weathering engine conveyor belt and corestone size distributions *Geochimica et Cosmochimica Acta* 71 (15S) A285

Navarre-Sitchler, A., Steefel, C., Hausrath, E., and Brantley, S. (2007) Influence of porosity on basalt weathering rates from the clast to the watershed scale *Geochimica et Cosmochimica Acta* 71 (15S) A707

Peightal, Brian Mark, Navarre-Sitchler, Alexis K., Hausrath, Elisabeth M., Brantley, Susan L. (2007) Soil profiles as indicators of mineral weathering rates in basalt Northeastern Section GSA Durham, New Hampshire

Hausrath, E.M., Sak, P.B., Navarre-Sitchler, A.K., Williams, J.Z., Cabret, E.J., and Brantley, S.L. (2006) Gradients in mineralogy and element composition at the bedrock-regolith interface record mineral reaction and transport rates GSA Annual Meeting Philadelphia, PA

Brantley S. L., Fletcher R. C., Buss H., Moore J., Hausrath E., Navarre A., Lebedeva M., and White A. F. (2006) Weathering from the soil profile to the watershed: what controls the weathering advance rate? *Geochimica et Cosmochimica Acta* 70(18, Supplement 1), 1.

Hausrath, E.M., Navarre, A.K., Steefel, C.I. and Brantley, S.L. (2006) Reactive transport modeling of basalt weathering under Mars-like conditions Astrobiology Science Conference, Washington, DC

Brantley, S.L., Liermann, L. J., and Hausrath, E.M. (2006) Investigating the potential for trace metal biosignatures in the rock record Astrobiology Science Conference, Washington, DC

Sak, P., Hausrath, E.M., Navarre, A.K., and Brantley, S.L. (2005) The persistence of rock-forming minerals in the soil environment. Earth Systems Processes 2 Calgary, Alberta.

Hausrath E. M., Neaman A., and Brantley S. L. (2005) Basalt and granite dissolution rates in the presence of citrate. Goldschmidt Conference, Moscow, Idaho.

Hausrath E. M., Neaman A., and Brantley S. L. (2005) Trace element mobility in the presence of organic acids: A potential "organomarker"? NASA Astrobiology Institute 2005 Biennial Meeting, 286.

Hausrath, E.M., Liermann, L.J. and Brantley, S.L. (2004) Influence of methanogens on mineral weathering Astrobiology Science Conference, NASA, Ames

Oldenborger, G., Buursink, M., Moret, G., Goldstein, S., Johnson, T., Reboulet, E., Hughes, C., and Hausrath, E., 2002, Tracer/time-lapse imaging test at the Boise Hydrogeophysical Research Site (abs.): Inland Northwest Research Alliance, Subsurface Science Symposium, Boise, 13-16 October 2002.

Hausrath, E.M., Barrash, W., and Reboulet, E.C., 2002, Water Sampling and Analysis for the Tracer/Time-Lapse Radar Imaging Test at the Boise Hydrogeophysical Research Site: Report to EPA for Grant X-970085-01-0 and to the U.S. Army Research Office for Grant DAAH04-96-1-0318, Center for Geophysical Investigation of the Shallow Subsurface Technical Report BSU CGISS 0203, Boise State University, Boise, ID, 86 p.

Barrash, W., Clemo, T., Hyndman, D.W., Reboulet, E., and Hausrath, E.M., 2002, Tracer/Time-Lapse Radar Imaging Test; Design, Operation, and Preliminary Results: Report to EPA for Grant X-970085-01-0 and to the U.S. Army Research Office for Grant DAAH04-96-1-0318, Center for Geophysical Investigation of the Shallow Subsurface Technical Report BSU CGISS 0202, Boise State University, Boise, ID, 120 p.

INVITED TALKS

“Weathering on Earth and on Mars” The Smithsonian Institution, Washington, DC September 2007

“Interpreting Phosphate Mobility on Mars” The Geological Society of Nevada, Southern Chapter, Las Vegas, NV January 2010

“Biogeochemical weathering of serpentine minerals from bedrock to soil” Critical Zone Observatories All Hands Meeting, Tucson, AZ May 2011

“Interpreting signatures of aqueous alteration on Earth and on Mars” Michigan State University, November 2011

“Interpreting signatures of aqueous alteration on Earth and on Mars” UNLV Chemistry Department, November 2011

“Interpreting aqueous alteration on Earth and on Mars” University of Oklahoma, August 2012

“Interpreting aqueous alteration on Earth and on Mars” University of Nevada, Reno 2012

“Biogeochemical weathering of serpentinites: An examination of the first reactions controlling serpentine soil formation”. E.M Hausrath (presenter) A.A. Olsen, J.L.* Baumeister, E. Yardley, M. Bodkin, K. Negrich Soil Science Society of America Meeting, Cincinnati, OH, October 21-24 2012.

“Laboratory experiments on Mars-relevant clay and phosphate minerals yield insights into the aqueous history and potential for habitability on Mars”. E.M. Hausrath (presenter) C.T. *Adcock, S. *Gainey, J. *Hurowitz, V. *Tu. The American Geophysical Union, San Francisco, CA Dec 3-7 2012.

“Evidence for widespread aqueous alteration and abundant phosphorus release on Mars” University of South Florida, April 2014

“Interpreting phosphate mobility in early, potentially habitable environments on Mars” Pardee Keynote Symposia GSA, Vancouver, BC October 2014

“Interpreting aqueous alteration on Earth and on Mars using field analyses, laboratory experiments and modeling” GSA, Vancouver, BC October 2014

AWARDS

Barrick Scholar Award	2015
Regents' Rising Researcher Award	2016

SCIENTIFIC SESSIONS AND CONFERENCES ORGANIZED

L. Hays, D. Beaty, M. Voytek, M. Meyer (convenors) A. Allwood, N. Cabrol, W. Calvin, D. Des Marais, J. Farmer, E. Hausrath, B. Horgan, R. Leveille, A.-L. Reysenbach (scientific organizing committee) “Biosignature preservation and detection in Mars-analog environments” Lake Tahoe, NV May 16-19, 2016

E. Marin-Spiotta, J. Chorover, C. Rasmussen, L. Jin, A. Olsen, E. Hausrath (organizers) “Organo-Mineral Interactions in the Critical Zone: Mineral Weathering and Carbon Stabilization in Soil” at the Goldschmidt Conference, Knoxville, TN 2010

Brantley, S.L., Michalski, J., Hausrath, E. (organizers) “Chemical and physical weathering of basalt on the Earth, Moon and Mars” at the Goldschmidt Conference, Cologne, Germany, 2007

Eigenbrode, J., Fries, M., Hausrath, E. (organizers) “Interdisciplinary research in cold Mars-analogue environments” at the Astrobiology Science Conference, Washington, DC, 2006

CONTRIBUTIONS TO THE UNIVERSITY AND THE PROFESSION

Member: Returned Sample Science Board for the Mars 2020 mission.

Reviewer for: Nature Communications, Geochimica et Cosmochimica Acta, Earth and Planetary Science Letters, Chemical Geology, Geochemical Journal, Arctic, Antarctic and Alpine Research, Chemical and Engineering Science, Icarus, The Soil Society of America Journal, JGR Planets, NSF, Mars Fundamental Research Program, Mars Data Analysis Program, NASA Earth and Space Science Fellowship Program, NASA Postdoc Program, Nevada NASA Space Grant Consortium, NASA Astrobiology: Exobiology and Evolutionary Biology Program, NASA Astrobiology Institute

Funding review panels: I have served as a panel reviewer on four NASA funding review panels, and chaired one NASA review panel.

University service: I am currently serving as the Graduate Admissions Coordinator for the Geoscience Department. I served as Undergraduate Coordinator (2012-2015) for the ~200 students in the Geoscience Department. I have also served as a McNair Faculty Mentor in the McNair Scholars Institute, which has the goal of encouraging and preparing undergraduate students who are members of underrepresented groups to pursue doctoral studies and I also served on the Advisory Board of the Multicultural Program at UNLV (2013-2014), which has the goal of increasing the number of minority and underrepresented groups in the STEM and health related sciences. I have served on the Sabbatical Committee (2009-2014), 4 Geoscience Department faculty search committees, the Geoscience Undergraduate Assessment Committee (2013 – 2015), the College of Science Undergraduate Curriculum Committee (2012 – 2015), the Geoscience Department Listening to Departments Committee (chaired Spring 2013, member Spring 2011), the Geoscience Department Graduate Admissions Committee, (2009-2012) and as chair of the Geoscience Department Curriculum Committee (2012- 2015). I have also mentored twelve undergraduate students working in my laboratory while at UNLV.

Outreach: I have spoken at outreach events including the Rebel Preview (2x) a recruiting talk at the College of Southern Nevada, Nate Mack and Coral Academy Elementary Schools, and my recent research has been covered in the media by NBC News, CBS news, New Scientist, Las Vegas Guardian Express, Fox News, The Oregon Herald, and others.

SUMMARY OF RESEARCH INTERESTS

Water-rock interactions on Earth and on Mars; soil-forming processes; astrobiology; geomicrobiology; kinetics of mineral dissolution and precipitation; biological impacts on weathering; mineral biosignatures; reactive transport modeling; the effect of climate on weathering

GRADUATE AND POSTDOCTORAL ADVISEES

Stephanie (S.J.) Ralston – PhD in progress at UNLV

Courtney Bartlett – MS in progress at UNLV

Zoe Harrold – current postdoctoral scholar

Seth Gainey – (PhD 2015) Currently employed as a postdoctoral researcher

Christopher Adcock – postdoctoral scholar 2014-2015

Christopher Adcock – (PhD 2014) Currently employed as an assistant research professor

Michael Steiner – (MS 2015) – Currently employed at the National Park Service

Valerie Tu – (MS 2013) – Currently employed at Marathon Oil.

Brittany Myers (MS 2012) – Currently employed at a state environmental agency

Julie Baumeister (MS 2012) – Currently employed at an environmental consulting company