CURRICULUM VITAE – 1/22/2019

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Degrees

1980	A.B.	Chemistry, Princeton University, *magna cum laude*
1983	M.A.	Geological and Geophysical Sciences, Princeton University
1987	Ph.D.	Geological and Geophysical Sciences, Princeton University

Professional Experience

8/80-8/81	Fulbright Scholar in Peru
9/81-9/86	Teaching and Research Assistant in Dept. of Geological and Geophysical Sciences, Princeton University
9/86-6/91	Assistant Professor of Geosciences, Penn State
6/91-7/97	Associate Professor of Geosciences, Penn State
1/95-7/95	Visiting Scientist, U.S. Geological Survey Menlo Center
1/95-7/95	Visiting Scientist, Stanford University
7/97-present	Full Professor of Geosciences, Penn State
7/98-04/03	Director, Center for Environmental Chemistry and Geochemistry, Penn State
8/99-1/03	Director, Biogeochemical Research Initiative for Education, Penn State
1/03-7/03	Visiting Scientist, U.S. Geological Survey Menlo Center
4/03-present	Director, Earth & Environmental Systems Institute, College of Earth and Mineral Sciences, Penn State
1/04-1/06	Vice-President, Geochemical Society
9/04-9/11	Director, Center for Environmental Kinetics Analysis, Penn State
1/06-01/08	President, Geochemical Society
1/08-1/10	Past-president, Geochemical Society
10/10-present	Director, Shale Network
2013-2015	Chair, Earth Science Council, Dept. of Energy, Basic Energy Sciences
1/08-present	Distinguished Professor, Penn State
2012-present	Member, National Academy of Sciences
9/12-present	Member, Nuclear Waste Technical Review Board (Presidential appointment)

Honors and Awards

1981-1982	IBM Fellowship, Princeton University
1982-1985	NSF Graduate Student Fellowship
1987-1992	NSF Presidential Young Investigator Award
1988-1993	David and Lucile Packard Fellowship
1996	Wilson Research Award, College of Earth and Mineral Sciences, Penn State
2001	Pardee Lecturer, Geological Society of America National Meeting
2002	Ingerson Lecturer of the Geochemical Society, Geol. Society of America

Honors and Awards (continued)

2003	Wilson Faculty Mentoring Award, College of Earth and Mineral Sciences, Penn State
2006	Pardee Lecturer, Geological Society of America National Meeting
2007	Elected Fellow, American Geophysical Union
2007	Wilson Award for Outstanding Service, College of Earth and Mineral Sciences, Penn State
2008	Pardee Lecturer, Geological Society of America National Meeting
2011	Honorary Doctorate, University of Toulouse III – Paul Sabatier University, France
2011	Arthur L. Day Medal, The Geological Society of America
2012	Elected Fellow, Geological Society of America
2012	Elected Fellow, Geochemical Society
2012	Elected Fellow, European Association of Geochemistry
2012	Elected Fellow, International Association of GeoChemistry
2012	Elected to membership in the National Academy of Sciences
2012	Soil Science Society of America (SSSA) Presidential Award
2013	Penn State Faculty Scholar Medal
2013	Honorary Doctorate, University of Lausanne, Switzerland
2016	Wollaston Medal, The Geological Society of London
2017	Geochemistry Division Medal, American Chemical Society
2018	Urey Award, European Association of Geochemistry
2019	Robert Garrels Award, The Geobiology Society

Publications

1. Maest, A., S.L. Brantley, P. Bauman, M. Borcsik, D. Crerar. 1984. Geochemistry of metal transport in the Raritan River and estuary. *New Jersey Bulletin, New Jersey Academy Science* 29, 69-78.

2. Wood, S., D.A. Crerar, S.L. Brantley, M. Borcsik. 1984. Mean molal stoichiometric activity coefficients of alkali halides and related electrolytes in hydrothermal solutions. *American Journal of Science* 284, 668-705.

3. Brantley, S.L., D.A. Crerar, N. Moller, J. Weare. 1984. Geochemistry of a modern marine evaporite: Bocana de Virrila, Peru. *Journal of Sedimentary Petrology* 54, 447-462.

4. Giddings, J.C., S.L. Brantley. 1984. Shear field-flow fractionation: Theoretical basis of a new, highly selective technique. *Separ. Science and Technology* 19(10), 631-651.

5. Crerar, D.A., S. Wood, S.L. Brantley, A. Bocarsly. 1985. Chemical controls on solubility of ore-forming minerals in hydrothermal solutions. *Canadian Mineral* 23, 333-352.

6. Brantley, S.L., S.R. Crane, D.A. Crerar, R. Hellmann, R. Stallard. 1986. Dissolution at dislocation etch pits in quartz. *Geochimica et Cosmochimica Acta* 50, 2349-2361.

7. Brantley, S.L., A. Borgia, G. Rowe, J.F. Fernandez, J.R. Reynolds. 1987. Poas volcano crater lake acts as a condenser for acid metal-rich brine. *Nature* 330, 470-472.

8. Schott, J., S.L. Brantley, D. Crerar, C. Guy, M. Borcsik, C. Willaime. 1989. Dissolution kinetics of strained calcite. *Geochimica et Cosmochimica Acta* 53, 373-382.

9. Rowe, G., S.L. Brantley, A. Borgia, J. Fernandez, J. Barquero. 1989. La sistema hidrotermal del Volcan Poas. *Boletin de Volcanologia* 20, 23-31.

10. Brantley, S.L., B. Evans, S.H. Hickman, D.A. Crerar. 1990. Healing of microcracks in quartz: Implications for fluid flow. *Geology* 18, 136-139.

11. Brantley, S.L. J. Donovan. 1990. Marine evaporites, bittern seepage, and the genesis of subsurface brines. *Chemical Geology* 84, 187-189.

12. Lee, V.W., S.J. Mackwell, S.L. Brantley. 1991. The effect of fluid chemistry on wetting textures in novaculite. *Journal of Geophysical Research* 96, 10,023-10,037.

13. Voigt, D.E., S.L. Brantley. 1991. Inclusions in synthetic quartz. *Journal of Crystal Growth* 113, 527-539.

14. Rowe, G.L., S.L. Brantley, M. Fernandez, J.F. Fernandez, J.A. Barquero, A. Borgia. 1992. Fluid-volcano interactions at an active stratovolcano: The crater lake system of Poas Volcano, Costa Rica. *Journal Volcanology and Geothermal Research* 49, 23-51.

15. MacInnis, I., S.L. Brantley. 1992. The role of dislocations and surface morphology in calcite dissolution. *Geochimica et Cosmochimica Acta* 56, 1113-1126.

16. Weedman, S., S.L. Brantley, W. Albrecht. 1992. Secondary compaction after secondary porosity: Can it form a pressure seal? *Geology* 20, 303-306.

17. Rowe, G., S. Ohsawa, B. Takano, S.L. Brantley, J.F. Fernandez, J. Barquero. 1992. Using crater lake chemistry to predict volcanic activity at Poas Volcano, Costa Rica. *Bulletin of Volcanology* 54, 494-503.

18. Brantley, S.L., G.L. Rowe, L. Konikow, W. Sanford. 1992. Toxic waters of Poas Volcano. *Research and Exploration* 8, 328-337.

19. Brantley, S.L. 1992. The effect of fluid chemistry on quartz microcrack lifetimes. *Earth and Planetary Science Letters* 113, 145-156.

20. Fisher, D., S.L. Brantley. 1992.Models of quartz overgrowth and vein formation: Deformation and episodic fluid flow in an ancient subduction zone. *Journal of Geophysical Research* 97, 20,043-20,061.

21. MacInnis, I., S.L. Brantley. 1993. Development of etch pit size distributions (PSD) on dissolving minerals. *Chemical Geology* 105, 31-50.

22. Rowe, G.L., S.L. Brantley. 1993. Estimation of the dissolution rates of andesitic glass, plagioclase, and pyroxene in a flank aquifer of Poas Volcano, Costa Rica. *Chemical Geology* 105, 71-88.

23. Brantley, S.L., A. Blai, I. MacInnis, D. Cremeens, D. Darmody. 1993. Natural etching rates of hornblende and feldspar. *Aquatic Science* 55, 262-272.

24. Brantley, S.L., A. Agustsdottir, G.L. Rowe. 1993. Crater lakes reveal heat and volatile fluxes of volcanoes. *GSA Today* 3, 175-178.

25. Agustsdottir, A.M., S.L. Brantley. 1994. Volatile fluxes integrated over four decades at Grimsvotn volcano, Iceland. *Journal of Geophysical Research* 99, 9505-9522.

26. Stillings, L.L., S.L. Brantley. 1995. Feldspar dissolution at 25^{o}C and pH 3: Reaction stoichiometry and the effect of cations. *Geochimica et Cosmochimica Acta* 59, 1483-1496.

27. Stillings, L.L., S.L. Brantley, M. Machesky. 1995. Proton adsorption at an adularia feldspar surface. *Geochimica et Cosmochimica Acta* 59, 1473-1482.

28. Shiraki, R., S.L. Brantley. 1995. Kinetics of near-equilibrium calcite precipitation at 100^{o}C: An evaluation of elementary reaction-based and affinity-based rate laws. *Geochimica et Cosmochimica Acta* 59, 1457-1471.

29. Rowe, G.L., S.L. Brantley, J.F. Fernandez, A. Borgia. 1995. The chemical and hydrologic structure of Poas Volcano, Costa Rica. *Journal of Volcanology Geothermal Research* 64, 233-267.

30. Sanford, W., L. Konikow, G.L. Rowe, S.L. Brantley. 1995. Groundwater transport of crater-lake brine at Poas Volcano, Costa Rica. *Journal of Volcanology Geothermal Research* 64, 269-293.

31. Fisher, D.M., S.L. Brantley, M. Everett, J. Dzvonik. 1995. Cyclic fluid flow through a regionally extensive fracture network within the Kodiak accretionary prism. *Journal of Geophysical Research* 100, 12881-12894.

32. Brantley, S.L., K. Koepenick. 1995. Measured carbon dioxide emissions from Oldoinyo Lengai and the skewed distribution of passive volcanic fluxes. *Geology* 23, 933-936.

33. Clark, M.B., S.L. Brantley, D.M. Fisher. 1995. Power-law vein thickness distributions and positive feedback in vein growth. *Geology* 23, 975-978.

34. Fein, J.B., N. Gore, D. Marshall, L. Yassa, A. Loch, S.L. Brantley. 1995. The effect of aqueous complexation and gibbsite surface sites on the decarboxylation rate of malonate. *Geochimica et Cosmochimica Acta* 59, 5071-5081.

35. Voigt, D.E., S.L. Brantley, R. Hennet. 1995. Chemical fixation of arsenic in contaminated soils. *Applied Geochemistry* 11, 633-643.

36. Stillings, L.L., J.I. Drever, S.L. Brantley, Y. Sun, R. Oxburgh. 1996. Rates of feldspar dissolution at pH 3-7 with 0-8 mM oxalic acid. *Chemical Geology* 132, 79-90.

37. Weedman, S.D., S.L. Brantley, R. Shiraki, S.R. Poulson. 1996. Diagenesis, compaction, and fluid chemistry modeling of a sandstone near a pressure seal: Lower Tuscaloosa formation, Gulf Coast. *AAPG Bulletin* 80, 1045-1064.

38. Koepenick, K.W., S.L. Brantley, J.M. Thompson, G.L. Rowe, A.A. Nyblade, C. Moshy. 1996. Volatile emissions from the crater and flank of Oldoinyo Lengai volcano, Tanzania. *Journal Geophysical Research* 101, 13819-13830.

39. Wilkin, R.T., H.L. Barnes, S.L. Brantley. 1996. The size distribution of framboidal pyrite in modern sediments: An indicator of redox conditions. *Geochimica et Cosmochimica Acta* 60, 3897-3912.

40. Brantley, S.L., L.L. Stillings. 1996. Feldspar dissolution at 25^{o}C and low pH. *American Journal of Science* 296, 101-127.

41. Brantley, S.L., L.L. Stillings. 1997. Reply to comment: Feldspar dissolution at 25^{o}C and low pH. *American Journal of Science* 297, 1021-1032.

42. Deleuze, M., S.L. Brantley. 1997. Inhibition of calcite crystal growth by Mg^{2+} at 100^{o}C and100 bars: Influence of growth regime. *Geochimica et Cosmochimica* Acta 61, 1475-1487.

43. Chen, Y., S.L. Brantley. 1997. Temperature- and pH-dependence of albite dissolution rate at acid pH. *Chemical Geology* 135, 275-292.

44. Foster, A.L., G.E. Brown, Jr., G.A., Parks, T.N. Tingle, D.E. Voigt, S.L. Brantley. 1997. XAFS determination of As(V) associated with Fe(III) oxyhydroxides in weathered mine tailings and contaminated soil from California, U.S.A. *Journal of Physics of France* 7, Colloque C2, Supplément au Journal de Physique III d'avril, C2-815-816.

45. Murphy, S.F., S.L. Brantley, A.E. Blum, A.F. White, H. Dong. 1998. Chemical weathering in a tropical watershed, Luquillo Mountains, Puerto Rico: II. Rate and mechanism of biotite weathering. *Geochimica et Cosmochimica Acta* 62, 227-244.

46. Erratum to S.F. Murphy, S.L. Brantley, A.E. Blum, A.F. White, H. Dong. 1998. "Chemical weathering in a tropical watershed, Luquillo Mountains, Puerto Rico: II Rate and mechanism of biotite weatering. *Geochimica et Cosmochimica Acta* 62(13), 2404.

47. Chen, Y., S.L. Brantley. 1998. Diopside and anthophyllite dissolution at 25^{o}C and 90^{o}C and acid pH. *Chemical Geology* 147, 233-248.

48. Brantley, S.L., J.T. Chesley, L.L. Stillings. 1998. Isotopic ratios and release rates of Sr measured from weathering feldspars. *Geochimica et Cosmochimica Acta* 62, 1492-1500.

49. Nugent, M.A., S.L. Brantley, C.G. Pantano, P.A. Maurice. 1998. The influence of natural mineral coatings on feldspar weathering. *Nature* 395, 588-591.

50. Chen, Y., S.L. Brantley, E. Ilton. 2000. X-ray photoelectron spectroscopic measurementof the temperature dependence of leaching of cations from the albite surface. *Chemical Geology* 163, 115-128.

51. Liermann, L., B. Kalinowski, S.L. Brantley, J.G. Ferry. 2000. Role of bacterial siderophores in dissolution of hornblende. *Geochimica et Cosmochimica Acta* 64, 587-602.

52. Lewicki, J., S.L. Brantley. 2000. CO_2 degassing along the San Andreas fault, Parkfield, California. *Geophysical Research Letters* 27, 5-8.

53. Chen, Y., S.L. Brantley. 2000. Dissolution of forsteritic olivine at 65^{o}C and $2 < pH < 5$. *Chemical Geology* 165, 267-282.

54. Kalinowski, B., L.J. Liermann, S.L. Brantley, A. Barnes, C.G. Pantano. 2000. X-ray photoelectron evidence for bacteria-enhanced dissolution of hornblende. *Geochimica et Cosmochimica Acta* 64, 1331-1343.

55. Boomer K., C. Werner, S.L. Brantley. 2000. CO_2 emissions related to the Yellowstone volcanic system 1. Developing a stratified adaptive cluster sampling plan. *Journal of Geophysical Research* 105, 10817-10830.

56. Werner C., S.L. Brantley, K. Boomer. 2000. CO_2 emissions related to the Yellowstone volcanic system 2. Statistical sampling, total degassing, and transport mechanisms. *Journal Geophysical Research* 105, 10831-10846.

57. Kump, L., S.L. Brantley, M.A. Arthur. 2000. Chemical weathering, atmospheric CO_2 and climate. *Earth and Planetary Science Reviews* 28, 611-667.

58. Hamilton, J., C.G. Pantano, S.L. Brantley. 2000. Dissolution of albite glass and crystal. *Geochimica et Cosmochimica Acta* 64(15), 2603-2615.

59. Liermann, L., A.S. Barnes, B.E. Kalinowski, X. Zhou, S.L. Brantley. 2000. Microenvironments of pH in biofilms grown on dissolving silicate surfaces. *Chemical Geology* 171, 1-16.

60. Kalinowski, B.E., L.J. Liermann, S.Givens, S.L. Brantley. 2000. Rates of bacteria-promoted solubilization of Fe from minerals: A review of problems and approaches. *Chemical Geology* 169, 357-370.

61. Werner, C., J. Wyngaard, S.L. Brantley. 2000. Eddy-correlation measurement of hydrothermal gases. *Geophysical Research Letters* 27, 2925-2928.

62. Brantley, S.L., N. Mellott. 2000. Surface area and porosity of primary silicate minerals. *American Mineralogist* 85, 1767-1783.

63. Brantley, S.L., L.J. Liermann, S. Wu, M. Bau. 2001. Uptake of trace metals and rare earth elements from hornblende by a soil bacterium. *Geomicrobiology Journal* 18, 37-61.

64. Mellott, N.P., S.L. Brantley, J.P. Hamilton, C.G. Pantano. 2001. Evaluation of surface preparation methods for glass. *Surface and Interface Analysis* 31, 362-368.

65. Brantley, S., L.J. Liermann, T. Bullen. 2001. Fractionation of Fe isotopes by soil microbes and organic acids. *Geology* 29, 535-538.

66. Hamilton, J., S.L. Brantley, C.G. Pantano, L. Criscenti, J. Kubicki. 2001. Dissolution of nepheline, jadeite and albite glasses: Toward better models for aluminosilicate dissolution. *Geochimica et Cosmochimica Acta* 65, 3683-3702.

67. Goyne, K.W., A.R. Zimmerman, B.L. Newalkar, S. Komarneni, S.L. Brantley, J. Chorover. 2002. Surface charge of variable porosity $Al_2O_{3(s)}$ and $SiO_{2(s)}$ adsorbents. *Journal of Porous Materials* 9, 243-256.

68. Tsomaia, N., S.L. Brantley, J.P. Hamilton, C.G. Pantano, K.T. Mueller. 2003. NMR evidence for formation of octahedral and tetrahedral Al and repolymerization of the Si network during dissolution of aluminosilicate glass and crystal. *American Mineralogist* 88, 54-67.

69. Turner, B.F., R.F. Stallard, S.L. Brantley. 2003. Investigation of *in situ* weathering of quartz diorite bedrock in the Rio Icascos basin, Luquillo Experimental Forest, Puerto Rico. *Chemical Geology* 202, 313-341.

70. Werner, C., G. Chiodini, D. Voigt, S. Caliro, R. Avino, M. Russo, T. Brombach, J. Wyngaard, S.L. Brantley. 2003. Monitoring volcanic hazard using eddy covariance at Solfatara Volcano, Naples, Italy. *Earth and Planetary Science Letters* 210, 561-577.

71. White, A.F., S.L. Brantley. 2003.The effect of time on the weathering of silicate minerals: Why do weathering rates differ in the laboratory and field? *Chemical Geology* 202, 479-506.

72. Lewicki, J.L, W.C. Evans, G.E. Hilley, M.L. Sorey, J.D. Rogie, S.L. Brantley. 2003. Shallow soil CO_2 flow along the San Andreas and Calaveras faults, California. *Journal of Geophysical Research* 108 (B4), 2187, doi:10.1029/ 2002JB002141.

73. Werner, C., S.L. Brantley. 2003. CO_2 emissions from the Yellowstone volcanic system. *Geochemistry, Geophysics Geosystems* 4(7), 1001-1029.

74. Bau, M., B. Alexander, J.T. Chesley, N.P. Mellott, P. Dulski, S.L. Brantley. 2004. Mineral dissolution in the Cape Cod aquifer, Massachusetts, USA: I . Reaction

stoichiometry and impact of accessory feldspar and glauconite on strontium isotopes, solute concentrations, and REY distribution. *Geochimica et Cosmochimica Acta* 68, 1199-1216.

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78. Goyne, K.W., A.R. Zimmerman, B.L. Newalkar, S. Komarneni, S.L. Brantley, and J. Chorover. 2004. *Surface charge of variable porosity Al_2O_3(s) and SiO_2(s) adsorbents*. Journal of Porous Materials 9, 243-256.

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80. Brantley, S.L., L.J. Liermann, R.L. Guynn, A. Anbar, G. Icopini. J. Barling. 2004. Fe isotopic fractionation during mineral dissolution with and without bacteria. *Geochimica et Cosmochimica Acta* 68(15), 3189-3204.

81. Zimmerman, A.R., J. Chorover, K.W. Goyne, S.L. Brantley. 2004. Protection of mesopore-adsorbed organic matter from enzymatic degradation. *Environmental Science and Technology* 38(17), 4542-4548.

82. Anderson, S.P., J. Blum, S.L. Brantley, O. Chadwick, J. Chorover, L.A. Derry, J.I. Drever, J. Hering, J.W. Kirchner, L.R. Kump, D. Richter, A.F. White. 2004. Proposed initiative would study earth's weathering engine. *EOS, Transactions, American Geophysical Union* 85(28), 265-269.

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84. Neaman A., J. Chorover, S.L. Brantley. 2005. Element mobility patterns record organic ligands in soils on early Earth. *Geology* 33(2), 117-120.

85. Criscenti, L.J., S.L. Brantley, K.T. Mueller, N. Tsomaia, J.D. Kubicki. 2005. Theoretical and ^{27}Al CPMAS NMR investigation of aluminum coordination changes during alumino-silicate dissolution. *Geochimica et Cosmochimica Acta* 69(9), 2205-2220.

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89. Zerkle, A.L., C.H. House, S.L. Brantley. 2005. Biogeochemical signatures through time as inferred from whole microbial genomes. *American Journal of Science* 30, 467-502.

90. Buss, H.L., M.A. Bruns, M.J. Schultz, J. Moore, C.F. Mathur, S.L. Brantley. 2005. The coupling of biological iron cycling and mineral weathering during saprolite formation, Luquillo Mountains, Puerto Rico. *Geobiology* 3, 247-260.

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92. Criscenti, L.J., J.D. Kubicki, S.L. Brantley. 2006. Silicate glass and mineral dissolution::Calculated reaction paths and activation energies for hydrolysis of a Q^3Si: by H_30^+ using *ab initio* methods. *Journal of Physical Chemistry* 110, 198-206.

93. Ruebush, S.S., G.S. Icopi*ni, S.L.* Brantley, *M. Tien. 2006. In vitro enzy*matic reduction kinetics of mineral oxides by membrane fractions from *Shewanella oneidensis* MR-1. *Geochimica et Cosmochimica Acta* 70, 56-70.

94. Neaman, A., J. Chorover, S.L. Brantley. 2006. Effects of organic ligands on granite dissolution in batch experiments at pH 6. *American Journal of Science* 306, 451-475.

95. Ruebush, S., S.L. Brantley, M. Tien. 2006. Reduction of soluble and insoluble iron forms by membrane fractions of Shewanella oneidensis grown under aerobic and anaerobic conditions. *Applied Environmental Microbiology* 72(4), 2925-2935.

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98. Brantley, S.L., B. Ketchum. 2006. Center for Environmental Kinetic Analysis: Biogeochemists spanning scales of space and time. *The Geochemical News, Newsletter of the Geochemical Societ*y 126, 29-33.

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101. Buss, H.L., A. Luttge, S.L. Brantley. 2007. Etch pit formation on iron silicate surfaces during siderophore-promoted dissolution. *Chemical Geology* 240, 326-342.

102. Hausrath E. M., L.J. Liermann , C.H. House, J.G. Ferry, S.L. Brantley. 2007. The effect of methanogen growth on mineral substrates: Will Ni markers of methanogen-based communities be detectable in the rock record? *Geobiology* 5(1), 49-61.

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Non-refereed Publications, Published Reports and Opinion Pieces

1992 "America's Academic Future: Presidential Young Investigator Workshop on U.S. Engineering, Mathematics, and Science Education for the Year 2010 and Beyond," National Science Foundation.

1995 Review of U.S. Dept. of Energy Technical Basis Report for Surface Characteristics, Preclosure Hydrology, and Erosion, Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion, National Academy Press, Washington D.C.

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2. Brantley, Susan L., R. Ravela, L. Jin, J. Nuester, P. L. Sullivan. 2013. Susquehanna Shale Hills Critical Zone Observatory Porewater Chemistry (2007). Interdisciplinary Earth Data Alliance (IEDA). doi:10.1594/IEDA/100234.
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2002 Brantley, S.L., **"**Ode to a Geochemist", *Water-Rock Interactions, Ore Deposits, and Environmental Geochemistry, A Tribute to David A Crerar*, Hellmann R. and Wood S. (ed.), The Geochemical Society, Spec. Pub. No. 7, xv-xvii.

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1986 Brantley, S.L., D.A. Crerar, B. Evans. Rates and mechanisms of porosity reduction in quartz: Implications for fluid flow in rocks. *Proceedings Fifth International Conference on Water-Rock Interaction*, Reykjavik, Iceland. 79-82.

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2002 Ruiz, J., R. Mathur, S. Brantley, J.L. Uhrie. Experimental constraints on Cu fractionation in natural environments, *Proceedings Sixth International Symposium on Geochemistry of the Earth's Surface*, Honolulu, Hawaii. 283-285.

2004 Buss, H.L., P.B. Sak, A.F. White, S.L. Brantley. Mineral dissolution at the granite-saprolite interface. *Proceedings Eleventh International Symposium on Water-Rock Interaction,* R. Wanty & R. Seal (eds.), A.A. Balkema Publishers, London 1, 819-823.

2004 Moore J., A.F. White, S.L. Brantley. Effects of giant sequoia on soil chemistry *Proceedings Eleventh International Symposium on Water-Rock Interaction*, R. Wanty & R. Seal (eds.), A.A. Balkema Publishers, London 1, 1341-1345.

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2004 Mathur, R., J. Ruiz, L.J. Liermann, S.L. Brantley. Cu isotopic fractionation associated with oxidation of Cu sulfide with and without *T. ferrooxidans. Proceedings Eleventh International Symposium on Water-Rock Interaction*, R. Wanty & R. Seal (eds.), A.A. Balkema Publishers, London 1, 1327-1330.

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2004 Zimmerman, A.R., S.L. Brantley, K.G. Goyne, J. Chorover. Investigations of the effects of mineral mesopores on the adsorption and preservation of organic matter. *Proceedings Eleventh International Symposium on Water- Rock Interaction*, R.Wanty and R. Seal (eds.), A.A. Balkema Publishers, London. 1059.

2004 Washton, N.M., R. Fry, K.T. Mueller, S.L. Brantley. Toward a quantitative understanding of reactive surface hydroxyl density in feldspar minerals. *Proceedings Eleventh International Symposium on Water-Rock Interaction* (WRI-11), R. Wanty & R. Seal (eds.), Saratoga Springs NY, 1665-1669.

2010 Dere, A., T. White, L. Jin, D. Harbor, M. Townsend, S.L. Brantley. Shale weathering rates across a continental-scale climosequence. *Nineteenth World Congress of Soil Science, Soil Solutions for a Changing World*, Brisbane Australia. August 1-6, 2010, 27-30.

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2011 Jin, L., S.L. Brantley. Soil chemistry and shale weathering on a hillslope influenced by convergent hydrologic flow regime at the Susquehanna/Shale Hills Critical Zone Observatory. *Applied Geochemistry* 26, S51-S56.

2011 Chabaux, F., L. Ma, P. Stille, E. Pelt, M. Granet, D. Lemarchand, R. di Chiara Roupert, S. L. Brantley. Determination of chemical weathering rates from U series nuclides in soils and weathering profiles: Principles, applications and limitations. *Applied Geochemistry* 26(1), S20-S23.

2011 Brantley, S.L., H. Buss, M. Lebedeva, R.C. Fletcher, L. Ma. Investigating the complex interface where bedrock transforms to regolith. *Applied Geochemistry* 26, S12-S15.

2011 Ma, L., L. Jin, S.L. Brantley. Geochemical behaviors of different element groups during shale weathering at the Susquehanna/Shale Hills Critical Zone Observatory. *Applied Geochemistry* 26(1), S89-S93.

2011 Herndon, E.M., S.L. Brantley. Movement of manganese contamination through the Critical Zone. *Applied Geochemistry* 26, S40-S43.

2017 Hynek, S., X. Comas, and S.L. Brantley. The effect of fractures on weathering of igneous and volcaniclastic sedimentary rocks in the Puerto Rican tropical rain forest. *Procedia Earth and Planetary Science* 17: 972-975. DOI: 10.1016/j.proeps.2017.01.001

2017 Zheng, G., S. L. Brantley, Z. Li. Contextual Spatial Outlier Detection with Metric Learning, in Proceedings of the 2017 ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD'17), Halifax, Nova Scotia, Aug. 2017.

Theses Supervised

1990 Lee, Vivian: "Fluid Wetting Characteristics of Quartzites" (M.S. co-advised by S.J. Mackwell)

1991 Rowe, Gary: "The Acid Crater Lake System of Poas Volcano, Costa Rica: Geochemistry, Hydrology, and Physical Characteristics" (Ph.D.)

1991 MacInnis, Ian: "Dissolution Kinetics of Calcite and Quartz under Surface Reaction Control" (Ph.D.)

1993 Agustsdottir, Anna: "Volatile Release Rates of Grimsvotn, Volcano, Iceland" (M.S.)

1993 Stillings, Lisa: "Feldspar Surface Chemistry and Dissolution Kinetics" (Ph.D.)

1995 Koepenick, K.W.: "Volatile Emissions from Oldoinyo Lengai Volcano, Tanzania" (M.S.)

1995 Murphy, Sheila F.: "The Weathering of Biotite in a Tropical Forest Soil, Luquillo Mountains, Puerto Rico" (M.S.)

1997 Everett, Mark, "Distribution of Veins in the Kodiak Accretionary Complex" (M.S.)

1997 Nugent, Melissa, "Temporal Evolution of Feldspar Surfaces during the Initial Stages of In-situ Weathering" (M.S.)

1999 Yau, Simmy, "Dissolution Kinetics of Feldspar in the Cape Cod Aquifer, Massachusetts: Calculation of Ground Water Residence Time" (M.S.)

1999 Werner, Cindy, "CO_2 Emissions Related to the Yellowstone Volcanic System: Statistical Sampling, Total Degassing, and Transport Mechanisms" (M.S.)

2000 Mellott, Nathan P., "Evolution of Surface Roughness with Aqueous Corrosion of Alkali and Alkaline-Earth Aluminosilicate Minerals and Glasses" (M.S.)

2001 Turner, Benjamin, "Effects of Temperature and Climate on Chemical Weathering in Two Contrasting High-Rainfall Mountainous Catchments" (Ph.D.)

2002 Lewicki, Jennifer, "Soil CO_2 Flow along the San Andreas and Calaveras Faults, California" (Ph.D.)

2002 Werner, Cynthia, "CO_2 Emissions in Yellowstone, USA, and Solfatara Volcano, Italy: Use of Eddy Coveriance and Mass Flux Modeling" (Ph.D.)

2006 Buss, Heather, **"**Biogeochemical Weathering of Iron-Silicate Minerals" (Ph.D.)

2007 Hausrath, Elizabeth, "Basalt Weathering on Mars" (Ph.D.)

2007 Moore, Joel, "Biogeochemistry of Granitic Weathering" (Ph.D.)

2007 Navarre-Sitchler, Alexis "Weathering advance rates in basalt: prediction and comparison across scales" (Ph.D.)

2008 Williams, Jennifer, "The Effect of Temperature and Precipitation on Sodium Depletion Fronts in Soils Developed on Peoria Loess" (M.S.)

2009 Alexander, Brian W. "Controls on Groundwater Chemistry in the Cape Cod Aquifer, Massachusetts: The Impact of Accessory Mineral Phases on Solute Concentrations, $^{87}Sr/^{86}Sr$, and Rare Earth Element Distributions" (M.S.)

2009 Kimball, Bryn, "Biogeochemical Cycling of Copper in Acid Mine Drainage" (Ph.D.)

2010 Regberg, Aaron B., "The Effect of Dissimilatory Iron Reduction, Nitrate Reduction and Microbial Growth on Electrical Conductivity" (Ph.D.)

2012 Herndon, Elizabeth, "Biogeochemistry of manganese contamination at the Shale Hills CZO" (Ph.D.)

2013 Carter, Megan, "Exploring a 60-year record of manganese deposition in Marietta Ohio using soil chemistry and atmospheric dispersion modeling" (M.S.)

2014 Yesavage, Tiffany, "Chemical and physical weathering in regolith: An investigation of three different Fe-rich sites of varying climate and lithology" (Ph.D)

2014 Dere, Ashlee, "Rates and mechanisms of shale weathering across a latitudinal climosequence" (Ph.D.)

2014 Grieve, Paul L., "Measuring concentrations of dissolved natural gas in three streams in Pennsylvania to estimate methane fluxes from the subsurface" (M.S.)

2014 Orlando, Joseph O., "The anatomy of weathering profiles on different lithologies in the tropical forest of northeastern Puerto Rico: from bedrock to clouds" (M.S.)

2017 Gu, Xin, "Characterizing Structure and Geochemistry of Shale Pores by Neutron Scattering" (Ph.D.)

Scientific Workshops or Symposia Organized

1991 Brantley, S.L., A. White (organizers). Geochemical kinetics: Field vs. laboratory rates, special Geochemical Society-sponsored session at the Geol. Society of America Annual Meeting, (27 papers presented). Fall '91.

1992 Brantley, S.L., C. M. Eggleston (organizers). Structure, bonding, and kinetics at mineral surfaces, sponsored by Geochemistry Division for the National Meeting of the American Chemical Society, special session (35 papers presented). Spring '92.

1993 Brantley, S.L., P. Heaney (organizers). Interactions between the Geosphere and Biosphere. A Symposium Honoring the Life and Career of David A. Crerar. Princeton University, (6 invited speakers). May '93.

1993 Brantley, S.L., B. Dutrow, J. Selverstone (organizers). Fluids and Fluid Flow in the Crust. Symposium at the Geological Society of America Annual meeting. Fall '93.

1995 Brantley, S.L., A.F. White (organizers). Chemical Weathering Rates of Silicate Minerals, Mineralogical Society of America Short Course, Fall '95.

2002 Brantley, S.L. Geomicrobiology, Geochemistry of the Earth's Surface, Hawaii, May '02.

2004 Brantley, S.L. (Secretary General WRI 11). Proceedings Eleventh International Symposium on Water-Rock Interaction, Working Group of the International Association of Geochemistry and Cosmochemistry, June '04.

2005 Brantley, S.L. WSSC Workshop, The Critical Zone Exploration Network: A Tool for Understanding Earth's Weathering Engine, Arlington, Va. January 24-26 2005.

2005 Brantley, S.L. The Earth's Weathering Engine: Coupling Chemical Weathering with Physical Erosion, Biology, Hydrology and Climate, Goldschmidt Conference, May 19-23, 2005.

2005 Brantley, S.L., T.S. White. The Critical Zone Exploration Network: A Tool for Understanding Earth's Weathering Engine, AGU Fall Meeting, October 24-26, 2005.

2007 Hausrath, E., S.L. Brantley, J. Michalski. Chemical and physical weathering of basalt on the Earth, Moon, and Mars, Goldschmidt Conference.

2009 Brantley, S.L., P. Megonigal, F. Scatena. Frontiers in Exploration of the Critical Zone II: The Geobiology of Weathering and Erosion, an NSF-Sponsored Workshop, Washington, DC, October 5-7, 2009.

2012 Brantley, S.L., Vidic, R., Gonzales, M., Williams, J., Yoxtheimer, D. 2012 Shale Network Workshp, The Pennsylvania State University, April 23-24, 2012, 41 participants.

2013 Brantley, S.L., Vidic, R., Gonzales, M., Williams, J., Yoxtheimer, D. Shale Network Workshop, The Pennsylvania State University, May 19-20, 2013, 65 participants.

2013 Member of National Research Council Steering Committee on the "Development of Unconventional Hydrocarbon Resources in the Appalachian Basin: A Workshop." West Virginia University, September 9-10, 2013.

2014 Brantley, S.L., Vidic, R., Gonzales, M., Williams, J., Yoxtheimer, D. Shale Network Workshop, The Pennsylvania State University, May 12-13, 2014, 80 particapants.

2015 Brantley, S.L., Vidic, R., Gonzales, M., Williams, J., Yoxtheimer, D. Shale Network Workshop: Lessons Learned about Water Issues in the Northeastern Region of Shale Gas Development, The Pennsylvania State University, May 7-8, 2015, 80 particapants.

2016 Brantley, S.L., Vidic, R., Gonzales, M., Williams, J., Yoxtheimer, D. Shale Network Workshop: Science and cooperation around water quality data and legacy wells in shale gas basins, The Pennsylvania State University, May 19-20, 2016, 97 participants.

2017 Brantley, S.L., Vidic, R., Gonzales, M., Williams, J., Yoxtheimer, D. Shale Network Workshop: Sharing data about shale gas development from drilling to disposal, The Pennsylvania State University, May 18-19, 2017, 107 participants.

2018 Brantley, S.L., Vidic, R., Gonzales, M., Williams, J., Yoxtheimer, D. Shale Network Workshop: Integrating data about shale gas development: Toward a more collaborative future, The Pennsylvania State University, May 17-18, 2018.

National Committees

1995 Member, National Research Council Committee for Yucca Mountain Peer Review: Surface Characteristics, Preclosure Hydrology, and Erosion

2001-03 Member, National Research Council Committee on Long-Term Institutional Management of DOE Legacy Waste Sites: Phase 2

2003-06 Member, Advisory Committee for Directorate of Geosciences, National Sciences Foundation

2004 Member, NSF Committee of Visitors to review EAR Instrumentation and Facilities program

2005 Chair, NSF Committee of Visitors to review EAR Surface Earth Processes

2005-07 Vice-chair of the Earth Sciences Policy and Research in Space Solid-Earth Panel established to write the Solid-Earth Contribution to the "Earth Science Applications from Space: A Community Assessment and Strategy for the Future" (Decadal Study)

2005-07 Member, NRC Space Studies Board Panel, Astrobiology Strategy for the Exploration of Mars

2007-10 Member of the National Research Council Committee on Challenges and Opportunities in Earth Surface Science

2008-15 Member, Department of Energy, Council on Earth Sciences (Chair, 2013- 2015)

2012-pres Member, U.S. Nuclear Waste Technical Review Board
2013-16 Member, U.S. Environmental Protection Agency (EPA) Science Advisory Board (SAB) Hydraulic Fracturing Advisory Panel, March 2013- 2016
2013-18 Member, National Academy of Sciences, Engineering, and Medicine Roundtable on Unconventional Hydrocarbon Development
2016-17 National Research Council's (NRC) Committee on Sources of Lead Contamination at or near Superfund Sites
2017 Member, Drilling, Observation, and Sampling of the Earth's Continental Crust (DOSECC)
2018-20 National Research Council's Committee, Review of the USGS Laboratories: Processes, Procedures, and Best Practices to Meet National Needs, May 2018 – November 2020

Professional Societies and Service to Scientific Community

The Geochemical Society: Nominations Committee, member, 1990-1992; Chair of Nominations Committee, 1992-1993; Member of Board of Councilors (Directors) of the Society, 1995-1998; Publications Committee, 1999-2002; Vice President, 2004-2005, and President, 2006-2007; Past-President 2008-2009; Publications Advisory Committee, 2012-2013.
Participated in National Academies of Science Frontiers of Science, 1997.
Organized the National Academies of Science Frontiers of Science, 1998.
Served as outside reviewer for "Research Needs in Subsurface Science," publication by the National Research Council reviewing the U.S. Dept. of Energy's Environmental Management Science Program, 1999.
Project Partner, SoilTrEC (Soil Transformations in European Catchements), coordinated through the University of Sheffield (UK), 2009-present.
Associated Partner, EU Isotopes and Weathering Network, 2010-2017.
Member, Scientific Advisory Committee, Swedish Strong Research Environment *Quantifying Rates for Sustainable Forestry* (QWARTS), 2012-2016
Member, Steering Committee, IGERT National Recruitment Program Advisory Committee (committee to enhance diversity within IGERT programs nationally)
Secretary General for WRI 11 (Water-Rock Interaction Working Group of the International Association of Geochemistry and Cosmochemistry), 2004-2007.
Manuscript reviewer for: *Geochimica Cosmochimica Acta, Geology, Chemical Geology, Science, Water Resources Research*, as well as other journals
Reviewer of grant proposals for National Science Foundation, Petroleum Research Fund, Department of Energy, NASA, and other agencies here and in Europe
DOE Science Review Panel Member, Natural and Accelerated Bioremediation Interdisciplinary Research Program, 2003
DOE Science Review Panel Chair, Environmental Molecular Science Program, July 2005
NSF Earth Sciences Postdoctoral program reviewer
NSF Environmental Geochemistry and Biogeochemistry Program (EGB), served as panelist
DOE Biological and Environmental Research Advisory/COV Panel, 2007
Penrose Medal Award Selection Committee, Geological Society of America, 2011-14
Arthur L. Day Medal Award Committee, Geological Society of America, 2017-2020.
American Chemical Society, member
American Women in Science, member
Association for Women Geoscientists, member

Editorial Activities

Assistant Editor for *Chemical Geology*, 1/89 - 1/91
Editor for *Chemical Geology*, 10/91-7/00
Editorial board for *Chemical Geology*, 7/00-3/16
Editorial board for *Geofluids*, 10/99-5/16
Editorial Advisory Board for *Geobiology*, 6/02-present
International Advisory Board, *Earth Surface Processes and Landforms*, 4/2014- 3/2019

Summary of Research Interests

Water-rock interaction; critical zone science; soil geochemistry and weathering; geomicrobiology; water quality issues related to shale gas development; measurement of the kinetics of dissolution and precipitation of minerals in the laboratory and in the field; surface chemistry of minerals; environmental water problems and biogeochemical cycles; fluid-volcano interactions; volcanic release of volatiles.

Undergraduate and Graduate Courses Taught
Earth 100 (Environment Earth). Geosciences 4 (Rocks and Minerals), Geosciences 201 (Earth Materials), Geosciences 303 (Environmental Geology), Geosciences 413W (Techniques in Environmental Geochemistry), Geosciences 522 (Geochemistry of Aqueous Systems), Geosciences 523, (Sedimentary Geochemistry), Geosciences 560, Geosciences 589 (Aqueous Geochemistry Seminar) (Kinetics of Geochemical Systems), Geosciences 589 (Geochem Seminar), Geosciences 597 (Fluids in the Earth), Geosciences 597 (Biogeochemical Analysis), Geosciences 597 (Trees in the Critical Zone).