

**CURRICULUM VITAE – 02/06/2025**  
**Susan L. Brantley**  
**Atherton Professor and**  
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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**

08/1980-8/1981 Fulbright Scholar in Peru  
09/1981-8/1986 Teaching and Research Assistant in Dept. of Geological and Geophysical Sciences, Princeton University  
08/1986-06/1991 Assistant Professor of Geosciences, Penn State  
07/1991-06/1997 Associate Professor of Geosciences, Penn State  
01/1995-07/1995 Visiting Scientist, U.S. Geological Survey Menlo Center  
01/1995-07/1995 Visiting Scientist, Stanford University  
07/1997-present Full Professor of Geosciences, Penn State  
07/1998-04/2003 Director, PSU Center for Environmental Chemistry and Geochemistry  
08/1999-01/2003 Director, PSU Biogeochemical Research Initiative for Education  
01/2003-07/2003 Visiting Scientist, U.S. Geological Survey Menlo Center  
04/2003-06/2022 Director, PSU Earth & Environmental Systems Institute  
01/2004-05/2024 Director, Laboratory for Isotopes and Metals in the Environment  
01/2004-01/2006 Vice-President, Geochemical Society  
09/2004-09/2011 Director, PSU Center for Environmental Kinetics Analysis  
01/2006-01/2008 President, Geochemical Society  
01/2008-01/2010 Past-president, Geochemical Society  
10/2010-present Director, Shale Network  
2013-2015 Chair, Earth Science Council, Dept. of Energy, Basic Energy Sciences  
01/2008-08/2021 Distinguished Professor, Penn State  
2012-2021 Presidentially-appointed Member, Nuclear Waste Techn. Review Board  
08/2021-12/2024 Dr. Hubert Barnes and Dr. Mary Barnes Professor in Geosciences  
07/2022-12/2024 Evan Pugh University Professor  
01/2025-present Evan Pugh University Professor Emerita of Geosciences  
01/2025-present Atherton Professor Emerita

**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

## Honors and Awards (continued)

2001	Pardee Lecturer, Geological Society of America National Meeting
2002	Ingerson Lecturer of the Geochemical Society, Geol. Society of America
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
2008	Water Network, Award of Excellence for Outstanding Community Service
2011	Honorary Doctorate, University of Toulouse III – Paul Sabatier University, France
2011	Arthur L. Day Medal, The Geological Society of America
2012	Elected Member, National Academy of Sciences
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	Soil Science Society of America (SSSA) Presidential Award
2013	Penn State Faculty Scholar Medal
2013	Honorary Doctorate, University of Lausanne, Switzerland
2015	U.S. Distinguished Service Award for Service to the Office of Basic Energy Sciences
2016	Wollaston Medal, The Geological Society of London
2017	Geochemistry Division Medal, American Chemical Society
2018	Urey Award, European Association of Geochemistry
2018	ACS Committee on the Petroleum Research Fund, Certificate of Recognition for Excellence in Peer Reviewing
2019	Robert Garrels Award, The Geobiology Society
2021	Elected Member, American Academy of Arts and Sciences
01/22 – present	Foreign Associate, French Academy of Sciences
2022	IAGC Vernadsky Medal, International Association of GeoChemistry
2024	Inducted as Distinguished Daughter of Pennsylvania by Governor Josh Shapiro

## 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 Science* 284, 668-705. doi: 10.2475/ajs.284.6.668.

3. Brantley, S. L., D. A. Crerar, N. Moller, J. Weare. 1984. Geochemistry of a modern marine evaporite: Bocana de Virrila, Peru. *Journal Sedimentary Petrology* 54, 447-462. doi: 10.1306/212F843B-2B24-11D7-8648000102C1865D.
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. doi: 10.1080/01496398408060666.
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. doi: 10.1016/0016-7037(86)90087-6.
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. doi: 10.1038/330470a0.
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(2), 373-382. doi: 10.1016/0016-7037(89)90389-X.
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. doi: 10.1130/0091-7613(1990)018<0136:HOMIQI>2.3.CO;2.
11. Brantley, S. L., J. Donovan. 1990. Marine evaporites, bittern seepage, and the genesis of subsurface brines. *Chemical Geology* 84, 187-189. doi: 10.1016/0009-2541(90)90207-N.
12. Lee, V. W., S. J. Mackwell, S. L. Brantley. 1990. The effect of fluid chemistry on wetting textures in novaculite. *Journal Geophysical Research* 96, 10,023-10,037. doi: 10.1029/91JB00604.
13. Voigt, D. E., S. L. Brantley. 1990. Inclusions in synthetic quartz. *Journal Crystal Growth* 113, 527-539. doi: 10.1016/0022-0248(91)90088-M.
14. Rowe, G.L., S. L. Brantley, M. Fernandez, J.F. Fernandez, J.A. Barquero, 1992. A. Borgia. Fluid-volcano interactions at an active stratovolcano: The crater lake system of Poas Volcano, Costa Rica. *Journal Volcanol. and Geothermal Research* 49, 23-51. doi: 10.1016/0377-0273(92)90003-V.
15. MacInnis, I., S. L. Brantley. 1992. The role of dislocations and surface morphology in calcite dissolution. *Geochimica et Cosmochimica Acta* 56, 1113-1126. doi: 10.1016/0016-7037(92)90049-O.
16. Weedman, S., S. L. Brantley, W. Albrecht. 1992. Secondary compaction after secondary porosity: Can it form a pressure seal? *Geology* 20, 303-306. doi: 10.1130/0091-7613(1992)020<0303:SCASPC>2.3.CO;2.
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. doi: 10.1007/BF00301395.

18. Brantley, S. L., G. L. Rowe, L. Konikow, W. Sanford. 1992. Toxic waters of Poas Volcano. *National Geographic Research and Exploration* 8(3), 328-337.
19. Brantley, S. L. 1992. The effect of fluid chemistry on quartz microcrack lifetimes. *Earth and Planetary Science Letters* 113, 145-156. doi: 10.1016/0012-821X(92)90216-I.
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 Geophysical Research* 97, 20,043-20,061. doi: 10.1029/92JB01582.
21. MacInnis, I., S. L. Brantley. 1993. Development of etch pit size distributions (PSD) on dissolving minerals. *Chemical Geology* 105, 31-50. doi: 10.1016/0009-2541(93)90117-2.
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. doi: 10.1016/0009-2541(93)90119-4.
23. Brantley, S. L., A. Blai, I. MacInnis, D. Cremeens, D. Darmody. 1993. Natural etching rates of feldspar and hornblende. *Aquatic Science* 55, 262-272. doi: 10.1007/BF00877271.
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. doi: 10.1029/93JB03597.
26. Stillings, L. L., S. L. Brantley. 1995. Feldspar dissolution at 25°C and pH 3: Reaction stoichiometry and the effect of cations. *Geochimica et Cosmochimica Acta* 59, 1483-1496. doi: 10.1016/0016-7037(95)00057-7.
27. Stillings, L. L., S. L. Brantley, M. Machesky. 1995. Proton adsorption at an adularia feldspar surface. *Geochimica et Cosmochimica Acta* 59, 1473-1482. doi: 10.1016/0016-7037(95)00056-6.
28. Shiraki, R., S. L. Brantley. 1995 Kinetics of near-equilibrium calcite precipitation at 100°C: An evaluation of elementary reaction-based and affinity-based rate laws *Geochimica et Cosmochimica Acta* 59, 1457-1471. doi: 10.1016/0016-7037(95)00055-5.
29. Rowe, G. L., S. L. Brantley, J.F. Fernandez, A. Borgia. 1995. The chemical and hydrologic structure of Poas Volcano, Costa Rica. *Journal Volcanology Geothermal Research* 64, 233-267. doi: 10.1016/0377-0273(94)00079-V.
30. Sanford, W., L. Konikow, G.L. Rowe, S. L. Brantley. 1995. Groundwater transport of crater-lake brine at Poas Volcano, Costa Rica. *Journal Volcanology Geothermal Research* 64, 269-293. doi: 10.1016/0377-0273(94)00080-Z.
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 Geophysical Research* 100, 12881-12894. doi: 10.1029/94JB02816.
32. Brantley, S. L. K. Koepenick. 1995. Measured carbon dioxide emissions from OI Doinyo Lengai and the skewed distribution of passive volcanic fluxes *Geology* 23(10), 933-936. doi: 10.1130/0091-7613(1995)023<0933:MCDEFO>2.3.CO;2.
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. doi: 10.1130/0091-7613(1995)023<0975:PLVTDA>2.3.CO;2.

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35. Voigt, D. E., S. L. Brantley, R. Henet. 1996. Chemical fixation of arsenic in contaminated soils. *Applied Geochemistry* 11, 633-643. doi: 10.1016/S0883-2927(96)00009-1.
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. doi: 10.1016/S0009-2541(96)00043-5.
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. doi: 10.1029/96JB00173.
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. doi: 10.1016/0016-7037(96)00209-8.
40. Brantley, S. L., L. L. Stillings. 1996. Feldspar dissolution at 25°C and low pH. *American Journal of Science* 296, 101-127. doi: 10.2475/ajs.296.2.101.
41. Brantley, S. L., L. L. Stillings. 1997. Reply to comment: Feldspar dissolution at 25°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°C and 100 bars: Influence of growth regime. *Geochimica et Cosmochimica Acta* 61, 1475-1487. doi: 10.1016/S0016-7037(97)00024-0.
43. Chen, Y., S. L. Brantley. 1997. Temperature- and pH-dependence of albite dissolution rate at acid pH. *Chemical Geology* 135, 275-290. doi: 10.1016/S0009-2541(96)00126-X.
44. Foster, A. L., Brown, Jr., G. E., Parks, G. A., Tingle, T. N., Voigt, D. E., Brantley, S. L. 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, supplement au Journal de Physique III d'avril, Colloque C2, Cd-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, 227-243. doi: 10.1016/S0016-7037(97)00336-0.
46. 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 weatering. *Geochimica et Cosmochimica Acta* 62(13), 2404, Erratum.
47. Chen, Y., S. L. Brantley. 1998. Diopside and anthophyllite dissolution at 25°C and 90°C and acid pH. *Chemical Geology* 147, 233-248. doi: 10.1016/S0009-2541(98)00016-3.
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. doi: 10.1016/S0016-7037(98)00082-9.

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. doi: 10.1038/26951.
50. Chen, Y., S. L. Brantley, E. Ilton. 2000. X-ray photoelectron spectroscopic measurement of the temperature dependence of leaching of cations from the albite surface. *Chemical Geology* 163, 115-128. doi: 10.1016/S0009-2541(99)00096-0.
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. doi: 10.1016/S0016-7037(99)00288-4.
52. Lewicki, J., S. L. Brantley. 2000. CO<sub>2</sub> degassing along the San Andreas fault, Parkfield, California. *Geophysical Research Letters* 2, 5-8. doi: 10.1029/1999JB900331.
53. Chen, Y., S. L. Brantley. 2000. Dissolution of forsteritic olivine at 65C and 2<pH<5. *Chemical Geology* 165, 267-282. doi: 10.1016/S0009-2541(99)00177-1.
54. Kalinowski, B., L. 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. doi: 10.1016/S0016-7037(99)00371-3.
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56. Werner C., S. L. Brantley, K. Boomer. 2000. CO<sub>2</sub> emissions related to the Yellowstone volcanic system 2. Statistical sampling, total degassing, and transport mechanisms. *Journal Geophysical Research* 105, 10831-10846. doi: 10.1029/1999JB900331.
57. Kump, L., S. L. Brantley, M.A. Arthur. 2000. Chemical weathering, atmospheric CO<sub>2</sub> and climate. *Earth and Planetary Science Reviews* 28, 611-667. doi: 10.1146/annurev.earth.28.1.611.
58. Hamilton, J., C. G. Pantano, S. L. Brantley. 2000. Dissolution of albite glass and crystal. *Geochimica et Cosmochimica Acta* 64, 2603-2615. doi: 10.1016/S0016-7037(00)00388-4.
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. doi: 10.1016/S0009-2541(00)00202-3.
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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. doi: 10.1016/j.chemgeo.2003.03.001.
72. Lewicki, J. L., W. C. Evans, G. E. Hilley, M. L. Sorey, J.D. Rogie, S. L., Brantley. 2003. Shallow soil CO<sub>2</sub> flow along the San Andreas and Calaveras faults, California. *Journal Geophysical Research* 108 (B4), 2187. doi: 10.1029/2002JB002141.
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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. doi: 10.1016/j.gca.2003.08.015.
75. Zimmerman, A.R., K.G. Goyne, S. Komarneni, J. Chorover, J. Kubicki, S. L. Brantley. 2004. Mineral mesopore effects on nitrogenous organic matter adsorption. *Organic Geochemistry* 35(3), 355-375. doi: 10.1016/j.orggeochem.2003.10.009.
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82. Anderson, S. P., J. Blum, S. L., Brantley, O. Chadwick, J. Chorover, L. A. Derry, J. I. Drever, J. G. Hering, J. W. Kirchner, L. Kump, D. Richter, A. F. White. 2004. Proposed initiative would study earth's weathering engine. *EOS, Transactions, American Geophysical Union* 85(28), 265-269. doi: 10.1029/2004EO280001.
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### **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<sub>2</sub> 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<sub>2</sub> Flow along the San Andreas and Calaveras Faults, California" (Ph.D.)
- 2002 Werner, Cynthia, "CO<sub>2</sub> Emissions in Yellowstone, USA, and Solfatara Volcano, Italy: Use of Eddy Covariance 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,  $^{87}\text{Sr}/^{86}\text{Sr}$ , 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.)
- 2018 Hoagland, Nell E. (Beth), “Surface water-sediment interactions: Examples from pristine and contaminated catchments” (Ph.D.)
- 2018 Wayman, Callum R., “Understanding the effects of hydrologic connectivity, land use, and lithology on water quality across scales: From a zeroth order catchment to a HUC 10 watershed in Susquehanna River Basin” (M.S.)
- 2019 Woda, Joshua, “Working with citizen scientists and homeowners in Pennsylvania to understand hydrocarbon-related contamination of water resources” (M.S.)
- 2019 Marcon, Virginia, “The Effect of Lithology on (Bio)geochemical Weathering: Sandstone to Serpentine” (Ph.D.)
- 2020 Reinthal, Mary, “Utilizing  $^{234}\text{U}/^{238}\text{U}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  to Understand the Provenance and fate of Uranium in Shaver’s Creek, Pennsylvania “ (M.S.)

- 2021 Forgeng, Michael, “Investigating Nitrate Transport and Denitrification in Hilly Terrain from the Scale of a Single Farm Field to a HUC-10 Watershed” (M.S.)
- 2021 Hodges, Caitlin, “Interactions between Minerals, Oxygen, and Carbon Dioxide in the Critical Zone” (co-supervised Ph.D., Soil Science and Biogeochemistry)
- 2022 Shaughnessy, Andrew R., “Weathering Dynamics in Watersheds: Connecting River Chemistry to Subsurface Mineral Distributions” (Ph.D.)
- 2024 Shaheen, Samuel, “Dissolved Gases, Salts, and Metals in Appalachian Basin Groundwater: Provenance and Processes in Relation to Oil and Gas Development” (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 Workshop, 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 participants.
- 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 participants.
- 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.
- 2019 Brantley, S. L., Vidic, R., Baka, J., Yoxtheimer, D. Shale Network Workshop: Monitoring Communities and their Environment, The Pennsylvania State University, May 16-17, 2019.

### **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 Catchments), 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.

Recipient, "Certificate of Recognition" from the American Chemical Society Petroleum Research Fund for outstanding contribution to the grant review process, 2019

Non-voting Advisor, Oil and Gas Technical Advisory Board (TAB), Pennsylvania Department of Environmental Protection, 2019 – present

EAG Urey Award Committee, July 2021 – June 2024

Fellow, American Geophysical Union

Fellow, Geological Society of America

Fellow, Geochemical Society  
Fellow, European Association of Geochemistry  
  
Fellow, International Association of GeoChemistry  
  
Member, American Chemical Society  
  
Member, American Women in Science  
  
Member, Association for Women Geoscientists,  
  
Member, Crop and Soil Science Society of America

### **Editorial Activities**

Assistant Editor for *Chemical Geology*, 1/89 - 1/91  
  
Editor for *Chemical Geology*, 10/91-7/00  
  
Editorial board for *Geofluids*, 10/1999-5/2016  
  
Editorial board for *Chemical Geology*, 7/00-3/16  
  
Editorial Board for *G<sup>3</sup>*, 10/00 to 9/15  
  
International Advisory Board, *Earth Surface Processes and Landforms*, 4/2014- 3/2019  
  
Editorial Advisory Board for *Earth Surface Processes and Landforms*, 1/14 to present  
  
Editorial Advisory Board for *Geobiology*, 6/02-present

### **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 (Kinetics of Geochemical Systems), Geosciences 589 (Aqueous Geochemistry Seminar), Geosciences 589 (Geochem

Seminar), Geosciences 597 (Fluids in the Earth), Geosciences 597 (Biogeochemical Analysis), Geosciences 597 (Trees in the Critical Zone).

### **Invited Seminars since 2024**

CZNet Research Experience for Undergraduates Program: *Perspectives on CZ science: From canopy to bedrock*. June 4, 2024, talk delivered virtually.

California Institute of Technology Seminar in the Division of Geological and Planetary Sciences: *From weathering fronts to streams: records of CO<sub>2</sub> and O<sub>2</sub> consumption across the critical zone*. April 15, 2024, Pasadena, CA, USA.

U.S. National Academy of Sciences Workshop on Practices and Standards for Plugging Orphaned and Abandoned Hydrocarbon Wells: *Methane emissions and water quality impacts around orphaned and abandoned hydrocarbon wells*. July 19, 2024, Washington D.C. (lecture delivered virtually).

Goldschmidt Meeting (annual meeting of the Geochemical Society): *The lab-field discrepancy for mineral kinetics: why we need to study the critical zone*. Aug. 21, 2024, Chicago, IL.

Pennsylvania Governor's Mansion, Distinguished Daughter of Pennsylvania Inauguration: *Fracking and water quality in Pennsylvania*. Sept. 25, 2024, Harrisburg, PA, USA.

Pennsylvania State University, Department of Geosciences Colloquium: *Understanding the lab-field discrepancy in mineral dissolution from flasks to enhanced rock weathering*. Nov 9, 2024, University Park PA, USA.

Princeton University, Environmental Geology and Geochemistry Seminars: *Understanding the lab-field discrepancy in mineral dissolution from flasks to enhanced rock weathering*. Nov. 21, 2024, Princeton, NJ, USA.

American Geophysical Union Annual Meeting: *Relating Physical and Chemical Weathering of Basaltic and Granitic-composition Rock Globally*. Dec. 13, 2024, Washington D.C.