

Dr. Kimberly Genareau
Curriculum Vitae

The University of Alabama
Department of Geological Sciences
201 7th Avenue, Bevill Bldg. Room 2041
Tuscaloosa, AL 35487
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Education

2009 Doctor of Philosophy, Geological Sciences, Arizona State University
 Dissertation: *SIMS depth profiling to determine volcanic conduit processes*
2003 Bachelor of Science, Geology, University of South Florida
2003 Bachelor of Science, Physics, University of South Florida
2003 Bachelor of Arts, Philosophy, University of South Florida
 Undergraduate Thesis: *Detection of two interfaces beneath the moat regions
 of the Valles Caldera, New Mexico using seismic refraction data*

Professional Appointments

2018- Associate Professor, Department of Geological Sciences, The University of
Alabama
2013-2018 Assistant Professor, Department of Geological Sciences, The University of
Alabama
2012-2013 Research Associate, Department of Earth & Environmental Sciences, Lehigh
University
2010-2012 Postdoctoral Research Associate, Department of Earth & Environmental
Sciences, Lehigh University
2009-2010 Postdoctoral Research Associate, School of Earth & Space Exploration, Arizona
State University
2004-2009 Graduate Research Associate, School of Earth & Space Exploration, Arizona
State University
2003 Undergraduate Intern, Incorporated Research Institutions for Seismology
(IRIS), Department of Physics, New Mexico State University
2001-2002 Undergraduate Research Associate, Semi-Conductor Laboratory, Department
of Physics, University of South Florida

Student Advisees at The University of Alabama

Emily Matthews, M.S.	2016
Shelby Cloer, M.S.	2017
Taylor Woods, M.S.	2017
Taylor Woods, Ph.D.	2022 (expected)

Funded Projects

2019 *Modular High-Voltage System for Materials Testing and Plasma Generation.*
Air Force Office of Scientific Research (DURIP). \$170,000

- 2016 *Early Career: Acquisition of Laser Diffractometer Particle Size Analyzer for Grain Size Analyses of Pyroclastic and Sedimentary Deposits.* National Science Foundation (Instruments and Facilities, EAR1536486). \$76,207
- 2016 *CAREER: Characterizing the Physical/Chemical Evidence of Volcanic Lightning.* National Science Foundation (Petrology and Geochemistry, EAR1553878). \$465,928 (5-year total + 2017 funding supplement of \$33,010)
- 2015 *Collaborative Research: Measuring Volcanic Ash Properties That Promote the Generation of Lightning in Eruptive Columns and Plumes.* National Science Foundation (Atmospheric and Geospace Sciences, AGS1444384), in collaboration with Dr. Stephen R. McNutt (University of South Florida). \$167,346
- 2015 *Sustained Impact of Volcanic Eruptions on Water Quality,* Research Grants Committee, The University of Alabama. \$5,750
- 2013 *The Effect of Volcanic Ash on the Electrical Properties of Infrastructure Materials,* College Academy for Research, Scholarship and Creative Activity (CARSCA), The University of Alabama. \$1,830
- 2012 *Degassing dynamics that lead to repeated lava dome growth and collapse at persistently active stratovolcanoes.* National Science Foundation (Petrology and Geochemistry, EAR1358886). \$199,237
- 2012 *Collaborative Research: Towards elucidating the transport mechanisms of fine volcanic ash.* National Science Foundation (EARly-concept Grants for Exploratory Research), in collaboration with Dr. Dork L. Sahagian (Lehigh University), Dr. Alexander A. Proussevitch, Dr. Joseph C. Klewicki, and Dr. Gopal K. Mulukutla (University of New Hampshire). \$14,418

Published Articles (*student author)

- *Woods, T. W., **Genareau, K.**, and Klüss, J. (2021), Alteration of volcanic ash glass chemistry due to lightning. *Journal of Volcanology and Geothermal Research*, 107340.
- Schultz, C.J., *Andrews, V.P., **Genareau, K.**, and Naeger, A.R. (2020), Observations of lightning in relation to transitions in volcanic activity during the 3 June 2018 Fuego Eruption. *Scientific Reports*, 10(1), 1-12.
- Genareau, K., Gharghabi, P., Klüss, J. (2020), Influence of shock propagation on lightning evidence in volcanic ashfall deposits. *Earth and Planetary Science Letters*, 535, 116124.
- *Woods, T. W., **Genareau, K.**, and Wallace, K. L. (2020), Influence of grain size and shape on volcanic ash electrical conductivity. *Journal of Volcanology and Geothermal Research*, 106788.
- Genareau, K., Perez-Huerta, A. Laiginhas, F. (2019), Atom Probe Tomography Analysis of Exsolved Mineral Phases. *Journal of Visualized Experiments*, 152.
- Genareau, K., Hong, Y.-K., Lee, W., *Choi, M., *Rostaghi-Chalaki, M., Gharghabi, P., Gafford, J., Klüss, J. (2019), Effects of Lightning on the Magnetic Properties of Volcanic Ash. *Scientific Reports*, 9, 1-11.
- Genareau, K., Wallace, K.L., Gharghabi, P., Gafford, J. (2019), Lightning Effects on the Grain Size Distribution of Volcanic Ash. *Geophysical Research Letters*, 46, 6, 3133-3141.
- Genareau, K., *Cloer, S., Primm, K., Tolbert, M. A., *Woods, T. W. (2018), Compositional and Mineralogical Effects on Ice Nucleation Activity of Volcanic Ash. *Atmosphere*, 9, 238.
- Genareau, K., Gharghabi, P., Gafford, J., Mazzola, M. (2017), The Elusive Evidence of Volcanic Lightning. *Scientific Reports*, 7, 1, 15508.
- Mulukutla, G., **Genareau, K.**, Durant, A., Proussevitch, A. (2017), Whole object surface

- area and volume of partial-view 3D models. *Measurement Science and Technology*, 28, 8, 085003.
- Wadsworth, F., Vasseur, J., Llewellyn, E., **Genareau, K.**, Cimarelli, C., Dingwell, D. (2017), Size limits for rounding of volcanic ash particles heated by lightning. *Journal of Geophysical Research - Solid Earth*, 122, 1977-1989.
- Genareau, K., Cronin, S.J., Stewart, C., Bhattacharyya, S., and Donahoe, R. (2016), Post-eruptive impacts of pyroclastic deposits from basaltic andesite stratovolcanoes on surface water composition. *Journal of Geophysical Research - Biogeosciences*, 121, 1275-1287.
- Schill, G., **Genareau, K.**, and Tolbert, M. (2015), Deposition and Immersion Mode Nucleation of Ice by Three Distinct Samples of Volcanic Ash. *Atmospheric Chemistry and Physics*, 15, 7523-7536.
- Genareau, K., Wardman, J., Wilson, T., McNutt, S., and Izbekov, P. (2015), Lightning-Induced Volcanic Spherules. *Geology*, 43, 4, 319-322.
- Genareau, K., Cronin, S.J., and Lube, G. (2014), Effects of Volatile Behavior on Dome Collapse and Resultant Pyroclastic Surge Dynamics: Gunung Merapi 2010 eruption. *Geological Society of London: The Role of Volatiles in the Genesis, Evolution and Eruption of Arc Magmas*, 410, 199-218.
- Christopher, T.E., Humphreys, M., Barclay, J., **Genareau, K.**, De Angelis, S.M., Plail, M., and Donovan, A. (2014), Petrological and Geochemical Variation During the Soufriere Hills Eruption (1995-2010). *Geological Society of London Memoirs*, 39, 317-342.
- Genareau, K., Proussevitch, A.A., Mulukutla, G.K., Durant, A.J., Rose, W.I., and Sahagian, D.L. (2013), The Size Range of Bubbles That Produce Ash During Explosive Volcanic Eruptions. *Journal of Applied Volcanology* 2:4.
- Genareau, K., Proussevitch, A.A., Durant, A.J., Mulukutla, G., and Sahagian, D.L. (2012), Sizing up the bubbles that produce very fine ash during explosive volcanic eruptions. *Geophysical Research Letters*, 39, L15306.
- Genareau, K. and Clarke, A.B. (2010), In situ measurements of plagioclase growth using SIMS depth profiles of $^{7}\text{Li}/^{30}\text{Si}$: A means to acquire crystallization rates during short-duration decompression events. *American Mineralogist*, 95, 592-601.
- Genareau, K., Valentine, G.A., Moore, G., and Hervig, R.L. (2010), Mechanisms for transition in eruptive style at a monogenetic scoria cone revealed by microtextural analyses (Lathrop Wells volcano, Nevada, U.S.A.). *Bulletin of Volcanology*, 72, 5, 593-607. doi:10.1007/s00445-010-0345-z.
- Genareau, K. and Clarke, A.B. (2010), Heterogeneous clasts as windows into magma mingling at Soufrière Hills volcano. *Geophysical Research Letters*, 37, L00E02.
- Genareau, K., Clarke, A.B., and Hervig, R.L. (2009), Connecting crystal-scale chemical changes with conduit-scale dynamics. *Geology*, 37, 4, 367-370.
- Genareau, K., Hervig, R., and Clarke, A. (2007), Geochemical variations in late-stage growth of volcanic phenocrysts revealed by SIMS depth-profiling. *American Mineralogist*, 92, 1374-1382.
- Halder, N.C. and **Genareau, K.** (2005), Near-surface and bulk deep trap states in $\text{Al}_x\text{Ga}_{1-x}\text{As}/\text{GaAs}$. *Applied Physics A*, 80, 81-85.
- Halder, N.C. and **Genareau, K.** (2002), Near-surface deep-trap and bulk deep-trap states in $\text{In}_x\text{Ga}_{1-x}\text{As}/\text{GaAs}$. *Journal of Vacuum Science and Technology B*, 20, 6, 2408-2412.

Conference Abstracts (*student author)

- Genareau, K., Cimarelli, C., *Stern, S., *Vossen, C., Dingwell, D. B. (2021), Turbulent Electrification of Ash, Dust, and Ice, and Resulting Polarity of Cloud-to-Ground Lightning. American Meteorological Society's 101st Annual Meeting, abs. 4.7.
- Genareau, K., *Woods, T.W., *Comas, R.M. (2019), Volcanic Lightning Evidence in Ashfall

- Deposits: Intra-Cloud or Cloud-to-Ground Discharges? AGU Fall Meeting, abs. V13E-0220.
- *Woods, T.W., **Genareau, K.**, *Comas, R.M. (2019), Chemical Alteration of Volcanic Ash Due to Simulated Lightning. AGU Fall Meeting, abs. V12B-08
- *Andrews, V., **Genareau, K.**, Schultz, C., Naeger, A. (2019), Using Ground-Based and Satellite Sensors to Quantify the Convection Within a Volcanic Plume. AGU Fall Meeting, abs. A21K-2826
- *Andrews, V., **Genareau, K.**, Naeger, A., Schultz, C. (2018), Using NASA and NOAA satellite data to improve volcanic ash plume modeling for impact-based decision support. AGU Fall Meeting, abs. A41G-3044.
- Genareau, K. (2018), Preparing Interdisciplinary Scientists. Alabama Science Teachers Association Conference, Tuscaloosa, Alabama.
- Genareau, K., Wallace, K. (2018), Lightning-Induced Fragmentation of Ash Particles. Cities on Volcanoes 10, Naples, Italy.
- *Woods, T., **Genareau, K.**, Wallace, K. (2017), Variations in Volcanic Ash Electrical Conductivity as a Function of Grain Size Distribution, Water Content, and Temperature. AGU Fall Meeting, abs. V13C-0390.
- Genareau, K., *Cloer, S., *Primm, K., *Woods, T., Tolbert, M. (2017), The Effect of Volcanic Ash Composition on Ice Nucleation Affinity. AGU Fall Meeting, abs. A13A-2049.
- *Woods, T., *Cloer, S., **Genareau, K.** (2017), Effects of Grain Size and Shape on Volcanic Ash Electrical Conductivity. IAVCEI 2017 Scientific Assembly.
- Genareau, K., *Back, W.E., Stewart, C., Cronin, S. (2017), Chemical Impacts of Remobilized Volcanic Deposits on Water Quality: The Role of Mineralogy. IAVCEI 2017 Scientific Assembly.
- Genareau, K., *Cloer, S., and *Woods, T. (2017), Characteristics of Volcanic Ash That Influence Lightning and Cloud Processes. 97th American Meteorological Society Meeting.
- *Back, W.E., **Genareau, K.** (2016), Effects of Volcanic Deposit Disaggregation on Exposed Water Composition. AGU Fall Meeting, abs. V13B-2849.
- *Cloer, S., *Woods, T., and **Genareau, K.** (2016), Depositional and Immersion-Mode Ice Nucleation of Fine-Grained Volcanic Ash Samples. AGU Fall Meeting, abs. A33E-0278.
- *Woods, T., *Cloer, S., and **Genareau, K.** (2016), The Role of Grain Size and Shape on the Electrical Conductivity of Volcanic Ash. AGU Fall Meeting, abs. A33E-0297.
- Genareau, K., Cronin, S.J., Stewart, C., and *Back, W.E. (2015), Sustained Water Quality Impacts in Marine Environments Due to Mechanical Milling of Volcanic Deposits. AGU Fall Meeting, abs. NH23B-1874.
- *Matthews, E. and **Genareau, K.** (2015), Calculation of Decompression Rates for the Initial Explosive Phase of the 2010 Merapi Eruption. AGU Fall Meeting, abs. V51F-3089.
- Tolbert, M.A., Schill, G.P., and **Genareau, K.** (2014), Laboratory Studies of Ice Nucleation on Volcanic Ash. AGU Fall Meeting, abs. V54D-05.
- Genareau, K., Cronin, S.J., and Lube, G. (2014), Variations in Pyroclast Porosity: The 2010 Gunung Merapi Eruption. AGU Fall Meeting, abs. V13E-01.
- Genareau, K. and *Farley, A.W. (2014), Alteration of Tephra Conductivity Resulting From Secondary Pyroclast Disaggregation. AGU Fall Meeting, abs. V43E-4931.
- *McGee, J., Mewes, C., Mewes, T., *Mohammadi, J., **Genareau, K.** (2014), Ferromagnetic Resonance Measurements of Volcanic Ash Samples. 43rd Southeastern Magnetic Resonance Conference, Tuscaloosa, Alabama.
- White, C.M., Allard, M.P., Klewicki, J., Proussevitch, A.A., Mulukutla, G., **Genareau, K.**, and Sahagian, D.L. (2013), Atmospheric fate and transport of fine volcanic ash: Does particle shape matter? AGU Fall Meeting, abs. V23C-2866.
- Genareau, K., Cronin, S.J., and Lube, G. (2013), Geochemical and Textural Evidence

- for Transitions in Degassing Regimes at Merapi Volcano, Java, Indonesia. AGU Fall Meeting, abs. V24C-04.
- Genareau, K., Cronin, S.J., and Platz, T. (2013), Identifying transitions in activity and precursors to major eruptive events at Mt. Taranaki, New Zealand. IAVCEI 2013 Scientific Assembly, Kagoshima, Japan.
- Genareau, K., Cronin, S.J., and Lube, G. (2013), Effects of volatiles, crystallization, and lava dome effusion rate on pyroclastic surge dispersal at Merapi volcano, Java, Indonesia. IAVCEI 2013 Scientific Assembly, Kagoshima, Japan.
- Schill, G.P., **Genareau, K.**, and Tolbert, M.A. (2013), Deposition and Immersion Mode Nucleation of Ice by Three Distinct Samples of Volcanic Ash. 19th International Conference on Nucleation and Atmospheric Aerosols, Fort Collins, Colorado.
- Christopher, T., Humphreys, M.C.S., **Genareau, K.**, Barclay, J., De Angelis, S.H., and Plail, M.J. (2012), Iron transfer and temporal variation in the Soufriere Hills lavas (1995-2007). AGU Fall Meeting, abs. V53E-2886.
- Genareau, K., Cronin, S.J., and Lube, G. (2012), Tracking Magma Degassing and Changes in Magma Rheology Between Major Dome Collapse Events. AGU Fall Meeting, abs. V12B-07.
- Genareau, K., Izbekov, P., and McNutt, S.R. (2012), The Feedback Relationship Between Ash Characteristics and Volcanic Lightning. Cities on Volcanoes 7, Colima, Mexico.
- Christopher, T., Humphreys, M.C.S., **Genareau, K.**, Barclay, J., and Plail, M. (2012), Basalt-contaminated andesites in the Soufriere Hills eruption (1995-2010). Workshop on Subduction Processes in the Lesser Antilles, Bristol, England.
- Genareau, K. and McNutt, S.R. (2012), Measuring Ash Properties That Help to Generate Lightning in Eruptive Plumes. AGU Chapman Conference on Volcanism and the Atmosphere, Selfoss, Iceland.
- Genareau, K., Cronin, S.J., and Lube, G. (2011), 2010 Eruptive Events at Merapi Volcano, Indonesia: Effects of Vesiculation Dynamics on Surge Behavior. AGU Fall Meeting 2011.
- Mulukutla, G., Proussevitch, A.A., Sahagian, D.L., and **Genareau, K.** (2011), On the 3-D Shape of Volcanic Ash. AGU Fall Meeting 2011.
- Proussevitch, A.A., Mulukutla, G., **Genareau, K.**, and Sahagian, D.L. (2011), Understanding The Relation Between Pre-eruptive Bubble Size Distribution and Observed Ash Particle Sizes: Prospects for Prediction of Volcanic Ash Hazards. 7th Biannual Workshop on Japan-Kamchatka-Alaska Subduction Processes, Petropavlovsk-Kamchatsky, Russia.
- Genareau, K., Mulukutla, G., Proussevitch, A.A., and Sahagian, D.L. (2011), Characterizing Bubbles That Drive Explosive Eruptions: Measuring Syn-Eruptive Bubble Sizes in Fine Ash. IUGG 2011 General Assembly, Melbourne, Australia.
- Proussevitch, A.A., Mulukutla, G., and **Genareau, K.** (2011), A New Automated Method for Characterization of Volcanic Ash Geometry Using Stereo-Scanning Electron Microscopy (SSEM) and Topological Interpolations. IUGG 2011 General Assembly, Melbourne, Australia.
- Genareau, K. and Clarke, A.B. (2011), Magma Ascent Dynamics During the Transition From Effusive to Explosive Activity: Products of the July 12-13, 2003 Vulcanian Explosions. Soufrière Hills Volcano 15+ Years on Scientific Conference.
- Genareau, K. and Clarke, A.B. (2010), Determining magma ascent rates from overprinted amphibole breakdown textures: The Soufrière Hills 2003 lava dome. AGU Fall Meeting, abs. V43B-2377.
- Sahagian, D.L., Proussevitch, A.A., Mulukutla, G., and **Genareau, K.** (2010), Reconstructing pre-fragmentation bubble size distributions from volcanic ash using stereo SEM analysis. AGU Fall Meeting, abs. V11D-2317.
- Genareau, K., Bell, D.R., and Buseck, P.R. (2010), Post-eruptive diffusive fractionation

- of lithium isotopes: Implications for mantle and volcanic processes. EGU General Assembly 2010.
- Genareau, K. and Clarke, A.B. (2010), Stopping of chamber margins into mafic intrusions: Magma mingling at Soufrière Hills volcano, Montserrat. EGU General Assembly 2010.
- Genareau, K., Clarke, A.B., and Hervig, R.L. (2009), High-resolution examination of volcanic conduit conditions using SIMS depth profiling. AGU Fall Meeting, abs. V51E-1774.
- Genareau, K., Valentine, G.A., Moore, G. (2009), Oxidation as a contributing factor to shallow conduit modification. Congress to Commemorate the 250th Anniversary of Volcán Jorullo's Birth, Morelia, Mexico.
- Genareau, K., Valentine, G.A., Moore, G., and Hervig, R.L. (2008), Multiphase processes at continental cinder cones: Microtextural evidence in the eruptive products of Lathrop Wells volcano. IAVCEI General Assembly, Reykjavik, Iceland.
- Belousov, A., Belousova, M., Clarke, A.B., Voight, B., **Genareau, K.**, Chojnicki, K., and Brand, B. (2008), What happens inside a blast-generated pyroclastic density current as it spreads over terrain: data from the NW sector of the 1980 Mount St. Helens blast. IAVCEI General Assembly, Reykjavik, Iceland.
- Genareau, K., Clarke, A.B., and Hervig, R.L. (2007), Constraining Pre-eruptive Pressure/Temperature Variations, Transition From Chamber to Conduit, and Crystal Growth Rates: a SIMS Examination of Plagioclase Phenocrysts, Eos Trans. AGU, 88 (52), Fall Meet. Suppl., abs. V22A-05.
- Genareau, K., Clarke, A.B., and Hervig, R.L. (2006), Pre-eruptive changes in physical conduit dynamics recorded in the final stage of phenocryst growth. Eos Trans. AGU, 87 (52), Fall Meet. Suppl., abs. V24A-04.
- Genareau, K., Clarke, A.B., and Hervig, R.L. (2006), Magma dynamics revealed by SIMS depth-profiling of plagioclase from Soufrière Hills Volcano. G.P.L Walker Symposium on Advances in Volcanology, Reykholt, Iceland.
- Genareau, K., Clarke, A.B., and Hervig, R.L. (2005), Soufrière Hills Plagioclase: Postcards From the Edge, Eos Trans. AGU, 86 (52), Fall Meet. Suppl., abs. V13B-0534.
- Genareau, K., Clarke, A.B., and Hervig, R.L. (2005), Conduit processes revealed by surface analysis of plagioclase phenocrysts? Soufrière Hills Volcano Ten-Year Anniversary Conference.
- Genareau, K., Roggensack, K., and Hervig, R.L. (2005), SIMS depth-profiling of igneous phenocrysts: Examining trace element variations on the edge. Goldschmidt Conference, abs. 2093.
- Genareau, K. and West, M. (2003), Seismic detection of sediment interface beneath the moat regions of the Valles Caldera, New Mexico. Eos Trans. AGU, 84 (46), Fall Meet. Suppl., abs. S521-07.
- Halder, N.C. and **Genareau, K.** (2003), Nature of the Deep Trap States in $Al_x Ga_{1-x}As$. Annual APS Meeting, abs. B24.011.
- Halder, N.C. and **Genareau, K.** (2002), Bulk and Near Surface Deep Trap States in $In_x Ga_{1-x}As$. Annual APS Meeting, abs. J28.010.

White Papers

- Genareau, K. (2018), Using Virtual and Augmented Reality to Study Explosive Volcanic Eruptions NSF Vision Workshop on Networked Virtual and Augmented Reality Communications.
- Genareau, K., Sahagian, D.L., Proussevitch, A.A., Gopal Mulukutla, G.K., Durant, A.J., Moore, G., Bell, D.R., Hervig, R.L. (2011), Tracking Volatiles at Mount St. Helens from Magma Chamber Residence to Eruption at the Vent. GeoPRISMS Implementation Workshop: Subduction Cycles and Deformation.

Honors and Awards

- 2017-2020 The University of Alabama College of Arts and Sciences Leadership Board
Faculty Fellow
- 2017 The University of Alabama's President's Faculty Research Award - Junior
Investigator

Invited Talks

- 2019 "Atmospheric Electrification: Causes, Uses, and Effects," Volcanology
Geochemistry and Petrology Seminar, Ludwig-Maximilians-Universität
München, Germany.
- 2019 "Generation Mechanisms and Effects of Volcanic Lightning: An Experimental
Approach," NASA/UAH Department of Atmospheric Science Spring Seminar
Series, University of Alabama Huntsville.
- 2018 "Volcanic Lightning: Current Knowledge and Emerging Questions," NSF Vision
Workshop on Networked Virtual and Augmented Reality Communications,
Alexandria, Virginia.
- 2018 "Volcanic Lightning: Bolts from a Different Kind of Cloud," Geology and
Geological Engineering Department Seminar, University of Mississippi.
- 2017 "Volcanic Lightning: Characteristics and Consequences," Geological Sciences
Department Seminar, The University of Alabama.
- 2017 "The Role of Volcanic Ash in Lightning Discharge During Explosive Eruptions,"
NASA/UAH Department of Atmospheric Science Spring Seminar Series,
University of Alabama Huntsville.
- 2017 "The Elusive Evidence of Volcanic Lightning," Take a Journey in Science
Lecture Series, Rodgers Library for Science and Engineering, The University of
Alabama.
- 2015 "Volcanic Eruptions: Atmospheric and Agricultural Effects," Sierra Club,
Tuscaloosa, Alabama.
- 2015 "Explosive Volcanic Eruptions: Causes and Consequences," Geological
Sciences Department Seminar, The University of Alabama.
- 2013 "Deciphering Eruptive Transitions Through Microanalyses of Tephra," The
University of Alabama.
- 2012 "Insights into ash-generating mechanisms from emerging micro-imaging
techniques," Lehigh University.
- 2011 "Variations in magma ascent rates during dome collapse events," Massey
University, New Zealand.
- 2011 "Sizing up vesicles that result in fine ash fragmentation," University of Otago,
New Zealand.
- 2010 "Using micro-scale pyroclast data to quantify pre-eruptive volcanic
processes," Mineral Sciences Seminar Series, Smithsonian Institution,
Washington, D.C.
- 2010 "Quantifying volcanic conduit processes with geochemical and microtextural
analyses," Earth & Environmental Sciences Seminar, Lehigh University.
- 2010 "Quantification of magmatic processes with high-resolution geochemical and
microtextural analyses," University of Washington.

Teaching Experience

- 2021 *GEO502/602: Communicating Geology*, Department of Geological Sciences,
The University of Alabama

- 2014-2021 *GEO314: Igneous & Metamorphic Petrology*, Department of Geological Sciences, The University of Alabama
- 2014-2021 *GEO495: Field Course*, Department of Geological Sciences, The University of Alabama
- 2013-2020 *GEO416/516: Volcanology*, Department of Geological Sciences, The University of Alabama
- 2020 *BUI301: Natural Hazards*, Blount Scholars Program, The University of Alabama
- 2014-2018 *GEO424/525: SEM Methods in Geology*, Department of Geological Sciences, The University of Alabama
- 2013 *EES4: The Science of Environmental Issues*, Department of Earth & Environmental Sciences, Lehigh University
- 2012 *EES395: Volcanology*, Department of Earth & Environmental Sciences, Lehigh University
- 2011 *EES2: Introduction to Environmental Science*, Department of Earth & Environmental Sciences, Lehigh University
- 2011-2012 Lecturer, Lehigh Microscopy School, Department of Materials Science & Engineering, Lehigh University
- 2004-2006 Graduate Teaching Assistant, School of Earth & Space Exploration, Arizona State University
GLG 101: Introduction to Geology I
GLG 103: Introduction to Physical Geology Laboratory
GLG 102: Introduction to Geology II
GLG 598: Introductory Volcanology
GLG 598: Advanced Physical Volcanology
- 2003 Undergraduate Teaching Assistant, Department of Physics, University of South Florida
PHY 2048L: General Physics Laboratory
- 2003 Introductory Physics Tutor, Department of Physics, University of South Florida

Professional Development

- 2020 DEPSCoR Southern Region- How to Engage: DoD Basic Research Enterprise, Baton Rouge, Louisiana
- 2016 Improving Understanding of Volcanic Eruptions, National Academy of Sciences, Washington, D.C.
- 2014 On the Cutting Edge Early Career Geoscience Faculty Workshop, College Park, Maryland
- 2013 Council on Undergraduate Research, Webinar: *Research Ethics for Undergraduate Research Programs*
- 2013 GeoPRISMS Planning Workshop for the New Zealand Primary Site, Wellington, New Zealand
- 2012 Volcanic Ash Impacts Working Group & International Volcanic Health Hazards Network Workshop, Colima, Mexico
- 2012 Explosive Ash-forming Eruptions: Mechanisms, Ash Morphology, and Transport Workshop, Bethlehem, Pennsylvania
- 2012 GeoPRISMS-EarthScope Planning Workshop for the Cascadia Primary Site, Portland, Oregon
- 2011 EarthScope-GeoPRISMS Science Workshop for Eastern North America, Bethlehem, Pennsylvania
- 2011 Eyjafjallajökull: Volcanic Clouds and Aviation, Melbourne, Australia
- 2011 Workshop of the Volcanic Ash Fall Impacts Working Group, Melbourne, Australia

- 2011 Nanyang Geoscience Roundtable: Can Plinian Eruptions be Forecast? Clark, Philippines and Tagaytay, Philippines
- 2011 GeoPRISMS Implementation Workshop: Subduction Cycles and Deformation, Austin, Texas
- 2010 Diffusion in Minerals and Melts, Mineralogical Society of America Short Course, Napa, California
- 2010 MARGINS Successor Planning Workshop, San Antonio, Texas
- 2008 Minerals, Inclusions, and Volcanic Processes, Mineralogical Society of America Short Course, San Francisco, California
- 2008 Volcano Systems Science Field Course, University of Auckland, New Zealand
- 2007 Melts, Glasses, and Magmas Short Course, Ludwig Maximilian University of Munich, Germany
- 2007 Understanding Pyroclastic Transport Workshop, Prescott, Arizona

Service

Professional

- 2018 Editorial Review Board, *Scientific Reports*
- 2016-2018 Review Editor, *Frontiers in Earth Science: Petrology*
- 2013-2018 Review Editor, *Frontiers in Earth Science: Volcanology*
- 2017 Session Co-Convener, IAVCEI Scientific Assembly 2017, IV.4 *Volcanic plumes and clouds: from injection to dispersion*
- 2015 Session Convener, AGU Fall Meeting, *Volcano-Atmosphere Interactions*
- 2014 Session Convener, AGU Fall Meeting, *Volcanic Plumes: Dispersion Dynamics and Atmospheric Phenomena*
- 2013 Session Convener, IAVCEI Scientific Assembly 2013, 2-6d: *Understanding Sudden Effusive-Explosive Transitions*
- 2013 Session Convener, Scientific Assembly of IAVCEI 2013, 3-2: *Monogenetic Volcanoes*
- 2012 Session Convener, AGU Fall Meeting, V51E: *What Can Pyroclasts Tell Us? Mechanisms of Generation, Transport, and Sedimentation in Explosive Eruptions*
- 2012 Organizer, *Explosive Ash-forming Eruptions: Mechanisms, Ash Morphology, and Transport Workshop*, Bethlehem, Pennsylvania
- 2011 Session Convener, AGU Fall Meeting, V42: *Tracking Syn-Eruptive Variations in Volcanic Conduit Properties*
- 2011 Session Convener, AGU Fall Meeting, V44: *Using Petrological Signatures to Forecast Eruptions from Andesite Volcanoes*
- 2007 Co-author, *Field Guide for the San Francisco Volcanic Field*, Understanding Pyroclastic Transport Workshop, Prescott, Arizona
- 2006-2009 Moderator, Volcano Listserv, Arizona State University

Manuscript reviewer for the following scientific journals: *Atmosphere*, *Bulletin of Volcanology*, *Contributions to Mineralogy and Petrology*, *Earth and Planetary Science Letters*, *Geology*, *Geophysical Research Letters*, *Journal of Geophysical Research: Atmospheres*, *Journal of Mineralogical and Petrological Sciences*, *Journal of Volcanology and Geothermal Research*, *Lithos*, *Nature*, *Physics and Chemistry of Minerals*, *PLoS One*, *Science of the Total Environment*, *Scientific Reports*, *Sedimentology*, *Terra Nova*.

Grant reviewer and panelist for the National Science Foundation

University

2021-	Graduate Program Director, Department of Geological Sciences, The University of Alabama
2020-2021	Diversity Committee, Department of Geological Sciences, The University of Alabama
2018-2021	Field Course Committee (Chair), Department of Geological Sciences, The University of Alabama
2019	Department Chair Search Committee (Chair), Department of Geological Sciences, The University of Alabama
2018-2019	Vision Committee (Chair), Department of Geological Sciences, The University of Alabama
2017-2019	Graduate Program and Curriculum Committee, Department of Geological Sciences, The University of Alabama
2014-2018	Field Course Committee, Department of Geological Sciences, The University of Alabama
2016-2018	Rock Preparation Laboratory Committee, Department of Geological Sciences, The University of Alabama
2016-2018	Textbook and Intellectual Property Committee (Chair), Department of Geological Sciences, The University of Alabama
2015-2016	Isotope Geochemist Faculty Search Committee, Department of Geological Sciences, The University of Alabama
2014-2015	Student Travel and Research Grants Committee, Department of Geological Sciences, The University of Alabama
2013	Faculty Meeting Recorder, Department of Geological Sciences, The University of Alabama
2007-2009	Scanning Electron Microscope Specialist, School of Earth & Space Exploration, Arizona State University
2004-2007	Presenter, School of Earth & Space Exploration Day, Arizona State University

Community

2021	Developer and administrator for 2021 Alabama State Science Olympiad "GeoLogic Mapping" test for high school teams, The University of Alabama
2017-2018	Administrator for the Regional Science Olympiad "Rocks and Minerals" test for middle school teams, The University of Alabama
2015-2018	Faculty Mentor, Tide Together Mentoring Program, The University of Alabama Graduate School, Tuscaloosa, Alabama
2014-2018	Guest Lecturer, Hillcrest High School, Tuscaloosa, Alabama
2017	Guest Lecturer for Tuscaloosa Magnet Elementary School
2017	Speaker for 2017 Women in Science and Engineering (WiSE) Symposium, University of Alabama
2011-2012	Lehigh University Visit, Inquire, and Explore our World (V.I.E.W.) Program to introduce local high school students to undergraduate university life
2005	Middle school demonstrations on volcanic processes, Phoenix, Arizona

Professional Memberships

- Alabama Science Teachers Association (ASTA)
- American Meteorological Society (AMS)
- American Geophysical Union (AGU)
- Clay Minerals Society
- Electrostatics Society of America

- International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)
- Mineralogical Society of America (MSA)
- National Association of Geoscience Teachers (NAGT)
- Sigma Xi
- Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS)