Tamara Lou Carley

Assistant Professor
Lafayette College Department of Geology and Environmental Geosciences
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ACADEMIC BACKGROUND

Vanderbilt University
Doctor of Philosophy: Environmental Engineering (Envi. Sci Option) — Nashville, TN
- Dissertation: The generation and evolution of silicic magma and juvenile crust: Insight from the Icelandic zircon record — 2014
- Advisor: Dr. Calvin F. Miller

Master of Science: Earth and Environmental Sciences — 2010
- Thesis: Studies of the evolution of felsic magma systems: I. Zircon in historic eruptions, Iceland; II. Modeling magma chamber evolution leading to the Peach Spring Tuff supereruption, AZ, NV, and CA
- Advisors: Dr. Calvin F. Miller, Dr. Guilherme A.R. Gualda

Whitman College
Bachelor of Arts: Environmental Sciences—Geology — Walla Walla, WA
- *Summa cum laude* — 2008
- Honors in course of study

University of Otago — New Zealand
Semester abroad — 2007

PROFESSIONAL APPOINTMENTS

Lafayette College — Easton, PA
Department of Geology and Environmental Geosciences — 2014-present
Assistant Professor (tenure track)

American Museum of Natural History — New York City, NY
Division of Physical Sciences — 2016-present
Research Associate

Vanderbilt University — Nashville, TN
Department of Earth and Environmental Sciences — 2017-2018
Visiting Scholar (pre-tenure research leave)

RESEARCH

Published Articles

**indicates Lafayette College student*

*Connors, L., **Carley, T.L.**, Fiege, A., 2020 (*in press*) Apatite as a monitor of dynamic magmatic evolution at Torfajökull Volcanic Center, Iceland, in Vetere, F. and Fiege, A. eds., Dynamic Magma Evolution (Geophysical Monograph 254), John Wiley & Sons, p. 61-88.

Sahagian, D., and **Carley, T.L.**, 2020, Explosive volcanic eruptions and spinodal decomposition: A different approach to deciphering the tiny bubble paradox: Geochemistry, Geophysics, Geosystems, 21, doi: 10.1029/2019GC008898.

Carley, T.L., Miller, C.F., Fisher, C.M., Hanchar, J.M., Vervoort, J.D., Schmitt, A.K., Economos, R.C., Jordan, B.T., Padilla, A.J., and Banik, T.J., 2020, Petrogenesis of Silicic Magmas in Iceland through Space and Time:

The Isotopic Record Preserved in Zircon and Whole Rocks: The Journal of Geology, v. 128, no. 1, p. 1–28, doi: 10.1086/706261.

Claiborne, L.L., Miller, C.F., Gualda, G.A., **Carley, T.L.**, Covey, A.K., Wooden, J.L., and Fleming, M.A., 2018, Zircon as Magma Monitor: Robust, Temperature-Dependent Partition Coefficients from Glass and Zircon Surface and Rim Measurements from Natural Systems, in Moser, D.E., Corfu, F., Darline, J.R., Reddy, S.M., and Tait, K. eds., Microstructural Geochronology: Planetary Records Down to Atom Scale (Geophysical Monograph 232), John Wiley & Sons, p. 3–34.

Carley, T.L., Miller, C.F., Sigmarsson, O., Coble, M.A., Fisher, C.M., Hanchar, J.M., Schmitt, A.K., and Economos, R.C., 2017, Detrital zircon resolve longevity and evolution of silicic magmatism in extinct volcanic centers: A case study from the East Fjords of Iceland: Geosphere, v. 13, no. 5, doi: 10.1130/GES01467.1.

*Ryan, M.J., Kney, A.D., and **Carley, T.L.**, 2017, A study of selective precipitation techniques used to recover refined iron oxide pigments for the production of paint from a synthetic acid mine drainage solution: Applied Geochemistry, v. 79, p. 27–35, doi: 10.1016/j.apgeochem.2017.01.019.

Padilla, A.J., Miller, C.F., **Carley, T.L.**, Economos, R.C., Schmitt, A.K., Coble, M.A., Wooden, J.L., Fisher, C.M., Vervoort, J.D., and Hanchar, J.M., 2016, Elucidating the magmatic history of the Austurhorn silicic intrusive complex (southeast Iceland) using zircon elemental and isotopic geochemistry and geochronology: Contributions to Mineralogy and Petrology, v. 171, no. 8–9, p. 69, doi: 10.1007/s00410-016-1279-z.

Carley, T.L., Miller, C.F., Wooden, J.L., Padilla, A.J., Schmitt, A.K., Economos, R.C., Bindeman, I.N., and Jordan, B.T., 2014, Iceland is not a magmatic analog for the Hadean: Evidence from the zircon record: Earth and Planetary Science Letters, v. 405, p. 85–97, doi: 10.1016/j.epsl.2014.08.015.

Articles above this line were published while at Lafayette College.

Pamukçu, A.S., **Carley, T.L.**, Gualda, G.A.R., Miller, C.F., and Ferguson, C.A., 2013, The evolution of the peach spring giant magma body: Evidence from accessory mineral textures and compositions, bulk pumice and glass geochemistry, and rhyolite-MELTS modeling: Journal of Petrology, v. 54, no. 6, doi: 10.1093/petrology/egt007.

Bindeman, I., Gurenko, A., **Carley, T.**, Miller, C., Martin, E., and Sigmarsson, O., 2012, Silicic magma petrogenesis in Iceland by remelting of hydrothermally altered crust based on oxygen isotope diversity and disequilibria between zircon and magma with implications for MORB: Terra Nova, v. 24, no. 3, p. 227–232, doi: 10.1111/j.1365-3121.2012.01058.x.

Gualda, G.A.R., Ghiorso, M.S., Lemons, R.V., and **Carley, T.L.**, 2012, Rhyolite-MELTS: A modified calibration of MELTS optimized for silica-rich, fluid-bearing magmatic systems: Journal of Petrology, v. 53, no. 5, doi: 10.1093/petrology/egr080.

Carley, T.L., Miller, C.F., Wooden, J.L., Bindeman, I.N., and Barth, A.P., 2011, Zircon from historic eruptions in Iceland: reconstructing storage and evolution of silicic magmas: Mineralogy and Petrology, v. 102, no. 1–4, p. 135–161, doi: 10.1007/s00710-011-0169-3.

Published Field Guide

Jordan, B. T., **Carley, T. L.**, and Banik, T. J., 2019, Iceland: The Formation and Evolution of a Young, Dynamic, Volcanic Island—A Field Trip Guide: Geological Society of America, p.119, https://doi.org/10.1130/2019.0054(01).

Manuscripts in Review

Carley, T.L., Bell, E.A., Miller, C.F., Claiborne, L.L., and Harrison, T.M., *in review*, Hadean, Archean, and modern Earth: Zircon-modeled melts clarify the formation of Earth's earliest crust: Geology. Manuscript no. G47833.

Banik, T.J., **Carley, T.L.,** Coble, M.A., Hanchar, J.M., Dodd, J.P., Casale, G.M., and McGuire, S.P., *in review,* Magmatic Processes at Snæfell volcano, Iceland, constrained by zircon ages, isotopes, and trace elements: Geochemistry, Geophysics, Geosystems, Manuscript no. 2020GC009255.

Work Approaching Submission

Manuscript: Blasizzo, A.Y., Ukstins, I., **Carley, T.L.**, Graettinger, A., Scheidt, S., Moritz, A., Peate, D., *in prep,* The 1961 eruption in Askja, Iceland: Morphology, geochemistry, and planetary analogues *for* Bulletin of Volcanology

Grant Proposal: Bubble formation in explosive volcanic eruptions: solving the tiny bubble paradox (in prep): *for* National Science Foundation (USA) and Natural Environment Research Council (UK)

- USA collaborative team: Dork Sahagian (Lehigh University), **Tamara Carley** (Lafayette College), Jim Gardner (University of Texas, Austin);
- UK collaborative team: Ed Llewellin, Halim Kusumaatmaja, and Fabian Wadsworth (Durham University).

Funded Research Grants

NSF-MRI (resubmission) [$563,976] 2020
"Acquisition of a Carl Zeiss EVO scanning electron microscope (SEM) at Lafayette College"

- PI: Jim Dearworth (Lafayette College)
- Co-Is: Zoe Boekelheide, **Tamara Carley** (Lafayette College)

Lafayette College Academic Research Committee [$3,500] 2019-20
Competitive internal funding in support of pilot projects: "Supervolcanoes in our own backyard: Investigating ancient ash deposits in Eastern and Central PA"

Lafayette College Academic Research Committee [$4,000] 2017-18
Competitive internal funding in support of pilot projects: "What lies beneath: A detrital investigation of Iceland's subglacial magmatic systems"

Lafayette College Academic Research Committee [$3,000] and RK Mellon Grant [$5,000] 2015-16
Competitive internal funding in support of pilot projects: "Tracing Alaskan tephra of unknown origins back to a source using Hf isotopes in zircon"

NSF Graduate Research Fellowship [$123,000] 2010-13
In support of self-designed research into the origins of Icelandic rhyolites and granites using zircon as an investigative tool

GSA Graduate Student Research Grant [$1,800] 2009-10
Self-designed research of zircon in historic rhyolites of Iceland

Unfunded Research Grants

NASA Mars Data Analysis Program 2020
"Survey of small and mid-size Martian volcanic edifices"

- PI: Susan Sakimoto (University at Buffalo and Space Science Institute)
- Co-Is: Ross Beveridge (Colorado State University), **Tamara Carley** (Lafayette College), Tracy Gregg (University at Buffalo)

NSF-MRI (funded on second attempt, 2020)
"Acquisition of a Carl Zeiss EVO Scanning Electron Microscope (SEM) at Lafayette College" 2019

- PI: Jim Dearworth (Lafayette College)
- Co-Is: Chris Anderson, **Tamara Carley**, Laurie Caslake, Chris Hawley (Lafayette College)

EPA: Safe and Sustainable Water (G2019-P3-Q2) 2018

"Producing nutrient-rich compounds from wastewater"

- PI: Art Kney (Lafayette College)
- Co-Is: **Tamara Carley,** Robert Creighton, Polly Piergiovanni, Jennifer Rao (Lafayette C.)

National Geographic Polar Research Grant 2017

"What lies beneath: A detrital investigation into the volcanic systems under Iceland's rapidly retreating glacial ice"

- Co-PIs: **Tamara Carley** (Lafayette College), Tenley Banik (Illinois State University)

NSF-EAR: Research Grant 2016

"What lies beneath: A detrital investigation into the volcanic systems under Iceland's rapidly retreating glacial ice"

- Co-PIs: **Tamara Carley** (Lafayette College), Tenley Banik (Illinois State University)

Conference Presentations

A complete list of abstracts can be found at the end of this document.

Invited Lectures and Seminars (Professional)

Syracuse University: Investigating proto-continental crust construction using very young (Icelandic) and very old (Hadean) zircon 2019

Geological Society of Washington: Investigating proto-continental crust construction using very young (Icelandic) and very old (Hadean) zircon 2019

American Museum of Natural History: Investigating proto-continental crust construction using very young (Icelandic) and very old (Hadean) zircon 2018

Memorial University of Newfoundland: Investigating proto-continental crust construction using very young (Icelandic) and very old (Hadean) zircon 2017

Princeton University: What lies beneath: A detrital investigation of Iceland's subglacial volcanoes 2017

Lehigh University: The generation and evolution of silicic magma and juvenile crust: Insights from elemental, isotopic, and geochronological studies of Icelandic zircon 2016

American Museum of Natural History: Generation and evolution of silicic magma and juvenile crust: Insights from elemental, isotopic, and geochronological studies of Icelandic zircon 2016

Columbia University Lamont-Doherty Earth Observatory: Iceland is not a magmatic analog for the Hadean: evidence from the zircon record 2015

Whitman College: The birth of a continent? Investigating Iceland's felsic history with implications for the early Earth 2013

Invited Lectures and Seminars (Lafayette College and Community)

Lafayette College Information Literacy Brown Bag: Information literacy as a framework for designing an upper level Geology course (Geology 321: Geochemistry) 2016

Lafayette College Academic Research Committee (ARC) Works in Progress (WIP): Geologic Sleuthing: Tracing Alaskan ash of unknown origins back to source volcano(es) 2016

Philanthropic Education Organization (P.E.O.), Easton Chapter: Being a woman in science and an early career geologist: My experience as P.E.O. Scholar Award recipient 2016

Whitman College Geology Senior Seminar: From Liberal Arts to Graduate School 2013

New Research Directions

Professional (Lafayette College) 2014-present

- Apatite-based perspectives into Icelandic petrogenesis and pre-eruptive activity;
- Magmatic instability and mechanisms of bubble formation;
- Modeling magma compositions using zircons from the early Earth;
- Calculated relationships between temperature and elemental partitioning in magmas;
- Mineralogical solutions to environmental engineering questions;
- Investigations into Iceland's subglacial magmatic and volcanic systems;
- Petrogenesis and pre-eruptive histories of Pennsylvania's Ordovician bentonites;
- Tracing Alaskan ash of uncertain origins back to volcanoes using isotopes in zircon;
- Establishing new collaborative contacts with:
    - Lehigh University (journal club and new research group, 2017-present)
    - Rutgers University (lab user: electron microprobe and CL, 2016-present)
    - American Museum of Natural History (Research Associate, 2015-present)
    - Minerals Technologies (thesis students using analytical facilities, 2015-2016)
    - USGS Alaska Volcano Observatory (fieldwork strategizing, 2015-2016)

Prior Research Experience

Ph.D. Dissertation (Vanderbilt University, Advisor: Calvin Miller): 2014

- Generation and evolution of silicic magma and juvenile crust: Insight from Icelandic zircon

Master's Thesis (Vanderbilt University, Advisor: Calvin Miller) 2010

- Studies of the evolution of felsic magma systems: I. Zircon in historic eruptions, Iceland; II. Modeling magma evolution leading to the Peach Spring Tuff super eruption (AZ, NV, CA)

Undergraduate Honors Thesis (Whitman College, Advisor: Kirsten Nicolaysen) 2008

- Mineralogical provenance of Missoula Flood deposits

NSF Research Experience for Undergraduates (Notre Dame University, Advisor: Susan Sakimoto) 2006-07

- Interdisciplinary Studies in Tsunami Impact and Mitigation
    - Chemical analysis of minor and reworked paleo-tsunami deposits (2007)
    - The effect of tsunamis on wetlands: monitoring microbial populations (2006)

Planetary Geology Research Assistant (Notre Dame University; Advisor: Susan Sakimoto) 2006-07

- Characterizing the morphology of small-scale features of Tharsis Montes, Mars (2007)
- Remote sensing and ground-truthing in Idaho to better understand Mars (2006)

Fieldwork Highlights

Professional Fieldwork (Lafayette College)

- Pennsylvania: Several days of bentonite sample collection in quarries across the state — 2019
- Iceland: Week of fieldwork northwest of Vatnajökull supporting subglacial detrital study — 2016
- Iceland: Several days of fieldwork and sample collection, in conjunction with interim course — 2015
- Alaska: Three weeks of fieldwork, sample collection for pilot investigation — 2015

Graduate Fieldwork (Vanderbilt University)

- Iceland: Five fieldwork sessions, ~sixteen weeks. Investigation of volcanic, intrusive, and sedimentary (rock and river sand) systems, spanning Iceland's history (~16 Ma to present) — 2009-13
- Peach Spring Tuff, AZ: Five fieldwork sessions totaling ~ seven weeks in the field. Field characterization and sample collection of proximal and distal supervolcano eruption products — 2008-11

Undergraduate Fieldwork (Whitman College and NSF-REU)

- Walla Walla, WA: mineralogical provenance of Missoula and pre-Missoula Flood deposits (Whitman senior honors thesis) — 2007-08
- Oregon Coast: paleotsunami deposits and modern hazards (NSF-REU) — 2006-07
- Thailand: 2004 tsunami destruction and recovery (NSF-REU)

Assorted Field Assistance Experiences

- Chile: investigating volcanic systems and associated ore deposits (Memorial University) — 2018
- Mount Saint Helens: investigation of early eruptive stages and products (Vanderbilt) — 2008
- East Snake River Plain, ID: ground-truthing exercises with implications for Martian geomorphology (2006; Notre Dame and Idaho State Universities) — 2006

Professional Development Workshops and Field Trips (Geology)

- IAVCEI Fourth International Workshop on Volcano Geology (Transylvania, Romania) — 2017
- Japan-Kamchatka-Aleutian Subduction Zone Processes (Alaska) — 2016
- IAVCEI Third International Workshop on Volcano Geology (Sicily) — 2016
- Cordilleran GSA Fieldtrip: Geology of the Chugach-Prince William Sound Accretionary Complex and Resurrection Ophiolite (Alaska) — 2015
- Cordilleran GSA Fieldtrip: Cretaceous-Paleogene geology of the Matanuska Valley (Alaska) — 2015
- IAVCEI First International Workshop on Volcano Geology (Madeira) — 2014
- IAVCEI Fieldtrip: Kikai caldera and southern Kyushu (Japan) — 2013
- Southeastern GSA Fieldtrip: Volcanic Evolution of Montserrat (Montserrat) — 2013
- FEMA-National Disaster Preparedness Training Center: Volcanic Crises Awareness Training (San Francisco, CA) — 2012
- Atlantic Conference on Eyjafjallajökull and Aviation (Iceland) — 2010
- Eyjafjallajökull Eruption Workshop and Field Forum (Iceland) — 2010
- Penrose Conference: Low δO^{18} signatures, (Idaho Falls, ID, Yellowstone) — 2009
- USGS fieldtrip: Caetano Caldera (Battle Mountain, NV) — 2009

TEACHING

Courses Taught at Lafayette College

- Geology 100: From Fire to Ice—Introduction to Geology (lecture/lab; Fall: 2014, 2015, 2016, 2018, 2019)
- Geology 180: Iceland: Geology and Natural History of a Young Island (co-taught; 2015, 2017)
- Geology 200: Earth and Planetary Materials (lecture/lab; Fall 2015, 2016, 2018)
- Geology 307: Igneous and Metamorphic Petrology (lecture/lab; Spring 2015, 2016, 2017, 2019, 2020)
- Geology 321: Geochemistry (seminar: Spring 2016; lecture/lab; Spring 2019)

Courses Proposed at Lafayette College

- First Year Seminar: Misadventure (intended date: Fall 2020)
- Geology Interim Course: A geologic exploration of New Zealand's dynamic landscape (intended date: January 2021; co-led with Dru Germanoski)
- Interdisciplinary Studies Interim Course: From plate to plate: The geology and agriculture of food in Italy (intended date: May 2021; co-led with Ben Cohen)

Lafayette College Academic Advising

- Geology Majors (and minors indicated by †):
  - Class of 2023: Gianna Greger
  - Class of 2022: Caroline DiTrolio, Thomas (Addison) Wand
  - Class of 2021: Maura DiGuglielmo, Katharine Kim
  - Class of 2020: Gillian Branam, Julia Owens†, Edward Ruger
  - Class of 2019: Andrea Felice
  - Class of 2018: Mary Elizabeth (Lissie) Connors, Wenjing (Tammy) Ma
  - Class of 2017: Costanza Davis, Cullen Scheland

- Pre-Major Advisees:
  - Class of 2024: William Bollwerk, Benjamin Cluver, Charlize Cramer
  - Class of 2023: Evan Flint
  - Class of 2022: Kylie Jurman
  - Class of 2019: Caroline Bottega, Sarah Eddy, Molly Martindale, Lauren Mathisen, Morgan Maves, Kim Schubert, Elana Weinstein

Undergraduate Research Mentor

Honors Thesis Advisor (Lafayette College; primary advisor unless indicated by ^)

- Isabelle Rein: Apatite geochemistry across the neovolcanic zones of Iceland: Establishing a baseline and searching for spatial significance — 2019-20
- Leah Shteynman: Utility of zircon-hosted melt inclusions for characterizing Ordovician explosive volcanism — 2019
- Rebecca Webster^: Toward a method of assessing microplastic accumulation in beach sand deposits; (Geology, primary research advisor: David Sunderlin) — 2018-19
- Mary Elizabeth ("Lissie") Connors: Using apatite to understand the volatile history of Törfajokull Volcanic Center, Iceland — 2017-18
- Emma Sosa: A zircon study of Öræfajökull Volcano, SE Iceland — 2016-17
- Cullen Scheland: Explosive silicic volcanism preceding the Peach Spring Tuff supereruption: Magmatic processes recorded by petrochemistry — 2016-17
- Aliza Furneaux^: Organic compost fortification using mineral precipitates from waste water treatment plants; (Civil Engineering, primary research advisor: Art Kney) — 2016-17
- Alexandra (Allie) Nagurney: Petrogenesis and magmatic evolution of sublacial volcanic systems, SE Iceland — 2015-16
- Amanda Leaman: Silicic origins in Iceland: Examining the spatial and temporal evolution of Torfajökull's oldest rhyolites — 2014-15

Senior Independent Study Research (Lafayette College)

- Edward Ruger: Investigating elevated rare earth elements in Icelandic apatite — 2019-20
- William DeBarba: Geothermobarometry of glacial sediment, Öræfajökull, Iceland — 2016-17

EXCEL Scholars Research Program (Lafayette College)

- Katherine Kim (class of 2021): Mineralogical and chemical characterization of supervolcano deposits in Pennsylvania (Summer-Fall EXCEL) — 2019
- Cullen Scheland (class of 2017): Alaskan Ash Beds of Unknown Origin (Spring EXCEL) — 2016

- Emma Sosa (class of 2017): Alaskan Ash Beds of Unknown Origin (Summer-Fall EXCEL) 2015
- William DeBarba (class of 2017): Iceland and Continental Nucleation (Summer EXCEL) 2015

Research Group Mentoring (Lafayette College)

- RUMBLE: "Research Unit on Magma, Bedrock, Lava, and Eruptions" (Academic Year) 2016-present
  - A weekly meeting of thesis and independent research students, open to participation by underclassmen interested in future research opportunities
- EnERGY: "Environment, Earth, Research Group, Yay" (Summer) 2015-16
  - A bi-weekly meeting of summer research students (primarily EXCEL) and faculty in Geology, Envi. Engineering, Engineering Studies, Envi. Studies, and Chemistry
- Geology Department student research group (Summer) 2015
  - A bi-weekly meeting of summer research students in Geology

Other Individualized Research Experiences (Lafayette College)

- Geology 351 (Independent Study): Economic Geology, Edward Ruger (class of 2020) 2018
- Digital museum of Van Wickle rock and mineral collections and teaching specimens 2016-17
  - Participation by students wishing to build toward potential research opportunities; scaled to match experience and abilities of students (Fall 2016: Martindale, '19, Owens, '20, Spring 2017: Perrotti '19 and Ma '18, Summer 2017: Golub '19)
- Iceland Interim research sample collection 2015
  - Interested students (Scheland '17, Connors '18) participated in collection of glacial sand for a new research direction, grant proposal, and honors thesis projects
- Civil and Environmental Engineering Research—Analytical Assistance 2016-present
  - Guiding the geological and analytical (XRD, SEM) aspects of CEE research projects conducted by students working with Art Kney (Weyland '16; Ye '17; Furneaux '17; Leeds '19; Hou '20; Orellana '20; Yue '20; Savage '21)
- Post-graduation research opportunities 2016-17
  - Recent Graduate Leslie Tintle ('16) volunteered as a research assistant, participated in RUMBLE, and conducted a thesis-like project in preparation for graduate school

Graduate Student Mentor for Undergraduate Honors Thesis Projects (Vanderbilt University)

- Daniel Birmingham: Magmatic provenance of quartz: CL zoning signatures 2012-13
- Kathleen Russell: Krafla zircon: Generation of silicic magma at an Icelandic volcano 2010-11
- Addy Petrilla: research experience, Icelandic fieldwork (not thesis) 2009

Lafayette College First-Generation Mentoring Program

- Faculty mentor for Lizbeth Arriaga ('21) 2019-present

Outreach Education

- Southern Environmental Law Center: Led a 6-mile educational nature/geologic hike for lawyers and summer interns (10 people) at Window Cliffs State Natural Area, TN 2017
- Lafayette College (Geology): Participation in hosting students from the Richard R. Green High School of Teaching, NYC (students of Peter Cocheo, Lafayette Class of 1991) 2016
- Vanderbilt Programs for Talented Youth: Developed and taught multiple sessions of a week-long course titled "Geologic detectives: Investigating Volcanoes" for 2nd and 3rd grade 2014
- University School of Nashville: "Meet a Scientist: what does a geologist do?" Question and answer sessions and hands-on activities; ninety 5th graders 2013
- Philanthropic Education Organization: "Volcanic Hazards: Not Science Fiction." Presentation to a social group dedicated to the education of women; 60 women in attendance 2013
- Oak Hill Elementary School "Introduction to rocks, minerals and volcanoes." Presentation, hands-on activities; fifteen 5th graders 2010
- Nashville State Community College, Introduction to Geology: "Icelandic volcanoes, living with hazards (four lectures total) 2010-11

Professional Development (Teaching)

- "Establishing and Sustaining an Undergraduate Research Program," workshop sponsored by the Council on Undergraduate Research, at the American Geophysical Union national meeting — 2019
- Teaching with Technology Grant (Lafayette) to build an Augmented Reality Sandbox — 2018
- Information Literacy Grant (Lafayette) for the development of Geology 321: Geochemistry — 2016
- Digital Humanities Grant (Lafayette) awarded for project "Creation of an interactive digital database of the petrologic teaching collection in Van Wickle Hall" — 2015
- "Teaching, Research, and Managing Your Career, Workshop for Early Career Geoscience Faculty" organized by the National Association for Geoscience Teachers; 5-day workshop — 2015
- Evidence Based Teaching Practices Fellowship: assisted with Coursera MOOC development for future STEM faulty (Vanderbilt Center for Teaching, Center for the Integration of Research, Teaching and Learning, NSF-WIDER grant) — 2014
- Visual Learning: Transforming the Liberal Arts (Carleton College), 2-day workshop — 2012
- Inquiry-based and Problem-based Learning in the College Classroom (CIRTL Network: Center for the Integration of Research, Teaching and Learning); semester-long course — 2011
- Teaching as Research Fellowship: "Constructing multi-scale, iterative, concept maps for management of geologic subject matter" — 2010
- Preparation for Careers in Academia (Vanderbilt); semester-long course — 2009

SERVICE

Professional Service (Lafayette College)

Elected Committee Service

- Governance Committee: three years of elected service — upcoming
  - Term begins Academic Year 2020-2021
- Faculty Academic Policy Committee (FAP): three years of elected service — 2015-2019
  - FAP Budget Subcommittee (2016-17)
  - FAP Facilities Committee (2015-16; 2018-19)
  - FAP representative on FCC healthcare committee (2015-2016)
  - Participation on Staffing Advisory (other members recused, 2015)

Appointed Committee Service

- Scholarships and Fellowships Advisory Committee; three years of appointed service — 2018-present

Supporting Environmental Initiatives

- Volunteer judge for the Annual Environmental Poster Session (11th-13th annual) — 2014-2016
- Invited Lehigh University sustainability coordinators for Earth Week lecture — 2015

Cross-campus Analytical Education

- XRD and SEM assistance for Dr. Kney's research students (Weyland '16; Ye '17; Leeds'19; Hou '21; Savage '21) — 2016
- XRD demonstration and analytical session for Chip Nataro's Inorganic Chemistry class (three hour lab section, will teach for the third time this spring) — 2015-present

Professional Service (Lafayette College Department of Geology and Environmental Geosciences)

Seminar series (inviting and hosting guest speakers)

- Michael Vandenbergh (Vanderbilt University Law: Private Action and Climate Change) — 2020
- Barbara Dunst (Pennsylvania Council of Professional Geologists: Careers in Geology) — 2019
- Steven Jaret (American Museum of Natural History: Meteorite Impacts) — 2019
- Laramie Jensen (Texas A&M University: Oceanography) — 2019
- Scott Samson (Syracuse University: Geochronology) — 2019
- Adrian Fiege (American Museum of Natural History: Lunar Apatite) — 2018
  2018

- Ingrid Ukstins (University of Iowa: Planetary Geology) 2016
- Ayla Pamukcu (Princeton/Brown: Supervolcanoes) 2015
- Karen Smit (Gemological Institute of America: Diamonds) 2015
- Lowell Miyagi (University of Utah: COMPRES visiting lecturer) 2014
- Richard Ramalho (Lamont-Doherty: Megatsunamis)

Outreach education and social media engagement

- Participation in hosting students from the Richard R. Green High School of Teaching, NYC (students of Peter Cocheo, Lafayette Class of 1991) 2016
- Frequent contributions of photos and status updates to departmental social media 2016-present

Professional Service (Geologic Community)

Co-leader and co-organizer of an international fieldtrip for professional geologists

- Iceland: The Formation and Evolution of a Young, Dynamic, Volcanic Island 2019
    - Planned and led a ten day fieldtrip around the Iceland for the Northeastern Section of the Geological Society of America, collaborating with Brennan Jordan (University of South Dakota) and Tenley Banik (Illinois State U.)

Co-convener and chair of sessions at regional meetings of the Geological Society of America

- The formation and evolution of Iceland: Magmatic, Tectonic, and Geomorphological Processes (Session T1, Portland, ME, Northeastern GSA) 2019

Co-convener and chair of sessions at national meetings of the American Geophysical Union

- Generation and storage of silicic magmas in hydrothermally preconditioned crust (Session V021, Washington, D.C.) 2018

Invited co-chair for sessions at regional meetings of the Geological Society of America

- Petrology, Mineralogy & Geochemistry (Session 16, Honolulu, HI, Cordilleran GSA) 2017

Co-convener and chair of sessions at national meetings of the Geological Society of America

- A matter of perspective: Integrating macro- and micro-scale evidence in investigations of magmatic origins and histories (Session T163, Baltimore) 2015
- Illuminating felsic origins: Using novel multiple-method approaches to investigate the birth of silicic magmas (Session T218, Denver) 2013

Reviewing manuscripts for academic journals

- Geology (x1) 2020
- Geohealth (x1) 2019
- Proceedings of the National Academy of Sciences (x2) 2017-18
- Lithos (x1) 2018
- Geosphere (x1) 2016
- Contributions to Mineralogy and Petrology (x1) 2015

Reviewing research grant proposals

- National Science Foundation: Earth Sciences (Postdoctoral Fellowship, x1) 2017
- Natural Sciences and Engineering Research Council of Canada (Discovery Award, x1) 2017

OTHER RELEVANT CONSIDERATIONS

Professional Memberships

Geological Society of America 2006-present
American Geophysical Union 2009-present
Mineralogical Society of America 2011-present

International Association of Volcanology and Chemistry of the Earth's Interior.	2013-present
National Association of Geoscience Teachers	2015-present

Academic Honors and Awards

Philanthropic Education Organization (P.E.O.) Endowed Scholar Award [$15,000]	2013-2014
Mensa Foundation Scholarship [$1,000]	2007-2008
Washington State Legislature: Washington Scholar [$22,780]	2004-2008
Vanderbilt University	
IBM Graduate Fellowship [$20,000]	2010-2014
Teaching as Research Fellowship [$3,000]	2011
Harold Stirling Vanderbilt Graduate Scholarship [$12,000]	2008-2010
Whitman College	
Dr. Albert Ripley Leeds Prize in Geology	2008
Order of Waiilatpu Honor Society	2007-present
Abshire Research Scholar Award [$800]	2007-2008
Alexander J. Anderson Scholarship [$24,000]	2004-2008

Conference Abstracts

*(Reverse chronological order; ^ indicates invited talk, *indicates Lafayette College student)*

1. *Rein, I.M.T., *Connors, L., *Ruger, E.C.V., **Carley, T.L.**, Gross, J., (submitted), Apatite as an indicator of pre-eruptive destabilization at Icelandic volcanoes: Geological Society of America Abstracts with Programs (conference virtual due to COVID-19).

2. **Carley, T.L.**, *Connors, L., *Rein, I.M.T., *Ruger, E.C.V., Gross, J., and Burger, P., 2020, Major and trace element geochemistry of Icelandic apatite: A case study at Torfajökull Volcano: VM Goldschmidt Conference Program with Abstracts (Honolulu, HI, withdrew from conference due to COVID-19 complications).

3. *Rein, I.M.T., *Connors, L., *Ruger, E.C.V., and **Carley, T.L.**, 2020, Apatite geochemistry across the neovolcanic zones of Iceland: Establishing a baseline and searching for spatial significance: Geological Society of America Abstracts with Programs, v. 52, no. 2, paper 7-5, poster. (Reston, VA) doi: 10.1130/abs/2020SE-344922; conference canceled due to COVID-19.

4. *Ruger, E.C.V., *Rein, I.M.T., *Connors, L, and **Carley, T.L.**, 2020, Using Icelandic apatites to investigate elevated contents of rare earth elements within Iceland: Geological Society of America Abstracts with Programs: v. 52, no. 2, paper 11-18, poster. (Reston, VA) doi: 10.1130/abs/2020SE-344930; conference canceled due to COVID-19.

5. *Shteynman, L., **Carley, T.**, and Jaret, S., 2020, Utility of zircon-hosted melt inclusions for characterizing the Millbrig K-bentonite: Geological Society of America Abstracts with Programs, v. 52, no. 2, paper 11-10, poster. (Reston, VA) doi: 10.1130/abs/2020SE-345403; conference canceled due to COVID-19.

6. Xu, Y., Claiborne, L.L., and **Carley, T.L.**, 2020, Investigating the paleotectonic setting of Ordovician K-bentonites in Southeastern US using zircon trace element geochemistry: Geological Society of America Abstracts with Programs, v. 52, no. 2, paper 7-15, poster. (Reston, VA) doi: 10.1130/abs/2020SE-345312; conference canceled due to COVID-19.

7. **^Carley, T.L.**, Bell, E.A., Claiborne, L.L., Miller, C.F., and Harrison, T.M., 2019, Transitions between the Hadean, Archean, and modern world: Zircon Kds clarify formation conditions of Earth's earliest crust: Fall Meeting, American Geophysical Union, V33B-03, oral (San Francisco, CA).

8. Sahagian, D., **Carley, T.L.,** Allabar, A., Gardner, J., Llewellin, E., Nowak, M., and Wadsworth, F., 2019, The birth of bubbles by spinodal decomposition: Solving the tiny bubble paradox. *Fall Meeting, American Geophysical Union*, V13E-0211, poster (San Francisco, CA), doi: 10.1002/essoar.10501524.1.

9. Banik, T.J., **Carley, T.L.**, Miller, C.F., and Jordan, B.T., 2019, Complicated geodynamic evolution in the northern Westfjords, Iceland elucidated by Iceland's oldest silicic rocks: Geological Society of America Abstracts with Programs, paper 23-4, oral (Portland, ME) ISSN 0016-7592, doi: 10.1130/abs/2019NE-328366.

10. **Carley, T.L.**, Miller, C.F., Padilla, A.J., Banik, T.J., Schmitt, A.K., and Economos, R.C., 2019, Icelandic rhyolite generation influenced by glacial climate in the Late Pleistocene: Evidence from oxygen isotopes and ages in the zircon record: Geological Society of America Abstracts with Programs, paper 23-2, oral (Portland, ME) ISSN 0016-7592, doi: 10.1130/abs/2019NE-328372.

11. *Connors, M.E., **Carley, T.L.**, and Fiege, A., 2019, Compositional evolution of Torfajökull central volcano, Iceland: Perspectives from the apatite record: Geological Society of America Abstracts with Programs, paper 23-6, oral (Portland, ME) ISSN 0016-7592, doi: 10.1130/abs/2019NE-328361.

12. *Shteynman, L., *Pinke, B., *Ruger, E.C., *Wiley, K., **Carley, T.L.**, and Ukstins, I., 2019, XRD analysis of mafic sands from the Icelandic interior: An analogue study for the Bagnold Dune Field of Mars: Geological Society of America Abstracts with Programs, v. 51, no. 1, poster (Portland, ME) doi: 10.1130/abs/2019NE-328469.

13. **Carley, T.L.**, Bell, E.A., Miller, C.F., Claiborne, L.L., and Harrison, T.M., 2018, Striking similarities and subtle differences across the Hadean-Archean boundary: Model melt insight into the Early Earth using new zircon/melt Kds: Fall Meeting, American Geophysical Union, paper V34C-03, oral (Washington, DC) bibcode: 2018AGUFM.V34..03C.

14. *Connors, M.E., Fiege, A., and **Carley, T.L.**, 2018, Apatite as a monitor of volatile and trace element evolution at Torfajökull central volcano, Iceland: Fall Meeting, American Geophysical Union, paper V11F-0075, poster (Washington, DC) bibcode: 2018AGUFM.V11F0075C.

15. ^Miller, C.F., **Carley, T.L.**, Schmitt, A.K., Banik, T.J., Padilla, A.J., and Economos, R.C., 2018, Oxygen isotopic record of silicic magma genesis in Iceland through time: Evidence suggests abrupt Late Pleistocene onset of glacial climate influence: Fall Meeting, American Geophysical Union, paper V13C-0117, poster (Washington, DC) bibcode: 2018AGUFM.V13C0117M.

16. **Carley, T.L.**, Miller, C.F., Padilla, A.J., Banik, T.J., Schmitt, A.K., and Economos, R.C., 2018, Climate influence imprinted on Late Pleistocene Icelandic rhyolites? Evidence from oxygen isotopes and ages in the zircon record: Geological Society of America Abstracts with Programs, v. 50, no. 6, paper 14-13, oral (Indianapolis, IN) doi: 10.1130/abs/2018AM-320404.

17. Padilla, A.J., Miller, C.F., **Carley, T.L.**, and Banik, T.J., 2018, The varied personalities of silicic Icelandic intrusions: A 10 My record of silicic magma petrogenesis in the shallow crust preserved by zircon: Geological Society of America Abstracts with Programs, v. 50, no. 6, paper 14-11, oral (Indianapolis, IN) doi: 10.1130/abs/2018AM-324079.

18. *Connors, M.E., Fiege, A., and **Carley, T.L.**, 2018, Using apatite to investigate the volatile history of Torfajökull central volcano, Iceland: Geological Society of America Abstracts with Programs, v. 50, no. 6, paper 190-8, poster (Indianapolis, IN) doi: 10.1130/abs/2018AM-324303.

19. **Carley, T.L.**, Hanchar, J.M., and Tornos, F., 2018, Major and trace element chemistry of magnetite in a global context: Examples from Chile (El Laco, Los Colorados, Punta del Cobre), Sweden (Kiruna), Iceland (oceanic rhyolites) and The United States (continental granites). XIX Peruvian Geological Congress (Lima, Peru).

20. Banik, T.J. and **Carley, T.L.**, 2018, Identifying and Evaluating the Past and Future Hazards from Icelandic Subglacial Volcanoes: A Zircon Study of the Öræfi Volcanic Belt: Cities on Volcanoes 10 (Napoli, Italy).

21. Claiborne, L.L., Miller, C.F., Gualda, G.A.R., and **Carley, T.L.**, 2017, New zircon-melt partition coefficients from natural zircon-glass pairs elucidate magmatic storage and interactions beneath Mount St. Helens volcano: Fall Meeting, American Geophysical Union, paper V12B-03, oral (New Orleans, LA) bibcode: 2017AGUFM.V12B..003C.

22. **^Carley, T.L.,** Miller, C.F., and Claiborne, L.L., 2017, Estimating Hadaen magma compositions using improved zircon/melt Kds: Cool petrogenesis, Archean connections? Geological Society of America Abstracts with Programs. v. 49, no. 6, paper 48-1, oral (Seattle, WA) doi: 10.1130/abs/2017AM-307444.

23. Neundorff, J.A., Banik, T.J., and **Carley, T.L.**, 2017, Evaluating the source: Using detrital zircon to investigate petrogenesis in subglacial magmas from Vatnajökull, Iceland: Geological Society of America Abstracts with Programs, v. 49, no. 6, paper 153-40, poster (Seattle, WA) doi: 10.1130/abs/2017AM-306934.

24. Banik, T.J., **Carley, T.L.**, and Coble, M.A., 2017, Temporal and geochemical evolution of subglacially derived detrital zircon along the Öræfi Volcanic Belt, Iceland: Geological Society of America Abstracts with Programs, v. 49, no. 6, paper 337-1, oral (Seattle, WA) doi: 10.1130/abs/2017AM-306844.

25. **Carley, T.L.**, Banik, T.J., *Sosa, E.S., and Coble, M.A., 2017, Altered, eroded, obscured by ice: A detrital zircon perspective into Iceland's rhyolitic history. IAVCEI Commission on Volcano Geology 4th International Workshop, Romanian Journal of Earth Sciences, Special Issue, v. 91, p. 62-63, poster (Transylvania, Romania) ISSN: 2248-2563.

26. **Carley, T.L.**, *Sosa, E.S., Banik, T.J., Coble, M.A., Fisher, C.M., and Miller, C.F., 2017, Combined insight from tephra and glacially-derived sediments: A zircon-based study of Öræfajökull, SE Iceland: Cordilleran Geological Society of America Abstracts with Programs, v. 49, no. 4, paper 16-4, oral (Honolulu, HI) doi: 10.1130/abs/2017CD-292860.

27. Claiborne, L.L., Miller, C.F., Gualda, G.A.R., and **Carley, T.L.**, 2017, New zircon-melt partition coefficients from natural zircon-glass pairs applied to Mount St. Helens, WA: Understanding MSH melt compositions through time: Cordilleran Geological Society of America Abstracts with Programs, v. 49, no. 4, paper 2-8, oral (Honolulu, HI) doi: 10.1130/abs/2017CD-292732.

28. McGillivray, K.M., Banik, T.J., **Carley, T.L.**, Coble, M.A., Claiborne, L.L., and Miller, C.F., 2017, Using detrital zircon to explore subglacial magmatism: A case study from northeastern Vatnajökull, Iceland: Cordilleran Geological Society of America Abstracts with Programs, v. 49, no. 4, paper 47-3, poster (Honolulu, HI) doi: 10.1130/abs/2017CD-292797.

29. *DeBarba, W.P., **Carley, T.L.**, Pamukcu, A.S., Banik, T.J., *Sosa, E.S., and *Tintle, L.R., 2017, Geothermobarometry of glacial outwash sediment from Öræfajökull, Iceland: Northeastern Geological Society of America Abstracts with Programs, v. 49, no. 2, paper 26-15, poster (Pittsburgh, PA) doi: 10.1130/abs/2017NE-291486.

30. *Scheland, C.L., Miller, C.F., **Carley, T.L.**, Foley, M.L., Claiborne, L.L., Cribb, J.W., and Wood, E.M., 2017, Constraining eruptive events preceding the Peach Spring Tuff supereruption (Miocene, AZ): Petrology and petrogenesis of ash fall tuffs: Northeastern Geological Society of America Abstracts with Programs, v. 49, no. 2, paper 26-5, poster (Pittsburgh, PA) doi: 10.1130/abs/2017NE-290732.

31. *Sosa, E.S., **Carley, T.L.**, Banik, T.J., Claiborne, L.L., and Miller, C.F., 2017, A detrital zircon investigation into the magmatic history of the Öræfajökull volcano in Southeastern Iceland: Northeastern Geological Society of America Abstracts with Programs. v. 49, no. 2, paper 26-11, poster (Pittsburgh, PA) doi: 10.1130/abs/2017NE-291274.

32. *Scheland, C.L., Wood, E.M., Miller, C.F., Claiborne, L.L., Foley, M.L., Cribb, J.W., and **Carley, T.L.**, 2016, Explosive silicic volcanism preceding the Peach Spring Tuff supereruption, Part 2: Magmatic processes recorded by petrochemistry: National Geological Society of America Abstracts with Programs, v. 48, no. 7, paper 175-7, poster (Denver, CO), doi: 10.1130/abs/2016AM-286012.

33. *Sosa, E.S., **Carley, T.L.**, Jensen, B.J.L., and Coble, M.A., 2016, A zircon-based investigation into the tephras of uncertain origins: A case study with the Old Crow Tephra in Central Alaska: National Geological Society of America Abstracts with Programs, v. 48, no. 7, paper 164-7, poster (Denver, CO): doi: 10.1130/abs/2016AM-286070.

34. **Carley, T.**, Banik, T., *Nagurney, A., *Tintle, L., and Catino, J., 2016, A detrital investigation of enigmatic subglacial magmatic systems: Vatnajökull, SE Iceland: IAVCEI Commission on Volcano Geology 3rd International Workshop, poster (Etna, Italy).

35. Campa, H., Bruff, D., Goldberg, B.B., Barnicle, K., Greenler, R., Mathieu, R.D., Campbell, L., Green, N., Mack, T., and **Carley, T.**, 2016, Beyond the campus: Using massive open online courses for advancing the use of evidence-based teaching practices: The Wildlife Society 23rd Annual Conference (Raleigh, NC).

36. Claiborne, L.L., Miller, C.F., Gualda, G.A.R., Fleming, M.A., Covey, A.K., Wooden, J.L., and **Carley, T.L.**, 2016, Zircon as a magma monitor: Robust partition coefficients from surface, rim, and glass measurements from natural systems: VM Goldschmidt Conference Program with Abstracts (Yokohama, Japan).

37. Asefa, S.R., Claiborne, L.L., **Carley, T.L.**, Banik, T.J., and Miller, C.F., 2016, Elemental chemistry of silicic glasses from Iceland and Mount St. Helens volcanic centers reveals distinct tectonomagmatic signatures and confirms an anomalous Icelandic subduction-like volcano: Cordilleran Geological Society of America Abstracts with Programs: v. 48, no. 4, p. 47, paper 25-4, poster (Fresno, CA).

38. **Carley, T.L.**, Miller, C.F., Coble, M.A., Banik, T.J., Fisher, C.M., Schmitt, A.K., Jordan, B.T., Hanchar, J.M., Economos, R.C., and Padilla, A.J., 2015, History of silicic magmatism in Iceland illuminated by isotopes (U-Pb, U-Th, O, Hf) in the zircon record: National Geological Society of America Abstracts with Programs: v. 47, no. 7, p. 581 paper 227-29, poster (Baltimore, MD).

39. Miller, C.F., Claiborne, L.L., Gualda, G.A.R., Padilla, A.J., Thomas, D., **Carley, T.L.**, and Covey, A.K., 2015, Improved partition coefficients for zircon/melt from in situ analysis of glass and crystal rims: Coherent behavior, strong temperature dependence: National Geological Society of America Abstracts with Programs: v. 47, no. 7, p. 278, paper 99-1, oral (Baltimore, MD).

40. *Scheland, C.L., Perry, S.E., Miller, C.F., Claiborne, L.L., Cribb, J.W., Varga, R.J., and **Carley, T.L.**, 2015, Investigating the extent of the Early Miocene Cook Canyon Tuff, a major Pre-Peach Spring Tuff ignimbrite, SW USA, using geochemistry and petrography: National Geological Society of America Abstracts with Programs: v. 47, no. 7, p. 533, paper 210-24, poster (Baltimore, MD).

41. Banik, T.J., Miller, C.F., **Carley, T.L.**, Coble, M.A., and Fisher, C.M., 2015, Generation of coeval tholeiitic and calc-alkaline magmas in Iceland: Insights from in situ zircon analyses: National Geological Society of America Abstracts with Programs. V. 47, no. 7, p. 581, paper 227-30, poster (Baltimore, MD).

42. **Carley, T.L.**, Miller, C.F., Sigmarsson, O., Coble, M.A., Fisher, C.M., and Hanchar, J.M., 2015, Detrital zircons reveal the genesis and surprising longevity of abundant silicic magmatism at Breiduvik Volcano, East Iceland: Cordilleran Geological Society of America Abstracts with Programs, v. 47, no. 4, p. 47, paper 15-1, poster (Anchorage, AK).

43. ^**Carley, T.L.**, Miller, C.F., Wooden, J., Padilla, A.J., Schmitt, A.K., Economos, R.C., and Jordan, B.T., 2015, Zircon evidence reveals that Iceland is not a modern analogue for earliest crustal construction (Hadean, >4 Ga): Joint Assembly, American Geophysical Union Abstract T21A-07, oral (Montreal, Canada).

44. Asefa, S.R., Banik, T.J., **Carley, T.L.**, and Miller, C.F., 2015, Petrology of Kambur and Borg in Iceland: Two Mid-Miocene silicic domes, cool, wet calc-alkaline contrasts with hot dry tholeiitic magmatism: Southeastern Geological Society of America Abstracts with Programs: v. 47, no. 2, p. 72, paper 28-4, poster (Chattanooga, TN).

45. Miller, C.F., **Carley, T.L.**, Padilla, A.J., and Banik, T.J., 2015, Generating granites and rhyolites in the Mid-Atlantic: Insights from elemental, isotopic, and geochronological studies of Iceland's zircon: The 8th Hutton Symposium on Granites and Related Rocks*,* Abstract PT. 062, poster (Floridanopolis, Brazil).

46. **Carley, T.L.**, Bruff, D.O., Gualda, G.A.R., 2015, Synthesizing multi-scale geologic concepts by creating iterative, zooming, concept maps: Northeastern Geological Society of America Abstracts with Programs, v. 47, no. 3, p. 67, oral (Bretton Woods, NH).

47. Miller, C.F., Frazier, W.O., **Carley, T.L.**, Claiborne, L.L., Padilla, A.J., Thomas, D., and Gualda, G.A.R., 2014, Zr/Sr ratios distinguish cool & wet from hot & dry magmatic suites: Geological Society of America Abstracts with Programs*,* v. 46, no. 6, paper 249880, poster (Vancouver, Canada).

48. Padilla, A.J., Miller, C.F., Bindeman, I.N., Economos, R.C., **Carley, T.L.**, Banik, T.J., and Schmitt, A.K., 2014, Generating the world's lowest magmatic zircon d18O: Melting of intensely hydrothermally altered sources at Austurhorn Intrusive Complex, SE Iceland: Geological Society of America Abstracts with Programs*,* v. 46, no. 6, paper 245937, poster (Vancouver, Canada).

49. Thomas, D., Miller, C.F., **Carley, T.L.**, and Covey, A., 2014, Partition coefficients for zircon from high-temperature Icelandic rhyolites, determined by *in situ* analyses of glass and crystal rims: Geological Society of America Abstracts with Programs: v. 46, no. 6, paper 248559, poster (Vancouver, Canada).

(conference abstracts above this line were published during my time at Lafayette)

50. **Carley, T.L.**, Sigmarsson, O., Vogler, E., Miller, C.F., Coble, M.A., Hanchar, J.M., Fisher, C.M., Economos, R.C., and Wooden, J.L., 2014, Using detrital zircon to resolve the longevity and origin of abundant silicic magma at the Breiduvik volcanic complex, Iceland: IAVCEI Commission on Volcano Geology 1st International Workshop, oral (Madeira, Portugal).

51. Miller, C.F., McDowell, S.M., Pamukcu, A.S., Miller, J.S., **Carley, T.L.**, Frazier, W.O., Gualda, G.A.R., Foley, M.L., Fisher, C.M., Ferguson, C.A., and Overton, S.L., 2014, Erupting supermush: Remobilization of cumulate from the abse of the Peach Spring Tuff (AZ, USA) magma chamber. Iceland: IAVCEI Commission on Volcano Geology 1st International Workshop, oral (Madeira, Portugal).

52. **Carley, T.L.,** Miller, C.F., Wooden, J.L., Padilla, A.J., Sigmarsson, O., Jordan, B.T., Fisher, C.M., Hanchar, J.M., Schmitt, A.K., and Economos, R., 2013, Pairing ages and isotopes in the Icelandic zircon record: adding critical insight to felsic petrogenesis with U-Pb, U-Th, O and Hf: Geological Society of America Abstracts with Programs*,* v. 45, no. 7, p. 83, oral (Denver, CO).

53. Padilla, A.J., Miller, C.F., **Carley, T.L.,** Economos, R.C., Schmitt, A.K., Fisher, C.M., Hanchar, J.M., Bindeman, I.N., Wooden, J.L., and Sigmarsson, O., 2013, Elucidating the construction of the Austurhorn Intrusion, SE Iceland, using zircon elemental and isotopic geochemistry and geochronology: Fall Meeting, American Geophysical Union, paper V53E-02 (San Francisco, CA) bibcode: 2013AGUFM.V53E..02P.

54. Miller, C.F., McDowell, S.M., **Carley, T.L.,** Frazier, W.O., Pamukcu, A.S., Padilla, A. DeJ., Claiborne, L.L., Flanagan, D.M., Gualda, G.A.R., Miller, J.S., Wooden, J.L., and Mapes, R.W., 2013, Hot/cold, wet/dry, big/small, erupt/ stall, juvenile/anatectic? – Multiple personalities of felsic magmatism. VM Goldschmidt Conference Program with Abstracts (Florence, Italy).

55. Banik, T.J., Miller, C.F., Hoskuldsson, A., and **Carley, T.L.**, 2013, Evolution of silicic magmas at Icelandic central volcanoes during rift relocations: IAVCEI Scientific Assembly, forecasting volcanic activity (Kagoshima, Japan).

56. **Carley, T.L.**, Miller, C.F., Wooden, J.L., Bindeman, I.N., Economos, R.C., Schmitt, A.K., Fisher, C.M., and Hanchar, J.M., 2013, Icelandic zircon: investigating felsic magmatism in a unique oceanic environment: IAVCEI Scientific Assembly, forecasting volcanic activity, oral (Kagoshima, Japan).

57. Padilla, A.J., **Carley, T.L.**, Miller, C.F., Wooden, J.L., Economos, R.C., Schmitt, A.K., Fisher, C.M., and Hanchar, J.M., 2013, Evolution of the Austurhorn Intrusive Complex revealed by zircon elemental and isotopic geochemistry and geochronology: IAVCEI Scientific Assembly, forecasting volcanic activity, poster (Kagoshima, Japan).

58. Birmingham, D.P., **Carley, T.L.**, Miller, C.F., and Covey, A.K., 2013, Shallow magmatic provenance of quartz: a cathodoluminescence zoning signature: Southeastern Geological Society of America Abstracts with Programs, paper 29-12, poster (San Juan, Puerto Rico).

59. **Carley, T.L.,** Bruff, D.O., and Gualda, G.A.R., 2012, Synthesizing multi-scale geologic concepts by creating iterative, zooming, concept maps with Prezi: Visual learning: transforming the liberal arts, oral (Carleton College, MN).

60. **Carley, T.L.,** Gualda, G.A.R., Ghiorso, M.S., and Miller, C.F., 2012, Eruption triggering of giant magma bodies by internal versus external forcing: a rhyolite-MELTS study: Fall Meeting, American Geophysical Union*,* paper V11A-2726, poster (San Francisco, CA), bibcode: 2012AGUFM.V11A2726C.

61. **Carley, T.L.**, Miller, C.F., Padilla, A.J., Wooden, J.L., Bindeman, I., Schmitt, A.K., Economos, R.C., Fisher, C.M., and Hanchar, J.M., 2012, Icelandic zircon: Illuminating juvenile silicic crust construction: The 22nd V.M. Goldschmidt Conference, oral (Montreal, Canada).

62. Padilla, A.J., Miller, C.F., **Carley, T.L.**, Wooden, J.L., Economos, R.C., Schmitt, A.K., Fisher, C.M., and Hanchar, J.M., 2012, Elucidating the complex thermal and fluid history of Austurhorn Intrusive Complex: zircon elemental and isotopic geochemistry: The 22nd V.M. Goldschmidt Conference (Montreal, Canada).

63. Miller, C.F., Pamukcu, A.S., Ferguson, C.A., **Carley, T.L.**, Gualda, G.A.R., Wooden, J.L., McIntosh, W.C., Lidzbarski, M.I., Miller, J.S., and McDowell, S.M., 2012, Peach Spring Tuff, Arizona-California-Nevada, USA: generating an isolated supereruption (Keynote Talk): The 22nd V.M. Goldschmidt Conference, oral (Montreal, Canada).

64. **Carley, T.L.**, Miller, C.F., Wooden, J., Padilla, A.J., Russel, K.M., Bindeman, I., Schmitt, A.K., and Economos, R., 2012, Juvenile silicic magmatism and crust construction: Iceland as a model for early-Earth or Iceland as a unique petrogenetic environment? Cordilleran Geological Society of America Abstracts with Programs, v. 44, no. 3, p. 60, poster (Querétaro, Mexico).

65. Lidzbarski, M., Miller, J., Miller, C., Wooden, J., Vazquez, J., Pamukcu, A.S., **Carley, T.L.**, and Gualda, G.A.R., 2012, Geochronology and trace element analysis of Peach Spring Tuff zircons and their bearing on growth of the Peach Spring Tuff magma chamber and eruption: Cordilleran Geological Society of America Abstracts with Programs, v. 44, no. 3, p. 60, poster (Querétaro, Mexico).

66. Miller, C.F., Padilla, A.J., Pamukcu, A., **Carley, T.L.**, Claiborne, L.L., Flanagan, D.M., Gualda, G.A.R., Wooden, J.L., Miller, J., and Lidzbarski, M., 2012, Reinvigorating stagnant silicic magma systems: volcanic and plutonic views: Cordilleran Geological Society of America Abstracts with Programs, v. 44, no. 3, p. 22, oral, (Querétaro, Mexico).

67. Russell, K.M., **Carley, T.L.**, Miller, C.F., Wooden, J., Schmitt, A.K., Economos, R., Fisher, C.M., and Hanchar, J.M., 2012, Krafla zircon: Insights into generation of silicic magma at an Icelandic central volcano: Cordilleran Geological Society of America Abstracts with Programs, v. 44, no. 3, p. 70, oral (Querétaro, Mexico).

68. **Carley, T.L.**, Miller, C.F., and Wooden, J.L., 2011, Pre-eruptive history and longevity of felsic magma in Iceland illuminated by *in situ* U-Th dating and trace-element analysis of zircon from historical eruptions:

Mineralogical Magazine, v. 75, no. 3, p. 623, The 21st V.M. Goldschmidt Conference, poster (Prague, Czech Republic).

69. Miller, C.F., Gualda, G.A.R., Padilla, A.D.J., Pamukcu, A.S., Claiborne, L.L., **Carley, T.L.**, and Flanagan, D.M., 2011, Reviving moribund intrusive complexes: Mafic thermal input, the accessory mineral record, and the pluton-volcano connection: Fall Meeting, American Geophysical Union, paper V11G-05 (San Francisco, CA) bibcode: 2011AGUFM.V11G..05M.

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