

# Tamara Lou Carley

Associate 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

2014

- Dissertation: The generation and evolution of silicic magma and juvenile crust: Insight from the Icelandic zircon record
- 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

2008

- *Summa cum laude*
- Honors in course of study

### University of Otago

Semester abroad

New Zealand

2007

## PROFESSIONAL APPOINTMENTS

### Lafayette College

Department of Geology and Environmental Geosciences

Easton, PA

2014-present

Associate Professor

2021-present

Assistant Professor

2014-2021

### American Museum of Natural History

New York City, NY

2016-2020

Division of Physical Sciences

Research Associate

### Vanderbilt University

Nashville, TN

2017-2018

Department of Earth and Environmental Sciences

Visiting Scholar (pre-tenure research leave)

## RESEARCH

### Published Articles

*In reverse chronological order, \*indicates Lafayette College student*

1. Aarons, S.M., Dauphas, N., Greber, N.D., Roskosz, M., Bouchez, J., **Carley, T.**, Liu, X.-M., Rudnick, R.L., and Gaillardet, J., 2023, Titanium transport and isotopic fractionation in the Critical Zone: *Geochimica et Cosmochimica Acta*, v. 352, p. 175–193, doi:10.1016/j.gca.2023.05.008.

2. Banik, T.J., Coble, M.A., Miller, C.F., Fisher, C.M., Jordan, B.T., Vervoort, J.D., **Carley, T.L.**, 2023, Petrogenesis and geodynamic evolution in the northern Westfjords, Iceland, elucidated by Iceland's oldest silicic rocks: *Journal of Geophysical Research: Solid Earth*, e2022JB026265.
3. Gardner, J.E., Wadsworth, F.B., **Carley, T.L.**, Llewellyn, E.W., Kusumaatmaja, H., and Sahagian, D., 2023, Bubble formation in magma: *Annual Review of Earth and Planetary Sciences*, v. 51, p. 131–154, doi:10.1146/annurev-earth-031621-080308.
4. Goldberg, B.B., Bruff, D.O., Greenler, R. McC., Barnicle, K., Green, N., Campbell, L.E.P., Laursen, S.L., Ford, M., Serafini, A., Mack, C., **Carley, T.L.**, Maimone, C., Campa III, H., 2023, Preparing future STEM faculty through flexible teaching professional development: *PLOS ONE*, e0276349.
5. **Carley, T.L.**, Bell, E.A., Miller, C.F., Claiborne, L.L., and Harrison, T.M., 2022, Zircon-modeled melts shed light on the formation of Earth's crust from the Hadean to the Archean: *Geology*, v. 50, p. 1028-1032. <https://doi.org/10.1130/G50017.1>.
6. Blasizzo, A.Y., Ukstins, I.A., Scheidt, S.P., Graettinger, A.H., Peate, D.W., **Carley, T.L.**, Moritz, A.J., and Thines, J.E., 2022, Vikrahraun—the 1961 basaltic lava flow eruption at Askja, Iceland: morphology, geochemistry, and planetary analogs: *Earth, Planets and Space*, v. 74, p. 168, doi:10.1186/s40623-022-01711-5.
7. Banik, T.J., **Carley, T.L.**, Coble, M.A., Hanchar, J.M., Dodd, J.P., Casale, G.M., McGuire, S.P., 2021, Magmatic processes at Snæfell Volcano, Iceland, constrained by zircon age, isotopes, and trace elements: *Geochemistry, Geophysics, Geosystems*, 22, e2020GC009255. <https://doi.org/10.1029/2020GC009255>.
8. \*Connors, L., **Carley, T.L.**, Fiege, A., 2020, Apatite as a monitor of dynamic magmatic evolution at Torfajökull Volcanic Center, Iceland, in Vetrone, F. and Fiege, A. eds., *Dynamic Magma Evolution* (Geophysical Monograph 254), John Wiley & Sons, p. 61-88.
9. 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.
10. **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.
11. 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.
12. **Carley, T.L.**, Miller, C.F., Sigmarsdóttir, 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.
13. \*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.
14. 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.

15. **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.*

16. 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.
17. Bindeman, I., Gurenko, A., **Carley, T.**, Miller, C., Martin, E., and Sigmarsdóttir, 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.
18. Gualda, G.A.R., Ghiorsu, 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.
19. **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.

#### Submitted Articles

*\*indicates Lafayette College student or graduate*

1. Wadsworth, F.B., **Carley, T.L.**, Llewellyn, E.W., Foster, A., Sullivan, P., Sahagian, D., Gardner, J.E. (in review) Magma in the microwave: submitted to *Volcanica*, December 2025.
2. Banik, T.J., **Carley, T.L.**, Essex, C.D., Montano, G.M. (in review) Pingmúli revisited: New zircon-based perspectives on rhyolite petrogenesis in Iceland: submitted to *Contributions to Mineralogy and Petrology*, July 2025.

#### 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, doi: 10.1130/2019.0054(01).

#### Funded Research Grants

NSF-EAR (resubmission) [\$238,445] 2022  
“Collaborative Research: What lies beneath: An investigation of subglacial silicic magma systems (Vatnajökull, Iceland)”

- Co-PIs: **Tamara Carley** (Lafayette College), Tenley Banik (Illinois State University);
- Award number: 2219430.

NSF-EAR-NERC (resubmission) [\$157,232] 2022  
“NSF GEO-NERC: Collaborative Proposal: A general model for bubble nucleation and growth in volcanic systems”

- USA collaborative team: Dork Sahagian (Lehigh University), **Tamara Carley** (Lafayette College), Jim Gardner (University of Texas, Austin);
- UK collaborative team: Ed Llewellyn, Halim Kusumaatmaja, and Fabian Wadsworth (Durham University);
- Award number: 2211684

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, <b>Tamara Carley</b> (Lafayette College)	
• Award number: 2018586	
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 Grant Proposals

NSF-NERC (funded on resubmission: 2022)	2020
“Bubble formation in explosive volcanic eruptions: solving the tiny bubble paradox”	
• USA collaborative team: Dork Sahagian (Lehigh University), <b>Tamara Carley</b> (Lafayette College), Jim Gardner (University of Texas, Austin);	
• UK collaborative team: Ed Llewellyn, Halim Kusumaatmaja, and Fabian Wadsworth (Durham University).	
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), <b>Tamara Carley</b> (Lafayette College), Tracy Gregg (University at Buffalo)	
NSF-MRI (funded on resubmission: 2020)	2019
“Acquisition of a Carl Zeiss EVO Scanning Electron Microscope (SEM) at Lafayette College”	
• PI: Jim Dearworth (Lafayette College)	
• Co-Is: Chris Anderson, <b>Tamara Carley</b> , 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: <b>Tamara Carley</b> , Robert Creighton, Polly Piergiovanni, Jennifer Rao (Lafayette C.)	

National Geographic Polar Research Grant “What lies beneath: A detrital investigation into the volcanic systems under Iceland’s rapidly retreating glacial ice” • Co-PIs: <b>Tamara Carley</b> (Lafayette College), Tenley Banik (Illinois State University)	2017
NSF-EAR: Research Grant (funded on resubmission: 2022) “What lies beneath: A detrital investigation into the volcanic systems under Iceland’s rapidly retreating glacial ice” • Co-PIs: <b>Tamara Carley</b> (Lafayette College), Tenley Banik (Illinois State University)	2016

### Conference Presentations

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

#### Invited Lectures and Seminars (Professional)

UCLA: Investigating proto-continental crust construction using very young (Icelandic) and very old (Hadean) zircon	2021
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 Outreach)

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)*

- Apatite-based perspectives into Icelandic petrogenesis and pre-eruptive activity; 2014-  
present
- Magmatic instability and mechanisms of bubble formation, experimental development;
- 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:
  - University of Wisconsin (lab user: SIMS, 2023-present);
  - Penn State University (lab user: EPMA and LASS-ICP-MS, 2022-present);
  - University of Texas at Austin (publications, funded grant, 2019-present);
  - Durham University (publications, funded grant, 2019-present);
  - Lehigh University (publications, funded grant, 2017-present);
  - Rutgers University (lab user: EPMA, 2016-2020);
  - American Museum of Natural History (Research Associate, 2015-2020);
  - Minerals Technologies (student/recent graduate opportunities, 2015-present);
  - 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)*

- Iceland: One week of fieldwork supported by NSF Award # 2219430 (+4 students) 2025
- Iceland: Two weeks of fieldwork supported by NSF Award # 2219430 (+5 students) 2024
- Iceland: Two weeks of fieldwork supported by NSF Award # 2219430 (+2 students) 2022
- Pennsylvania: Several days of bentonite sample collection across PA (+ 2 students) 2019-21
- Iceland: One week northwest of Vatnajökull supporting subglacial detrital study 2016

- Iceland: Several days of sample collection, in conjunction with interim course 2015
- Alaska: Three weeks of fieldwork, sample collection for pilot study (+1 student) 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 U.) 2018
- Mount Saint Helens, WA: investigation of early eruptive stages (Vanderbilt) 2008
- East Snake River Plain, ID: ground-truthing exercises with implications for Martian geomorphology (2006; Notre Dame and Idaho State Universities) 2006

**Participation in Professional Development Workshops and Field Trips (Geology)**

- Bubble Nucleation Workshop at Lehigh and Lafayette (Lehigh Valley, PA) 2025
- Lehigh Microscope School (Bethlehem, PA) 2023
- IAVCEI Fieldtrip: How to build and destroy a stratovolcano: Mts. Ruapehu and Taranaki (New Zealand) 2023
- Vanderbilt-OFM Research MELTS training workshop 2020-21
- 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  $\delta O^{18}$  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: '14-'16, '18-'19; '21)
- Geology 140: A geologic exploration of New Zealand's dynamic landscape (interim abroad '23, '25)
- Geology 180: Iceland: Geology and natural history of a young island (interim abroad January '15, '17)
- Geology 200: Earth and planetary materials (lecture/lab; Fall '15-'16; '18-'21, '23, '24, '25)
- Geology 307: Igneous and metamorphic petrology (lecture/lab; Spring '15-'17; '19-'22, '24, '25, '26)

- Geology 321: Geochemistry (seminar: Spring 2016; lecture/lab: Spring '19, '21, Fall '24)
- First Year Seminar 98: Misadventure (Fall 2020)
- Interdisciplinary Studies 201: From plate to plate: The geology and agriculture of food in Italy (interim abroad May 2022 and 2024)

### Lafayette College Academic Advising

- Geology Majors (and minors indicated by <sup>†</sup>):
  - Class of 2028: Charlotte Mucha.
  - Class of 2027: Francesco Di Lascia, Anika Ebbert, Marin Rosser.
  - Class of 2026: John Kammerer, Sophia LaMarco.
  - Class of 2025: Madelyn Brennan.
  - Class of 2023: Gianna Greger.
  - Class of 2022: Caroline DiTrolio, Thomas (Addison) Wand.
  - Class of 2021: Gillian Branam, Charlie Brownstein, Maura DiGuglielmo, Katharine Kim.
  - Class of 2020: Julia Owens<sup>†</sup>, 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 2029: Kerri Falvey, Allison Giebutowski, Henry Prout.
  - Class of 2027: Allison Feczko<sup>^</sup>, Irelynd Lorenzen<sup>^</sup>, Emma Patmon<sup>^</sup>, Mackenzie Pitera.
  - Class of 2025: Elizabeth Flynn<sup>^</sup>, Phoebe Glass<sup>^</sup>, Nina Kernan<sup>^</sup>, Abby Nieporte<sup>^</sup>, Anna Penman<sup>^</sup>, Carson Grace Toomer<sup>^</sup>, Natasha Zorbas.<sup>^</sup>
  - Class of 2024: William Bollwerk, Isabella Calle<sup>^</sup>, Benjamin Cluver, Charlize Cramer, Grace Gibson<sup>^</sup>, Alyssa Vitale<sup>^</sup>, Kaitlyn Weston.<sup>^</sup>
  - 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.
- Volleyball Team Faculty Mentor (Spring 2021-present; players indicated above by <sup>^</sup>)

### Undergraduate Research Mentor

*Honors Thesis Advisor* (Lafayette College; primary advisor unless indicated by \* for co-advisor or <sup>^</sup> for reader)

- John Kammerer: Exploring the presence and implication of magma-mingled rocks at Jökulsárlón, Iceland 2025-26
- Maria Soukup<sup>^</sup>: Starling digestion of microplastics, an analytical perspective 2025-26
- Beck Knittel: Regional diversity of subglacial volcano compositions revealed through moraine material at Jökulsárlón, Iceland 2024-25
- Harper Will: Preliminary geochemical characterization of apatite from Þórðarhryna, Iceland: Pursuing advanced understanding of degassing of rhyolitic magmas 2024-25
- Madaleine Perry\*: Experimentally simulating and analyzing bubble dynamics in volcanoes using obsidian testing (Mechanical Engineering, co-advised by Jenn Rossmann) 2023-24
- Gianna Greger: Insight into source material and tectonomagmatic setting of Ordovician bentonites using zircon geochemistry 2022-23
- Katherine Kim: The volatile content in apatite from the 1875 eruption of Askja, Iceland 2020-21
- Julisan Street: Geochemistry and mineralogy of the Newcastle Dacite adakites in Jamaica: Jamaican crustal thickness during the Cenozoic as an analogue for Archean crust 2020-21
- 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 Törfajökull 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 subglacial 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)*

- Morgan Merritt: Using Geothermobarometry to explore pressures and temperatures of magma storage and crystallization at Þóðrarhyrna, Iceland 2024-25
- 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)*

- Maggie Pearce (class of 2027): Bubble nucleation and growth in volcanic systems (Summer EXCEL); 2025
- Victoria Andreo (class of 2027): What lies beneath: An investigation of subglacial silicic magma systems (Vatnajökull, Iceland) (Summer EXCEL); 2025
- John Kammerer (class of 2026): What lies beneath: An investigation of subglacial silicic magma systems (Vatnajökull, Iceland) (Summer, Fall EXCEL); Bubble nucleation and growth in volcanic systems (Summer EXCEL); 2024-25
- Beck Knittel (class of 2025): What lies beneath: An investigation of subglacial silicic magma systems (Vatnajökull, Iceland) (Spring-Summer EXCEL) 2024
- Harper Will (class of 2025): What lies beneath: An investigation of subglacial silicic magma systems (Vatnajökull, Iceland) (Spring-Summer EXCEL) 2024
- Erin Roth (class of 2025): What lies beneath: An investigation of subglacial silicic magma systems (Vatnajökull, Iceland) (Spring EXCEL); Bubble nucleation and growth in volcanic systems (Summer-Fall-Spring EXCEL) 2024
- Mikey Kotler (class of 2025): Bubble nucleation and growth in volcanic systems (Summer, Fall-Spring EXCEL) 2023-24
- Serafina Rivera (class of 2024): Bubble nucleation and growth in volcanic systems (Summer, Fall-Spring EXCEL) 2023-24
- Morgan Merritt (class of 2025): What lies beneath: An investigation of subglacial silicic magma systems (Vatnajökull, Iceland) (Fall-Spring EXCEL) 2022
- Nicole Szokai (class of 2023): Transitioning Taranaki (New Zealand) to a Volcanic Future (Fall-Spring EXCEL) 2022
- Gianna Greger (class of 2023): Mineralogical and chemical characterization of supervolcano deposits in Pennsylvania (Summer-Fall-Spring EXCEL) 2021-22
- Aidan Hinchey (class of 2022): Mineralogical and chemical characterization of supervolcano deposits in Pennsylvania (Summer EXCEL), co-mentored by Dave Sunderlin 2021
- 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 Assistant Mentoring (Lafayette College)*

• Maggie Pearce (class of 2027): pre-RUMBLE lab training, thesis student lab assistance	2025
• Victoria Andreo (class of 2027): pre-RUMBLE lab training, thesis student lab assistance	2024-25
• Francesco Di Lascia (class of 2027): RUMBLE lab assistant, pre-RUMBLE training	2024-25
• Leo Gilbert (class of 2025): RUMBLE lab assistant	2025
• Anika Ebbert (class of 2027): pre-RUMBLE lab training, thesis student lab assistance	2024

*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	2016-20
○ 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	2023
○ Recent graduate Gianna Greger ('23) worked as a paid research assistant, focused on Icelandic apatite, supported by NSF award #2219430.	
○ Recent graduate Leslie Tintle ('16) volunteered as a research assistant, participated in RUMBLE, and conducted a thesis-like project in preparation for graduate school	2016-17

*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)	2019-2021
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**Outreach Education**

• University School of Nashville: “Meet a Scientist: VOLCANOES!” Show and tell and question and answer session; seventy two 4 <sup>th</sup> graders (via Zoom)	2021
• 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 2<sup>nd</sup> and 3<sup>rd</sup> grade 2014
- University School of Nashville: “Meet a Scientist: what does a geologist do?” Question and answer sessions and hands-on activities; ninety 5<sup>th</sup> 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 5<sup>th</sup> 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 faculty (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*

- Promotion, Tenure, and Review (PTR): three years of elected service 2025-present
- Governance Committee: three years of elected service '20-22, '23-24
- Advocacy and Coordination Council, one year of service 2023-24
- 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)

#### *Leadership Positions in Elected Committee Service*

- Governance Committee Chair 2023-24

#### *Appointed Committee Service*

- Scholarships and Fellowships Advisory Committee; three years of appointed service 2018-21

#### *Other Service*

- Scholarships and Fellowships Advisory; volunteered to review an unusually large volume of applications (15) for the Goldwater Fellowship 2025
- Mechanical Engineering search committee (external member) 2021

- Common Course of Study review (working group member) 2021

*Supporting Environmental Initiatives*

- Volunteer judge for the Annual Environmental Poster Session (11<sup>th</sup>-13<sup>th</sup> annual) 2014-16
- 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 2015-23

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

*Seminar series (inviting and hosting guest speakers)*

- Leah Shteynman (LC '20, ASU: Meteorites and Minerals) 2025
- Josh Garber (Penn State University: U-Pb Paleoenvironmental Perspectives) 2025
- Lissie Connors (LC '18, USGS: Microanalysis of East African Rift Volcanics) 2025
- Ben Black (Rutgers University: Magmatic Events, Paleoclimate, and Extinctions) 2024
- Jada Siverand (Lehigh University: Geochemistry of Deep Sea Hydrothermal Vents) 2024
- Dork Sahagian (Lehigh University: Bubbles and Explosive Eruptions) 2024
- Bradley Pitcher (Columbia University: Geochronology and Japanese Calderas) 2024
- Franziska Keller (Lehigh University: Caldera Forming Eruption Cycles) 2024
- Jessica Jahre (Michael Baker International, Climate Resilience—Policy and Planning) 2024
- Julianne Gross (Rutgers University / NASA: Apollo to Artemis—Moon Rocks) 2023
- Claire Zerkowski (Lawrence Livermore National Lab, MSA distinguished lecturer) 2023
- Jesse Reimink (Penn State University: Cratons and Early Earth) 2023
- Allie Nagurney (LC '16, University of South Carolina: Metamorphic Rocks) 2023
- 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
- Ingrid Uktstins (University of Iowa: Planetary Geology) 2018
- Ayla Pamukçu (Princeton/Brown: Supervolcanoes) 2016
- Karen Smit (Gemological Institute of America: Diamonds) 2015
- Lowell Miyagi (University of Utah: COMPRES visiting lecturer) 2015
- Ricardo Ramalho (Lamont-Doherty: Megatsunamis) 2014

**Professional Service and Leadership (Geologic Community)**

*Co-organizer and co-host of an NSF-funded workshop on the topic of bubble nucleation*

- Co-organized, with Dork Sahagian, a three-day workshop on the topic of bubble nucleation. Talks, poster sessions, and discussions were held at Lehigh University, and a half-day of lab demonstrations was hosted at Lafayette College. Approximately 25 scientists were in attendance, from across the United States as well as Japan, Italy, the U.K., and Germany. Funding was associated with NSF-NERC award #2211684.

*Management Board member for the Northeastern Section of the Geological Society of America*

- Member-at-large, two-year elected term of service 2024-present

*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*

- North Atlantic arcs, rifts and Plumes: Ordovician to Today (Session T11, Lancaster, PA, Northeastern GSA) 2022
- 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*

- The Archean: Crustal evolution and planetary habitability (Session V029, San Francisco, CA) 2023
- 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*

- Journal of Petrology (x1) 2024
- Volcanica (x1) 2023
- Nature Geoscience (x1) 2023
- Nature Communications (x1) 2022
- Geology (x2) 2020-23
- Geohealth (x1) 2019
- Proceedings of the National Academy of Sciences (x4) 2017-24
- Lithos (x1) 2018
- Geosphere (x1) 2016
- Contributions to Mineralogy and Petrology (x1) 2015

*Reviewing research grant proposals*

- National Science Foundation: Earth Sciences (CAREER Grant, x1) 2023
- National Science Foundation: Earth Sciences (panel member) 2023
- National Science Foundation: Earth Sciences (EAR Research Grant, x1) 2022
- National Science Foundation: Earth Sciences (Postdoctoral Fellowship, x1) 2017
- Natural Sciences and Engineering Research Council of Canada (Discovery Award, x1) 2017

## OTHER 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

## Honors and Awards

• The Thomas Roy and Lura Forrest Jones Faculty Lecture Award, Lafayette College (awarded Spring 2025, presentation Spring 2026)	2025
• Jame P. Crawford Teaching Award, Lafayette College	2022
• 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
• IBM Graduate Fellowship, Vanderbilt University [\$20,000]	2010-2014
• Teaching as Research Fellowship, Vanderbilt University [\$3,000]	2011
• Harold Stirling Vanderbilt Graduate Scholarship, Vanderbilt University [\$12,000]	2008-2010
• Dr. Albert Ripley Leeds Prize in Geology, Whitman College	2008
• Order of Waialapu Honor Society, Whitman College	2007-present
• Abshire Research Scholar Award, Whitman College [\$800]	2007-2008
• Alexander J. Anderson Scholarship, Whitman College [\$24,000]	2004-2008

## Conference Abstracts

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

1. **\*Andreо, V., \*Kammerer, J., \*Pearce, M., Montano, G., Banik, T.J., Carley, T.L.** (2025) Iceland's uncharted skull: An analysis of Hauskúpa, an unmapped nunatak at Þóðrarhyrna: American Geophysical Union, poster, (New Orleans, LA).
2. **\*Kammerer, J., \*Andreо, V., \*Pearce, M., \*Knittel, B., Montano, G., Glover, A., Garey, R., Greger, G., Banik, T.J., Carley, T.L.** (2025a) Histories emerging from the ice: Physical and compositional characterization of igneous moraine clasts at Jökulsárlón: American Geophysical Union, poster, (New Orleans, LA).
3. **\*Kammerer, J., \*Pearce, M., \*Andreо, V., Wadsworth, F.B., Gardner, J.E., Llewellyn, E.W., Sahagian, D.L., Carley, T.L.** (2025b) The tiniest bubbles possible: Experimental insight into the size of a critical bubble nucleus in rhyolitic magmas: American Geophysical Union, poster, (New Orleans, LA).
4. **\*Pearce, M., \*Andreо, V., \*Kammerer, J., Gardner, J.E., Llewellyn, E.W., Wadsworth, F.B., Sahagian, D.L., Carley, T.L.** (2025) Water migration, bubble nucleation, and worms, oh my: Capturing the mobilization of water in rhyolitic glass: American Geophysical Union, poster, (New Orleans, LA).
5. Montano, G., **\*Knittel, B., Banik, T.J., Carley, T.L., Popa, R.G., Bachmann, O., Blum, T.** (2025) Old bedrock of young volcano? Searching for insights into the Esjufjöll magmatic system using moraine material at Jökulsárlón, Iceland: Geological Society of America *Abstracts with Programs*.
6. Schoonover, E.J., Mittal, T., Garber, J.M., Ackerson, M.R., **Carley, T.L.**, Flowers, R.M., Fonseca Teixeira, L., Kenny, G., Rioux, M.E., Reimink, J. (2025) Not your average zircon—Assessing geochemical variability across igneous compositions: Geological Society of America *Abstracts with Programs*.
7. **\*Merritt, M., Carley, T.L., Banik, T.J.** (2025) Geothermobarometric investigation of nunataks from Þóðrarhyrna (Thordarhyrna), Iceland using textures and compositions of clinopyroxene and plagioclase: Geological Society of America *Abstracts with Programs*. v. 57, no. 3, paper 22-32, poster (Erie, PA) doi: 10.1130/abs/2025NE-408574.
8. Garey, R., Banik, T.J., **Carley, T.L., \*Greger, G., \*Kammerer, J., \*Knittel, B.** (2025) The ongoing search from rhyolite at Kverkfjöll (Iceland) via detrital sediments: Geological Society of America *Abstracts with Programs*. v. 57, no. 3, paper 22-33, poster (Erie, PA) doi: 10.1130/abs/2025NE-408261.

9. Glover, A., Banik, T.J., **Carley, T.L.**, Nachlas, W.O. (2025) Prominent flow banding in basalts from Kverkfjöll volcano, Iceland: Geological Society of America *Abstracts with Programs*. v. 57, no. 3, paper 22-34, poster (Erie, PA) doi: 10.1130/abs/2025NE-408191.
10. **Carley, T.L.**, \*Roth, E., \*Perry, M., Gardner, J.E., Llewellyn, E.W., Sullivan, P.J., Kusamaatmaja, H., Wadsworth, F., Sahagian, D.L. (2024) Bubble nucleation in synthetic rhyolitic glasses along a thermal gradient at 1 bar: American Geophysical Union, poster, (Washington, D.C.).
11. \*Greger, G., **Carley, T.L.**, Banik, TJ., Keller, F., \*Rein, I., \*Kim, K. (2024) Using apatite geochemistry to reveal pre-eruptive volatile behavior of the Askja 1875 caldera-forming eruption: American Geophysical Union, poster, (Washington, D.C.).
12. Banik, T.J., **Carley, T.L.**, Halldorsson, S.A., Jones, A.K. (2024) Isotopic variability in evolved magmas along the Öræfi Volcanic Belt, Iceland: American Geophysical Union, oral, (Washington, D.C.).
13. \*Knittel, B., \*Kammerer, J., Glover, A., \*Greger, G., Garey, R., Banik, T.J., **Carley, T.L.** (2024) Regional diversity of subglacial volcano compositions revealed through moraine material at Jökulsárlón, Iceland: American Geophysical Union, poster, (Washington, D.C.).
14. \*Roth, R., **Carley, T.L.**, Sahagian, D.L., Gardner, J.E. (2024) Catching bubble nucleation “in the act” through novel experiments on hydrated rhyolite: American Geophysical Union, poster, (Washington, D.C.).
15. Schoonover, E., Mittal, T., Ackerson, M.R., Garber, J., Kenny, G., **Carley, T.L.**, Reimink, J.R. (2024) Efficacy of zircon depth profiling analysis for classification of petrogenetic settings: American Geophysical Union, poster, (Washington, D.C.).
16. \*Will, H., **Carley, T.L.**, \*Knittel, B., Banik, T.J. (2024) Preliminary geochemical characterization of apatite from Pórdarhryna, Iceland: Pursuing advanced understanding of degassing of rhyolitic magmas: American Geophysical Union, poster, (Washington, D.C.).
17. Driggs, L., Banik, T.J., **Carley, T.L.**, (2024) A young, multi-stage, rhyolitic history at Esjufjöll volcano, Iceland, revealed by zircon ages and trace elements. Geological Society of America *Abstracts with Programs*. v. 56, no. 5 paper 264-8, poster (Anaheim, CA) doi: 10.1130/abs/2024AM-403679.
18. \*Perry, M., **Carley, T.L.**, Sahagian, D., Rossmann, J.S. (2024) Experimentally simulating and analyzing bubble dynamics and nucleation in magma: Geological Society of America Abstract with Programs, v. 56, no. 1, paper 40-13, poster (Manchester, NH) doi: 10.1130/abs/2024NE-397500.
19. \*Rivera, S., \*Kotler, M., **Carley, T.L.**, Banik, T., Sahagian, D. (2024) Refining subglacial emplacement of Hágöngur on the perimeter of Vatnajökull ice sheet, Iceland: Geological Society of America Abstract with Programs, v. 56, no. 1, paper 40-14, poster (Manchester, NH) doi: 10.1130/abs/2024NE-397572.
20. **Carley, T.L.**, Banik, T.J., Sigmarsdóttir, O., Halldorsson, S.A., Valley, J.W., Zhang, M., \*Merritt, M., Driggs, L. (2023): A Petrologic Introduction to Pórdarhryna (Thordarhryna), a Subglacial Silicic Formation in the Basaltic Grímsvötn-Laki Volcanic System, Fall Meeting, American Geophysical Union, paper V13B-0105, poster (San Francisco, CA).
21. Sahagian, D.L., **Carley, T.L.**, Gardner, J.E., Kusamaatmaja, H., Llewellyn, E.W., Wadsworth, F. (2023) Toward a general model for bubble formation in volcanic systems: Fall Meeting, American Geophysical Union, V21C-0140, poster (San Francisco, CA).
22. Driggs, L., Banik, T., **Carley, T.L.**, \*Merritt, M., Halldorsson, S.A., Zhang, M., Valley, J.W. (2023) Oxygen isotopes in zircon and rhyolite characterization from Esjufjöll volcano, Iceland: Geological Society of America *Abstracts with Programs*, v. 55, no. 6, paper 186-20, poster (Pittsburgh, PA), doi: 10.1130/abs/2023AM-395279.

23. \*Greger, G., Carley, T.L., Garber, J., Sunderlin, D., Hinckey, A., Gold, D. (2023) Tectonomagmatic origin of Ordovician K-Bentonites in central PA based on zircon petrochronology: Geological Society of America Abstracts with Programs, v. 55, no. 5, paper 24-3, oral (Reston, VA) doi: 10.1130/abs/2023SE-386042.
24. \*Merritt, M., Carley, T.L., Banik, T.J., Driggs, L. (2023) Initial characterization of silicic nunataks from Pórðarhyrna (Thordarhyrna), Iceland: Geological Society of America Abstracts with Programs, v. 55, no. 5, paper 21-8, poster (Reston, VA) doi: 10.1130/abs/2023SE-386001.
25. Banik, T.J., **Carley, T.L.**, (2023) A zircon-based exposé on rhyolite petrogenesis from the Öræfi Volcanic Belt, Iceland: IAVCEI Scientific Assembly (Rotorua, New Zealand).
26. \*Greger, G., Carley, T.L., Garber, J.M., Reimink, J., Sunderlin, D., \*Hinchey, A., Gold, D. (2022) The Millbrig ash in context of preceding eruptions: preliminary U-Pb and trace-element analysis of zircon in Ordovician Pennsylvania bentonites: Geological Society of America Abstract with Programs, v. 54, no. 3, paper 38-1, poster (Lancaster, PA) doi: 10.1130/abs/2022NE-375293.
27. Essex, C., Banik, T.J., Carley, T.L. (2022) Understanding magma formation at Þingmúli (Thingmuli) Volcano, Iceland based on zircon analyses: Geological Society of America Abstract with Programs, v. 54, no. 3, paper 38-3, poster (Lancaster, PA) doi: 10.1130/abs/2022NE-375213.
28. \*Rein, I.M.T., \*Connors, L., \*Ruger, E.C.V., Carley, T.L., Gross, J., (2020), Apatite as an indicator of pre-eruptive destabilization at Icelandic volcanoes: Geological Society of America Abstracts with Programs (conference virtual due to COVID-19).
29. **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).
30. \*Rein, I.M.T., Connors, L., Ruger, E.C.V., **Carley, T.L.**, Gross, J., 2020, Apatite as an indicator of pre-eruptive destabilization at Icelandic volcanoes: Geological Society of America Abstracts with Programs, v. 52, no. 6, oral (virtual) doi: 10.1130/abs/2020AM-358977.
31. \*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.
32. \*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.
33. \*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.
34. 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.
35. <sup>^</sup>**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).

36. Sahagian, D., **Carley, T.L.**, Allabar, A., Gardner, J., Llewellyn, 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.

37. 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.

38. **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.

39. \*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.

40. \*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.

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