

Emily Cunningham

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University of Utah, Department of Geology and Geophysics
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Education

Ph.D. Candidate in Geology, University of Utah— January 2021 - Present
Focus: Quantifying mantle heterogeneity; Using first row transition elements to better understand mantle processes (Advisor: Sarah Lambart, Ph.D.)

Master of Science in Geology, University of Missouri—2020

Bachelor of Science in Geology, Middle Tennessee State University—2018

Publications

Cunningham E.H., Hartley, A.H., Lambart, S., Guo, P., Chatterjee, S., Tegner, C., Planke, S., Berndt, C., Alvarez Zarikian, C., and the IODP Expedition 396 Scientists, in prep, Mantle Conditions During the Northeast Atlantic Breakup and Controls on Magmatic Production – Submission for consideration in JDR: Solid Earth expected in January 2024

Cunningham, E.H. and Lambart, S., in prep, First Row Transition Element Ratios as Tracers for Mantle Mineralogical Heterogeneity – a Monte Carlo Numerical Melting Model – Submission in Volcanica expected in spring 2024

Cunningham, E.H., 2020, The Role of Volatile Elements in Megaspheulite Formation: A Field and Experimental Investigation, Master's Thesis, University of Missouri – Columbia

Cunningham, E.H., 2018, Petrographic and Geochemical Investigation of Magmatic Processes at Olallie, Pinhead, and Clear Lake Buttes, Northern Oregon Cascade Range, Undergraduate Thesis, Middle Tennessee State University

Research Presentations

Cunningham, E.H., Hartley, A.H., Lambart, S., Guo, P., Chatterjee, S., Tegner, C., Planke, S., Berndt, C., Alvarez Zarikian, C., and the IODP Expedition 396 Scientists, 2023, Mantle source conditions and their control on magmatic productivity during the Northeast Atlantic breakup, AGU 2023, San Francisco, California

Cunningham, E.H., Hartley, A.H., Lambart, S., Guo, P., Chatterjee, S., Tegner, C., Planke, S., Berndt, C., Alvarez Zarikian, C., and the IODP Expedition 396 Scientists, 2023, The Northeast Atlantic breakup: Why so much magma?, US Advisory Committee for Scientific Ocean Drilling Summer Meeting, New York City, **invited talk**

Cunningham, E.H., Lambart, S., Guo, P., Chatterjee, S., Tegner, C., Planke, S., Berndt, C., Alvarez Zarikian, C., and the IODP Expedition 396 Scientists, 2023, The Northeast Atlantic Breakup (IODP Exp. 396): A case study for modeling the evolution of mantle source mineralogy during continental rifting, Goldschmidt Conference, Lyon, France

Cunningham, E.H. and Lambart, S., 2021, Using First Row Transition Elements to Understand and Trace Mantle Heterogeneity, Italian Mineralogical Society MEREMA School, Sestri Levante, Italy

Cunningham, E.H., 2020, Megaspherulite Occurrence in Rhyolite Obsidian: The Result of an Extensively Hydrated Melt? University of Missouri Geology Graduate Society Student Research Forum, Columbia, Missouri

Cunningham, E.H. and Whittington, A., 2019, The Role of Volatile Elements in Megaspherulite Formation: Essential to the Recipe or Icing on the Cake?, American Geophysical Union annual meeting, San Francisco, California

Cunningham, E.H., 2019, History of Moon Formation Models, University of Missouri Geology Graduate Society Student Research Forum, Columbia, Missouri

Cunningham, E.H. and Cribb, W., 2018, Crystallization Dynamics and Magma Mixing Beneath Small Quaternary Volcanic Centers, Northern Oregon Cascade Range, MTSU College of Basic and Applied Sciences Scholar's Day, Murfreesboro, Tennessee

Cunningham, E.H., Corey, A., Smith, T., and Cribb, W., 2017, Petrographic and Geochemical Investigation of Magmatic Processes at Olallie, Pinhead, and Clear Lake Buttes, Northern Oregon Cascade Range, American Geophysical Union annual meeting, New Orleans, Louisiana

Grants

2024 – Post-cruise activity grant (USSSP, 09/01/2024 – 08/31/2025, \$18k) - **pending**

2024 – Participation in IODP Expedition 402: “Tyrrhenian Continent-Ocean Transition” (IODP/JRSO, 02/01/2024 – 01/01/2025) – **accepted**

2021 – Dave and Inga Chapman Grant awarded to travel for MEREMA School to Sestri Levante, Italy, \$1,726

2019 – Megaspherulites: Field and Experimental Investigation of Extensively Hydrated Rhyolite Obsidian and Resulting Crystal Formation, University of Missouri Graduate Student Research Fund, \$2,183

2017 – Petrographic and Geochemical Investigation of Magmatic Processes at Olallie, Pinhead, and Clear Lake Buttes, Northern Oregon Cascade Range, Middle Tennessee State University Undergraduate Research and Creative Activity (URECA) Scholar Award, \$3,000.

Honors & Awards

Williamson Fellowship – Fall 2023
Schlanger Ocean Drilling Fellowship – 2022-2023 Academic Year
University of Utah College of Mines and Earth Sciences Outstanding Teaching Assistant Award – 2021-2022 Academic Year
University of Utah Stokes-Eardly Fellow – Spring 2021
MTSU Department of Geosciences Estwing Rock Hammer Award—Spring 2018
MTSU College of Basic and Applied Sciences Outstanding Geology Student Award—Spring 2018
MTSU Department of Geosciences Burt Bordine Scholarship Recipient—Spring 2017

Teaching Experience

Williamson Fellow, Salt Lake Center for Science Education, Fall 2023
Lecturer (half semester) and Graduate Teaching Assistant, **Mineralogy**, Fall 2021
Graduate Teaching Assistant, **Environmental Geology**, Fall 2018, Spring 2020
Graduate Teaching Assistant, **Mineralogy**, Fall 2019
Graduate Teaching Assistant, **Principles of Geology**, Spring 2019
Supplemental Instruction Leader, **Precalculus**, Fall 2017
Tutor, **Introductory Geology**, Spring 2016-Fall 2017

Professional Development

Goldschmidt Non-Academic Careers workshop – July 2023
Goldschmidt Hidden Histories workshop – July 2023
Goldschmidt Writing Scientific Papers workshop – July 2023
University of Utah Annual Teaching Symposium – August 2021
Goldschmidt HDIP Software virtual workshop – July 2021
Goldschmidt Magma Chamber Simulator virtual workshop – July 2021
Rift2Ridge NSF workshop, virtual – June 2021
Undergraduate Research Mentor Development Program graduate, University of Utah – Spring 2021
Unlearning Racism in Geosciences (URGE) Participant – Spring 2021
Geochemical Society alphaMELTS2.0 virtual workshop – November 2020

Service & Outreach

Research Supervisor of Autumn Hartley through University of Utah ACCESS Program and Undergraduate Research Opportunity Program – November 2021-Present
Speaker, Grad Student Prep Forum, University of Utah College of Mines and Earth Sciences- Spring 2021
Safety Officer, MTSU Rock Climbing Team—Fall 2016-May 2018
President, Sigma Gamma Epsilon National Geological Honors Society, Eta Sigma Chapter—Fall 2016-May 2018
Secretary & Treasurer, Sigma Gamma Epsilon National Geological Honors Society, Eta Sigma Chapter—Spring 2016-Fall 2016

Relevant Analytical Proficiencies

- Electron Probe Microanalysis
- Scanning Electron Microscopy
- Laser Ablation Inductively
Coupled Plasma Mass
Spectrometry

Relevant Software Proficiencies

- MATLAB
- Python
- Adobe Suite
- Microsoft Office Suite