

## Curriculum Vitae - Madeline J. Lewis

Department of Geology and Geophysics  
University of Wyoming, Laramie, WY 82071

**Contact:** mlewis48@uwyo.edu

### PROFESSIONAL APPOINTMENTS

Assistant Professor- University of Wyoming	(2023-present)
Postdoctoral Research Associate- Purdue University	(2021-2023)
Instructor- Indiana University Geologic Field Station	(2021-22)
Associate Instructor- Indiana University Geologic Field Station	(2020)
Graduate Research Assistant- Caltech	(2015-2021)
Intern, US Geological Survey- Menlo Park, CA	(2015)
Science, Research, and Technology Scholar- Indiana University	(2012-2015)

### EDUCATION

<b>Ph.D. in Geochemistry, California Institute of Technology</b>	(2021)
Dissertation: Magmatic Differentiation in Arc and Mid-Ocean Ridge Settings	
<b>M.S. in Geology, California Institute of Technology</b>	(2017)
<b>B.S. in Geological Sciences, Indiana University- Bloomington</b>	(2015)
Magna cum laude, Hutton Honors College, Minor in Studio Art	

### GRANT FUNDING

**NSF-EAR Postdoctoral Fellowship:** Awarded \$180,000 (*declined*, awarded in 2022)  
NSF EAR-PF Grant. No. 2204477: Measuring the Effects of Large Volcanic Eruptions on a Shallow Magma Reservoir using Microanalytical Techniques

**StraboSpot fieldwork support:** Awarded \$1,500 (2021)

**GSA: Awards for Geochronology Student Research 2:** Awarded \$8,987 (2019-2020)  
Project: Timing of Mafic Intrusions Relative to Granitic Pluton Emplacement in the Sierra Nevada Batholith

**NASA Indiana Space Grants Consortium, Undergraduate:** Awarded \$1,500 (2014-2015)

### TEACHING EXPERIENCE

**Instructor- University of Wyoming**  
GEOL 4210/5210, Topics in Magmatic Processes

**Instructor- Indiana University**  
EAS-E432 2022, Field Geology Fundamentals in Montana and Wyoming  
EAS-X429 2021, Field Geology in the Rocky Mountains

**Associate Instructor- Indiana University**  
EAS-X428 and EAS-X498c 2020, Field Geology in the Rocky Mountains (virtual)

**Teaching Assistant- Caltech**  
Ge120a 2020, Introduction to Field Geology  
Ge120b 2019, Field Camp  
Ge114a,b 2018, Mineralogy and Mineralogy Lab

## Ge136a,b,c 2016-2017, Regional Geology of the Southwestern US

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**AWARDS**

NSF-EAR Postdoctoral Fellowship (awarded in 2022, *declined*)  
 Ian Campbell Award for outstanding performance in field geology courses, Caltech (2017)  
 Honorable Mention- National Science Foundation Graduate Research Fellowship (2016)  
 California Institute of Technology Graduate Research Fellowship (2015-2016)  
 Magna Cum Laude, Indiana University (2015)  
 Phi Beta Kappa, Indiana University (2015)  
 Faculty Scholarship, Indiana University Department of Geological Sciences (2015)  
 ConocoPhillips Brunton Compass Award: Top Student at Indiana University Field Camp (2014)  
 Judson Mead Geologic Field Station Anadarko Scholarship (2014)  
 Indiana University Alumni Council Undergraduate Geology Scholarship (2014-2015)  
 Mineralogical Society of America Undergraduate Prize (2014)  
 Professional Development Award, Indiana University Department of Geological Sciences (2014)  
 N. Gary Lane Beginning Geologist Award, Indiana University (2013)  
 Hutton Honors College Member at Indiana University (2012-2015)  
 Richard and Virginia Stoner Scholarship (2012-2015)  
 Indiana University Distinction Scholarship (2012-2015)  
 William L. Frye Scholarship San Fernando, CA Elks Lodge #1539 (2012-2016)

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**STUDENTS ADVISED**

Mollie Pope, University of Wyoming MS Student (graduating 2024)

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**PUBLICATIONS**

**Lewis, MJ**; Ryan-Davis, JR; Bucholz, CE (2023). "Mafic intrusions record mantle inputs and crustal thickness in the eastern Sierra Nevada batholith, California, USA." *GSA Bulletin*. doi: <https://doi.org/10.1130/B36646.1>

**Lewis, MJ**; Bucholz, CE; Jagoutz OE (2021) "Evidence for polybaric fractional crystallization in a continental arc: Hidden Lakes mafic complex, Sierra Nevada batholith, California. *Contributions to Mineralogy and Petrology*. 176.11: 1-27

Lund, DC; Seeley, EI; Asimow, PD; **Lewis, MJ**; McCart, S; Mudahy, A (2018) "Anomalous Pacific-Antarctic Ridge volcanism precedes glacial Termination 2." *Geochemistry, Geophysics, Geosystems*. 19.8: 2478-2491.

**Lewis, MJ**; McCart, S; Asimow, PD; Lund, DC (*in review*). "Multiple sills tapped by explosive eruptions from the East-Pacific Rise: Ties to sea level variation."

**Lewis, MJ**; Eddy, MP; DesOrmeau, JW; Pamukcu AS (*in prep*). "Volatile and thermal evolution of stored magmas in response to a super-eruption: Poco Canyon Caldera system, Nevada."

**Lewis, MJ**; Asimow, PD; Maurice, A; Fischer, WW, (*in prep*). "Primary hosting of REEs in apatite the Wadi Karim BIF: Implications for REE chemistry in Iron Formations."

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**MEETING ABSTRACTS** (\*indicates oral presentation)

- \***Lewis, MJ**; Eddy, MP (2023) Efficient fractional crystallization and early zircon saturation in an upper crustal arc mafic intrusion: Hidden Lakes Mafic complex, Sierra Nevada batholith. *GSA Cordilleran Section Meeting, 2023*, 10-5.
- \***Lewis, MJ**; Eddy, MP; DesOrmeau, JW; Pamukçu AS (2022) Effects of a caldera-forming eruption on the conditions of magma storage: Poco Canyon Caldera System, Nevada. *GSA Annual Meeting 2022*, 115-9.
- McCart, S; Lund, DC; **Lewis, MJ**; Asimow, PD (2022) Assessing glacial-interglacial variability in mid-ocean ridge magmatism: New submarine volcanic ash records from the East Pacific Rise and Pacific-Antarctic Ridge. *Ocean Sciences Meeting, OC13*.
- Bucholz, CE; **Lewis, MJ**; Ryan-Davis, JR (2021) Contributions of mafic magmatism to the upper crustal Sierra Nevada batholith, California. *GSA Annual Meeting 2021*, 203-7.
- \***Lewis, MJ**; Asimow, PD; Lund, DC; McCart S (2020). Multiple sills tapped by a series of explosive eruptions from the East Pacific Rise. *AGU Fall Meeting 2020*, V004-06.
- Lewis, MJ**; Bucholz, CE; Ryan-Davis, JR (2020). Geochronology and Petrology of Upper Crustal Mafic Plutons Support a Mantle Connection to Arc Magmatic Productivity: Eastern Sierra Nevada Batholith, CA. *GSA Annual Meeting 2020*, 175-9.
- Lewis, MJ**; Bucholz, CE (2019). Mafic Intrusions in the Sierra Nevada Batholith: Evidence for Polybaric Crystallization in a Continental Arc. *GranitesII Summer School on Magmatic Differentiation*. Roscoff, France.
- \***Lewis, MJ**; Bucholz, CE; Jagoutz, OE (2018). Polybaric crystallization of hydrous basalts in a continental arc: evidence from Hidden Lakes mafic complex, Sierra Nevada batholith, California. *AGU Fall Meeting 2018*, V34C-08.
- Lewis, MJ**; Asimow, PD; Maurice, AE; Fischer, WW (2018). REE budget in a Neoproterozoic iron formation dominated by accessory apatite: Wadi Karim BIF, Eastern Desert, Egypt. In *GSA Annual Meeting 2018*, 190-10.
- \***Lewis, MJ**; Bucholz, CE; Jagoutz, OE; Eddy, MP (2017). Petrology and Geochemistry of an Upper Crustal Mafic Complex-Hidden Lakes, Sierra Nevada Batholith, California. *AGU Fall Meeting 2017*, V24D-02.
- Asimow, PD; **Lewis, MJ**; Lund, DC; Seeley, EI; McCart, S; Mudahy, A (2017). Glacial modulation of mid-ocean ridge magmatism and anomalous Pacific Antarctic Ridge volcanism during Termination II. *AGU Fall Meeting 2017*, PP13E-03.
- \***Lewis, MJ**; Asimow, PD; Lund, DC (2017). Petrology of Explosive Eruptions from the Pacific-Antarctic Ridge and Ties to Sea Level Variation, *IAVCEI Scientific Assembly 2017*.
- Lewis, MJ**; Asimow, PD; Lund, DC (2017). Petrologic Controls on Explosive Eruptions from the Pacific-Antarctic Ridge. *AGU Chapman Conference on Submarine Volcanism 2017*.
- Lewis, MJ**; Asimow, PD; Lund, DC (2016). Controls on Explosive Eruptions along the Pacific-Antarctic Ridge. *AGU Fall Meeting 2016*, OS31D-2055.
- \***Lewis, MJ**; Kirby, SH (2015). Regional Sampling of Mantle Peridotites in Serpentinite Blocks Collected from Serpentinite Bodies in the San Francisco Bay Area, California: Petrological Trends. *AGU Fall Meeting 2015*, T13H-05.

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**INVITED PRESENTATIONS**

University of Arizona – Geosciences Colloquium Series (2023)

University of Wyoming – Geology and Geophysics Department Seminar (2023)

University of Missouri – Geological Sciences Seminar (2023)

University of Florida – Department of Geological Sciences Seminar Series (2023)  
 Purdue University – EAPS Departmental Seminar (2023)  
 University of Washington – Petrolunch Talk (2022)  
 University of Oklahoma – Shell Colloquium Series (2022)  
 Indiana University – EAS Colloquium Series (2022)  
 UC Santa Barbara – Earth Science Colloquium (2022)  
 Purdue University – Gaggle Seminar (2021)  
 University of Southern California – Lithospheric Dynamics Seminar (2019)

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## OUTREACH, VOLUNTEER, AND SERVICE

**Journals reviewed for, to date:** Contributions to Mineralogy and Petrology(2), EPSL (2), African Journal of Earth Sciences(1)

**Session Convener and judge of student posters- GSA Cordilleran Section Meeting (2023)**  
 Session: Drivers of Cordilleran Magmatic Processes and Geochemistry

**Guest, The Schist of It Podcast (2022)**  
 Episode 22, New Model for Crystallization in the Sierra Nevada Batholith

**Session Convener- GSA Cordilleran Section Meeting (2021)**  
 Session: Petrology, Geochemistry, and Structure of Cordilleran Batholiths through Space and Time

**Skype a Scientist (2020-present)**  
 Introductory geology presentations, Q&A, and career discussions with seven classrooms ranging from second to eighth grade

**Participant in Certificate of Practice in University Teaching program (2019-2021)**  
 Through Center for Teaching, Learning and Outreach at Caltech

**Caltech Equity and Title IX Advocate (2019-2021)**  
 Served as a confidential resource for Title IX concerns, prevention, and intervention.

**Presenter & Volunteer- Skype a Scientist (2018-present)**  
 Virtual guest scientist for elementary school classrooms

**Chair- Caltech Arts Committee (2017-2019)**  
 Advocate for the arts on campus, organize art and science outreach events

**Graduate Student Representative- Institute Arts Committee (2018-2021)**  
 Select and approve art installations at Caltech

**Volunteer- Science Olympiad (2017-2019)**  
 Roles: proctor and grader at State tournament

**Volunteer- Arroyos and Foothills Conservancy (2016)**  
 Geologic mapping to secure land for wildlife corridor

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## WORKSHOPS AND TRAINING

**GSA Short Course:** AGeS Geochronology Short Course (2022, invited speaker)

**GSA Short Course:** Petrochronologic Applications of U-Pb Geochronology and Lu-Hf and Trace/ REE Geochemistry by LA-ICPMS (2020)

**GSA Field Short Course:** Pluton Construction Using StraboSpot Field Data System (2019)

**Granites II Summer School:** Magmatic Differentiation (2019, Roscoff, France)

**UCLA SIMS Workshop:** Fundamentals of SIMS Analysis and Roles in Geology (2017, UCLA)

**alphaMELTS workshop (2015, Caltech)**

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## **FIELD EXPERIENCE**

### **Postdoctoral Fieldwork (2021-2023)**

Stillwater Range, NV and North Cascades, WA – Igneous Petrology, Mapping  
Mentoring of two Purdue PhD students

### **Field Camp, Instructor (2021)**

Tobacco Root Mountains, MT – Mapping, Structural Geology  
Course: Field Geology in the Rocky Mountains, EAS-X429, Indiana University

### **PhD Fieldwork: Mapping and sampling mafic intrusions (2016, 2017, 2018, 2019)**

Eastern Sierra Nevada, CA – Igneous Petrology, Mapping  
Mentoring of 2 Caltech undergraduate students

### **Field Assistant: Mapping and sampling of volcanic rocks (2018)**

Isla Ángel de la Guarda, Baja California, Mexico – Structural Geology, Igneous Petrology

### **Field Assistant: Sampling of peraluminous granites (2017,2018)**

Northwestern Ontario, Canada – Igneous and Metamorphic Petrology

### **USGS Internship: Serpentinites of the Franciscan Complex (2015)**

San Francisco Bay Area, CA – Structural Geology, Metamorphic Petrology

### **Indiana University Field Camp G429, Student (2014)**

Tobacco Root Mountains, MT – Mapping, Structural Geology