

Curriculum Vitae - Madeline J. Lewis

Department of Earth, Atmospheric, and Planetary Sciences
Purdue University, West Lafayette, IN 47907

Contact: maddie@purdue.edu, (818) 219-8498

PROFESSIONAL APPOINTMENTS

Postdoctoral Research Associate- Purdue University	(2021-present)
NSF-EAR Postdoctoral Fellow- Stanford University	(starting in 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

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

TEACHING EXPERIENCE

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

GRANT FUNDING

NSF-EAR Postdoctoral Fellowship: Awarded \$180,000 (2023-2025)

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)

AWARDS

NSF-EAR Postdoctoral Fellowship (awarded in 2022)
 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)

PUBLICATIONS

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; Ryan-Davis, JR; Bucholz, CE (*in review*). "Mafic intrusions record mantle inputs and crustal thickening during flare-ups in the Sierra Nevada batholith."

Lewis, MJ; McCart, S; Asimow, PD; Lund, DC (*in prep*). "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."

MEETING ABSTRACTS

(*indicates oral presentation)

***Lewis, MJ**; Eddy, MP; Desormeau, JW; Pamukcu 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.

INVITED PRESENTATIONS

- Indiana University - EAS Colloquium Series (2022)
 UC Sana Barbara - Earth Science Colloquium (2022)
 Purdue University - Gaggle Seminar (2021)
 University of Southern California - Lithospheric Dynamics Seminar (2019)

OUTREACH, VOLUNTEER, AND SERVICE

- 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

WORKSHOPS AND TRAINING

GSA Short Course: AGeS Geochronology Short Course (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)

FIELD EXPERIENCE

Postdoctoral Fieldwork (2021, 2022)
 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