

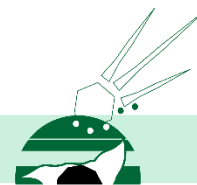
LORI NICOLE WILLHITE



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EDUCATION

University of Maryland

Ph.D. Geology, in progress (May 2023) **GPA 3.83**

Advisors: Ricardo Arevalo, Jr.; Richard Walker

University of California Santa Barbara

M.S. Earth Science, 2019 **GPA 4.00**

Advisor: Matthew G. Jackson

B.A. Chemistry, 2016 **GPA 3.51**

B.S. Biological Psychology, 2016 **GPA 3.83**

Minor, Earth Science, 2016 **GPA 3.71**

MEMBERSHIPS

Geochemical Society
Geological Society of America
American Geophysical Union
National Association of Geoscience Teachers
Association of Women Geologists
Earth Science Women's Network
Females in Mass Spectrometry
IEEE Aerospace and Electronic Systems Society
IEEE Women in Engineering
Canine Training Association

AWARDS, GRANTS, & FELLOWSHIPS

Amelia Earhart Fellowship, Zonta International, 2020-2021
Goldschmidt Grant, 2021
Earth System Science Interdisciplinary Center Student Travel Award, 2019
Geological Society of America, CARES Grant, 2020
Dean's Fellowship Award, University of Maryland College Park, 2019
Earth System Science Interdisciplinary Center Student Travel Award, 2019
George Tunnel Endowed Fellowship, UCSB, 2019
Global Field Travel Award, Department of Earth Science, UCSB, 2019
Service to Undergraduate and Graduate Well-Being Award, Royal Geologic Society of Goleta, 2019
Grad Slam! best oral presentation, Department of Earth Science, UCSB, 2018
Preston Cloud Award, Department of Earth Science, UCSB, 2018
Graduate Research Grant, Geological Society of America, 2018
Conference Travel Grant, Graduate Student Association, UCSB, 2018
Undergraduate Research and Creative Studies Grant, UCSB 2016
Phi Lambda Upsilon Award, Department of Chemistry and Biochemistry, UCSB, 2016

MENTORING EXPERIENCE

Maddy Raith, undergraduate researcher, UMDCP
Fall 2020 to present

Gordan Williams, undergraduate research project,
UCSB Spring 2019

TEACHING EXPERIENCE

Introduction to Geology TA, UCSB Earth Science,
(Winter 2018)
Mineralogy (Earth Materials) TA, UCSB Earth Science,
(Fall 2018)
Field Methods TA, UCSB Earth Science (Spring 2018)
Geologic Catastrophes TA, UCSB Earth Science
(Winter 2017)
Introduction to Geology TA, UCSB Earth Science (Fall
2017)

RESEARCH HIGHLIGHTS AND EXPERIENCE

Invited talk: Lunar Exploration Assessment Group (LEAG) Virtual Meeting **February 7, 2020**
Characterization of Regolith and Trace Economic Resources (CRATER) via NASA DALI Program: Integration into the Artemis Program

NASA Goddard Space Flight Center

Research Assistant

Testing of a novel prototype mass spectrometer for ocean worlds airless rocky bodies. Leader of weekly data analysis and science team meetings for the CORALS and CRATER development projects at NASA GSFC. 10-40 hours/week **August 2019 – present**

NASA Jet Propulsion Laboratory

Applied Science and Systems Engineering Intern: AIRS Mission

Applied data visualization techniques to atmospheric and weather data from the AIRS instrument on the Aqua satellite. 40-60 hours/week **June 2018-August 2018**

Non-Traditional Stable Isotope Short Course, Lawrence Berkeley National Laboratory

Attendee

Attended course on non-traditional isotope geochemistry, method development, isotope theory, and applications of isotope chemistry. **December 2016**

High Temperature Isotope Geochemistry, University of California Santa Barbara

Undergraduate Research Assistant

Mineral collection; analyses of isotope, major, and trace element data; and discussion of pertinent literature. Hrs/week varied. **April 2016-June 2017**

Neuropharmacology Lab, University of California Santa Barbara

Undergraduate Research Assistant

Worked independently performing Western Blotting techniques including preparation and execution of electrophoresis, blocking and antibody incubation, and developing film. 10-15 hours/week. **January 2014 – March 2014**

COMMUNITY INVOLVEMENT AND SERVICE

Kids Excelling in Math and Science (KEMS) Mentor and Program Director

- Weekly after school science program for middle school students

Geological Society of America Planetary Geology Division Student Representative

- Student representative and student advisor on GSA student advisory committee

Goldschmidt 2021 Conference Primary Convener

- Organizing the "Chemical Geodynamics Throughout the Solar System" session at the upcoming Goldschmidt conference

Girls on the Run DC Volunteer

- Volunteer at local chapter for girls' fitness, life skills, and empowerment

Guest Appearance on "Volcano Moments with Dr. Janine Krippner" YouTube Episode: "Fancy Rock Party"

- Talked about lava bombs for educational outreach

Science Night Volunteer

- Taught elementary school students about minerals, fossils, and earthquakes

ACE Chemistry Tutoring Program Tutor

- Helped create the ACE Chemistry tutoring program at UCSB, aimed at teaching chemistry and academic skills to historically excluded groups of students in STEM

Mental Health Peer

- Liaison between student organizations and mental health resources at UCSB and the Goleta community

Senior Dog Sanctuary Volunteer

- Volunteer at a local rescue for senior dogs

Society for the Prevention of Cruelty to Animals Volunteer

- Volunteered at the New Zealand SPCA while studying abroad

SKILLS

Laboratory techniques

Column chromatography in a clean lab, thermal ionization mass spectrometry, laser ablation/desorption sampling techniques, inductively coupled plasma mass spectrometry, Orbitrap mass spectrometry, electron probe microanalysis, scanning electron microscopy, mineral separation, simple and fractional distillation, titration, gravimetric analysis

Computer skills

Data visualization. Motion graphics and 2D animation. Proficient with MATLAB; Python; Mathematica; Microsoft Word, Excel, PowerPoint; Adobe Illustrator, After Effects, Photoshop.

PUBLICATIONS

Willhite, L. N., Jackson, M. G., Blichert-Toft, J., Bindeman, I., Kurz, M. D., Halldórsson, S. A., et al. (2019). Hot and heterogenous high-³He/⁴He components: New constraints from proto-Iceland plume lavas from Baffin Island. *Geochemistry, Geophysics, Geosystems*, 20. <https://doi.org/10.1029/2019GC008654>

M.G. Jackson, J. Blichert-Toft, S.A. Halldórsson, A. Mundl-Petermeier, M. Bizimis, M.D. Kurz, A.A. Price, S. Harðardóttir, **L.N. Willhite**, K. Breddam, T.W. Becker, R.A. Fischer (2020). Ancient helium and tungsten isotopes preserved in mantle domains least modified by crustal recycling. *Proceedings of the National Academy of Sciences*. 202009663; DOI: 10.1073/pnas.2009663117

Willhite, L. N., Ni, Z., Arevalo Jr., R. D., Southard, A., Bardyn, A., Danell, R., Grubisic, A., Gundersen, C., Minasola, N., Fahey, M., Yu, A., Briois, C., Thirkell, L., Colin, F., Hernandez, E., Ersahin, A., and Makarov, A. (2021). CORALS: A Laser Desorption /Ablation Orbitrap Mass Spectrometer for In Situ Exploration of Europa. *2021 IEEE Aerospace Conference*. (in press)

DEPARTMENT SERVICE AND LEADERSHIP

IDEA Committee Graduate Representative, UMD Geology

- Elected graduate representative of the main department inclusivity, diversity, equity, and accessibility committee

IDEA Communications Committee Member, UMD Geology

- Committee with the goal of communicating department opportunities and activities to the greater community and connecting with UMD Geology alumni

IDEA Outreach Committee Member, UMD Geology

- Committee with the goal of reaching the greater community to create an inclusive and accessible future for geoscience

"How to Apply to Graduate School" Panel, UMD Geology

- Organized a diverse panel of graduate students to answer questions about the graduate school application process and graduate career paths

Women's Lunch Organizer, UMD Geology

- Organized two women's lunches to foster a sense of community and provide a safe space and facilitate informal and formal mentorship within the department community

Alumni Relations Chair, UCSB Earth Science

- Helped maintain the database of alumni; organize the alumni weekend; and choose winners of the Prestigious Alumni Award

"Applying to Graduate School" Panel, UCSB Earth Science

- Served on a panel about applying to and choosing a graduate program

Health and Wellness Chair, Royal Geological Society of Goleta

- Founded the Health and Wellness chair within the graduate student government in the Earth Science Department at UCSB; planned a mental health workshop; served as a liaison between graduate students and faculty/staff

ABSTRACTS

- Willhite, L.N.**, Ni, Z., Arévalo, R., Southard A., Bardyn, A., Danell, R., Grubisic, A., Gundersen, C., Minasola, N., Fahey, M., Yu, A., Briois, C., Thirkell, L., Colin, F., Hernandez, E., Ersahin, A., Makarov, A. (2020) CORALS: A Laser Desorption/Ablation Orbitrap Mass Spectrometer for *In Situ* Exploration of Europa, *2021 IEEE Aerospace Conference*
- Willhite, L. N.**, Arévalo, R., Locmelis, M., Piccoli, P., Farcy, B., Funderburg, R., Jackson, M., Day, J., Ireland, T., Lassiter, J. (2020) An Investigation of Oxygen Fugacity in Ocean Island Basalts, Abstract #V031-0007 presented at 2020 Fall Meeting, AGU, Dec 1-17
- Ricardo Arevalo, Adrian E Southard, Ryan Danell, Andrej Grubisic, **Lori N Willhite**, Ziqin Ni, Cynthia Gundersen, Niko A Minasola, W Yu Anthony, Molly Fahey, Barbara A Cohen, Stephanie Getty, Christelle Briois, Laurent Thirkell, Fabrice Colin, Emanuel Hernandez, Alexander Makarov (2020) Laser Desorption/Ablation Orbitrap Mass Spectrometry for the Exploration of Astrobiology Targets in the Next Decade, Abstract #P051-02 presented at 2020 Fall Meeting, AGU, Dec 1-17
- Willhite, L. N.**, Arévalo, R., Locmelis, M., Piccoli, P., Farcy, B., Castillo, M., Funderburg, R., Jackson, M., Day, J., Ireland, T., Lassiter, J. (2020) The Spatial Distribution of fO₂ in the Mantle: Insights from V Partitioning Behavior in Ocean Island Basalts, *Goldschmidt Abstracts, 2020*
- Willhite, L.**, Southard A., Bardyn, A., Arévalo, R., Grubisic, A., Danell, R., Ni, Z., Gundersen, C., Minasola, N., Yu, A., Fahey, M., Cohen, B., Briois, C., Thirkell, L., Colin, F., Makarov, A. (2020) Characterization of Regolith and Trace Economic Resources (CRATER): Integration into the Artemis Program, Lunar Surface Science Workshop
- Arévalo, R., **Willhite, L.**, Bardyn, A., Ni, Z., Grubisic, A., Yu, A., Fahey, M., Cohen, B., Southard, A., Danell, R., Gundersen, C., Minasola, N., Briois, C., Thirkell, L., Colin, F., Makarov, A. (2020) Characterization of Regolith and Trace Economic Resources (CRATER) for Exploration of the Lunar Surface, American Society for Mass Spectrometry (ASMS) Conference for Mass Spectrometry and Allied Topics, Houston, TX, USA
- Southard, A., **Willhite, L. N.**, Bardyn, A., Hernandez, E., Grubisic, A., Danell, R., Gundersen, C., Minasola, N., Makarov, A., Arévalo, R. (2020) Characterization of Ocean Realms and Life Signatures (CORALS) Prototype, 2020 In Situ Science and Instrumentation for Exploration of Europa and Ocean Worlds Workshop, Pasadena, CA, USA
- Southard, A., **Willhite, L. N.**, Bardyn, A., Hernandez, E., Grubisic, A., Danell, R., Gundersen, C., Minasola, N., Makarov, A., Arévalo, R. (2020) Characterization of Ocean Realms and Life Signatures (CORALS) Prototype, American Society for Mass Spectrometry (ASMS) Conference for Mass Spectrometry and Allied Topics, Houston, TX, USA
- Ni, Z., Arévalo, R., Southard, A., Grubisic, A., Danell, R., **Willhite, L.**, Bardyn, A., Gundersen, C., Minasola, N., Ersahin, A., Yu, A., Fahey, A., Getty, S., Briois, C., Thirkell, L., Colin, F., Makarov, A. (2020) The Unambiguous Identification of Prospective Biosignatures across Multiple Scales with the CORALS Instrument, 2020 In Situ Science and Instrumentation for Exploration of Europa and Ocean Worlds Workshop, Pasadena, CA, USA
- Arévalo, R., Southard, A., Grubisic, A., Danell, R., Gundersen, C., Minasola, N., Ersahin, A., Yu, A., Fahey, A., Getty, S., Ni, Z., **Willhite, L.**, Bardyn, A., Briois, C., Thirkell, L., Colin, F., Makarov, A. (2020) Characterization of Ocean Realms and Life Signatures (CORALS): Status and Path Forward, 2020 In Situ Science and Instrumentation for Exploration of Europa and Ocean Worlds Workshop, Pasadena, CA, USA
- Jackson, M. G., Blichert-Toft, J., Halldórsson, S. A., **Willhite, L. N.**, Kurz, M. D., Breddam, K., Bindeman, I., Harðardóttir, S., Price, A. (2019) Cenozoic Evolution of the Iceland Hotspot Reveals a Temporal Shift in the Composition of the Primordial Component, Abstract #V23H-0202 presented at 2019 Fall Meeting, AGU, San Francisco, CA, USA, Dec 9-13
- Willhite, L.N.**, Jackson, M.G., Blichert-Toft, J., Bindeman, I., Kurz, M.D. (2018) The Icelandic Mantle Plume: A 62-Million-Year Record of the Deep Mantle, Abstract #V11A-02 presented at 2018 Fall Meeting, AGU, Washington D.C., USA, Dec 10-14

CONFERENCE, MEETING, AND GUEST LECTURE PRESENTATIONS

- IEEE Aerospace Conference 2021, recorded oral presentation, March 6 – March 13, 2021
 - *CORALS: A Laser Desorption/Ablation Orbitrap Mass Spectrometer for In Situ Exploration of Europa*
- Guest lecturer, Planetary Habitability, GEOL 615, Department of Geology, University of Maryland, February 2, 2021
 - *Stellar Nucleosynthesis and Radiogenic Isotopes*
- AGU Fall Meeting 2020, poster presentation, December 16, 2020
 - *An Investigation of Oxygen Fugacity in Ocean Island Basalts*
- Guest Lecturer, Planetary Geology, Department of Earth Science, University of California Santa Barbara, May 7, 2020
 - *Past and Future of Lunar Exploration*
- Lunar Exploration Assessment Group (LEAG) Virtual Meeting, oral presentation, February 7, 2020
 - *Characterization of Regolith and Trace Economic Resources (CRATER) via NASA DALI Program*
- University of Maryland, Department of Geology, Lunch time geocheminar, September 25, 2019
 - *Hot and heterogenous high-³He/⁴He components: New constraints from proto-Iceland plume lavas from Baffin Island*
- AGU Fall Meeting 2018, oral presentation, December 10, 2018
 - *The Icelandic Mantle Plume: A 62-Million-Year Record of the Deep Mantle*