

# LIANNIE C. VELÁZQUEZ SANTANA

Postdoctoral Fellow

Department of Geological Sciences, The University of Texas at Austin

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## EDUCATION

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**Miami University**, Oxford, Ohio August 2022  
Doctor of Philosophy (Ph.D.) in Geology

*Dissertation:* “Insights into Trans Crustal Magmatic Systems: A Framework for Investigating Continental Arc Magmatism at the Bolivian Andes”

*Advisor:* Dr. Claire L. McLeod

*Committee members:* Dr. Mike Brudzinski, Dr. Mark Krekeler, Dr. Alicia Cruz-Uribe

**University of Puerto Rico**, Mayagüez, Puerto Rico July 2018  
B.S. in Geology, *magna cum laude*

*Undergraduate Thesis:* “Petrological Investigation of Mafic Enclaves in the Utuado Pluton, Puerto Rico”

*Advisor:* Dr. Thomas Hudgins

## APPOINTMENTS

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**Provost’s Early Career Cohort Postdoctoral Fellow** September 2022 - present  
Department of Geological Sciences, The University of Texas at Austin

**Graduate Student Writing Consultant** January 2020 - August 2021  
HOWE Writing Center, Miami University

## FELLOWSHIPS

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UT Austin Provost’s Early Career Postdoctoral Fellowship	2022-2024
Miami University Dissertation Scholar Fellowship	2021-2022
Miami University Graduate School Scholar Fellowship	2018-2022
Miami University Diversity Enhancement Pathway Graduate Fellowship	2018-2022

## AWARDS & GRANTS

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SZ4D Community Meeting Travel Grant	2022
IAGD Accessible Field Trip Award	2022
GSA On to the Future Alumni Professional Development Award	2022
MU Department of Geology Annual Doctoral Award	2022
MU Department of Geology Annual Student DEI Award	2022
NAGT Outstanding Teaching Assistant Award	2022
AGU Student Travel Grant	2021
NSF GeoAllies Program Award	2021- present
Miami University Graduate School Graduate Student Achievement Award	2020
NAGT Earth Education for Sustainable Societies Award	2020
NAGT Student Academic Career Prep Award	2020
Miami University Graduate Student Association Travel Grant	2019
GSA Rocky Mountain Student Travel Grant	2019
GSA MGPV Division Student Travel Grant	2019
ExxonMobil/GSA Student Geoscience Grant	2019
GSA Student Professional Development Pathways Travel Award	2018
GSA Field Camp Scholar Award	2018

AGU Student Travel Grant	2017
SURGE Program Stanford University Scholarship	2017
GSA On to the Future (OTF) Travel Award	2017
GSA Rocky Mountain Section Travel Grant	2017

## PEER-REVIEWED JOURNAL PUBLICATIONS

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### *In Review*

4. **Velázquez Santana, L.C.**, McLeod, C.L., Shaulis, B., Loocke, M., Al Gbory, R. (*in review*). *Transcrustal Magmatic Processes as revealed by Multiple Amphibole Crystal Cargoes at the Quillacas Volcanic Center, Bolivia*. Contributions to Mineralogy & Petrology.
3. **Velázquez Santana, L.C.**, McLeod C.L., Brown, K. (*in review*). *Constraining the Timescales of Continental Crust Evolution in the Central Andes through U-Pb-Hf Analyses of Zircons in Crustal Xenoliths*. GSA Bulletin.

### *Published*

2. **Velázquez Santana, L.C.**, McLeod, C.L., Blakemore, D., Shaulis, B., Hill, T. (2020). *Bolivian Cumulate Hornblendites: Insights into the Depths of Central Andean Arc Magmatic Systems*. Lithos. <https://doi.org/10.1016/j.lithos.2020.105618>
1. Qin, Z., Soldati, A., **Velázquez Santana, L.C.**, Rust, A.C., Suckale, J., Cashman, K.V. (2018). *Slug stability in flaring geometries and ramifications for lava-lake degassing*. JGR -Solid Earth. <https://doi.org/10.1029/2018JB016113>

## CONFERENCE CONTRIBUTIONS

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### *First-Author Oral Presentations*

- 2022 **Velázquez Santana, L.C.**, McLeod, C.L., Shaulis, B., Loocke, M., Al Gbory, R. *Transcrustal Magmatic Processes Revealed through an Integrated Study of Amphibole Crystal Cargoes at the Quillacas Volcanic Center, Bolivia*. GSA Annual Meeting.
- 2021 **Velázquez Santana, L.C.**, McLeod, C.L., Brown, K. *Establishing the Continental Crust of the Central Andes: Insights from Zircons in Bolivian Crustal Xenoliths*. AGU Fall Meeting.
- 2020 **Velázquez Santana, L.C.**, McLeod, C.L., Bucholz, C.E. *Initial Characterization of Sulfides in Central Andean Arc Hornblendite Cumulates via Scanning Electron Microscopy*. GSA Online Meeting.
- 2020 **Velázquez Santana, L.C.**, McLeod, C.L., Shaulis, B., Brown, K. *Bolivian Crustal Xenoliths: Petrochronological Constraints on the History of the Central Andean Continental Crust*. Goldschmidt Virtual Meeting.
- 2019 **Velázquez Santana, L.C.**, McLeod, C.L., Blakemore, D., Shaulis, B. *Bolivian Cumulate Hornblendite Enclaves: Insights into the depths of Central Andean arc magmatic systems*. GSA Annual Meeting, AZ.
- 2019 **Velázquez Santana, L.C.**, McLeod, C.L., Blakemore, D. *Mafic Enclaves from the Central Andes: Investigating the magmatic plumbing systems of continental arcs*. GSA Joint Section Meeting, KS.

### *First-Author Poster Presentations*

- 2019 **Velázquez Santana, L.C.**, McLeod, C.L., Blakemore, D., Shaulis, B., Brown, K. *Xenoliths and Cumulates: Insights into the Petrological, Geochemical, and Geochronological Stratigraphy of the Central Andean Arc Crust*. AGU Fall Meeting, CA.

- 2019 **Velázquez Santana, L.C.**, McLeod, C.L., Blakemore, D., Shaulis, B., Brown, K. *Crustal Xenoliths, their Zircons and Apatites: Investigating the continental basement beneath the Central Andes*. Miami University Annual Research Forum, Oxford, OH.
- 2019 **Velázquez Santana, L.C.**, McLeod, C.L., Blakemore, D., Shaulis, B., Brown, K. *Crustal Xenoliths, their Zircons and Apatites: Investigating the continental basement beneath the Central Andes*. GSA Annual Meeting, AZ.
- 2018 **Velázquez Santana, L.C.** and McLeod, C.L. *Crustal ARChitecture: Inputs and outputs of Central Andean magmatic systems*, Miami University Annual Graduate Research Forum, Oxford, OH.
- 2017 **Velázquez Santana, L.C.**, Qin, Z., Suckale, J., Keller, T., Soldati, A., Rust, A., Cashman, K., *Modeling Gas Slug Break-up in the Lava Lake at Mt. Erebus, Antarctica*, AGU Fall Meeting, LA.
- 2017 **Velázquez Santana, L.C.**, and Hudgins, T. *Petrography of the Mafic Enclaves within the Utuado Pluton, Puerto Rico*, GSA Annual Meeting, WA.

### **Co-Authored Presentations**

\*Undergraduate mentee

- 2021 Duncan, M.\*, McLeod, C.L., **Velázquez Santana, L.C.** Evaluating Magma Ascent Rates Beneath Central Andean Monogenetic Volcanoes. NCUR Online Meeting. (oral)
- 2021 Al Gbory, R.\*, **Velázquez Santana, L.C.**, McLeod, C.L. *Geochemical Insights into Magma Dynamics beneath Monogenetic Volcanoes at Active Continental Margins: Constraints from Amphibole and Apatite Crystal Populations*. NCUR Online Meeting. (oral)
- 2020 Al Gbory, R.\*, **Velázquez Santana, L.C.**, McLeod, C. L., Shaulis, B. *Tracking Amphibole Crystal Populations in Continental Arc Magmas through study of Andesites and Hornblendite Cumulates in the Central Andes, Bolivia*. GSA Sectional Meeting, Duluth, MN. (poster)
- 2020 McLeod, C. L., **Velázquez Santana, L.C.**, Blakemore, D., Shaulis, B., Hill, T. *Investigating the Depths of Continental Arc Magmatic Systems*. Ball State University Graduate Colloquium Series.
- 2019 Hudgins, T., **Velázquez Santana, L.C.**, Moreu Vicente, M. *Mafic Enclaves in Puerto Rico: A Window into Crustal Recycling and Structure*. American Geophysical Union Fall Meeting, CA. (oral)
- 2019 McLeod, C.L., Davidson, J., de Silva, S., **Velázquez Santana, L.C.** *Insights into Transcrustal Processes beneath Continental Monogenetic Volcanoes from Minor Centers on the Bolivian Altiplano*. Geological Society of America Annual Meeting, AZ. (oral)

### **INVITED TALKS**

- 2023 **Velázquez Santana, L.C.**, Title: TBD. Lithosphere and Deep Earth Seminar Series, Jackson School of Geosciences, The University of Texas at Austin. *February 1, 2023*.
- 2022 **Velázquez Santana, L.C.**, *Revealing magmatic and tectonic processes through a multifaceted study of the monogenetic volcanic record of the Bolivian Altiplano*. DeFord Lecture Series, Jackson School of Geosciences, The University of Texas at Austin.

### **RESEARCH EXPERIENCE**

**University of Texas at Austin, Dept. of Geological Sciences** September 2022 -present  
*High Temperature Stable Isotope Research Group, advised by Dr. Jaime Barnes*

**Miami University, Dept. Geology & Environmental Earth Science** Aug. 2018 - Aug. 2022

*Magmatic and Planetary Processes Research Group*, advised by Dr. Claire McLeod

**University of Puerto Rico, Department of Geology**  
*Petrology Research Group*, advised by Dr. Thomas Hudgins

January 2017 - December 2017

**Stanford University, Department of Geophysics**

June 2017 - August 2017

*SIGMA Research Group (SURGE Program Scholar)*, advised by Dr. Jenny Suckale

## **FIELD EXPERIENCE**

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- 2022 ***Geology of the Tavakaiv (Pikes Peak) Region, CO***  
IAGD/GSA-sponsored accessible 2-day field trip exploring the stratigraphic succession of the Colorado Front Range, Colorado Springs
- 2019 ***Southeast Missouri Batholith, MO***  
Field trip with the 2019 Miami University Igneous Petrology Class focused on studying volcanic/plutonic units within the Missouri Batholith
- 2017 ***Mt. St. Helens Volcanic Area, WA***  
Field trip with the 2017 GSA Annual Meeting to study volcanic deposits within the Mt. St. Helens volcanic area
- 2017 ***Utado Pluton, Utado, Puerto Rico***  
Sample collection of granodiorite and mafic enclaves within the Utado Pluton, Puerto Rico

## **TEACHING EXPERIENCE**

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### **Miami University**

***Course Instructor, Department of Geology***

January - May 2022

\*Instructor of record for the introductory-level course GLG 111 The Dynamic Earth taught to major and non-majors

***Field Camp Assistant Instructor, Department of Geology***

June - July 2021

\*Assisted in instructing the 2021 Field Camp capstone course GLG 411/511 based in Montana and Wyoming, US

***Graduate Teaching Assistant, Department of Geology***

January - May 2021

\*Assisted in teaching the laboratory portion of the upper-level undergraduate course GLG 357 Igneous and Metamorphic Petrology

***Graduate Teaching Assistant, Department of Geology***

August - December 2020

\*Assisted in teaching the laboratory portion of the upper-level undergraduate course GLG 201 Mineralogy

***Graduate Teaching Assistant, Department of Geology***

January - May 2020

\*Assisted in teaching the laboratory portion of the upper-level undergraduate course GLG 357 Igneous and Metamorphic Petrology

## **MENTORING EXPERIENCE**

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### **GSA On to the Future Program**

César Bucheli-Olaya

Missouri State University

2022

Alondra Mercado-Mercado

University of Puerto Rico, Mayagüez

2022

### **Miami University Magmatic and Planetary Processes Research Group**

2018-2022

Mitchell Duncan\*

Undergraduate Research

Brad Reagan

Undergraduate Research

Raghad Al Gbory\*

Undergraduate Research

Kali Manning\*  
Ciara Childers\*  
Sarah Emrick\*  
David Beka Binyam\*  
\*Graduated from program

Undergraduate Research  
Undergraduate Research  
Undergraduate Research  
Undergraduate Research

## **SACNAS Diversity in STEM GeoFutures Program**

2020

Stephen Galindo

Humboldt State University

## **PROFESSIONAL EXPERIENCE**

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### ***Summer Scholar, Stanford University***

June - August 2017

Stanford Undergraduate Research Geoscience and Engineering (SURGE) Program

\*Participated as a Summer scholar in the SURGE Program at Stanford University where I conducted research with PI Dr. Jenny Suckale.

### ***Administrative Student Assistant, University of Puerto Rico***

Aug. 2016 - Dec. 2017

Department of Food Science & Technology

\*Served as an administrative student assistant in the Dept. of Food Science & Technology at the University of Puerto, Mayagüez as part of the Federal Work-Study Program.

## **SERVICE, OUTREACH, & PUBLIC ENGAGEMENT**

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### ***Subject Matter Expert, Telemundo 48 Bay Area, San Francisco, CA***

Jan. 2022

\*TV interview about the risks and dangers of the Hunga Tonga-Hunga Ha'apai volcanic eruption for the Telemundo 48 Bay Area Noticiero.

### ***Invited Speaker, Lola Rodriguez de Tió High School, San Germán, PR***

Oct. 2021

\*Presented to 11<sup>th</sup> graders at the Lola Rodriguez de Tió High School about Geology and career options in STEM.

### ***Ph.D. Student Representative, Dept. of Geology, Miami University***

Aug. 2020 - Aug. 2021

\*Representative of Ph.D. students at the bi-weekly Dept. of Geology faculty meetings.

### ***Invited Speaker, Lola Rodriguez de Tió High School, San Germán, PR***

Jan. 2021

\*Presented to 10<sup>th</sup> graders at the Lola Rodriguez de Tió High School about Geology and Climate Change and discussed career options in geoscience.

### ***Graduate Student Panelist, Arcanum High School, Arcanum, OH***

October 2020

\*Panelist for *Geoscience is for Everyone* during the 2020 Earth Science week at Arcanum High School, Ohio.

### ***Virtual Session Technical Assistant, Goldschmidt Virtual Meeting***

June 2020

\*Provided technical assistance during virtual sessions at the 2020 Goldschmidt Virtual Meeting.

### ***Graduate Representative, Dept. of Geology, Miami University***

Aug. 2019 - Feb. 2020

\*Served as the graduate student representative for the search committee to hire a tenure-track teaching assistant professor in the Dept. of Geology.

### ***Speaker Ready Room and Registration Desk Assistant, GSA Meeting, AZ***

Sept. 2019

\*Assisted with the speaker ready room and registration desk at the 2019 GSA Annual Meeting in Phoenix.

### ***Graduate Student Panelist, Applying to Graduate School, Miami University***

Aug. 2019

\*Panelist for the NSF-Funded AUGITE Program Applying to Graduate School Panel.

### ***Science Communicator, The Geology Project***

May 2019

\*Created a geoscience video for The Geology Project social media platforms

(<https://www.youtube.com/watch?v=-fTJNJ5x5sk>) where I explained my research in Spanish to a broader non-scientific audience.

**Geoscience Outreach Participant, Piqua Intermediate School, OH**

February 2019

\*Participated in a geoscience outreach experience at the Piqua Intermediate School where I offered a real-life perspective into what scientists do and look like.

**RESEARCH TECHNIQUES**

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Scanning Electron Microscope (SEM)  
Thermal Ionization Mass Spectrometry (TIMS)  
Laser Ablation Inductively Coupled Mass Spectrometry (LA-ICP-MS)  
Clean Laboratory Sample Preparation  
Zircon Sample Preparation and Analysis

**PROFESSIONAL DEVELOPMENT**

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Geological Society of America OTF Alumni Workshop	October 2022
Miami University Unlearning Racism in Geoscience (URGE) Pod Member	Jan. 2021 - May 2022
National Association of Geoscience Teachers Science Communication Workshop	July 2020
National Association of Geoscience Teachers Academic Career Prep Workshop	July 2020
Arizona State University Secondary Ion Mass Spectrometry Workshop	January 2020
American Geophysical Union Student and Early Career Scientist Conference	December 2019
American Geophysical Union Career Options in Academia: Paths Through Science	December 2019
Geological Society of America Student Professional Development Pathways Workshop	October 2018

**PROFESSIONAL AFFILIATIONS**

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American Geophysical Union  
Geochemical Society  
GeoLatinas  
Geological Society of America  
National Association of Geoscience Teachers  
Society for the Advancement of Chicanos/Hispanics and Native Americans in Science