

# Dr. Hannah Inés Shamloo

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## RESEARCH INTERESTS

Eruption Initiation; Magmatic Timescales, Storage, and Processes; High-Silica Magmatic Systems; Experimental Petrology; Diffusion Chronometry; Volcano Science and Hazards; Igneous Petrology

## EDUCATION

Ph.D., Geological Sciences, Arizona State University April 2020  
Advisor: Christy B. Till, Committee: R. Hervig, M. Barboni, E. Shock, D. Shim

B.S., Geophysics, Minor in Physics, California State University, Northridge May 2015  
*Cum Laude*, Advisor: Joshua. J. Schwartz

## PROFESSIONAL EXPERIENCE

Assistant Professor, Department of Geological Sciences, Central Washington University 2021–Present  
NSF EAR Postdoctoral Fellow, Oregon State University 2020–2021  
Research Assistant, School of Earth and Space Exploration, Arizona State University 2015–2020  
Teaching Assistant, School of Earth and Space Exploration, Arizona State University 2015–2020  
Undergraduate Research Assistant, Dept. Geological Sciences, Cal. State, Northridge 2014–2015  
Research Intern, Southern California Earthquake Center 2013

## FUNDING & AWARDS

### Grants

Title	Agency	Total Funds	Duration	Roles/Collab.
Collaborative Research: Phenocryst or Not? Using a Stratovolcano's Crystal Cargo to Explore Crustal-scale Magmatic Systems, Koma Kulshan (Mt. Baker), Northern Cascade Arc	NSF EAR CH	\$277,473	36 mo. Start: 2022	PI (CWU): <b>H. Shamloo</b> PI's (WWU): S. DeBari & K. Walowski
Unleashing the Petrogenetic Potential of Sanidine Using a Combined Compositional, Experimental, and 3D Textural Approach	NSF EAR Postdoctoral Fellowship	\$174,000	24 mo. Start: 2020	PI (OSU): <b>H. Shamloo</b>

### Other Awards

GSA MGPV Student Research Grant Award, \$2,500 2018  
Graduate College Research Fellowship, \$10,000 2018  
Graduate Excellence Award, \$100 2019  
Goldschmidt Graduate Travel Award, \$450 2018  
Graduate College Travel Award, \$500 2017  
Louis Stokes Alliance for Minority Participation Awards, \$1,500 2013–2015

Frank M. Hanna Award Geological Science Department	2013–2014
AfricaArray Training and Research Opportunity Support, \$1,500	2014
GSA On to the Future Program Award, \$ 500	2014
CSUN Scholarship for leadership in Society of Physics Students for Women \$2,500	2012–2013
Presidential Service Award bestowed by President Barack Obama	2012

## **WRITINGS**

### **Publications in preparation**

**Shamloo, H. I.** and Grunder, A., (in prep) Minutes of magma mixing and ascent in the conduit inferred from banded pumice, Rattlesnake Tuff, Oregon

**Shamloo, H. I.** and Kent, A. (in prep) Is the rheological lock-up fifty percent? An appraisal of crystallinities of erupted material

**Shamloo, H. I.**, Befus, K., Watkins, J., Kent, A. (in prep) Controls on Ba partitioning and other trace element partitioning in sanidine and rhyolite

**Shamloo, H. I.**, Till C. B., Kent, A. (in prep) Statistical Analysis of the Effects of Sampling Bias on the Distribution of Historic Eruptions at Six High- to Very-High Threat Cascade Volcanoes

**Shamloo, H. I.**, Till C. B., Cooper, K., (in prep) Li diffusion in zircon

### **Peer-Reviewed Publications**

**Shamloo, H. I.**, Till C. B., Hervig, R. L., (2021) Multi-Mode Magnesium Diffusion in Sanidine: Applications for Geospeedometry in Magmatic Systems. *Geochimica et Cosmochimica Acta*. <https://doi.org/10.1016/j.gca.2021.01.044>

Till C.B., Vazquez J.A., Stelten M., **Shamloo H. I.**, Shaffer J., (2019) Co-existing Discrete Bodies of Rhyolite and Punctuated Volcanism Characterize Yellowstone's Post-Lava Creek Tuff Caldera Evolution. *Geochemistry, Geophysics, Geosystems*. <https://doi.org/10.1029/2019GC008321>

**Shamloo, H.** and Till C.B., (2019) Decadal transition from quiescence to supereruption: petrologic investigation of the Lava Creek Tuff, Yellowstone Caldera, WY. *Contributions to Mineralogy and Petrology*, 174(4), 32.

### **Other Writings**

**Shamloo, H.** and Zaniewski, A. "Mentoring workbook: Designing a near-peer mentoring program for science majors"

**Shamloo, H. I.** (2020). Quantifying the Timing and Controls of Magmatic Processes Associated with Volcanic Eruptions (Doctoral dissertation, Arizona State University).

## **PUBLISHED PRESENTATION ABSTRACTS**

Presentation style: \*oral, † poster

- Shamloo, H.\***, Grunder A., Pendergast, K. (2021) Ignimbrite Magma Ascent Rate in the Conduit Determined by Diffusion in Banded Pumice. AGU Fall Meeting Abstract V22B-08, New Orleans, LA.

12. **Shamloo, H.** †, Kent, A.J.R., Watkins, J., Befus, K. (2021) An Experimental Reexamination on Ba Zoning in Sanidine: What Magmatic Processes Is It Actually Recording? Geological Society of America Abstract 95-3, Portland, OR.
11. **Shamloo, H.\***, C.B. Till, A.J.R. Kent (2021) Statistical Analysis of the Effects of Sampling Bias on the Distribution of Historic Eruptions at Six High-Threat Cascade Volcanoes. GSA Cordilleran Section Meeting Abstract 14-11.
10. **Shamloo, H.\*** (*Invited*) and C.B. Till, (2020) Supersized and Speedy: The Timing and Initiation of the Lava Creek Tuff Supereruption, Yellowstone Caldera. AGU Fall Meeting Abstract 672837, San Francisco, CA.
9. **Shamloo, H.** †, Till, C.B., Kent, J. R., Cooper, K. (2019) Constraining first-order controls on volcanic repose time by examining cumulative distribution functions. AGU Fall Meeting Abstract V034, San Francisco, CA.
8. Till C. B., Vazquez J. A., **Shamloo H. I.**, Stelten M. E., (2019) Records of Magma Evolution & Eruption during Yellowstone's Last Caldera Cycle from Geospeedometry and Zircon Petrochronology. AGU Fall Meeting Abstract V24B-04, San Francisco, CA.
7. Muller, J.K., Kemmerlin M.S., Gonzalez Santana, J.M., **Shamloo, H. I.** †, Tan Y.J., Zhan, Y., Smith, C.A., Myers, M., Gregg, P.A., Abers, G.A., Plank, T.A., Wallace, P.J., Andrews, B.J., Roman, D.C., Bergantz, G., and Cooper, K.M., (2019) Tectonic and compositional controls on magma storage depths globally: Results from CIDER 2019. AGU Fall Meeting Abstract V23D-0256, San Francisco, CA.
6. **Shamloo, H.** † and C.B. Till, (2019) Mg Diffusion in Alkali Feldspar; Applications for Diffusion Chronometry in Magmatic Systems. Geological Society of America Abstract T35-338595, Phoenix, AZ.
5. **Shamloo, H.\*** and C.B. Till, (2018) Mg Diffusion in Alkali Feldspar; Applications for Diffusion Chronometry in Magmatic Systems. Goldschmidt Abstract 2306, Boston, MA.
4. **Shamloo, H.** † and C.B. Till, (2017) Petrologic Insights into the Timing and Triggering Mechanism for the Lava Creek Tuff Super-eruption, Yellowstone Caldera, WY. IAVCEI 2017 Scientific Assembly Abstract PE43B-097, Portland, OR.
3. **Shamloo H.** † and C.B. Till, (2016) Petrologic Insights into the Triggering Mechanism for the Lava Creek Tuff Super-eruption, Yellowstone Caldera, WY. AGU Fall Meeting Abstract V23B-2979, San Francisco, CA.
2. **Shamloo H.** †, Schwartz J.J., Klepeis K., Stowell H.H., Sadorski, J.F., Coble, M.A., (2014) Timescales of Intra-arc Contraction and Extensional Collapse in the Lower and Middle Crust of Cretaceous Convergent-margin Magmatic Arc, Central Fiordland, New Zealand. GSA Annual Conference Abstract 58-3, Vancouver, B.C.
1. Arvin L., Novoa K., **Shamloo H.** †, Philo D., Yuan J., Jordan T., de Groot R., Rousseau N., Smith D., Milner K., (2013) SCEC Undergraduate Studies in Earthquake Information Technology Program: Implementing GIS, UCERF3, and OpenSHA data in SCEC-VDO. SCEC Annual Meeting Abstract, Palm Springs, CA.

## **INVITED TALKS & COLLOQUIA**

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|---|-----------|
| 9. Western Washington University, Geology Department Seminar Series               | Jan. 2022 |
| 8. Diffusion Chronometry Seminar Series, Ruhr-Universität Bochum                  | Sep. 2021 |
| 7. University of Maryland, Geology Seminar Series                                 | Mar. 2021 |
| 6. California Institute of Technology, Geoclub Seminar                            | Feb. 2021 |
| 5. University of California, Davis, Earth & Planetary Department Seminar Series   | Jan. 2021 |
| 4. Central Washington University, Seminar Series, "Mentee/Mentor Relationships"   | Oct. 2020 |
| 3. Oregon State University, Geology & Geophysics Seminar                          | Sep. 2020 |
| 2. California State University, Northridge, Geology Colloquium                    | Nov. 2019 |
| 1. California State University, Northridge, ROCS Group, "Applying to Grad School" | Oct. 2015 |

## **STUDENT RESEARCH SUPERVISION**

*Note: Advising roles at Central Washington University unless otherwise indicated*

### **Graduate Primary Advisement**

Desiree` Cunningham, MS, Fall 2022 start  
Emily Yoder, MS, Fall 2022 start

### **Graduate Thesis Committee Membership**

Tim Miller, MS, Fall 2021 start  
Catherine Jones, MS, Fall 2021 start  
Brendan Garvey, MS, *graduated Spring 2022, Western Washington University*

### **Undergraduate Primary Advisement**

Katheryn Josten, Summer 2022 start  
James IV Genero, Fall 2022 start  
Marcus Ashton, Fall 2022 start

## **TEACHING**

Key: \*Courses developed; † Courses team-taught

### **Courses Taught**

Living with Volcanoes*, GEOL 498/598, Central Washington University	Fall 2022
Rocks & Minerals†, GEOL 320, Central Washington University	Fall 2022
Volcanology*, GEOL 478/578, Central Washington University	Spring 2022
Earth History†, GEOL 203, Central Washington University	Spring 2022
Undergraduate Seminar Series, GEOL 304, Central Washington University	Winter 2022
Graduate Seminar Series, GEOL 504, Central Washington University	Winter 2022
Research Methods†, GEOL 503, Central Washington University	Winter 2022
Igneous Petrology†, GEO 412/512, Oregon State University	Fall 2020

### **Invited Lecturer**

Integrated Science, 9 <sup>th</sup> -10 <sup>th</sup> grade, Milpitas High School, CA,	Fall 2020
Advanced Petrology, GEOL 536, Cal. St. Northridge,	Fall 2019
Physics Leadership & Mentoring, PHY 194/494, Arizona State University,	Spring 2017

### **Teaching Assistant**

Historical Geology, GLG 104, Arizona State University 2018  
Introduction to Geology, GLG 101, Arizona State University 2017  
Petrology, GLG 424/424Lab, Arizona State University 2015

### **SELECT FIELD EXPERIENCE**

Mt. Baker (Kulshan), Northern Washington, sample collection 2022  
Medicine Lake (2x), CA, Sample collection 2017, 2020  
Katmai, Alaska, Advanced Volcanology Field Class, University of Alaska, Fairbanks 2019  
Mt. Shasta, CA, Sample collection 2017  
Yellowstone National Park, Dissertation research and sample collection 2015

### **PROFESSIONAL SERVICE**

#### **Service to Central Washington University**

Scholarship Committee, Department of Geological Sciences, *redesigned web application process, managed and distribute endowment funds, review student applications* Winter 2022–Pres.  
Antiracism, Diversity, and Inclusivity Ad Hoc Committee 2022-2023  
Recruitment for Dept. Geological Sciences, *redesign display cases* 2022  
Creation of CHIVES lab, Dept. Geological Sciences, *experimental petrology lab for student research and learning* 2022

#### **Editorial Service**

Manuscript Peer Reviewer: LITHOS • Geology • Journal of Petrology • G-Cubed • Journal of Volcanology and Geothermal Research 2019–Pres.  
Proposal Reviewer, National Science Foundation EAR-Petrology & Geochemistry (2x) 2021

#### **Press Coverage & Media**

Atlas Obscura interviewee, “At Pizza Pacaya, the Oven Is an Active Volcano” 2021  
National Geographic, “X-Ray Earth” Docuseries, Episode 3, *Available on Disney+* 2020  
Consultant, Science Vs, Gimlet Media 2020  
New York Times, Coverage on Yellowstone research 2018  
*Secondary Coverage: Snopes.com, National Geographic, PBS Nova, National Public Radio, Channel 12 News, TIME, USAToday, CBS, Fox, + more* 2018-2019  
transverse RANGES Magazine, Featured scientist Oct. 2018  
AGU EOS Magazine, Coverage on Yellowstone research May 2016  
Generación STEM on Vme Television, Featured LatinX scientist Dec. 2016

#### **Educational Resources and Products**

GeoClick published activity, SERC Carleton July 2021

Discovery Education Originals, "Volcano Scientist", 4 <sup>th</sup> Grade Curriculum	June 2021
The Science of Magma, ASU CLASroom Video Series Ep. 3, Wrote and co-produced	Jan. 2018
Scholastic's Science World Magazine, Coverage on Yellowstone research	Jan. 2018
What Does a Scientist Look Like? & Who Thinks About Scale? K-12 Edu. Books	Jan. 2018

**Conference Convening and Conference Proposal Submissions**

AGU Annual Conference, "The Cascadia Margin: Linking Geophysical Characteristics with Subduction Zone Structure and Evolution", New Orleans, LA	Dec. 2021
GSA Annual Conference, "Rhyolites, Take a Bow! Examining the Production of Rhyolite Magma in Continental Arc Settings", Portland, OR	Oct. 2021
IAVCEI Scientific Assembly, "Unmasking the lithosphere: mantle-to-surface perspectives on magma heterogeneity", Rotorua, New Zealand (postponed to 2023 due to COVID-19)	2020
Access Network Conference, "Best Mentoring Practice," Tempe, AZ	2017

**Contribution to Improving Diversity, Equity, and Inclusion**

Undocu Ally Training, <i>workshop on how to support undocumented students</i> , WSU	2022
University of Maryland Diverse Career Paths Interviewee	2021
Scientist Spotlight Initiative, Featured Scientist	2019, 2020
Social Justice Education Initiative, Tier One Training	Oct. 2020
Bystander Intervention Workshop, One Orb, Tempe, AZ	2019
Mentor, ASU Sundial Program, For students from marginalized groups in STEM	2017-2019
Program Facilitator, Organized Sundial mentors/mentees, co-wrote mentoring workbook	2017-2018

**Participant in Scientific Community Workshops**

National Association of Geoscience Teachers Traveling Workshop	2021
Earth Educators Rendezvous	2021
Early Career Geoscience Faculty Workshop	2021
Melts, Glasses, Magmas	2020
Community Network for Volcanic Eruption Response, GSA Workshop, Phoenix, AZ	2019
Cooperative Institute for Dynamic Earth Research, "Volcanoes", Berkeley, CA	2019
Mineralogical Society of America's Diffusion Short-course, Bochum, Germany	2018
Hot Life in the Desert, Integrating Geologic, Geochemical, Microbial Research, Tempe, AZ	2018
Enabling Knowledge Integration Data-thon, Tempe, AZ	2017
NSF Secondary Ion Mass Spectrometry Workshop, ASU, Tempe, AZ	2017

**Professional Societies**

National Association of Geoscience Teachers, since 2020  
 Geological Society of America, since 2013  
 American Geophysical Union, since 2015  
 Mineralogical Society of America, since 2016

**COMMUNITY ENGAGEMENT AND OUTREACH**

Yakima Rock & Mineral Show, Trashcano Demonstrations	2022
Student Advocate, ASU School of Earth, and Space Exploration Graduate Council	2017-2019
Event Supervisor, Arizona Science Olympiad State Tournament	2018
Tour Guide, ASU Sundial Summer Program, lab tours of EPIC lab	2016-2019
Earth and Space Exploration Day and ASU Open Door, K-12+ Science Demos	2015-2019
The Great California ShakeOut, Promote earthquake hazard awareness to Los Angeles	2013-2015