Michelle Muth

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PROFESSIONAL EXPERIENCE

2016- Present	*Graduate Researcher*, University of Oregon
2020	*GRIP Fellow,* Smithsonian National Museum of Natural History
2019	*Lead Instructor*, Sternberg Museum of Natural History Science Camps
2015- 2016	*Geoscientist*, AECOM, Philadelphia Area Remediation Services Group
2014	*Outdoor Education Instructor,* Texas Parks and Wildlife Department
2013- 2015	*Undergraduate Researcher*, Rice University Experimental Petrology Group
2012- 2015	*Student Consultant*, Rice University Center for Communication
2013	*NSF-REU Intern*, University of Minnesota Institute for Rock Magnetism

EDUCATION

2021 *(expected)*	*Ph.D. Earth Science*, University of Oregon, Eugene, OR Research advisor: Paul Wallace
2015	*B.S. Earth Science*, Rice University, Houston, TX Research advisor: Rajdeep Dasgupta Distinction in Research and Creative Work Thesis: The effect of variable Na/K on CO_2 solubility in slab-derived rhyolitic melts
2013	Sea Education Association, Woods Hole, MA 6 weeks oceanography coursework, 6 weeks at sea in Eastern Pacific Research Project: Effect of Low pH on the Growth of Phytoplankton in the Eastern Pacific Ocean

PUBLICATIONS

Submitted	Lerner, A. H., **Muth, M. J.,** Wallace, P.J., Lanzirotti, A., Newville, M., Gaetani, G. A., Chowdhury, P., Dasgupta, R. Improving the reliability of Fe- and S-XANES measurements in silicate glasses: correcting beam damage and identifying Fe-oxide nanolites in hydrous and anhydrous melt inclusions. *Chemical Geology.*
Accepted pending revisions	**Muth, M. J.**, Wallace, P.J. Slab-derived sulfate generates oxidized basaltic magmas in the Southern Cascades arc. *Geology.*
2020	**Muth, M.**, Duncan M. S., Dasgupta, R. (2020). The Effect of Variable Na/K on CO_2 Solubility in Slab-Derived Rhyolitic Melts. *Carbon in Earth's Interior AGU Monograph,* 195-208*.*
2014	Frahm, E., Feinberg, J. M., Schmidt-Magee, B. A., Wilkinson, K., Gasparyan, B., Yeritsyan, B., Karapetian, S., Meliksetian, K., **Muth, M.,** and Adler D. S. (2014). Sourcing geochemically identical obsidian: multiscalar magnetic variations in the Gutansar volcanic complex and implications for Palaeolithic research in Armenia, *Journal of Archaeological Science,* 47, 164-178.

HONORS AND AWARDS

2019	Argonne National Laboratory User Beamtime Award
2019	Warren DuPre Smith Research Award
2018	Geology Emeritus Research Award
2017	NSF Graduate Research Fellowship
2017	Geology Emeritus Tribute Award
2016	University of Oregon First Year Graduate Student Fellowship
2016	Eugene Cota-Robles Fellowship *(Declined)*
2015	Torkild Rieber Award in Earth Science
2013	Eugen Merten Memorial Prize in Geology and Geophysics
2013	Chevron Earth Science Minority Scholarship

Invited Seminar Presentations

2020	Carnegie Science Earth and Planets Laboratory
2020	Smithsonian National Museum of Natural History, Dept. of Mineral Sciences
2020	International Volcanology Seminar *(Collaborative Virtual Seminar Series)*

Conference Presentations

2020	**Muth, M.**, Wallace, P.J. Insights into global sulfur cycling from the melt inclusion record. *AGU 2020 Fall Meeting, Virtual, 1-17 December.* **(*invited*).**
2020	**Muth, M.**, Wallace, P.J. The influence of slab-derived sulfur on the sulfur content and oxidation state of arc magmas in the Southern Cascades. *AGU 2020 Fall Meeting, Virtual, 1-17 December.*
2020	Lerner, A., **Muth, M.**, Wallace, P. J., Lanzirotti A., Newville, M., Gaetani, G., Chowdhury, P., Dasgupta, R. Correcting Fe- and S-XANES Beam Damage and Recognizing Rapid Redox Equilibration of Olivine-Hosted Melt Inclusions. *Goldschmidt Conference, Virtual, 21-26 June.*
2020	**Muth, M.**, Wallace, P. J. Tracking Slab-Derived Sulfur and its Effect on Magma Oxidation State in the Southern Cascades. *Goldschmidt Conference, Virtual, 21-26 June.*
2019	**Muth, M.**, Wallace, P. J., Gaetani, G. A. Drawing connections between slab-derived sulfur, mantle melting, and arc magma oxidation state: A case study in the southern Cascades. *AGU 2019 Fall Meeting, Washington D. C., 9-13 December.*
2019	**Muth, M.,** Wallace, P. J. How does slab-derived sulfur affect magma redox in the southern Cascades? Insights from the melt inclusion record. *Cordilleran Section-115th Annual Meeting, 15-17 May.*
2018	**Muth, M.**, Wallace, P. J. Insights into Arc Magma Volatile Cycling and Oxidation State from Global Sulfur Trends. *AGU 2018 Fall Meeting, Washington D. C., 10-14 December.*
2017	**Muth, M.**, Wallace, P. J., Walowski, K. J. The Role of Hydrous Slab Melts in the Sulfur Content, Metal Content, and Oxidation State of Primitive Arc Magmas in the Southern Cascades. *AGU 2017 Fall Meeting, New Orleans, LA.*

2017 Harvey, K. M., Perry-Houts J., Domino J., **Muth M**., Carruthers S., Kotowski A. J., DeGrandpre K., Faul, U., Kent, A. J., Abers, G. A., Krawczynksi, M. The ins and outs of mélange diapirs: a multidisciplinary approach to formation, ascent, and observation. *AGU 2017 Fall Meeting, New Orleans, LA, 11-15 December.*

2014 **Muth, M.**, Duncan, M. S., Dasgupta, R. Effect of variable Na/K ratio on CO_2 solubility in slab-derived rhyolitic melts- An experimental study. *AGU 2014 Fall Meeting, San Francisco, CA, 15-19 December.*

FIELD EXPERIENCE

2019 *Lassen Volcanic Area, CA*
Field sampling of tephra deposits with high school students during a two-week volcanology field course.

2018 *Trinity Ophiolite, CA*
Field trip with the University of Delaware Mantle Processes group for 3 days in the Trinity Ophiolite.

2018 *Santorini, Greece*
Field trip focusing on the volcanic deposits on the island of Santorini and deformation structures associated with the neotectonics of the surrounding region.

2017 *Lassen Volcanic Area, CA*
Sample collection of tephra deposits at selected cinder cones, targeting deposits likely to contain rapidly quenched primitive melt inclusions.

2017 *Long Valley Caldera, CA*
Sample collection of inter-layered ignimbrite and fall deposits.

RESEARCH TECHNIQUES

Fourier Transform Infrared Spectroscopy (FTIR)
Electron Microprobe (EPMA)
X-Ray Absorption Near Edge Structure (XANES)
Laser Ablation ICP-MS
Secondary Ion Mass Spectrometry (SIMS)
End-loaded Piston Cylinder Apparatus
MATLAB, Python
Melt inclusion preparation and analysis

PROFESSIONAL ACTIVITIES

2019	GeoPrisms Synthesis and Integration Theoretical and Experimental Institute *San Antonio, TX*
2018	Thermodynamic modeling with alphaMELTS and other MELTS software Workshop *Caltech, CA*
2018	Annual Workshop in Secondary Ion Mass Spectrometry *University of Arizona, AZ*
2018	Mineral-Hosted Melt Inclusions Workshop *Woods Hole Oceanographic Institution, MA*
2017	CIDER (Cooperative Institute for Dynamic Earth Research) Summer Program *University of California Berkeley, CA* Participated in collaborative research effort: "The ins and outs of mélange diapirs: a multidisciplinary approach to formation, ascent, and observation". Presented results at 2017 AGU Fall meeting.

OUTREACH ACTIVITIES

2020	*"Expert Is In", Smithsonian National Museum of Natural History* Led a 2-hour interactive public discussion on museum floor around the theme "The Many Faces of Sulfur".
2016-2019	*"Mad Duck" Science Outreach Program, University of Oregon* Organized and lead several 4-hour long science outreach modules for local middle school students through NSF-funded 'Mad Duck' program. Facilitated module design collaborations between Mad Duck and other graduate student organizations. Module design for Oregon paleontology is still in use.

PROFESSIONAL SERVICE

2017-current	*Board Member, CMiS (Community for Minorities in STEM)* *University of Oregon* UO CMiS is a graduate student organization dedicated to helping minority graduate students in STEM succeed through professional workshops, social and networking events, and community building activities. Elected Social

and Outreach Chair 2017-2018, Seminar Chair 2018-2019 and Vice President 2019-current.

2018-current *Organizing Team, IgDEAS (Inclusivity and Gender Diversity in Earth and Atmospheric Science)*
University of Oregon
The mission of IgDEAS is to provide geoscience-specific professional and social support to women at the University of Oregon. Co-founded in 2018. Currently active on organizing team.

2020 *Manuscript Reviewer, Geology*

2019 *Session Convener, Cordilleran Section GSA Annual Meeting*
"Crystal Windows into Igneous Processes"