

# Michelle Muth

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Department of Earth Sciences  
1272 University of Oregon  
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## PROFESSIONAL EXPERIENCE

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

## EDUCATION

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2016- Present	<i>Ph.D. Earth Science</i> , University of Oregon, Eugene, OR Research advisor: Paul Wallace
2015	<i>B.S. Earth Science</i> , Rice University, Houston, TX Research advisor: Rajdeep Dasgupta Distinction in Research and Creative Work Thesis: The effect of variable Na/K on CO <sub>2</sub> 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

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- 2020            **Muth, M.**, Duncan M., S. and Dasgupta, R. (2020). The Effect of Variable Na/K on CO<sub>2</sub> 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.**, & 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

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- 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            First Year Graduate Student Fellowship
- 2015            Torkild Rieber Award in Earth Science
- 2013            The Eugen Merten Memorial Prize in Geology and Geophysics
- 2013            Chevron Earth Science Minority Scholarship

## INVITED SEMINARS

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- 2020            Smithsonian National Museum of Natural History, Dept. of Mineral Sciences
- 2020            International Volcanology Seminar

## PRESENTATIONS

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- 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.*
- 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., Krawczynski, 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<sub>2</sub> solubility in slab-derived rhyolitic melts- An experimental study. *AGU 2014 Fall Meeting, San Francisco, CA, 15-19 December.*

## FIELD EXPERIENCE

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- 2017 *Lassen Volcanic Field, CA*  
Field sampling of tephra deposits at selected cinder cones with the goal of collecting olivine hosted melt inclusions for subsequent analysis.
- 2017 *Long Valley Caldera, CA*  
Assisted with detailed field sampling of inter-layered ignimbrite and fall deposits.

## RESEARCH TECHNIQUES

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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  
Geochemical Modelling (MATLAB, Python)

## PROFESSIONAL ACTIVITIES

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

## OUTREACH ACTIVITIES

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| 2020      | <i>"Expert Is In", Smithsonian National Museum of Natural History</i><br>Led a 2-hour interactive public discussion on museum floor around the<br>theme "The Many Faces of Sulfur".   |
| 2016-2019 | <i>"Mad Duck" Science Outreach Program</i><br>Organized and lead 4-hour long science outreach modules for local middle<br>school students. Facilitated module design collaborations between Mad<br>Duck and other graduate student organizations. |

## ORGANIZATIONS AND SERVICE

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- 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*  
Co-founded in 2018. The mission of IgDEAS is to provide geoscience-specific professional and social support to women at the University of Oregon. Currently active on organizing team.
- 2017-current     *Member, Mineralogical Society of America*
- 2016-current     *Member, Geological Society of America*
- 2014-current     *Member, American Geophysical Union*