

Tanya Furman (*furman@psu.edu*)
Professor, Department of Geosciences
Pennsylvania State University, University Park, PA 16802 USA

Education

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| 1982 | B.S.E. Civil Engineering | Princeton University (magna cum laude) |
| 1989 | Ph.D. Geochemistry | Massachusetts Institute of Technology/Woods Hole Oceanographic Institution Joint Program |

Professional Experience

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| 2021-2022 | President, Education Section of the American Geophysical Union |
| 2013-2017 | Associate Vice President & Associate Dean for Undergraduate Education |
| 2010-2017 | Director, Earth and Space Science Partnership |
| 2015-2017 | Interim Director, University Fellowships Office |
| 2014-2015 | Interim Director, Millennium Scholars Program |
| 2007-2013 | Assistant Vice President & Associate Dean for Undergraduate Education |
| 2005- | Professor, Department of Geosciences, Pennsylvania State University |
| 2005-2006 | Acting Director, Alliance for Earth Science, Education and Development in Africa, PSU |
| 1999-2004 | Assoc. Department Head for Undergraduate Programs, Department of Geosciences, PSU |
| 1998-2005 | Associate Professor, Department of Geosciences, Pennsylvania State University |
| 1992-1998 | Assistant Professor, Department of Environmental Sciences, University of Virginia |
| 1989-1993 | Founding Director, Virginia Museum of Natural History, UVa Branch |

Honors and Awards

Editors' Citation for Excellence in Refereeing, American Geophysical Union, 2021
President, Education Section of the American Geophysical Union (Pres-Elect 2018-2020)
Achieving Woman Award, Penn State Commission for Women (2012)
Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (2005)
Faculty Mentoring Award, College of Earth and Mineral Sciences (2003)
Project Kaleidoscope, Faculty for the 21st Century, National Steering Committee (2003-2009)
National Science Foundation CAREER Award (1995)
Alumni Association Board of Trustees Distinguished Young Teacher Award, Univ. of Virginia (1994)
Lilly Teaching Fellowship, University of Virginia (1992-1993)
National Science Foundation graduate fellowship (1984-1987)
Fulbright Fellowship to Iceland (1982-1983)

Narrative of Research Experience

My students and I use petrographic and geochemical features of mafic lavas and their xenolith cargo to investigate fundamental Earth processes of rifting, metasomatism, and melt generation in continental and oceanic environments. I have conducted field-based research on young volcanic rocks from Iceland, several portions of the East African Rift System, and the circum-Mediterranean. Our analytic approaches include trace element systematics of lavas to characterize mantle mineralogy and melting conditions, high-precision Sr-Nd-Pb-Hf-He isotopic investigation to unravel mantle heterogeneity and geodynamics, and diffusion modeling of crystal compositions to determine timescales of melt generation and transport.

Narrative of Administrative Experience

As Associate VP for Undergraduate Education, I provided vision and leadership to develop university-wide assessment of learning objectives in baccalaureate programs, general education and the co-curriculum. I served as project lead for implementing a diagnostic adaptive mathematics placement test to all incoming students. As Director of the NSF-funded Earth and Space Science Partnership, I led intensive summer workshops and year-round professional development for ~150 middle- and high school teachers from underserved public-school districts in Pennsylvania and participated in revision of K-12 state standards for Earth and Space Science content, in addition to researching student learning pathways.

List of 10 Select Recent Publications (student authors underlined)

- Bowden S, Furman T, Alhumimidi M, Hames W, Assiri A, Alyousif M, Almutairi R, Alqahtani H, Rogaib AB, Rushood AB & AlYousef K, 2023. Geodynamic Controls on Basaltic Volcanism in the Arabian Peninsula: Evolution of Harrat Uwayrid, Saudi Arabia. *Geochemistry, Geophysics, Geosystems*, 24, <https://doi.org/10.1029/2022GC010780>
- Pitcavage E, Furman T, Nelson WR, Graham DW, Shirey S, Kalebga PK, Barifaijo E. 2023, Isotopic constraints on lithospheric magmatism in the Bufumbira Volcanic Field, Uganda. *Geochemistry, Geophysics, Geosystems*, 24, e2023GC010950. <https://doi.org/10.1029/2023GC010950>.
- Brune S, Kolawole F, Olive J-A, Stamps DS, Buck WR, Buitter SJH, Furman T & Shillington DJ, 2023, Geodynamics of continental rift initiation and evolution, *Nature Reviews Earth & Environment*, 4, 235-253
- Gall H, Hanan B, Kürkçüoğlu B, Sayit K, Yurur T, Pickard M, Sen E, Alici Sen P & Furman T, 2021. Post-delamination magmatism in south-central Anatolia. *Lithos*, <https://doi.org/10.1016/j.lithos.2021.106299>.
- Furman T, Hanan BB, Pickard M, Kürkçüoğlu B, Sayit K, Sen E, Alici Sen P & Yurur T, 2021. Evolution of mafic lavas from Central Anatolia: Mantle source domains. *Geosphere*, 17, <https://doi.org/10.1130/GES02329.1>.
- Salehi N, Torkian A & Furman T, 2019. Olivine-hosted melt inclusions in Pliocene-Quaternary lavas from the Qorveh-Bijar volcanic belt, western Iran: implications for source lithology and cooling history. *International Geology Review*, DOI: 10.1080/00206814.2018.1564890.
- Nelson W, Hanan B, Graham DW, Shirey SB, Yirgu G, Ayalew D & Furman T. 2019. Distinguishing plume and metasomatized lithospheric mantle contributions to post-flood basalt volcanism on the southeastern Ethiopian Plateau. *Journal of Petrology*, doi: 10.1093/petrology/egz024.
- Furman T, Nelson W & Elkins-Tanton L 2016, Evolution of the East African Rift: drip magmatism, lithospheric thinning and mafic volcanism. *Geochimica et Cosmochimica Acta* 185, 418-434.
- Nelson WR, Furman T, van Keken PE, Shirey SB & Hanan B 2012, Os-Hf isotopic insight into mantle plume dynamics beneath the East African Rift System. *Chemical Geology*, 320-321, 66-79.
- Rooney TO, Hanan BB, Graham DW, Furman T, Blichert-Toft J & Schilling J-G 2012. Upper mantle pollution during Afar plume – continental rift interaction. *Journal of Petrology*, 53, 365-389. doi: 10.1093/petrology/egr065.

Select Recent Publications on the Scholarship of Teaching and Learning (student authors underlined)

- Furman T and Moldwin M, 2021. Higher education during the pandemic: truths and takeaways, *EOS*, 102, <https://doi.org/10.1029/2021EO160171>.
- Ortiz-Suslow DG, Furman T, Clement A, Potter H and Sun-Suslow N, 2020. Perspectives on parenting while researching (during a pandemic), *EOS*, 101, <https://doi.org/10.1019/2020EO149235>.
- McDonald S, Bateman K, Gall H, Tanis-Ozcelik A, Webb A & Furman T, 2019. Mapping the increasing sophistication of students' understandings of plate tectonics: A learning progressions approach. *Journal of Geoscience Education*. DOI: 10.1080/10899995.2018. 1550972.

Research Supervision, Publications and Funding for Scientific and Educational Research

Post-doctoral scholars 10, graduate students 21, undergraduates 40 since 2000, high school students 6
Scientific research publications and in review: 68 (52 with students)
Publications on learning and scholarship: 31 (16 with students or pre-college teachers)
PI or co-PI on grants totaling over \$21.5 million (PI grant total over \$12.6 million)

Professional Memberships

American Geophysical Union
Geological Society of America
Geochemical Society

Association of Women Geoscientists
American Mineralogical Society
National Association of Geoscience Teachers