

CURRICULUM VITAE

Sarah C. Penniston-Dorland

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Education

PhD	2005	Earth and Planetary Sciences, Johns Hopkins University
MA	1999	Earth and Planetary Sciences, Johns Hopkins University
MS	1997	Geological Sciences, The University of Texas, Austin
EdM	1990	Graduate School of Education, Harvard University
BA	1986	History and Science, <i>cum laude</i> , Harvard College

Employment

2020-present Professor, Department of Geology, University of Maryland
2020-present Visiting Investigator, Carnegie Institution for Science
2013-2020 Associate Professor, Department of Geology, University of Maryland
2015-2016 Research Fellow in the Judd H. and Cynthia S. Oualline Centennial Lectureship in Geological Sciences, Department of Geosciences, The University of Texas at Austin
2008-2017 Research Associate, National Museum of Natural History, Smithsonian Institution
2007-2013 Assistant Professor, Department of Geology, University of Maryland
2005-2007 Research Associate, Department of Geology, University of Maryland
2004-2005 Lecturer, Department of Geology, University of Maryland
1990-1993 Middle School Science Teacher (General Science) and Algebra II

Research Interests

I am interested in processes occurring within subduction zones. My studies focus primarily on metamorphic rocks exhumed from within subduction zones. Much of my research has emphasized the understanding of subduction-related fluids, approaching questions of fluid sources, fluid flow pathways, and mass transfer. Recently I have become interested in understanding the tectonic history of subduction-related metamorphic rocks using trace element thermometry. I collect field data and the analytical tools that I use include the electron microprobe, *in situ* trace element analysis of minerals by LA-ICP-MS, and stable and radiogenic isotope analysis of oxygen, carbon, lithium, osmium, and sulfur in rocks and minerals.

Publications (lead authors are the first in the list of authors, mentored co-authors (UMD students, post-docs, etc.) are indicated by a hashtag#)

Penniston-Dorland, S.C., 2025. Fluids in metamorphic systems. In: Weis, D. and Anbar, A. (eds.) *Treatise on Geochemistry*, 3e. Vol. 2, pp. 495-531. UK: Elsevier.

Stegner, C.J., Gaschnig, R.M., Marshall, S., Rader, S.T., Bebout, G.E., **Penniston-Dorland, S.C.**, 2024. Molybdenum isotope behavior during subduction zone metamorphism. *Geochemica et Cosmochimica Acta*. <https://doi.org/10.1016/j.gca.2024.10.016>

Penniston-Dorland, S.C., #Harvey, K.M. 2023. Constraints on tectonic processes in subduction mélange: A review of insights from the Catalina Schist (CA, USA). *Geosystems and Geoenvironment*. 100190.

- #Hoover, W.F., **Penniston-Dorland, S.C.**, Piccoli, P.M., Kylander-Clark, A., 2023. Reaction-induced porosity in an eclogite-facies vein selvage (Monviso Ophiolite, W. Alps): Textural evidence and *in situ* trace elements and Sr isotopes in apatite. *Journal of Petrology*. 64, 1-23. <https://doi.org/10.1093/petrology/egac128>
- #Hoover, W.F., **Penniston-Dorland, S.C.**, Baumgartner, L., Bouvier, A.-S., Dragovic, B., Locatelli, M., Angiboust, S., Agard, P., 2022. Episodic fluid flow in an eclogite-facies shear zone: Insights from Li isotope zoning in garnet. *Geology*. <https://doi.org/10.1130/G49737.1>
- #Harvey, K.M., Walker, S., Starr, P.G., **Penniston-Dorland, S.C.**, Kohn, M.J., Baxter, E.F., 2021. A mélange of subduction ages: Constraints on the timescale of shear zone development and underplating at the subduction interface, Catalina Schist (CA, USA). *Geochemistry, Geophysics, Geosystems*. 22, 9.
- #Hoover, W.F., **Penniston-Dorland, S.C.**, Baumgartner, L.P., Bouvier, A.-S., Baker, D., Dragovic, B., Gion, A., 2021. A method for SIMS analysis of lithium isotopes in garnet: The utility of glass reference materials. *Geostandards and Geoanalytical Research*. 45, 3, 477-499
- Cullen, J.T., Hurwitz, S., Barnes, J.D., Lassiter, J.C., **Penniston-Dorland, S.**, Meixner, A., Wilkens, F., Kasemann, S.A., McClekey, R.B., 2021. The systematics of chlorine, lithium and boron and $\delta^{37}\text{Cl}$, $\delta^7\text{Li}$ and $\delta^{11}\text{B}$ in the hydrothermal system of the Yellowstone Plateau Volcanic Field. *Geochemistry, Geophysics, Geosystems*.
- #Harvey, K.M., **Penniston-Dorland, S.C.**, Kohn, M.J., Piccoli, P.M., 2021. Assessing *P-T* variability in melange blocks from the Catalina Schist: Is there differential movement at the subduction interface? *Journal of Metamorphic Geology*, 39, 271-295.
- Penniston-Dorland, S.C.**, Baumgartner, L.P., Dragovic, B., Bouvier, A.-S., 2020. Li isotope zoning in garnet from Franciscan eclogite and amphibolite: The role of subduction-related fluids. *Geochimica et Cosmochimica Acta*, 286, 198-213
- #Magalhães N., Farquhar, J., Bybee, G., **Penniston-Dorland, S.**, Rumble III, D., Kinnaird, J., and McCreech, M., 2019, Multiple sulfur isotopes reveal a possible non-crustal source of sulfur for the Bushveld Province, southern Africa. *Geology*, 47, <https://doi.org/10.1130/G46282>.
- Cullen, J.T., Hurwitz, S., Barnes, J.D., Lassiter, J.C., **Penniston-Dorland, S.**, Kasemann, S.A., and Thordsen, J.J., 2019, Temperature-dependent variations in mineralogy, major element chemistry and the stable isotopes of boron, lithium and chlorine resulting from hydration of rhyolite glass: Constraints from hydrothermal experiments at 150 to 350°C and 25 MPa. *Geochimica et Cosmochimica Acta*, 261, 269-287.
- #Gorman, J.K., **Penniston-Dorland, S.C.**, Marschall, H.R., and Walker, R.J., 2019, The roles of mechanical mixing and fluid transport in the formation of reaction zones in subduction-related melange: Evidence from highly siderophile elements. *Chemical Geology*. <https://doi.org/10.1016/j.chemgeo.2019.07.004>.
- Barnes, J.D., Cullen, J., Barker, S., Agostini, S., **Penniston-Dorland, S.**, Lassiter, J.C., Klügel, A., Wallace, L., and Bach, W., 2019, The role of the upper plate in controlling fluid-mobile (Cl, Li, B) element cycling in the Hikurangi accretionary prism, New Zealand. *Geosphere*. 15, 1-17. <https://doi.org/10.1130/GES02057.1>
- Barnes, J.D., **Penniston-Dorland, S.C.**, Bebout, G.E., #Hoover, W. Beaudoin, G.M., and Agard, P., 2019, Chlorine and lithium behavior in metasedimentary rocks during prograde metamorphism: a comparative study of exhumed subduction complexes (Catalina Schist and Schistes Lustres). *Lithos*, 336-337: 40-53.
- Filiberto, J., Gross, J., Udry, A., Trela, J., Wittmann, A., Cannon, K. M., **Penniston-Dorland, S.**, Ash, R., Hamilton, V.E., Meado, A.L., Carpenter, P., Jolliff, B., Ferré, E.C., 2018. Shergottite Northwest Africa 6963: A pyroxene-cumulate Martian gabbro. *Journal of Geophysical Research: Planets*, 123. <https://doi.org/10.1029/2018JE005635>

- Barth, A.P., Wooden, J.L., Riggs, N.R., Walker, J.D., Tani, K., **Penniston-Dorland, S.C.**, Jacobson, C.E., Laughlin, J.A., Hiramatsu, R., 2018. Marine volcanoclastic record of early arc evolution in the Eastern Ritter Range Pendant, Central Sierra Nevada, California. *Geochemistry, Geophysics, Geosystems*. doi:10.1029/2018GC007456.
- #Magalhães, N., **Penniston-Dorland, S.**, Farquhar, J., and Mathez, E.A., 2018, Variable sulfur isotope composition of sulfides provide evidence for multiple sources of contamination in the Rustenberg Layered Suite, Bushveld Complex. *Earth and Planetary Science Letters*, 492: 163-173.
- Penniston-Dorland, S.C.**, Kohn, M.J., and Piccoli, P.M., 2018, A mélange of subduction temperatures: Evidence from Zr-in-rutile thermometry for strengthening of the subduction interface. *Earth and Planetary Science Letters*, 482: 525-535, <https://doi.org/10.1016/j.epsl.2017.11.005>.
- Kohn, M.J. and **Penniston-Dorland, S.C.**, 2017, Diffusion: obstacles and opportunities in petrochronology. *Reviews in Mineralogy and Geochemistry*, eds. Kohn, M.J., Engi, M., Lanari, P. *Petrochronology: Methods and applications*, 83: 103-152.
- Penniston-Dorland, S.C.**, Liu, X.-M., and Rudnick, R.L., 2017, Lithium isotope geochemistry, in *Reviews in Mineralogy and Geochemistry*, eds. Teng, F.-Z., Watkins, J.M., Dauphas, N., Non-traditional stable isotopes, 82: 165-217, doi:10.2138/rmg.2017.82.6
- #Sievers, N.E., Tenore, J., **Penniston-Dorland, S.C.**, and Bebout, G.E., 2016, Fingerprints of forearc element mobility in blueschist-facies metaconglomerates, Catalina Schist, California, *International Geology Review*, doi:10.1080/00206814.2016.1253038
- Kohn, M.J., **Penniston-Dorland, S.C.**, and Ferreira, J.C.S., 2016, Implications of near-rim compositional zoning in rutile for geothermometry, geospeedometry, and trace element equilibration. *Contributions to Mineralogy and Petrology*, 171: 78. doi:10.1007/s00410-016-1285-1.
- Bebout, G.E. and **Penniston-Dorland, S.C.**, 2016, Fluid and mass transfer at subduction interfaces – the field metamorphic record. Invited manuscript, *Lithos*. 240-243, 228-258.
- #Ireland, R.H.P., and **Penniston-Dorland, S.C.**, 2015, Chemical interactions between a sedimentary diapir and surrounding mafic magma: Evidence from the Phepane Dome and Bushveld Complex, South Africa. *American Mineralogist*. 100, 1985-2000.
- Penniston-Dorland, S.C.**, Kohn, M.J., and Manning, C.E., 2015, The global range of subduction zone thermal structures from exhumed blueschists and eclogites: Rocks are hotter than models. *Earth and Planetary Science Letters*. 428, 243-254.
- Penniston-Dorland, S.C.**, #Gorman, J.K., Bebout, G.E., Piccoli, P.M., and Walker, R.J., 2014, Reaction rind formation in the Catalina Schist: Deciphering a history of mechanical mixing and metasomatic alteration, *Chemical Geology*. 384, 47-61.
- Ferry, J.M., Winslow, N.W., and **Penniston-Dorland, S.C.**, 2013, Re-evaluation of infiltration-driven regional metamorphism in northern New England: New transport models with solid solution and cross-layer equilibration of fluid composition, *Journal of Petrology*. 54, 2455-2485.
- Sharman, E.R., **Penniston-Dorland, S.C.**, Kinnaird, J.A., Nex, P.A.M., Brown, M., and Wing, B.A., 2013, Primary origin of marginal Ni-Cu-(PGE) mineralization in layered intrusions: $\Delta^{33}\text{S}$ evidence from the Platreef, Bushveld, South Africa. *Economic Geology*. 108, 365-377.
- Filiberto, J., Chin, E., Day, J.M.D., Franchi, I.A., Gross, J., Greenwood, R.C., **Penniston-Dorland, S.C.**, Schwenger, S.P., and Treiman, A.H., 2012, Intermediate olivine-phyric shergottite NorthWest Africa 6234, with similarities to basaltic shergottite NorthWest Africa 480 and olivine-phyric shergottite NorthWest Africa 2990. *Meteoritics and Planetary Science*. 47, 1256-1273.

- Penniston-Dorland, S.C.**, Mathez, E.A., Wing, B., Farquhar, J., and Kinnaird, J.A., 2012, Multiple sulfur isotope evidence for surface-derived sulfur in the Bushveld Complex. *Earth and Planetary Science Letters*, 337-338, 236-242.
- Yakob, J.L., Feineman, M.D., Deane, Jr., J.A., Eggler, D.H., **Penniston-Dorland, S.C.**, 2012, Lithium partitioning between olivine and diopside at upper mantle conditions: An experimental study. *Earth and Planetary Science Letters*. 329-330, 11-21.
- Penniston-Dorland, S.C.**, Walker, R.J., Pitcher, L., and Sorensen, S.S., 2012, Mantle-crust interactions in a paleosubduction zone: Evidence from highly siderophile element systematics of eclogite and related rocks. *Earth and Planetary Science Letters*. 319-320, 295-306.
- Penniston-Dorland, S.C.**, Bebout, G.E., Pogge von Strandmann, P.A.E., Elliott, T., and Sorensen, S.S., 2012, Lithium and its isotopes as tracers of subduction zone fluids and metasomatic processes: Evidence from the Catalina Schist, California, USA. *Geochimica et Cosmochimica Acta*. 77, 530-545.
- Hebert, C.L., Kaufman, A.J., **Penniston-Dorland, S.C.**, and Martin, A.J., 2010, Radiometric and stratigraphic constraints on terminal Ediacaran (post-Gaskiers) glaciation and metazoan evolution. *Precambrian Research*. 182, 402-412.
- Penniston-Dorland, S.C.**, Sorensen, S.S., Ash, R.D., and Khadke, S.V., 2010, Lithium isotopes as a tracer of fluids in a subduction zone mélange: Franciscan Complex, CA. *Earth and Planetary Science Letters*, 292, 181-190.
- Penniston-Dorland, S.C.**, Wing, B.A., Nex, P.A.M., Kinnaird, J.A., Farquhar, J., Brown, M., and Sharman, E.R., 2008. Multiple sulfur isotopes reveal a primary magmatic origin for the Platreef PGE deposit, Bushveld Complex, South Africa: *Geology*, 36, 979-982. (25)
- Penniston-Dorland, S.C.** and Ferry, J.M., 2008. Element mobility and scale of mass transport in the formation of quartz veins during regional metamorphism of the Waits River Formation, east-central Vermont: *American Mineralogist*, 93, 7-21.
- Penniston-Dorland, S.C.** and Ferry, J.M., 2006. Development of spatial variations in reaction progress during regional metamorphism of micaceous carbonate rocks, Northern New England: *American Journal of Science*, 306, 475-524.
- Ferry, J.M., Rumble, D. III, Wing, B.A. and **Penniston-Dorland, S.C.**, 2005. A new interpretation of centimeter-scale variations in the progress of infiltration-driven metamorphic reactions: Case study of carbonated metaperidotite, Val d'Efra, Central Alps, Switzerland. *Journal of Petrology*, 46, 1725-1746.
- Penniston-Dorland, S.C.** and Ferry, J.M., 2005. Coupled dichotomies of apatite and fluid composition during contact metamorphism of siliceous carbonate rocks. *American Mineralogist*, 90, 1606-1618.
- Ferry, J.M., Wing, B.A., **Penniston-Dorland, S.C.** and Rumble, D. III, 2002. The direction of fluid flow during contact metamorphism of siliceous carbonate rocks: new data for the Monzoni and Predazzo aureoles, northern Italy, and a global review. *Contributions to Mineralogy and Petrology*, 142, 679-699.
- Penniston-Dorland, S.C.**, 2001. Illumination of vein quartz textures in a porphyry copper ore deposit using scanned cathodoluminescence: Grasberg Igneous Complex, Irian Jaya, Indonesia. *American Mineralogist*, 86, 652-666.

Other

- Penniston-Dorland, S.** 2022, Keeping white gold green, *Nature Energy*, 1-2,
<https://doi.org/10.1038/s41560-022-01133-3>

Penniston-Dorland, S., Rowe, C., 2021, Unraveling subduction zone processes: Evidence from exhumed rocks, *GeoPRISMS Newsletter*, Science Review, 43, 52-63.

Ernst, W.G., Dutrow, B.L., Sisson, V., **Penniston-Dorland, S.**, 2017, Subduction, fluids and accessory minerals: a celebration of the career of Sorena S. Sorensen, *International Geology Review*, 59, 523-525.

Penniston-Dorland, S., 2012, Patching the leaky faculty pipeline: *Elements*, 8, 85.

Feineman, M., **Penniston-Dorland, S.**, Poitrasson, F., and Weyer, S., 2009, Applications of non-traditional stable isotopes in high-temperature geochemistry: *Chemical Geology*, 258, 1-4.

Teaching, Mentoring and Advising

Courses Taught in the Last Five Years - University of Maryland

Geol 100: Physical Geology (99 students, 2023)

Geol 322: Mineralogy (2013-2015, 2017)

Geol 423: Optical Mineralogy (2005-2014, 2016-present)

Geol 443: Petrology (2011-2015, 2017-present, co-taught with Richard Walker)

Portions of Geol 497H: Special Topics: Recent Advances in Geology (2009, 2010, 2012-2014)

Geol 789P/I/643: Recent Advances in Igneous and Metamorphic Petrology (4-8 students, 2008, 2011, 2021, 2024 (in 2021, 2024 co-taught with Megan Newcombe)

Geol 789A: Advanced Petrology (2016)

Geol 798: Petrology seminar (2010)

Undergraduates

Audrey Graham – senior thesis “Peak metamorphic temperatures of Russian eclogites found using Zirconium-in-rutile geothermometry” in progress.

Helen Hutchinson – senior thesis “Determination of metamorphic temperatures of the Raspas Complex, Ecuador, Using Zr-in-Rutile thermometry” 2024.

Charlotte Norris – senior thesis “Trace element geochemistry of Chatanika Eclogites and accompanying potential protoliths” 2024.

Kathryn Bickerstaff – senior thesis “The relationship between hydrogen and other elements in garnets from two contact metamorphic localities” 2023.

Kalman Bass – GEOL 393 student “Lithium diffusion experiments on grossular garnet” 2022.

Abigail Brodsky – senior thesis “Fluid or flop: Investigating metasomatism at the North Doherty pluton” 2021.

Zexing Zheng – senior thesis “Investigating oxygen fugacity changes during subduction metamorphism” 2020.

Sona Chaudhary – senior thesis “Metasomatism in Monviso eclogites: Birth of the reaction rind” 2020.

Cristy Ho – senior thesis “Conditions of mélangé diapir formation” 2019.

Jenna Reimer – senior thesis “Comparing metamorphic conditions of Catalina Schist rocks using zirconium-in-rutile thermometry” 2019.

Tyler Hicks – senior thesis “P-T conditions and chemical changes in Monviso eclogites: Implications for fluid-rock interaction in a subduction shear zone” 2018.

Gwen Sullivan – senior thesis “Fluids in subduction zones: Production of jadeite in Panoche Pass, CA” 2018.

Devin Simmons – University of Maryland undergraduate research assistant, 2017-2018.

Justine Grabiec – senior thesis “Insights into the formation of the Cottonwood Canyon Fault in the Catalina Schist” 2017

- Steven Noll – senior thesis “Zirconium in rutile geothermometry: Peak temperature determination in the Catalina Schist” 2015
- Robert Burgess – University of Maryland undergraduate research assistant, 2014.
- Jessica Adams – University of Maryland undergraduate research assistant, 2013.
- Hollie McBride – senior thesis “Zirconium in rutile thermometry: Temperature estimates for metamorphic rocks of the Catalina Schist” 2013
- Natalie Sievers – senior thesis “Evidence for chemical changes during subduction zone metamorphism within the Catalina Schist” 2012.
- Gregory Polley – senior honors thesis “A study of the $\Delta^{33}\text{S}$ signature of xenoliths from the Premier kimberlite, South Africa” 2011.
- Maureen Kelly – University of Maryland summer intern, 2011.
- Aleeza Harburger – summer intern, University of Pittsburgh, summer 2010.
- Sarah Regen – senior thesis "Fluid-rock interactions: Lithium concentrations in minerals from a block in the Franciscan Complex, California," 2009-2010.
- Supriya Khadke – Senior Summer Scholars Research Project: “Lithium isotope study of eclogite from the Samana Peninsula of the Dominican Republic” (summer 2009), work on lithium isotope analysis of rocks of the Franciscan Complex, CA, 2007-2010.
- Alexandra Schwaab - lithium isotope analysis of a variety of rocks. 2009-2010.
- Cory Hanson – senior honors thesis “Vein-related mass transport in the Ritter Range roof pendant during Late Cretaceous contact metamorphism,” 2008-2009.
- Whitney Ford –LSAMP project: "Dehydration of Serpentinites in the Bergell contact aureole, Northern Italy" 2007-2008.

Graduate Students

- Kathryn Bickerstaff, M.S. student, 2024-present – TBD.
- Kathleen Stepien, Ph.D. student, 2022-present – “Water in garnet as a tracer of fluid flow in metamorphism”.
- Christiana Hoff, Ph.D. student, 2019-present – “Natural and experimental constraints on lithium incorporation and diffusion behavior in garnet and the implications for investigating fluid-rock interactions”.
- Alexander Taylor, M.S. 2023– “New constraints on the metamorphic history of the Catalina Schist paleosubduction zone”. *USGS*
- William Hoover, Ph.D. 2021 – "Characterizing the duration, periodicity and chemical impact of fluid transport in the subducting slab: Insights from isotope geochemistry of high-pressure metamorphosed oceanic crust." *NSF Post-doctoral fellow, University of Washington*
- Kayleigh Harvey, Ph.D. 2020 – "Petrologic and geochronologic constraints on the thermal and structural evolution of paleo-subduction interfaces." *Senior Applications Specialist, JEOL USA, Inc.*
- Nivea Magalhães, Ph.D. 2019 – “Origin of $\Delta^{33}\text{S}$ anomaly in the Rustenburg Layered Suite, Bushveld Complex” *Post-doctoral Research Associate, University of Exeter.*
- Leigh Roble, M.S. 2014 – “Lithium and its isotopes as a tracer of fluid flow mechanisms in the Catalina Schist melange zone”
Hydrogeologist, South Carolina Dept. of Health and Environmental Control
- Julia Gorman, M.S. 2013 – “Understanding mechanisms of rind formation in mélange zones using highly siderophile elements”
Water Quality Specialist for the PA Department of Environmental Protection
- John-Luke Henriquez, M.S. 2011 – “Tracing retrograde metamorphic fluids in a subduction zone using Li: Franciscan Complex, California.”
Instructional support technician/adjunct professor at SUNY Cortland.
- Rachel Potter, M.S. 2009 - "Diffusion of oxygen and lithium isotopes at a contact between the

Bushveld and metasedimentary rocks: Implications for diapiric rise of the Phepane Dome". Rachel received a GSA Research Grant in 2007 for her research and additionally granted *Outstanding Mention* (one of the top 20 recipients). *Staff consultant for TechLaw, Inc.*

Service on Graduate Student Committees

Christine France (PhD 2008), Xiaoming Liu (MS 2009), Lin Qiu (PhD 2011), Jessica Yakob (MS 2011, Pennsylvania State University), Jesse Wimert (MS 2011), Michael Mengason (PhD 2011), Heather Franz (PhD 2012), Nanping Wu (PhD 2013), Zachary Reeves (MS 2014) Christopher Yakymchuk (PhD 2014), J. Michael Wilks (MS 2015), Mitchell Haller (MS 2017), Sarah Hayes (MS 2017, Curtin Univ), Stephanie Wafforn (PhD 2017, UT Austin), Michele Locatelli (PhD 2017, UPMC, Paris), John Hollingsworth (MS 2018), Jeffrey Cullen (PhD 2018, UT Austin), Evan Keir-Sage (MS 2019, Laurentian Univ), Justine Grabiec (MS 2019, UNC), R. William Nicklas (PhD 2019), Austin Gion (PhD 2020), Grace Beaudoin (PhD 2022, UT Austin), Goeun Ha (PhD 2023), Kristijan Rajic (PhD 2023, Université d'Orleans), Eli Mizrachi (PhD 2024, Dean's Representative), James Bader (PhD 2024).

Service

Professional

Subduction community service

- Subduction Zone 4D Coordinating Committee, 2017- 2019.
- Organizing committee member, Subduction Zone Observatory Workshop, September, 2016.
- Member of GeoPRISMS Steering and Oversight and Education Advisory Committees, 2014 to 2018; Mid-term Review Writing Committee; Organizing committee for GeoPRISMS Theoretical and Experimental Institute for the SCD initiative, October, 2015, led fieldtrip to Santa Catalina Island.
- Co-founder of ExTerra: Understanding Subduction Through Study of Exhumed Terranes (2011-present); Convened GeoPRISMS ExTerra Mini-workshop at Fall AGU, 2011; ExTerra workshop at Goldschmidt, 2013; Co-director of E-FIRE (ExTerra Field Institute and Research Endeavor, 2016-2024); ExTerra workshop at Goldschmidt, 2023.
- Leader of NSF-GeoPRISMS SCD Metamorphic Processes working group (2009-11)

Mineralogical Society of America

- MSA President, 2024 to present.
- MSA Vice President, 2023-2024.
- MSA Councilor, 2016-2019.
- MSA Financial Advisory and Audit Committee, 2022-present, Chair of Nominating Committee for MSA Officers, 2019, Chair of MSA Award Committee 2018, Dana Medal Committee 2016-2017, Committee on Committees, 2012, Lecture Program Committee, 2007-2009.

Editorial service

- Associate Editor, *Journal of Metamorphic Geology*, 2022-present.
- Advisory Board, *Journal of Petrology*, 2020-present.
- Associate Editor, *American Mineralogist*, 2013-2021.
- Associate Editor, *GSA Bulletin*, 2012 to 2014.
- Associate editor, special collection "Insights into subduction processes from models and observations of exhumed terranes," *Geochemistry, Geophysics, Geosystems*, 2021-present.
- Associate guest editor, "*Subduction Top to Bottom 2*," 2015-2021.

- Guest editor, Special Issue of *International Geology Review*, 2017, "Subduction, fluids, and accessory minerals: A celebration of the career of Sorena S. Sorensen."
- Guest editor, Special Issue of *Chemical Geology*, 2009, "Applications of non-traditional stable isotopes in high-temperature geology"

Other

- Leader of Early Career Geoscience Faculty workshop, On the Cutting Edge, 2014, 2015. Convener and leader, 2016-2020.
- National Science Foundation Earth Sciences Proposal Review Panels - Petrology and Geochemistry, Tectonics, GeoPRISMS Programs.
- Co-convenor of sessions at international conferences: Fall American Geophysical Union (AGU) meeting (2011, 2012, 2021), Theme chair, Goldschmidt (2022); Session convener, Goldschmidt (2007, 2009, 2010, 2013-2017, 2019, 2022), GSA (2015, 2016, 2018, 2019) and AGU 2006 Joint Assembly.
- GSA Student Research Grants Selection Committee, 2014 to 2016
- NSF Louis Stokes Alliance for Minority Participation (LSAMP) faculty mentor for Undergraduate Research Program (URP), 2007-2008, summer 2023.
- Reviewer for: Science, Nature Geoscience, Geology, *Geochimica et Cosmochimica Acta*, American Mineralogist, American Journal of Science, Chemical Geology, Contributions to Mineralogy and Petrology, Earth and Planetary Science Letters, Economic Geology, Geochemical Perspectives, Geochemistry, Geophysics, Geosystems (G³), Geosphere, GSA Bulletin, Journal of Metamorphic Geology, Journal of Asian Earth Sciences, Journal of Geochemical Exploration, Journal of Metamorphic Geology, Journal of Petrology, European Journal of Mineralogy, Lithos, South African Journal of Geology, Tectonics, National Science Foundation-EAR: Petrology and Geochemistry and Instrumentation and Facilities, and the Czech and German Science Foundations.
- AGU Fall Meeting Program Committee, Fall 2012, 2014.
- Lead author for online minilesson "Subduction Zone Metamorphism" through the MARGINS mini-lesson program.

Departmental

Search Committee for Administrative Assistant (2023)
 Director of Graduate Studies (2017-2022)
 Graduate Admissions Committee (2006-2009, 2015-present)
 Coordinator, Geology Colloquium (2008-2010)
 Merit Pay Review Committee (2011-2012)
 Wylie Fellowship Committee (2012-2013)
 Graduate Student Best Paper Award Committee (2014-present)
 Search Committee for Geology Department Chair (2021)
 Search Committee for Earth Materials Faculty Hire (2018)

Campus

ADVANCE Professor for the College of CMNS (2022-2024).
 Search Committee for CMNS Assistant Dean for Diversity and Strategic Initiatives (2022-23).
 Search Committee for Dean of the Graduate School (2023)
 Faculty-Student Research Award Selection Committee (2022).
 Teaching Innovation Grant Review Committee (2022).
 Professional Track Promotion Review Committee, 2021-2022.

Graduate Student Grievance Policy Committee, Graduate School, 2017.
 Reviewer for University submissions for NSF-PIRE, 2016.
 University Library Committee (2013-2015)

Contracts and Grants

- 2023-2026** "Water in garnet as a record of fluid flow during metamorphism" National Science Foundation EAR-2320100 (\$387,136); PIs, S. Penniston-Dorland, M. Newcombe.
- 2022-2023** "Upgrade of existing Element2 (ICPMS) and acquisition of a replacement laser ablation system at the University of Maryland, Geology" NSF EAR-2210692 (\$336,623); PI, W. McDonough, Co-PIs, R. Walker, S. Penniston-Dorland, R. Ash, J. Dottin.
- 2021-2024** "Collaborative Research: Developing crystal clocks in metamorphic rocks: Using lithium in subduction zone garnets to decipher fluid release timescales" NSF EAR-2122512 (\$339,945); PIs, S. Penniston-Dorland, P. Piccoli (UMD), B. Dragovic (U of SC).
- 2019-2023** "Collaborative Research: Constraining the thermal conditions of the subduction interface by integrating petrology and geodynamics" NSF EAR-1850786 (\$130,994); PIs, S. Penniston-Dorland, I. Wada (U. Minn.), B. Dragovic (Va. Tech), and P. van Keken (Carnegie DTM)
- 2018-2021** "Collaborative Research: Early Career Geoscience Faculty Development Workshop: A partnership between NAGT and NSF." NSF DUE-IUSE 1821317 (\$261,442); PIs, S. Penniston-Dorland, T. Hill.
- 2017-2019** "Acquisition of a State-of-the-Art Multi-Collector Inductively-Coupled Plasma Mass Spectrometer." NSF EAR-1659023 (\$480,000); PIs, R. Walker, R. Ash, W. McDonough, S. Penniston-Dorland, I. Puchtel.
- 2017-2018** "On the Cutting Edge: Early Career Geoscience Faculty Development Workshop: A partnership between NAGT and NSF." NSF EHR-171102 (\$82,912); PI, S. Penniston-Dorland.
- 2016-2018** "Constraining the source of ancient, surface-derived sulfur in the Bushveld Complex" National Science Foundation EAR-1551196 (\$134,316); PI S. Penniston-Dorland
- 2016-2021** "PIRE: ExTerra Field Institute and Research Endeavor (E-FIRE)" NSF OISE-1545903 (\$4,022,940; Umd portion \$882,832), PIs M. Kohn, M. Feineman, S. Penniston-Dorland
- 2014-2017** "Collaborative Research: Deciphering subduction dynamics: Case study of the Catalina Schist," NSF EAR-1419871 (\$210,544); PIs, S. Penniston-Dorland, M. Kohn.
- 2013-2015** "Workshop: ExTerra 2013, Florence, Italy," NSF EAR-1340360, (\$27,265); PI S. Penniston-Dorland.
- 2013-2015** "Acquisition of a State-of-the-Art Thermal Ionization Mass Spectrometer," NSF EAR-1255787, (\$325,000); PI R. Walker, Co-PIs M. Brown, S. Penniston-Dorland, I. Puchtel, R. Rudnick.
- 2011-2015** "Highly siderophile elements as tracers of mantle-crust interactions in subduction zone metamorphic rocks," NSF EAR-1119111, (\$300,027); PIs, S. Penniston-Dorland, R. Walker.
- 2009-2012** Tracing evidence of fluid flow in eclogite, blueschist and amphibolite blocks in subduction zone mélanges," NSF EAR-0911100, (\$249,675.50); PI, S. Penniston-Dorland.
- 2007-2009** "Under the (Mesozoic) Volcano: fluid-rock histories of a fossil hydrothermal system in the Sierra Nevada, USA," Smithsonian Institution, (\$22,515); S. Sorensen, PI, S. Penniston-Dorland, Co-PI.
- 2005-2007** "Petrogenesis of the Platreef, Bushveld Complex, South Africa, interrogated using mass-independent sulfur isotopes," USGS MRERP, (\$44,500); M. Brown, S. Penniston-Dorland, B. Wing, Co-PIs