

Valerie A. Finlayson

Postdoctoral Associate, High Temperature Isotope Geochemistry (Advisor: Richard J. Walker)

Department of Geology, University of Maryland

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Education

Ph.D., Geological Sciences, University of Hawai'i at Mānoa; 2014-2017

Advisor: Jasper G. Konter

Dissertation: "Investigations of Southwest Pacific intraplate and backarc volcanism using traditional and non-traditional isotopes"

Ph.D. Student, Geological Sciences, the University of Texas at El Paso; 2011-2013 (*transferred to University of Hawai'i at Mānoa*)

Advisor: Jasper G. Konter

M.S., Geological Sciences, University of Illinois at Urbana-Champaign; 2011

Advisor: Craig C. Lundstrom

Thesis: "Understanding the evolution of compositional zoning in San Juan Volcanic Field ignimbrites using iron isotope ratios"

B.S., Geological Sciences (Additional Major: Earth Sciences, Concentration: Meteorology/Atmospheric Sciences), Michigan State University; 2009

Advisor: Tyrone O. Rooney

Research Interests

- Trace element (incl. siderophile), radiogenic and radioactive isotopes (Nd, Sr, Pb, Hf, Re-Os, W, U-Th, Po), and noble and non-traditional stable isotope (He, Fe) geochemistry in intraplate volcanic systems and oceanic and continental backarcs
- Coupling and decoupling of lithophile, noble, and siderophile isotopic systems in the mantle
- Applications of mantle-derived geochemical data to geodynamic modeling and understanding deep-Earth heterogeneity and processes
- Understanding igneous processes such as magma chamber chemical zonation, pre-eruptive conditions in volcanic systems, volcanic stages of ocean islands, and reservoirs and differentiation processes in Earth's mantle
- Improvement of elemental separation chemistry techniques and multicollection mass spectrometry analytical methods

Academic Positions

Nov 2018 – Present: Postdoctoral Associate, University of Maryland

Aug 2017 – Oct 2018: Postdoctoral Researcher, University of Hawai'i at Mānoa

Jan 2014 – Jul 2017: Graduate Research/Teaching Assistant, University of Hawai'i at Mānoa

Aug 2011 – Dec 2013: Graduate Research/Teaching Assistant, University of Texas at El Paso

Aug 2009 – Jul 2011: Graduate Research/Teaching Assistant, University of Illinois at Urbana-Champaign

Jun 2009 – Jul 2009: Lab Assistant, University of Illinois at Urbana-Champaign

Jan 2009 – May 2009: Undergraduate Assistant, Michigan State University

Sep 2008 – May 2009: Undergraduate Research Assistant, Michigan State University

Publications

- Konter, J. G., **Finlayson, V. A.**, Engel, J., Jackson, M. G., Koppers, A. A., & Sharma, S. K. (2019). Shipboard characterization of Tuvalu, Samoa, and Lau dredge samples using Laser-Induced Breakdown Spectroscopy (LIBS). *Applied Spectroscopy*, 73(6), 623-637.
- **Finlayson, V. A.**, Konter, J. G., Konrad, K., Koppers, A. A. P., Jackson, M. G., and Rooney, T. O. (2018). Sr–Pb–Nd–Hf isotopes and $^{40}\text{Ar}/^{39}\text{Ar}$ ages reveal a Hawaii–Emperor-style bend in the Rurutu hotspot, *Earth and Planetary Science Letters*, vol. 500C, pg. 168-179, doi: 10.1016/j.epsl.2018.08.020.
- Konrad, K., Koppers, Anthony A. A. P., Steinberger, B., **Finlayson, V. A.**, Konter, J. G., Jackson, M. G. (2018). On the relative motions of long-lived Pacific mantle plumes, *Nature Communications*, vol. 9, no. 1, 854.
- Konter, J. G., Pietruszka, A. J., Hanan, B. B., **Finlayson, V. A.**, Craddock, P. R., Jackson, M. G., and Dauphas, N. (2016). Unusual $\delta^{56}\text{Fe}$ values in Samoan rejuvenated lavas generated in the mantle, *Earth and Planetary Science Letters*, vol. 450, pg. 221-232.
- **Finlayson, V. A.**, Konter, J. G., and Ma, L. (2015). The importance of a Ni correction with ion counter in the double spike analysis of Fe isotopic ratios using a $^{57}\text{Fe}/^{58}\text{Fe}$ double spike, *Geochemistry, Geophysics, Geosystems*, vol. 16, no. 12, pg. 4209-4222.
- Jackson, M. G., Koga, K. T., Price, A., Konter, J. G., Koppers, A. A. P., **Finlayson, V. A.**, Konrad, K., Hauri, E. H., Kylander-Clark, A., Kelley, K. A., Kendrick, M. A. (2015). Deeply-dredged submarine HIMU glasses from the Tuvalu Islands, Polynesia: Implications for volatile budgets of recycled oceanic crust, *Geochemistry, Geophysics, Geosystems*, vol.16, no. 9, pg. 3210-3234.

Abstracts

- **Finlayson, V. A.**, Walker, R. J., Haller, M. B., Day, J. M., O'Driscoll, B., Kontinen, A., and Hanski, E. (2019). Highly siderophile element and $^{187}\text{Os}/^{188}\text{Os}$ heterogeneity in the ~ 1.95 Ga Jormua Ophiolite, Finland: Implications for upper mantle budgets and evolution history, *AGU Fall Meeting 2019*, no. V23H-0203.
- Konter, J. G., Jackson, M. G., Koppers, A. A. P., Wessel, P., **Finlayson, V. A.**, Konrad, K., and Alverson, A. (2019). The Link Between Ontong-Java and Louisville Revealed in the West Pacific, *AGU Fall Meeting 2019*, no. V13B-02
- **Finlayson, V.**, Rubin, K. H., Konter, J. G., Nie, N. X., and Dauphas, N. (2018). Variable Fluid Contributions to Boninite Magma Generation, Mata Volcanic Field, NE Lau Basin as Determined by Trace Elements and Fe-Sr-Pb-Nd-Hf-U-Th-Ra Isotopes, *AGU Fall Meeting 2018*, no. T13C-03.
- **Finlayson, V. A.**, Konter, J. G., Rubin, K. H., Nie, N. X., and Dauphas, N. (2017). A subduction zone-spreading ridge transition signature preserved in recent volcanic activity in the NE Lau Basin, *Geological Society of America Abstracts with Programs*. Vol. 49, No. 4, doi: 10.1130/abs/2017CD-293011.
- **Finlayson, V. A.**, Konter, J. G., Konrad, K., Price, A., Koppers, A. A. P., Jackson, M. G. (2016). Identification of a Hawaiian-Emperor Style Bend in the Tuvalu Segment of the Rurutu Hotspot, *AGU Fall Meeting 2016*, no. DI52A-05.
- Konter, J. G., Koppers, A. A. P., Jackson, M. G., **Finlayson, V. A.**, and Konrad, K. (2015). Constraints from Seamounts on Pacific Plate or Plume Motion Prior to 80 Ma, *AGU Fall Meeting 2015*, no. DI41A-2596.
- Konrad, K., Koppers, A. A. P., Steinberger, B. M., Konter, J. G., **Finlayson, V. A.**, Jackson, M. G. (2015). The Relative Motion of Pacific Mantle Plumes: Implications for the Viscosity Structure of the Earth's Mantle, *AGU Fall Meeting 2015*, no. DI34A-08.

- Koppers, A. A. P., Konrad, K., Rose, J., Konter, J. G., **Finlayson, V. A.**, Jackson, M.G. (2015). Tracing the Long-Lived Rurutu Mantle Source in the Pacific with Implications for Plume Motions, *Goldschmidt 2015 Conference Abstracts*
- Konter J. G., Koppers, A. A. P., Jackson, M.G., Storm L., **Finlayson, V.**, Konrad, K. (2015). Seamount geochemistry argues for new Pacific plate motion models, *Goldschmidt 2015 Conference Abstracts*
- **Finlayson, V.**, Konter, J. G., Konrad, K., Koppers, A. A. P., Jackson, M. G., 2014. The Rurutu Hotspot: Isotopic and trace element evidence of HIMU hotspot volcanism in the Tuvalu Islands, *AGU Fall Meeting 2014*, no. V33C-4883
- Konrad, K., **Finlayson, V.**, Koppers, A. A. P., Konter, J. G., and Jackson, M. G. (2014). High Resolution $^{40}\text{Ar}/^{39}\text{Ar}$ Geochronology of the Tuvalu Seamount Chain: Implications for Hotspot Longevity and Pacific Plate Motion, *AGU Fall Meeting 2014*, no. D134A-03
- Konter, J. G., Pietruszka, A., Hanan, B. B., and **Finlayson, V.** (2014). High $\delta^{56}\text{Fe}$ values in Samoan basalts, *AGU Fall Meeting 2014*, no. V33C-4886
- De Silva, S., **Finlayson, V.**, Gu, T., Li, M., Lithgow-Bertelloni, C., and Cormier, V. (2014). Modeling mantle heterogeneity development in Earth's mantle using multidisciplinary approaches, *AGU Fall Meeting 2014*, no. D123A-4282
- Konter, J. G., **Finlayson, V. A.**, Engel, J. M., Jackson, M. G., and Koppers, A. A. P (2014). Trends in igneous rocktypes from shipboard analysis with LIBS, *Goldschmidt 2014 Conference Abstracts*, p. 1304
- **Finlayson, V. A.**, and Konter, Jasper G. (2012). Maximizing precision of double spiked iron isotopic analyses on a Nu Plasma HR MC-ICPMS, American Geophysical Union Fall Meeting 2012, no. V23B-2807
- Manaois, A., Lundstrom, C. C., Chakraborty, P., **Finlayson, V.**, and Li, X. (2011). An alternative process for large silicic caldera eruptions, *Geological Society of America Abstracts with Programs*, vol. 43, no. 5, p. 106
- **Finlayson, V.** (2010). Understanding the evolution of compositional zoning in San Juan Volcanic Field ignimbrites using iron isotope ratios, *Geological Society of America Abstracts With Programs*, vol. 42, no. 5, p. 101
- **Finlayson, V. A.** and Rooney, T. (2009). The Geochemistry of Aplite Dikes at Elliot Lake, Ontario, *American Geophysical Union Spring Meeting 2009*, no. V13B-05

Research and Laboratory Experience

Instrumentation Experience

- Thermo Neptune MC-ICP-MS (UMD, University of Chicago Origins Lab)
- Thermo Triton TIMS (UMD)
- Nu Plasma HR MC-ICP-MS (UHM, UTEP, UIUC)
- VG Sector TIMS (UHM)
- JEOL Hyperprobe EPMA (UHM)
- Portable LIBS (UHM/UTEP)
- JEOL 840A SEM (UIUC)
- Micromass LA-ICP-MS with Cetac LSX 200 laser (MSU; facility since updated)

Clean Laboratory Management Experience

- **2014 – 2018:** University of Hawai'i at Mānoa; Installation, integration, and general setup of Jasper Konter's workspaces within the UHM Isotope Laboratory Facility. Managed day-to-day operation, including but not limited to distillation, equipment upkeep and diagnostics/repair (including assisting with various multicollector repairs and maintenance), cleaning, equipment design and manufacture, consumables management, waste disposal, power outage/storm monitoring

- **2011 – 2013:** University of Texas at El Paso; Including but not limited to monitoring consumable supply, equipment upkeep and diagnostics/repair, managing lab cleaning schedule, multicollector upkeep and maintenance
- **2010 – 2011:** University of Illinois at Urbana-Champaign; Including but not limited to managing consumable supply, equipment upkeep and maintenance, cleaning, multicollector diagnostics and repair

Postdoctoral Work, Department of Geology, University of Maryland; Advisor: Dr. Rich Walker

- Os isotopic HSE, and temporal systematics of the Jormua Ophiolite and other ophiolites
- W isotopic systematics of Hawaiian plume components
- Mo-W systematics of Earth's mantle
- Mantle plume structure inferred from geochemical patterns and dynamics of hotspot tracks

Postdoctoral Work, Department of Geology and Geophysics, University of Hawai'i at Mānoa; Advisor: Dr. Ken Rubin

- Short-lived (^{210}Po) isotope analysis of samples from the ongoing 2018 Kilauea (Lower Puna/Lower East Rift Zone) eruption
- Radiogenic and radioactive isotopic behavior (Pb-Sr-Nd-Hf and U-series) of the Mata Volcanic Field, northern Lau Basin

Graduate Work, Department of Geology and Geophysics, University of Hawai'i at Mānoa; Advisor: Dr. Jasper G. Konter

- Determining provenance of seamounts from the Tuvalu Islands via radiogenic isotope ratios (Sr, Pb, Nd, and Hf)
- Fe stable isotope behavior of northern Lau Basin boninitic volcanism and links to local tectonic processes and mantle domains
- Pilot study of radiogenic Os ingrowth in Tuvalu basalts, in collaboration with Greg Ravizza and Denys Vonderhaar
- Cooperative Institute for Deep Earth Research (CIDER) 2014 Junior participant; modeling origins of mantle heterogeneities using a multidisciplinary approach
- Clean room setup, maintenance and repairs, and operation, reagent handling and distillation, equipment and supply management
- Multicollection mass spectrometry (Nu Plasma HR MC-ICP-MS, VG Sector TIMS), associated maintenance and repair
- JEOL Hyperprobe electron probe microanalysis (EPMA)

Graduate Work, Department of Geology, the University of Texas at El Paso; Advisor: Dr. Jasper G. Konter

- Multicollector mass spectrometry methods development to measure high precision iron isotopic ratios
- Participated in NSF-funded research cruise (Expedition RR1310, R/V Roger Revelle) to obtain high-resolution bathymetry of and sample the Tuvalu and western Samoa island chains (July-August 2013; 5 weeks)
- Performed shipboard analysis of ~600 groundmass samples (~3000 datapoints) for major element geochemistry via LIBS (laser-induced breakdown spectroscopy) during the Summer 2013 RR1310 expedition (R/V Roger Revelle)

Graduate Work, Department of Geology, University of Illinois at Urbana-Champaign; Advisor: Dr. Craig C. Lundstrom

- Sampled (assistance from Peter W. Lipman, USGS) and analyzed iron and strontium isotopic behavior in Tertiary zoned ignimbrites from the San Juan Caldera Complex, SW Colorado (presented initial iron isotope data at the 2010 GSA Annual Meeting in Denver, CO)
- Sampled groundwater (with assistance from Craig Lundstrom, Matthew Kyrias, and members of the Texas Water Board) for extraction and analysis of uranium for U-roll front deposit behavior in the Carrizo Aquifer in Atascosa County, Texas
- Developed a uranium coprecipitation technique using available equipment and reagents to extract uranium from low-concentration water samples

Undergraduate Researcher, Department of Geology, Michigan State University; Advisor: Dr. Tyrone O. Rooney

- Sampled and studied geochemistry and alteration of Midcontinent Rift basalts of Mamainse Point, Ontario, Canada
- Sampled (from drill core stored offsite) and studied potassic metasomatism in a uranium ore-bearing quartzite in the Elliot Lake area, Ontario, Canada (*manuscript in prep*)
- Presented results and progress of the above project at the 2009 American Geophysical Union Regional Meeting in Toronto, ON, Canada

Forestry Intern, USDA Forest Service, Northern Research Station (East Lansing, MI), Supervisor: Jay Charney

- Ran fire weather case study models (MM5 and WRF) and generated graphical output

Field Experience

Oceanic:

- 2018 KM1810 (*R/V Kilo Moana*); Teaching and dredging cruise designed to introduce NSF-REU undergraduate researchers to marine geology. Duties included shift leader and dredge recovery assistance. Chief Scientists: Drs. Deborah Eason and Robert Dunn
- 2017 FK171110 Leg 2 (*R/V Falkor*); ROV-based survey and sampling of volcanoes in the Mata Volcanic Group, NE Lau Basin. Led curation of the geological sample set (rocks and sediments), assisted with dive logging, and provided relief for dive lead (livestream narration, operation of science camera, directing sampling, and executing dive plan). Chief Scientists: Drs. Kenneth H. Rubin and Bill Chadwick
- 2017 FK170825 Legs 1 and 2 (*R/V Falkor*); Shipboard/AUV mapping and ROV-based coral studies to investigate the effect of sea level changes on whole-reef development. Planned and ran overnight shipboard mapping. Chief Scientist: Dr. Kenneth H. Rubin. Principal Investigator: Dr. Scott White
- 2013 RR1310 (*R/V Roger Revelle*); Dredging and mapping Rurutu Hotspot seamounts in the southwest Pacific, onboard sample processing and portable Laser-Induced Breakdown Spectroscopy (LIBS) geochemical characterization. Chief Scientist: Dr. Jasper G. Konter. Principal Investigators: Dr. Matthew G. Jackson and Dr. Anthony A. P. Koppers
- Curaçao; Dominantly SCUBA-based nearshore and onshore volcanic island reef geology and coral studies (2010)

Terrestrial:

- Upolu, Samoa (2017)
- 2017 GSA Cordilleran Section Field Trip leader, Geology of SE Oahu
- Various Hawaiian islands, including Volcanoes National Park and assisting monitoring the 2014-2015 Pahoehoe Crisis with Dr. Jeff Sutton (USGS-HVO; retired) and Dr. Bruce Houghton (UHM; various trips, 2014-2015)

- Taupo Volcanic Zone, New Zealand, with Dr. Bruce Houghton (2014)
- New Mexico volcanic areas: Kilbourne Hole, Valles Caldera (various trips, 2011-2013)
- St. François Mountains, Missouri (2011)
- Troodos ophiolite, Cyprus with Dr. Craig C. Lundstrom, Dr. Steve Marshak, Dr. Wang-Ping Chen, Dr. Michael Stewart, and others (2011)
- Arkansas Alkalic Province, Magnet Cove area, Arkansas (2010)
- Various Midwest region igneous, metamorphic, sedimentary, igneous, and economic areas (Michigan, Illinois, Minnesota, Wisconsin, Indiana; 2009-2011)
- Big Bend National Park (2009, 2012)
- San Juan Volcanic Field; calderas and eruptive products including the Bonanza and Bachelor calderas with Dr. Peter W. Lipman, Dr. Olivier Bachmann, Dr. Craig C. Lundstrom, and others (2009, 2010)
- Mamainse Point, Ontario Midcontinent Rift metavolcanics with Dr. Tyrone O. Rooney (2009)
- Marquette, Michigan Precambrian geology and banded iron formations (2008, 2011)
- Utah, various National and State Parks (2008)
- Appalachian Mountains and Cumberland Gap region sedimentology and stratigraphy (2008, 2009)
- Attended the 2008 Wasatch-Uinta Field Camp (Utah, Nevada, Wyoming; Director: Dr. Kurtis Burmeister, University of the Pacific)
- Death Valley and Owens Valley, California (2007)

Teaching and Mentoring Experience

University of Maryland

- 2018 – Present: Co-supervising undergraduate laboratory assistants Jairus Slagle (BSc Spring 2019), Andrew Houston (BSc Fall 2019), and Ari Capricardo (BSc expected 2020)

University of Hawai'i at Mānoa

- 2017 – 2018: Assisted NSF-REU undergraduates with dredging operations during the KM1810 research cruise (*R/V Kilo Moana*)
- 2017 – 2018: Mentored graduate student Katherine Herries (MSc, 2018; Advisor: Ken Rubin)
- 2017: Assisted with supervision of visiting graduate student Andrew Lavigne (MSc, 2019; Advisor: Tyrone Rooney, Michigan State University)
- 2016: Assisted with supervision of visiting graduate student Susan Beightol (née Krans) (Advisor: Tyrone Rooney, Michigan State University)
- Fall 2015: Graduate Research Teaching Assistant; Dynamic Earth Laboratory (GG101L); two lab sections

The University of Texas at El Paso

- Summer at Sea 2013: Shift leader/co-supervisor with co-PI Dr. Matthew G. Jackson to a team of undergraduate students (UTEP and Oregon State University geology students) during the RR1310 expedition (*R/V Roger Revelle*)
- 2013: Assisted with supervision of visiting graduate student Brandon Chiasera (PhD, 2019; Advisor: Tyrone Rooney, Michigan State University)
- Fall 2013: Graduate Teaching Associate; Introduction to Earth Science I (GEOL 1111); two lab sections
- Fall 2012: Graduate Teaching Associate; Historical Geology (GEOL 1314); Head TA, one lab section
- Summer 2012: Lecturer; Historical Geology Summer Session II (GEOL 1314)
- Spring 2012: Graduate Teaching Associate; Igneous and Metamorphic Petrology (GEOL 3315)
- Spring 2012: Graduate Teaching Associate, Principles of Earth Sciences I (GEOL 1311); one lab section
- Fall 2011: Graduate Teaching Associate, Introduction to Geology Lab (GEOL 1103); two lab sections

University of Illinois at Urbana-Champaign

- Spring 2010 and 2011: Teaching Assistant, Igneous and Metamorphic Petrology lab
- Fall 2009: Teaching Assistant, Physical Geology, three lab sections

Michigan State University

- Spring 2009: Undergraduate Grader/Professorial Assistant for Integrated Studies in Physical Science

Relevant Coursework

University of Hawai'i at Mānoa

- Department of Geology: Special Topics in Geology and Geophysics: Trace Elements and Isotopes, Explosive Volcanism, Electron Microprobe Analysis, Graduate Seminar, Research Credit, Dissertation Research

The University of Texas at El Paso

- Department of Geology: Graduate-level Isotope Geology, Forensic Geology, Non-Traditional Stable Isotope Geochemistry, Advanced Igneous Petrology, Plate Tectonics, Volcanology, Computer Applications in the Geosciences, Geochemical Statistics, Study At Sea, Graduate Seminar, Research Credit

University of Illinois

- Department of Geology: Graduate-level Physical Geochemistry, Isotope Geology, Geotectonics, Geochemical Reaction Analysis, Analytical Geochemistry, Mineralogy, Field Geology (Curaçao January 2010, Cyprus March 2011), Research Credit, Graduate Seminar, Research Credit

Michigan State University

- Department of Geology: Introductory Geology, Oceanography, Structural Geology, Sedimentology/Stratigraphy, Mineralogy/Geochemistry, Hydrology, Petrology, Advanced Petrology, Glacial Geology, Historical Geology, Wasatch-Uinta Field Camp, Plate Tectonics, Independent Study in Geology (research)
- Department of Geography: Introductory Meteorology, Weather Forecasting and Analysis, Agricultural Climatology, Remote Sensing of Environment
- Department of Biology: Organisms and Populations

Invited Talks

- "Rurutu-Arago: A third long-lived (>120 Myr) Pacific hotspot track", November 2019, American Museum of Natural History Petrology Group
- "Primordial Componentry in the Hawaiian Plume", October 2019, UMD Department of Geology Geochemistry Lunchtime Seminar
- "Long-lived (>100 Myr) bilateral heterogeneity at the Rurutu hotspot sampled by a forked mantle plume", April 2019, UMD Department of Geology Geochemistry Lunchtime Seminar

Grants Funded, Awards

- University of Hawai'i at Mānoa OGE Outstanding Geology and Geophysics Student Award (2015)
- The University of Texas at El Paso Department of Geological Sciences Hunt Scholarship (2011-2012)
- University of Illinois Geology Department Roscoe Jackson Award (2009)
- Michigan State University Department of Geology Chevron Scholarship (2008)
- Michigan State University CURESS Undergraduate Research Grant (2008)

- Dean's List, Spring Semester 2008

Software and Coding Experience

- R
- Generic Mapping Tools (GMT)
- Unix/sed/awk
- MATLAB
- Microsoft Office
- Adobe Creative Suite 4
- CoDaPak 2
- Mass spectrometry software (Nu Plasma HR, VG Sector, ThermoNeptune)
- Other software and languages: MELTS, Fledermaus, Aspect, HeFESTo, C++, HTML, Google Earth/KML

Workshops, Academic Service & Outreach

Workshop

- Cooperative Institute for Deep Earth Research (CIDER) 2014, Santa Barbara, CA

Professional Service

- Session chair/convener (proposal under review) for Goldschmidt 2020
- AGU Outstanding Student Participation Award Liaison; Sessions V43D and V52A ("Tracing the Cosmochemistry of the Solar System: Dust to Planets" I and II)
- Session chair/co-convener, AGU 2019 Fall Meeting; Sessions V21B, V23H, V43D, and V52A (Geodynamics from the Crust to the Lower Mantle: Celebrating 100 years of Geochemistry, Thermodynamics, and Mineralogy" I and II; "Tracing the Cosmochemistry of the Solar System: Dust to Planets" I and II)
- Reviewed manuscripts for *Chemical Geology*, *Geology*, *Earth and Planetary Science Letters*, and *Minerals* since 2017, and an NSF-CAREER proposal in 2019
- UMD Department of Geology Geochemistry Lunchtime Seminar organizer, academic year 2019-2020
- UH-Mānoa SOEST Open House Volunteer (2015, 2017)
- UTEP Department of Geology Outreach Program Volunteer (2010 – 2013)
- Member, University of Illinois Geology Club (2009 – 2011)
- Member, Michigan State University Geology Club (2007 – 2009)
- Volunteer work at the annual Central Michigan Gem and Lapidary Show (2007 – 2009)

Professional Affiliations

- American Geophysical Union (2009 – Present)
- Geological Society of America (2010 – Present)
- Geochemical Society (2010 – Present)