

AARON J. PIETRUSZKA, Ph.D. — ASSOCIATE SPECIALIST

DEPARTMENT OF EARTH SCIENCES/SOEST
1680 East-West Rd., University of Hawai'i, Honolulu, HI 96822
(808) 956-9607/apietrus@hawaii.edu/POST 612A

EDUCATION

Ph.D. Geology and Geophysics (1999)
University of Hawai'i, Honolulu, HI

B.A. Geophysical Sciences (1992), Departmental and General Honors
University of Chicago, Chicago, IL

PROFESSIONAL EXPERIENCE

Associate Specialist, Department of Earth Sciences (Aug. 2019 to present)
University of Hawai'i, Honolulu, HI

Research Geologist, U.S. Geological Survey (2012-2019), GS-1350-13
Southwest Isotope Research Laboratories, Denver, CO

Associate Professor (*with tenure*), Department of Geological Sciences (2009-2012)
San Diego State University, San Diego, CA

Assistant Professor, Department of Geological Sciences (2003-2009)
San Diego State University, San Diego, CA

Postdoctoral Research Associate, Department of Geology (2002)
University of Maryland, College Park, MD

Postdoctoral Research Fellow, Department of Terrestrial Magnetism (1999-2001)
Carnegie Institution of Washington, Washington, DC

TEACHING & MENTORING

I am a non-instructional faculty member.

CURRENT GRADUATE STUDENTS (2 total)

R. Lopaka Lee (since Fall 2020), Molly Cunningham (since Spring 2021)

REU PROGRAM, UNDERGRADUATE STUDENT (1 total)

Araela Richie (2021)

HONORS

American Geophysical Union, 2017 Editor's Citation for Excellence in Refereeing, G-cubed (2018); Geological Society of America, Fellow (2017); STAR Award, U.S. Geological Survey (2016); Outstanding Faculty Award, Most Influential Professor, Department of Geological Sciences, San Diego State University (2008, 2011, 2013); Outstanding Faculty Member, Mortar Board Award, San Diego State University (2004); J. Watumull Merit Scholarship, University of Hawai'i (1998); Phi Beta Kappa (1992); National Merit Scholar (1988-1992)

PUBLICATIONS (* = Pietruszka student, 1st author)

35. **Pietruszka A.J.**, M.O. Garcia, J.M. Rhodes (in press). Accumulated Pu'u Ō'ō magma fed the voluminous 2018 rift eruption of Kīlauea Volcano: evidence from lava chemistry. *Bulletin of Volcanology*.
34. Garcia, M.O., **A.J. Pietruszka**, M.D. Norman, J.M. Rhodes (2021). Kīlauea's Pu'u Ō'ō eruption (1983-2018): a synthesis of magmatic processes during a prolonged basaltic event. *Chemical Geology*. 581:120391, doi.org/10.1016/j.chemgeo.2021.120391
33. **Pietruszka A.J.**, D.E. Heaton, M.O. Garcia, J.P. Marske (2019). Explosive summit collapse of Kīlauea Volcano in 1924 preceded by a decade of crustal contamination and anomalous Pb isotope ratios. *Geochimica et Cosmochimica Acta* 258:120-137, doi.org/10.1016/j.gca.2019.05.029.
32. Tucker, J.M., E.H. Hauri, **A.J. Pietruszka**, M.O. Garcia, J.P. Marske, F.A. Trusdell (2019). A high carbon content of the Hawaiian mantle from olivine-hosted melt inclusions. *Geochimica et Cosmochimica Acta* 254:156-172, doi.org/10.1016/j.gca.2019.04.001.
31. **Pietruszka A.J.**, J.P. Marske, D.E. Heaton, M.O. Garcia, J.M. Rhodes (2018). An isotopic perspective into the magmatic evolution and architecture of the rift zones of Kīlauea Volcano. *Journal of Petrology* 59:2311-2352.
30. **Pietruszka A.J.**, L.A. Neymark (2017). Evaluation of laser ablation double-focusing SC-ICPMS for "common" Pb isotopic measurements in silicate glasses and minerals. *Journal of Analytical Atomic Spectrometry*, 32:1135-1154, doi:10.1039/c7ja00005g.
29. Garcia M.O., B.R. Jicha, J.P. Marske, **A.J. Pietruszka** (2017). How old is Kīlauea Volcano (Hawai'i)? Insights from $^{40}\text{Ar}/^{39}\text{Ar}$ dating of the 1.7-km-deep SOH-1 core. *Geology* 45:79-82, doi:10.1130/G38419.1.
28. Neymark L.A., C.S. Holm-Denoma, **A.J. Pietruszka**, J.N. Aleinikoff, C.M. Fanning, R.M. Pillers, R.J. Moscati (2016). High spatial resolution U-Pb geochronology and Pb isotope geochemistry of magnetite-apatite ore from the Pea Ridge iron oxide-apatite deposit, St. Francois Mountains, southeast Missouri, USA. *Economic Geology* 111:1915-1933, doi:10.2113/econgeo.111.8.1915.
27. Konter J.G., **A.J. Pietruszka**, B.B. Hanan, V.A. Finlayson, P.R. Craddock, M.G. Jackson, N. Dauphas (2016). Unusual $\delta^{56}\text{Fe}$ values in Samoan rejuvenated lavas generated in the mantle. *Earth and Planetary Science Letters* 450:221-232.
26. Vlastélic I., **A.J. Pietruszka** (2016). A review of the recent geochemical evolution of Piton de la Fournaise Volcano (1927-2010), in Bachelery P., J.-F. Lenat, A. Di Muro, L. Michon (eds.), Active volcanoes of the southwest Indian Ocean: Piton de la Fournaise and Karthala: Active Volcanoes of the World, p. 185-201, doi:10.1007/978-3-642-31395-0_11.

PUBLICATIONS (continued)

25. **Pietruszka A.J.**, D.E. Heaton, J.P. Marske, M.O. Garcia (2015). Two magma bodies beneath the summit of Kīlauea Volcano unveiled by isotopically distinct melt deliveries from the mantle. *Earth and Planetary Science Letters* 413:90-100.
24. Garcia M.O., D. Weis, L. Swinnard, G. Ito, **A.J. Pietruszka** (2015). Petrology and geochemistry of volcanic rocks from the South Kaua'i Swell Volcano, Hawai'i: Implications for the lithology and composition of the Hawaiian mantle plume. *Journal of Petrology* 56:1173-1197, doi:10.1093/petrology/egv033.
23. Greene A.R., M.O. Garcia, **A.J. Pietruszka**, D. Weis, J.P. Marske, M.J. Vollinger, J. Eiler (2013). Temporal geochemical variations in lavas from Kīlauea's Pu'u 'Ō'ō eruption (1983–2010): cyclic variations from melting of source heterogeneities. *Geochemistry, Geophysics, Geosystems*, 14:4849-4873, doi:10.1002/ggge.20285.
22. **Pietruszka A.J.**, M.D. Norman, M.O. Garcia, J.P. Marske, D.H. Burns (2013). Chemical heterogeneity in the Hawaiian mantle plume from the alteration and dehydration of recycled oceanic crust. *Earth and Planetary Science Letters* 361:298-309.
21. *Marske J.P., **A.J. Pietruszka**, F.A. Trusdell, M.O. Garcia (2011). Geochemistry of southern Pagan Island lavas, Mariana arc: the role of subduction zone processes. *Contributions to Mineralogy and Petrology* 162:231-252.
20. Tian L., P.R. Castillo, D.R. Hilton, J.W. Hawkins, B.B. Hanan, **A.J. Pietruszka** (2011). Major and trace element and Sr-Nd isotope signatures of the northern Lau Basin lavas: implications for the composition and dynamics of the back-arc basin mantle. *Journal of Geophysical Research* 116, B11201, doi:10.1029/2011JB008791.
19. **Pietruszka A.J.**, M.J. Keyes, J.A. Duncan, E.H. Hauri, R.W. Carlson, M.O. Garcia (2011). Excesses of seawater-derived ^{234}U in volcanic glasses from Lō'ihi Seamount due to crustal contamination. *Earth and Planetary Science Letters* 304:280-289.
18. **Pietruszka A.J.**, E.H. Hauri, J. Blichert-Toft (2009). Crustal contamination of mantle-derived magmas within Piton de la Fournaise Volcano, Réunion Island. *Journal of Petrology* 50:661-684.
17. Tian L., P.R. Castillo, J.W. Hawkins, D.R. Hilton, B.B. Hanan, **A.J. Pietruszka** (2008). Major and trace element and Sr-Nd isotope signatures of lavas from the Central Lau Basin: implications for the nature and influence of subduction components in the back-arc mantle. *Journal of Volcanology and Geothermal Research* 178:657-670, doi:10.1016/j.jvolgeores.2008.06.039.
16. *Marske J.P., M.O. Garcia, **A.J. Pietruszka**, J.M. Rhodes, M.D. Norman (2008). Geochemical variations during Kīlauea's Pu'u 'Ō'ō eruption reveal a fine-scale mixture of mantle heterogeneities within the Hawaiian plume. *Journal of Petrology* 49:1297-1318.

PUBLICATIONS (continued)

15. **Pietruszka A.J.**, A.D. Reznik (2008). Identification of a matrix effect in the MC-ICP-MS due to sample purification using ion exchange resin: an isotopic case study of molybdenum. *International Journal of Mass Spectrometry* 270:23-30.
14. *Marske J.P., **A.J. Pietruszka**, D. Weis, M.O. Garcia, J.M. Rhodes (2007). Rapid passage of a small-scale mantle heterogeneity through the melting regions of Kīlauea and Mauna Loa Volcanoes. *Earth and Planetary Science Letters* 259:34-50.
13. Snyder D.C., E. Widom, **A.J. Pietruszka**, R.W. Carlson, H.-U. Schmincke (2007). Time scales of formation of zoned magma chambers: U-series disequilibria in the Fogo A and 1563 A.D. trachyte deposits, São Miguel, Azores. *Chemical Geology* 239:138-155.
12. **Pietruszka A.J.**, E.H. Hauri, R.W. Carlson, M.O. Garcia (2006). Remelting of recently depleted mantle within the Hawaiian plume inferred from the ^{226}Ra - ^{230}Th - ^{238}U disequilibria of Pu'u Ō'ō eruption lavas. *Earth and Planetary Science Letters* 244:155-169.
11. **Pietruszka A.J.**, R.J. Walker, P.A. Candela (2006). Determination of mass-dependent molybdenum isotopic variations by MC-ICP-MS: an evaluation of matrix effects. *Chemical Geology* 225:121-136.
10. Norman M., M.O. Garcia, **A.J. Pietruszka** (2005). Trace-element distribution coefficients for pyroxenes, plagioclase, and olivine in evolved tholeiites from the 1955 eruption of Kīlauea Volcano, Hawai'i, and the petrogenesis of differentiated rift-zone lavas. *American Mineralogist* 90:888-899.
9. Snyder D.C., E. Widom, **A.J. Pietruszka**, R.W. Carlson (2004). The role of open-system processes in the development of silicic magma chambers: a chemical and isotopic investigation of the Fogo A trachyte deposit, São Miguel, Azores. *Journal of Petrology* 45:723-738.
8. Garcia M.O., **A.J. Pietruszka**, J.M. Rhodes (2003). A petrologic perspective of Kīlauea Volcano's summit magma reservoir. *Journal of Petrology* 44:2313-2339.
7. **Pietruszka A.J.**, R.W. Carlson, E.H. Hauri (2002). Precise and accurate measurement of ^{226}Ra - ^{230}Th - ^{238}U disequilibria in volcanic rocks using plasma ionization multicollector mass spectrometry. *Chemical Geology* 188:171-191.
6. **Pietruszka A.J.**, K.H. Rubin, M.O. Garcia (2001). ^{226}Ra - ^{230}Th - ^{238}U disequilibria of historical Kīlauea lavas (1790-1982) and the dynamics of mantle melting within the Hawaiian plume. *Earth and Planetary Science Letters* 186:15-31.
5. Garcia M.O., **A.J. Pietruszka**, J.M. Rhodes, K. Swanson (2000). Magmatic processes during the prolonged Pu'u Ō'ō eruption of Kīlauea Volcano, Hawai'i. *Journal of Petrology* 41:967-990.

PUBLICATIONS (continued)

4. **Pietruszka A.J.**, M.O. Garcia (1999). The size and shape of Kīlauea Volcano's summit magma storage reservoir: a geochemical probe. *Earth and Planetary Science Letters* 167:311-320.
3. **Pietruszka A.J.**, M.O. Garcia (1999). A rapid fluctuation in the mantle source and melting history of Kīlauea Volcano inferred from the geochemistry of its historical summit lavas (1790-1982). *Journal of Petrology* 40:1321-1342.
2. Garcia M.O., E. Ito, J.M. Eiler, **A.J. Pietruszka** (1998). Crustal contamination of Kīlauea Volcano magmas revealed by oxygen isotope analyses of glass and olivine from Pu'u Ō'ō eruption lavas. *Journal of Petrology* 39:803-817.
1. Garcia M.O., J.M. Rhodes, F.A. Trusdell, **A.J. Pietruszka** (1996). Petrology of lavas from the Pu'u Ō'ō eruption of Kīlauea Volcano: III. The Kupaianaha episode (1986-1992). *Bulletin of Volcanology* 58:359-379.

RESEARCH GRANTS (* = active, obtained at UH-Mānoa)

- *National Science Foundation, \$399,977, *Principal Investigator* (2020) EAR 20-11366. Mantle controls on magmatic-volcanic cycles at basaltic volcanoes: an isotopic probe of the Pu'u Ō'ō, Halema'uma'u, and 2018 Leilani eruptions of Kīlauea Volcano.
- *National Science Foundation, \$624,649, *Co-principal Investigator* (2020) EAR 20-18807. MRI: Acquisition of a Thermal Ionization Mass Spectrometer (TIMS) for Multidisciplinary Research and Student Training at UH.
- *National Science Foundation, \$41,986, *Co-investigator* (2019) Supplement to OCE 17-37284 (M. O. Garcia, PI). Using Lō'ihi basaltic rocks to understand the Hawaiian plume.
- National Science Foundation, \$169,771, *Principal Investigator* (2011) EAR 11-18738. Collaborative research: Magmatic evolution of Kīlauea Volcano, Hawai'i: Past, Present and Future.
- National Science Foundation, \$164,883, *Principal Investigator* (2008) EAR 07-38671. Collaborative research: Hawaiian plume heterogeneity and melting dynamics revealed by Kīlauea's ongoing eruption, prehistoric lavas and olivine-hosted melt inclusions.
- National Science Foundation, \$151,397, *Principal Investigator* (2008) EAR 07-38286. Using ^{226}Ra - ^{230}Th - ^{238}U disequilibria to test the hypothesis of peridotite-pyroxenite melt mixing at Hawaiian shield volcanoes.
- National Science Foundation, \$262,777, *Co-principal Investigator* (2005) EAR 04-53138. Collaborative research: Chemical, isotopic and volatile constraints on the evolution of the Lau Basin.

RESEARCH GRANTS (continued)

National Science Foundation, \$210,583, *Principal Investigator* (2004) EAR 03-46052. Production of high-purity ^{229}Th for analyses of U- and Th-series isotopes in geological materials.

National Science Foundation, \$30,000 (SDSU portion), *Co-principal Investigator* (2004) EAR 03-36874. What are the parental magma compositions for historical Kīlauea lavas?

National Science Foundation, \$51,830, *Principal Investigator* (2000) EAR 00-03359. A geochemical investigation of the dynamics of mantle melting within the Réunion plume using the ^{226}Ra - ^{230}Th - ^{238}U disequilibria of historical lavas from Piton de la Fournaise Volcano (1931-1998).

RECENT AND ONGOING PROFESSIONAL SERVICE

- Guest Associate Editor, *Frontiers in Earth Science* (Petrology) for research topic on *Basaltic Volcanism: From Magmatic Processes to Eruptive Styles* (2020-present)
- Panelist, National Science Foundation, Petrology and Geochemistry Program, EAR (Nov. 16-19, 2020)
- Co-founding member, Huliāmahi, a weekly student-faculty discussion and action group for Inclusion, Diversity, Equity, and Advocacy (IDEAs) in the Department of Earth Sciences, UH-Mānoa (2020-present)
- Member, SOEST Diversity, Equity, and Inclusion (DEI) Council, UH-Mānoa (2019-present)
- Co-convener, Hawai'i-themed session for the Virtual2020 Goldschmidt Conference
- Member, Graduate Admissions Committee, Department of Earth Sciences, UH-Mānoa (2020-present)
- Member, Department Operations Committee, Department of Earth Sciences, UH-Mānoa (2019-2020)
- Interviewer, graduate student annual evaluations, Department of Earth Sciences, UH-Mānoa (2019)
- Demonstrator of rocks and minerals, SOEST Open House, UH-Mānoa (2019)
- Director, high-purity Th-229 project for the U-series isotope scientific community, SDSU, USGS, and UH-Mānoa (2004-present)

STUDENTS AND POST-DOCTORAL SCHOLARS

UH-MĀNOA, CURRENT GRADUATE STUDENTS (2 total)

R. Lopaka Lee (started Ph.D. program in Fall 2020), Molly Cunningham (Bullard Fellow, started Ph.D. program in Spring 2021)

STUDENTS AND POST-DOCTORAL SCHOLARS (continued)

UH-MĀNOA, REU PROGRAM, UNDERGRADUATE STUDENT (1 total)

Araela Richie (2021)

SDSU, GRADUATE STUDENTS ADVISED (7 total)

(Note: the M.S. was the highest degree offered in the Geological Sciences at SDSU)

Daniel Heaton, M.S. (2011), Alena Buhler, M.S. (2011), Dale Burns, M.S. (2009), Jennifer Duncan, M.S. (2008), Audrey Reznik, M.S. (2006), Jared Marske, M.S. (2005), Rebekah McGirk, M.S. (2005)

SDSU, UNDERGRADUATE THESIS STUDENTS ADVISED (9 total)

Joanna Rose, B.S. (2013), Carrie Welker, B.S. (2011), Matthew Keyes, B.S. (2010), Jennifer Piper, B.S. (2008), Angela Cavallini, B.S. (2008), Kyle Welchans, B.S. (2007), Melissa Sabga, B.S. (2006), Michael Higgins, B.S. (2005), Jose Espino, B.S. (2003)

POST-DOCTORAL SCHOLARS ADVISED (3 total)

Kathleen Scheiderich (2015), Tyrone Rooney (2007), Jasper Konter (2007)

TEACHING

SDSU COURSES TAUGHT

(Note: 500-level courses include both graduate and undergraduate students)

Geol 324: Petrology (Spring semesters, 2004-2012)

Geol 530: Geochemistry (Fall semesters, 2003-2005, 2007-2011)

Geol 660: Isotope Geology (Fall semesters, 2005, 2007, 2009)

Geol 600: Graduate Seminar (Fall semesters, 2004, 2006, 2008)

Geol 596: Undergraduate/Graduate Seminar (Spring semester, 2003)

FIELD INVESTIGATIONS

- USGS-HVO Eruption Response Team Participant, Kīlauea Volcano, Hawai'i (2018)
- Volcanological Field Work, Upolu and Savai'i, Samoa (2006)
- Oceanographic Cruise Scientific Crew Member, R/V Melville Magellan Leg 08 (2006)
- Volcanological Field Work, Kīlauea Volcano, Hawai'i (2010, 2007, 2006, 2003, 1992 to 1999)
- Volcanological Field Work, Diamond and Jordan Craters, Oregon (2005)
- Oceanographic Cruise Scientific Crew Member, R/V Yokosuka JAMSTEC YK99-7 (1999)
- Oceanographic Cruise Scientific Crew Member, R/V Melville GLORIA Leg 08 (1993)

INVITED TALKS

- Dept. of Earth Sciences/G&G, Univ. of Hawai'i—Honolulu, HI (2001, 2019)
- Dept. of Earth and Planetary Sciences, Univ. of Tennessee—Knoxville, TN (2019)
- NordVulk Summer School on “Magmatic Processes”, Reykjavik, Iceland (2017)

INVITED TALKS (continued)

- Dept. of Geology and Geological Engineering, Colorado School of Mines—Golden, CO (2013)
- Denver Federal Center, U.S. Geological Survey—Denver, CO (2012)
- Dept. of Geological Sciences, California State Univ.—Northridge, CA (2007)
- Dept. of Geological Sciences, Univ. of Colorado—Boulder, CO (2006)
- Dept. of Geological Sciences, California State Univ.—San Diego, CA (2002, 2005)
- Scripps Institution of Oceanography, Univ. of California—San Diego, CA (2003)
- Dept. of Earth, Environmental, and Planetary Sciences, Case Western Reserve Univ.—Cleveland, OH (2002)
- Dept. of Earth and Atmospheric Sciences, Univ. of Houston—Houston, TX (2002)
- Dept. of Geological Sciences, Univ. of North Carolina—Chapel Hill, NC (2001)
- Dept. of Earth, Planetary, and Space Sciences, Univ. of California—Los Angeles, CA (2001)
- Geological Society of Washington—Washington, DC (2000)
- Dept. of Geology, Univ. of Maryland—College Park, MD (2000)
- Dept. of Terrestrial Magnetism, Carnegie Institution of Washington—Washington, DC (1999)
- Hawaiian Volcano Observatory, U. S. Geological Survey, Volcano, Hawai'i (1999)

USGS PROJECT MANAGEMENT

Mineral Resources Program, *Chief Scientist* (2017-2019)

Project: Application of plasma ionization isotope ratio mass spectrometry and U-Pb geochronology to collaborative studies of ore minerals and ore-forming processes.

Mineral Resources Program, *Chief Scientist* (2012-2016)

Project: Design and creation of a metal-free clean laboratory for isotope geochemistry, and acquisition of a Nu Plasma II MC-ICPMS.

PROFESSIONAL AFFILIATIONS

American Geophysical Union, The Geochemical Society, Geological Society of America

GRADUATE AND POSTDOCTORAL ADVISORS

Richard Carlson (Carnegie Inst. of Washington), Michael Garcia (Univ. of Hawai'i), Erik Hauri (Carnegie Inst. of Washington, deceased), Kenneth Rubin (Univ. of Hawai'i), Richard Walker (Univ. of Maryland)

REFERENCES

Professional references are available upon request.