CLAIRE E. BUCHOLZ

Division of Geologic and Planetary Sciences
248 Arms Laboratory, Mail Code: 170-25
California Institute of Technology
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EDUCATION

2016 Ph.D. Geochemistry, MIT/WHOI Joint Program, Cambridge, MA, 2016
Chemical, Isotopic, and Temporal Variations during Crustal Differentiation
Principal Advisor: Prof. O. Jagoutz

2009 B.S. Geology and Geophysics, Yale University, CT, 2009
Fluid flow and Al transport during quartz-kyanite vein formation, Unst, Shetland Islands, Scotland
Principal Advisor: Prof. J.A. Ague

PROFESSIONAL EXPERIENCE

Sep 2017- present	Assistant Professor, California Institute of Technology, CA
Sep 2015-Aug 2017	O.K. Earl Postdoctoral Scholar in Geology, California Institute of Technology, CA
2010-2015	Graduate Research Assistant, MIT/WHOI Joint Program, Cambridge, MA
2010	Lab Technician, Laser Fluorination Oxygen Isotope Lab, Yale University, CT
2009	High School Geology Teacher, Swiss Semester, Zermatt, Switzerland
2008	Cripple Creek & Victor Mining Company Exploration Geologist Intern, CO

Leaves of absence:
May 2015-Aug 2015: Maternity leave (1st child, boy, Owen Robert McPhillips)
Nov 2017-Mar 2018: Maternity leave (2nd child, girl, Margot Ann McPhillips)
Jan 2021-May 2021: Maternity leave (3rd child, boy, Wesley Toshio McPhillips)

FELLOWSHIPS & AWARDS

AGU Hisashi Kuno Award (2020)
Rose Hills Foundation Innovator Fellowship for Junior Faculty (2017-2018)
O.K. Earl Postdoctoral Fellowship – California Institute of Technology (2015-2017)
National Science Foundation Graduate Research Fellowship (2012-2015)
Graduate Student Award for Excellence in Teaching – Field Geology, MIT (2014)
Ida M. Green Presidential Fellowship, MIT (2010-11)
Hammer Prize for 'excellence in the oral presentation of the senior thesis, Yale University, (2009)
William R. Belknap Prize for 'excellence in Geological Studies', Yale University (2009)
Magna Cum Laude, Yale University (2009)
Phi Beta Kappa, Yale University (2009)
Sherwood E. Silliman Fellowship Prize for 'scientific research in the Natural Sciences conducted during the summer', Yale University (2007)
Samuel Lewis Penfield Prize for 'proficiency in mineralogy', Yale University (2006)

TEACHING EXPERIENCE

2023	Ge11a/101: Earth as a Planet/Introduction to Geology and Geochemistry
2023	Ge121c: Advanced Field Geology
2020, 2023	Ge120a: Introductory Field Geology
2020, 2022	Ge119: Regional Geology of the southwestern United States
2020-2023	Ge/ESE 298: Mentoring and Outreach for GO-Outdoors (Faculty advisor)
2019	Ge120b: Summer Field Camp
2019	Ge195: Enrichment Trip Seminar (topics on Arctic Canada and Alaska)
2018-2020, 2022-2023	Ge123: Origin and Evolution of the Continental Crust
2012-2014	Field Camp Teaching Assistant, MIT, Cambridge, MA and Mojave Desert, CA
2013-2014	Structural Geology Teaching Assistant, MIT, Cambridge, MA (2013 & 2014)
2009	High School Geology Teacher, Swiss Semester, Switzerland (2009)

GRANTS

Innovation in Education Award – 2023 – GeoPads for Modern Field Mapping and Instruction
PI C Bucholz. $4,112

Caltech Center for Evolutionary Science – 2023 – Uranium in ophiolites as a record of deep ocean oxygenation
Co-PIs C Bucholz, F Tissot. $20,000

GPS Division Discovery Funds – 2023 – Portable X-ray Fluorescence Spectrometer to Enhance Geologic Mapping, Teaching, and Research
PI C Bucholz - $50,000

Caltech Center for Comparative Planetary Evolution – 2022 – Uranium in ophiolites as a record of deep ocean oxygenation.
Co-PIs C Bucholz, F Tissot. $44,800

NSF Petrology and Geochemistry – **EAR 2105371** Collaborative Research: Contribution of mafic magmatism to upper crustal batholiths: A case study of the Sierra Nevada batholith
PI C. Bucholz; co-PI JS Lackey (Pomona). $405,087 to C. Bucholz; $103,434 to Lackey. 2021-2024

GPS Division Discovery Funds – 2020 – Temporal Evolution of Arc Redox State
PI C Bucholz - $50,415

NSF CAREER: Linking the stable isotope record of Earth's surface and interior across the Great Oxidation Event - EAR 1943629
PI C. Bucholz. $664,500, 2020-2025

NSF Petrology and Geochemistry – **EAR 1949160** Collaborative Research: Evaluating the Exhumation History of the Aleutians with Zircon and Apatite Thermochronology
PI E. Cooperdock (USC); co-PI C. Bucholz. $311,203 to Cooperdock. 2020-2023; $38,334 to Bucholz

NSF Petrology and Geochemistry - EAR 1841790 Fe^{3+}/Fe^{T} ratios in amphiboles – a new tool for understanding the redox state of arc magmas
PI C. Bucholz, co-PI J. Jackson (Caltech). $290,000, 2019-2023.

Richard Lounsbery Foundation - Understanding the Dynamics of Continental Crust Formation.
PI C. Bucholz
$149,998. 2017-2020.

PEER REVIEWED PUBLICATIONS – Published or Submitted (*indicates advised student or postdoc)

(29) Bednarick A*, **Bucholz CE**, Stolper DA, De Paolo DJ. Temporal evolution of Sr isotopes in arc rocks. *Submitted to Proceedings of the National Academy of Sciences*.

(28) Hernández-Montenegro JD*, **Bucholz CE**, Sosa ES*, Kipp MA, Tissot FLH. Iron isotope fractionation during partial melting of metapelites and the generation of strongly peraluminous granites: the Ghost Lake batholith. *Submitted to Geochimica et Cosmochimica Acta.*

(27) Sosa ES*, **Bucholz CE**, Hernández-Montenegro JD*, Kipp MA, Tissot FLH, Jackson JM, Ratschbacher BC, Kay S, Kay R. Fe isotopes in lower crustal plutonic xenoliths from Adak Island, Central Aleutians: Implications for Fe isotope compositions of arc magmas. *Submitted to Geochimica et Cosmochimica Acta.*

(26) **Bucholz CE.** 2024. On the Origin and Diversity of Granites. Treatise on Geochemistry, 3rd edition.

(25) Mikhail S, Stüeken EE, Boocock TJ, Athey M, Mappin N, Prytulak J, Boyce AJ, Liebmann J, Spencer CJ, **Bucholz CE**. 2023. Strongly peraluminous granites provide independent evidence for an increase in biomass burial across the Precambrian-Phanerozoic boundary. Geology. https://doi.org/10.1130/G51800.1

(24) Stewart EM*, Eiler JM, **Bucholz CE**. Carbonate clumped isotopes record the heterogeneous onset of metamorphism in the Alta Stock contact aureole, Utah. *Contributions to Mineralogy and Petrology* 178(11):81. https://doi.org/10.1007/s00410-023-02061-5

(23) Sosa ES*, **Bucholz CE**, Barickman MH*, VanTongeren Jill A, Setera JB, Kay S, Kay R. 2023. Petrology and geochemistry of Adak Island plutonic xenoliths: implications for crustal differentiation in the Aleutain island arc. *Journal of Petrology* 64(10), 073. https://doi.org/10.1093/petrology/egad073

(22) Lewis MJ*, Ryan-Davis J*, **Bucholz CE**. 2023. Mafic intrusions reveal a mantle drive of arc episodicity and crustal thickening in the Sierra Nevada batholith. Geol. Society of America Bulletin. https://doi.org/10.1130/B36646.1

(21) Ratschbacher BC*, Jackson JM, Toellner TS, **Bucholz CE**, Sturhahn W, Solomatova NV. 2023. Fe^{3+}/Fe^{T} ratios of amphiboles determined by high-spatial resolution, single-crystal synchrotron Mössbauer spectroscopy in energy and time domain mode. American Mineralogist 108(1): 70-86. https://doi.org/10.2138/am-2022-8115

(20) **Bucholz CE**, Liebmann J, Spencer CJ. 2022. Secular variability in zircon phosphorus concentrations prevents simple petrogenetic classification. *Geochemical Perspective Letters* 24:12-16. https://doi.org/10.7185/geochemlet.2240

(19) **Bucholz CE**. 2022. Coevolution of the igneous and sedimentary phosphorus records. *Earth and Planetary Science Letters* 596, 117795. https://doi.org/10.1016/j.epsl.2022.117795

(18) Xie SW, Wang F, **Bucholz CE**, Liu FL, Wang PZ, Bao ZM. 2022. Whole-rock geochemistry and zircon O-Hf isotope compositions of ca. 2.35 Ga strongly peraluminous granites: Implications for increase in zircon $\delta^{18}O$ values during the Paleoproterozoic. Geochimica et Cosmochimica Acta 332: 186-202. https://doi.org/10.1016/j.gca.2022.06.029

(17) Stolper DA, Pu X, Lloyd MK, Christensen MI, **Bucholz CE**, Lange RA. 2022. Constraints on Early Paleozoic deep-ocean oxygen concentrations from the iron geochemistry of the Bay of Islands ophiolite. Geochemistry, Geophysics, Geosystems: e2021GC010196. https://doi.org/10.1029/2021GC010196

(16) Lewis MJ*, **Bucholz CE**, Jagoutz OE. 2021. Evidence for polybaric fractional crystallization in a continental arc: Hidden Lakes mafic complex, Sierra Nevada batholith, California. Contributions to Mineralogy and Petrology 176(11):1-27. https://doi.org/10.1007/s00410-021-01844-y

(15) Liebmann J*, Spencer CJ, Kirkland CL, **Bucholz CE**, Xia X, Martin L, Kitchen N, Shumlyanskyy L. 2021. Coupling of the atmosphere and sediment melts across the Archean-Proterozoic transition. Geochimica et Cosmochimica Acta 307: 242-257. https://doi.org/10.21203/rs.3.rs-55162/v1

(14) Liebmann J*, Spencer CJ, Kirkland, CL, **Bucholz CE**, He X, Santosh M, Xia X, Martin L, Evans NJ. 2021. Emergence of continents above sea-level influences compositions of sediment melts. Terra Nova 33(5), 465-474. https://doi.org/10.1111/ter.12531

(13) **Bucholz CE**, Biasi JA*, Beaudy P, Ono S. 2020. Sulfur isotopes during metamorphism and anatexis of Archean sedimentary rocks: a case study from the Ghost Lake batholith, Ontario, Canada. Earth and Planetary Science Letters 549:116494. https://doi.org/10.1016/j.epsl.2020.116494

(12) **Bucholz CE** & Kelemen PB. 2019. Oxygen fugacity at the base of the Talkeetna arc, Alaska. Contributions to Mineralogy and Petrology 174(10): 79. https://doi.org/10.1007/s00410-019-1609-z

(11) **Bucholz CE** & Spencer CJ. 2019. Strongly peraluminous granites across the Archean-Proterozoic boundary. Journal of Petrology 60(7): 1299-1348. https://doi.org/10.1093/petrology/egz049

(10) Stolper DA & **Bucholz CE**. 2019. Neoproterozoic to early Phanerozoic rise in island arc redox state due to deep ocean oxygenation and increased marine sulfate levels. Proceedings of the National Academy of Sciences 116:18, 8746-8755. https://doi.org/10.1073/pnas.1821847116

(9) **Bucholz CE**, Stolper EM, Eiler JM, Break FW. 2018. A comparison of oxygen fugacities of strongly peraluminous granites across the Archean-Proterozoic boundary. Journal of Petrology 59(11): 2123-2156. https://doi.org/10.1093/petrology/egy091

(8) **Bucholz CE**, Jagoutz O, Vantongeren JA, Setera J, Wang Z. 2017. Oxygen isotope trajectories of crystallizing melts: Insights from modeling and the plutonic record. Geochimica et Cosmochimica Acta 207: 154-84. https://doi.org/10.1016/j.gca.2017.03.027

(7) **Bucholz CE**, Eddy MP, Jagoutz O, Schmidt MW, Sambuu O, Bowring SA. 2017. High Precision U-Pb zircon CA-ID-TIMS Age Constraints on Timescales of Magmatic Differentiation. Geology 45.1, 11-14. https://doi.org/10.1130/G38505.1

(6) **Bucholz CE**, Jagoutz O, Schmidt MW, & Sambuu O. 2014b. Fractional Crystallization of High-K Arc Magmas: Biotite- vs. Amphibole-dominated Fractionation Series in the Dariv Igneous Complex, Western Mongolia. Contributions to Mineralogy & Petrology 168.5, 1072. https://doi.org/10.1007/s00410-014-1072-9

(5) **Bucholz CE**, Jagoutz O, Schmidt MW, Sambuu O. 2014a. Phlogopite- and Clinopyroxene-dominated Fractional Crystallization of an Alkaline Primitive Melt: Petrology and Mineral Chemistry of the Dariv Igneous Complex, Western Mongolia. Contributions to Mineralogy & Petrology 167.4, 1-28. https://doi.org/10.1007/s00410-014-0994-6

(4) **Bucholz CE**, Gaetani GA, Behn MD, Shimizu N, Newville M. 2013. Post-Entrapment Modification of Volatiles and Oyxgen Fugacity in Olivine-Hosted Melt Inclusions. Earth and Planetary Science Letters, 374, 145-155. https://doi.org/10.1016/j.epsl.2013.05.033

(3) Gaetani GA, O'Leary JA, Shimizu N, **Bucholz CE**, & Newville M. 2012. Rapid Re-equilibration of H_2O and Oxygen Fugacity in Olivine Hosted Melt Inclusions. Geology 40, 915-918. https://doi.org/10.1130/G32992.1

(2) Wang Z, **Bucholz C**, Skinner B, Shimizu N, & Eiler J 2011. Oxygen isotope constraints on the origin of high-Cr garnets from Kimberlites. Earth and Planetary Science Letters 312, 337-347. https://doi.org/10.1016/j.epsl.2011.09.061

(1) **Bucholz CE** & Ague JJ. 2010. Fluid flow and Al transport during quartz-kyanite vein formation, Unst, Shetland Islands, Scotland. Journal of Metamorphic Geology 28, 19-39. https://doi.org/10.1111/j.1525-1314.2009.00851.x

MEETING ABSTRACTS (*indicates advised student or postdoc)

Ryan-Davis J*, **Bucholz CE**, Sisson TW. An intrusive record of shallow differentiation of low-H_2O primitive arc magmas: Emigrant Gap, California. American Geophysical Union Fall Meeting. San Francisco, 2023. (invited talk)

Stolper D, Bednarick A*, **Bucholz CE**, Christensen JN, DePaolo D, Ibarra DE, Lloyd M. Do changes in seawater chemistry affect the composition of hydrothermally altered oceanic crust? A case study using strontium isotopes from the early Paleozoic Bay of Islands ophiolite. American Geophysical Union Fall Meeting. San Francisco, 2023

Carrera A, Cooperdock EHG, Kay SM, **Bucholz CE**. Investigating Island Arc Exhumation Mechanisms – A Detailed Low-Temperature Thremochronologic Study of Adak and Kagalaska Islands, Aleutian Islands. American Geophysical Union Fall Meeting. San Francisco, 2023

Bucholz CE. Defining crustal and mantle contributions to granites through time. Xth Hutton Symposium, Baveno, Italy. 2023. (Keynote Overview)

Wilner O*, **Bucholz CE**. Trends in halogen content with other geochemical indicators from a global survey of granitoids. Xth Hutton Symposium, Baveno, Italy. 2023.

Ryan-Davis J*, **Bucholz CE**, Lackey JS, Lewis M, Kitajam K, Valley J. Mafic contributions across the Sierra Nevada batholith, California. Xth Hutton Symposium, Baveno, Italy. 2023.

Carrera A, Cooperdock EHG, Kay SM, **Bucholz CE.** Investigating Island Arc Exhumation Mechanisms – A Detailed Low-Temperature Thermochronologic Study of Adak and Kagalaska Islands, Aleutian Islands. International Thermochronology Conference. Riva del Garda, Italy. 2023.

Ryan-Davis J*, **Bucholz CE**, Sisson TW. Fractional crystallization and open system processes of H_2O-poor primitive basalt at the Jurassic Emigrant Gap intrusive complex, Sierra Nevada batholith, California. Lyon, France. Goldschmidt, 2023.

Ratschbacher B, Jackson J, Toellner T, **Bucholz CE**, Sturhahn W. Characterization of Natural Amphibole Crystals through a Combination of Microanalytical Techniques including Single-Crystal Synchrotron Mössbauer Spectroscopy. Invited oral presentation at the APS User Meeting, Chicago, Illinois, 2023.

Bednarick A*, **Bucholz CE**, Stolper D, DePaolo DJ. Temporal evolution of Sr isotopes in island arc rocks. Goldschmidt, Honolulu, Hawaii, 2022.

Sosa ES*, **Bucholz CE**, Hernández-Montenegro JD*, Tissot FLH, Kipp MA, Kay SM, Kay RW. Iron isotopes in mantle and cumulate xenoliths from Adak Island, Central Aleutians. Goldschmidt, Honolulu, Hawaii, 2022.

Bucholz CE, Liebmann J, Spencer CJ. Coevolution of the sedimentary and granite phosphorus records. Goldschmidt, Honolulu, Hawaii, 2022.

Ratschbacher B, Sosa E, **Bucholz CE**, Toellner T. Characterization of lower crustal cumulate amphiboles (H_2O content, dD, Fe^{3+}/Fe^{T} ratios) by a combination of microanalytical techniques on single crystals. AGU Fall Meeting, Chicago, Illinois, 2022.

Hernández-Montenegro JD*, **Bucholz CE**, Sosa ES*, Tissot FLH, Kipp MA. Fractionation of iron isotopes between S-type granites and their sedimentary sources: a case study of the Ghost Lake batholith. Goldschmidt, Honolulu, Hawaii, 2022. (Bucholz presented as keynote).

Stewart E, Eiler J, **Bucholz CE**. Barely metamorphic: carbonate clumped isotope thermometry applied to low-T reaction zones in marbles of the Alta Stock contact aureole, Utah. AGU, New Orleans, 2021.

Bucholz CE, Lewis MJ*,Ryan Davis J*. Contributions of mafic magmatism to the upper crustal Sierra Nevada batholith, California. GSA Annual Meeting, Portland, 2021. (Invited)

Ryan Davis J*, **Bucholz CE**, Sisson TW. Field, petrologic, and geochemical evidence for upper-crustal ultramafic cumulate fractionation to generate intermediate plutons at Emigrant Gap, Sierra Nevada, California. GSA Annual Meeting, Portland, 2021.

Lewis MJ*, **Bucholz CE**, Ryan-Davis J, Gerhrels GE. Upper crustal mafic plutonic geochronology and petrology support mantle connection to arc magmatic productivity: eastern Sierra Nevada batholith, CA. GSA Annual Meeting, virtual, 2020.

Liebmann J, Spencer, CJ, **Bucholz CE**, Kirkland CL, Martin L, Xia X, Kitchen N. Coupling atmosphere and sediment melts across the Archean-Proterozoic transition. GSA Annual Meeting, virtual, 2020.

Velazquez Santana, LC*, McLeod, CL, **Bucholz CE**. Initial characterization of sulfides in central Andean arc hornblendite cumulates via scanning electron microscopy (SEM). GSA Annual Meeting, virtual, 2020.

Bucholz CE, Biasi JA*, Beaudry P, Ono S, Liebmann J, Spencer CJ. Sulfur isotopes in Archean and Proterozoic strongly peraluminous granites. Goldschmidt, virtual, 2020. (Keynote)

Liebmann J, Spencer, CJ, **Bucholz CE**, Kirkland CL, Martin L, Xia X, Kitchen N. Is Paleoproterozoic atmospheric oxygenation linked to the emergence of continents above sea-level? Evidence from sulfur and oxygen isotopic signatures in Archean to Proterozoic sediment-derived granitoids. Goldschmidt, virtual, 2020.

Worthington JR*, **Bucholz CE**, Bold U, Macdonald FA. Neoproterozoic tectonic evolution of the ophiolitic Bayankhongor suture zone, Central Asian Orogenic Belt (Central Mongolia). GSA Annual Meeting, Phoenix, Arizona, 2019.

Liebmann J, Spencer CJ, Kirkland, C, **Bucholz CE**, He X, Tang L, Santosh M, Xia X, Martin L, Evans N. Emergence of continents above sea-level influences composition of sediment melts. Goldschmidt, Barcelona, Spain, 2019.

Bucholz CE and Biasi JA.* Sulfur isotope systematics during partial melting of Archean sedimentary rocks: a case study from the Ghost Lake batholith, Ontario, Canada. Gordon Conference, Mt. Holyoke College, Massachusetts, June 2019.

Ratschbacher BC*, **Bucholz CE**, Jackson JM, Solomatova NV. Variations in Fe3+/FeT ratios in volcanic amphibole as a function of magmatic oxygen fugacity and mineral composition. AGU Fall Meeting, San Francisco, 2018.

Lewis MJ*, **Bucholz CE**, Jagoutz, OE. Polybaric crystallization of hydrous basalts in a continental arc: evidence from Hidden Lakes mafic complex, Sierra Nevada batholith, California. AGU Fall Meeting, San Francisco, 2018.

Bucholz CE, Kelemen P. Oxygen fugacity at the base of the Talkeetna Arc, Alaska. Goldschmidt, Boston, MA. 2018.

Stolper D, **Bucholz CE**. A Phanerozoic increase in arc rock oxidation state. Goldschmidt, Boston, MA. 2018.

Gatti E, **Bucholz C**, Guan Y, Zhang Y, Gaetani G, Eiler J. dD variations in olivine-hosted melt inclusions due to post-entrapment processes: a case study from Baffin Island picrites. Goldschmidt, Boston, MA. 2018.

Barickman MH*, **Bucholz CE**, Kay SM, Kay RW. Petrology and geochemistry of Adak Island plutonic xenoliths: implications for crustal differentiation in the Aleutian island arc. GSA Annual Meeting, Seattle, WA. 2017.

Lewis M*, **Bucholz CE**, Jagoutz OE, Eddy MP. Petrology and geochemistry of an upper crustal mafic complex – Hidden Lakes, Sierra Nevada Batholith, California. AGU Fall Meeting, New Orleans, LA, 2017.

Bucholz CE, Eiler JM, Stolper EM, Breaks FW. Comparison of oxygen fugacities of S-type granites across the Archean-Proterozoic boundary. AGU Fall Meeting, San Francisco, CA, 2016.

Biasi J*, Asimow PD, **Bucholz CE**. Evolution and Eruptibility of Magma Reservoirs. Modeling Results from the Western Peninsular Ranges Batholith. AGU Fall Meeting, San Francisco, CA, 2016.

Bucholz CE, Eddy MP, Jagoutz O, Bowring S. Constraining the Timescales of Magmatic Differentiation with U-Pb Zircon Geochronology. AGU Fall Meeting, San Francisco, CA, 2015.

Bucholz CE, Jagoutz O, VanTongeren JA, Wang Z. Oxygen Isotope Trajectories of Crystallizing Arc Magmas. AGU Fall Meeting, San Francisco, CA, 2014.

Bucholz CE, Gaetani GA, Behn MD. Modeling Post-Entrapment Modification of Volatile Contents in Olivine-Hosted Melt Inclusions from Mid-Ocean Ridges. AGU Fall Meeting, San Francisco, CA, 2014. (invited)

Bucholz CE, Jagoutz O, Schmidt MW. Many Roads Lead to Granite: A Field Study of a High-K LLD. Goldschmidt, Sacramento, CA, 2014.

Bucholz CE, Gaetani GA, Behn MD, Shimizu N, Newville M, Monteleone B. Volatile Records in Olivine-Hosted Melt Inclusions: What Can We Actually Learn From Them? Goldschmidt, Sacramento, CA, 2014. (Keynote)

Bucholz CE, Jagoutz O, Schmidt MW. A Field and Geochemical Study of the Hydrous Fractionation of an Alkaline Primitive Arc Melt: the Dariv Igneous Complex, Western Mongolia. GSA Annual Meeting, Denver, CO, 2013.

Jagoutz O, **Bucholz CE**. What controls the chemical stratification of an entire arc's crust? GSA Annual Meeting, Denver, CO, 2013.

Gaetani GA, **Bucholz CE**, Rose-Koga E, Shimizu N, Koga K, Monteleone B. Reading the Melt Inclusion Record of Pre-eruptive Magmatic Volatiles. Goldschmidt, Florence, Italy, 2013.

Bucholz CE, Gaetani GA, Behn MD. Diffusive Re-equilibration of Volatiles and Oxygen Fugacity in Olivine-Hosted Melt Inclusions: Experiments and Numerical Models. AGU Fall Meeting, San Francisco, CA, 2011.

Gaetani GA, O'Leary JA, Shimizu N, **Bucholz CE**, Decoupling of Water, Oxygen Fugacity and Incompatible Elements in Olivine-Hosted Melt Inclusions by Diffusive Re-Equilibration. AGU Fall Meeting, San Francisco, CA, 2010.

INVITED TALKS

Overview Keynote Speaker, Xth Hutton Symposium on Granites (September 2023)
Chevron Climate Energy Environment Webinar Series (May 2023)
University of St. Andrews (December 2022)
Washington University St. Louis Earth & Planetary Sciences Colloquium (October 2021)
UC Davis Earth and Planetary Sciences Department Seminar Series (October 2021)
Virtual Seminar in Precambrian Geology (October 2021)
Scripps Institution of Oceanography – Geoscience/Marine Chemistry and Geochemistry seminar (October 2021)
Stanford-USGS-UC Santa Barbara – Tectonics-Petrology-Geochronology Seminar (May 2021)
UC Riverside - Department of Earth & Planetary Sciences – Hewett Club Seminar (October 2019)
Johns Hopkins University – Department of Earth & Planetary Sciences – Bromery Lecture (October 2019)
U. Oregon – Department of Earth Sciences (April 2019)
UC Berkeley – EPS Seminar (October 2018)
UCSB – Speakers Club (October 2017)
UCLA – Geocheminar (May 2017)
Lamont Doherty Earth Observatory – Geochemistry Seminar (February 2017)
Yale University – Dept. of Geology and Geophysics (March 2016)
Stanford University – Dept. of Geological Sciences Seminar (October 2015)
Harvard University – EPS Department Colloquium (March 2015)
University of Southern California – Dept. of Earth Sciences (February 2015)
California Institute of Technology – GPS Division Seminar (November 2014)
California Institute of Technology – GPS Tectonic Observatory Lunch (November 2014)
Goldschmidt Sacramento – Keynote Speaker (June 2014)
Harvard University – BISEPPS (November 2013)
Mongolian University of Science and Technology – (June 2012)

PROFESSIONAL AFFILIATIONS AND SERVICE

Affiliations

American Geophysical Union (2008-present)
Geological Society of America (2008-present)

Mineralogical Society of America (2010-present)

Associate Editor

American Journal of Science (2022-present)
American Mineralogist (2022-present)

Reviewer for journals including: Contributions to Mineralogy and Petrology; Geochemistry, Geophysics, Geosystems; American Mineralogist; Geology; Journal of Petrology, Nature, Nature Communications, Science Advances

Reviewer for funding agencies including: National Science Foundation, Swiss National Science Foundation

Committee Work

2023-present	Caltech 3CPE Steering Committee
2022-present	GPS Field Safety Committee (Chair)
2020-2022	SZ4D Magmatic Drivers of Eruption Working Group
2019-present	Caltech Library Committee
2022	GPS Librarian Search Committee
2021	GPS Faculty Search Committee

ADVISED STUDENTS and POSTDOCTORAL SCHOLARS

*Indicates students for whom I am/was a primary advisor

Graduate students:

*Paolo Sanchez (2022-present)
*Eran Funaro (2021-present)
Shane Houchin (2020-present)
*Juan Hernandez-Montenegro (2020-present)
*Amanda Bednarick (2020-present)
*Juliet Ryan-Davis (2018-present; PhD expected 2024)
*Emma Sosa (2017-present; PhD expected 2024)
Joe Biasi (PhD 2021) – now Assistant Professor at University of Wyoming
*Madeline J. Lewis (PhD 2021) – now Assistant Professor at University of Wyoming

Undergraduate students:

Sam Newall – Caltech SURF 2018, now PhD student at UC Santa Barbara
Matt Barickman – Caltech SURF 2017, masters degree Washington University, now staff geologist at HDR (Denver)
Allyson Trussell – Caltech SURF 2018, now PhD student at Arizona State University
Rahul Chawlani – Caltech SURF 2021, now senior at Caltech
Odalys Callejas – Caltech SURF 2021, now PhD student at Cornell University

Postdoctoral Scholars:

Barbara Ratschbacher (now Assistant Professor at UC Davis)
James Worthington (now postdoc at Scripps Institution of Oceanography)
Emily Stewart (now Assistant Professor at Florida State University)

THESIS COMMITTEE PARTICIPATION

Lee Saper (PhD, Caltech, member, 2021)
Madeline Lewis (PhD, Caltech, advisor, 2021)
Joe Biasi (PhD, Caltech, member, 2021)
Manuel Pimenta Silva (PhD, ETH Zürich, member, 2024)

FIELDWORK

Spirit Mountain batholith, Nevada – Igneous Petrology (2023)
Payson ophiolite, Arizona – Igneous Petrology (2022)
South Dakota and Wyoming – Igneous Petrology (2018)
Ontario, Superior Province – Igneous Petrology (2016, 2017)
Sierra Nevada, California - Igneous Petrology (2014, 2016, 2017, 2018, 2019, 2020)
Indian Himalayas – Paleomagnetic Sampling (2013)
Western Mongolia – Igneous Petrology/Regional Tectonics (2011, 2012)
Mojave Desert, California – MIT Field Camp (2011, 2013, 2014)
Ticino, Switzerland – Keck Consortium, Igneous/Structural Geology (2007)
Glen Clova, Scotland – Metamorphic Petrology (2007)
Shetland Islands, Scotland – Metamorphic Petrology (2006)