

Sarah E. Brooker
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EDUCATION

- 2022 – present Ph.D. Jackson School of Geosciences, University of Texas at Austin, Austin, TX, Department of Earth and Planetary Sciences
Tracing fluid-rock reactions using traditional and non-traditional stable isotopes: examples from mantle xenoliths and tourmaline gemstones (advised by Dr. Jaime Barnes), GPA: 4.00
- 2020 - 2022 M.S. Jackson School of Geosciences, University of Texas at Austin, Austin, TX, Department of Geological Sciences
Stable isotope composition of the Slave subcontinental lithospheric mantle as a tracer of metasomatism (advised by Dr. Jaime Barnes), GPA: 4.00
- 2016 - 2020 B.S. University of North Carolina at Chapel Hill, Chapel Hill, NC, Department of Geological Sciences, Geochemistry
With Honors, Honors College and with distinction
Chemical profiles of composite intrusions of the Independence dike swarm in eastern California (co-advised by Dr. Allen Glazner and Dr. Drew Coleman), GPA: 3.800
- 2016 - 2020 B.A. University of North Carolina at Chapel Hill, Chapel Hill, NC, Department of Mathematics, Mathematics, GPA: 3.795
- 2019 University of Arizona Summer Field School (6 credit hours), Tucson, AZ, GPA: 4.00

RESEARCH EXPERIENCE

- 2022 – present **Graduate Research Assistant**, University of Texas at Austin, Austin, TX, working with Dr. Jaime Barnes, Conducted research on oxygen and calcium isotope compositions in mantle xenolith samples from the Kaapvaal Craton and the Navajo Volcanic Field and copper and oxygen isotopes of Paraíba gem tourmaline.
- 2024 **NSF INTERN**, Smithsonian Institute National Museum of Natural History, Washington, D.C., working with Dr. Elizabeth Cottrell and Dr. Michael Ackerson, pre-doctoral fellow at the museum, analyzing mantle xenoliths from the Kaapvaal craton for mineral major element concentrations and participating in museum outreach events.
- 2023 **Graduate Field Assistant**, Nelson, New Zealand, Participated in field studies with researchers from UT Austin, University of South Carolina, and Colorado College, investigated the Dun Mountain Ophiolite by taking structural measurements, recording lithological details, and collecting hand samples for chemical analysis.
- 2020 – 2022 **Research Assistant**, University of Texas at Austin, Austin, TX, working with Dr. Jaime Barnes, conducted research on oxygen and calcium isotope compositions in mantle xenolith samples from the Slave Craton (master's thesis).

- 2019 – 2020 **Honors Undergraduate Research Assistant**, University of North Carolina at Chapel Hill, Chapel Hill, NC, working with Dr. Allen Glazner and Dr. Drew Coleman, investigated dike intrusion mechanisms in the Independence Dike Swarm using geochemical analyses to identify chemical zonation patterns (undergraduate thesis).
- 2018 **NSF IDEA Undergraduate Research Intern**, University of North Carolina at Chapel Hill, Chapel Hill, NC working with Dr. Xiao-Ming Liu, analyzed REE concentration variations in soils from weathering profiles on the island of Hawai'i using ICP-MS techniques.
- 2017 – 2019 **Undergraduate Research Assistant**, University of North Carolina at Chapel Hill, Chapel Hill, NC, working with Dr. Allen Glazner, examined pollution levels in Pea Island, NC, by analyzing sand samples for heavy metals and SEM imaging.

PUBLICATIONS

- in prep* **Brooker, S.E.**, Barnes, J.D., and Lassiter J.C., Ca isotope composition of the subcontinental lithospheric mantle of SW United States.
- in prep* **Brooker S.E.**, Befus, K.S., Mather, R., Dutrow, B.L., and Barnes, J.D., Pegmatite genesis: insights from Paraíba tourmaline gemstone.
1. **Brooker, S.E.**, Barnes, J.D., Lassiter, J.C., Satkoski, A., and Pearson, D.G., (2024), Tracking subduction-related metasomatism of the subcontinental lithospheric mantle using Ca-, O-, and H-isotopes, *Geochimica et Cosmochimica Acta*, v. 385, p. 16-33. doi: 10.1016/j.gca.2024.09.036.

AWARDS AND HONORS

- 2025 Frank Perham Memorial Scholarship (\$1,180)
- 2025 DeFord Field Scholarship at the University of Texas at Austin (\$3,500)
- 2025 Ingerson Scholarship at the University of Texas at Austin (\$350)
- 2025 Chevron Student Analytical Research Fund at Louisiana State University (\$1,000)
- 2024 Vargas Gem Fellowship at the University of Texas at Austin (~\$10,000)
- 2024 International Kimberlite Conference Travel Grant (\$1,000)
- 2024 Geological Society of America's Lipman Research Award (\$2,500)
- 2024 13th Annual Jackson School Student Research Symposium: Late Career Graduate Student Poster Runner Up Award (\$500)
- 2023 Chevron Student Analytical Research Fund at Louisiana State University (\$1,000)
- 2023 DeFord Field Scholarship at the University of Texas at Austin (\$1,000)
- 2022 Geological Society of America's Lipman Research Award (\$2,500)
- 2021 Richard Chuchla Dean's Discretionary Fellowship at the University of Texas at Austin (\$1,000)
- 2021 Duchin Centennial Memorial Endowed Presidential Scholarship at the University of Texas at Austin (\$4,000)
- 2019 Grover Murray Field Camp Scholarship at the University of North Carolina at Chapel Hill (\$2,000)
- 2019 The Daniel Craig Pignatiello Fund for Undergraduate Research in Geological Sciences at the University of North Carolina at Chapel Hill (\$5,000)

PRESENTATIONS

- 2025 **Brooker, S.E.**, Cottrell, E., Barnes, J.D., Lassiter, J.C., Apatites in mantle xenolith peridotites: petrography, mineral chemistry, and possible kimberlitic origins, 14th Annual Jackson School Student Research Symposium, Austin, TX, Poster presentation.
- 2025 **Brooker, S.E.**, Barnes, J.D., Lassiter, J.C., Satkoski, A., Pearson, D.G., Tracking subduction signatures in subcontinental lithospheric mantle using stable isotopes, Lithosphere and Deep Earth Seminar, Austin, TX, Oral presentation.
- 2024 **Brooker, S.E.**, Barnes, J.D., Lassiter, J.C., Satkoski, A., Pearson, D.G., Metasomatism of the deep root of the Slave craton by melts from subducted oceanic crust, 13th International Kimberlite Conference, Yellowknife, Canada, Poster presentation.
- 2024 **Brooker, S.E.**, Befus, K.S., Mather, R., Dutrow, B.L., and Barnes, J.D., Copper isotope composition of Paraíba tourmaline gemstone, 13th Annual Jackson School Student Research Symposium, Austin, TX, Poster presentation.
- 2023 **Brooker, S.E.**, Befus, K.S., Mather, R., Dutrow, B.L., Loocke, M.P., and Barnes, J.D., Copper isotope composition of Paraíba tourmaline from Sao Jose da Batalha, Geological Society of America Annual Meeting, Pittsburgh, PA, Oral presentation.
- 2022 **Brooker S.E.**, Barnes, J.D., Lassiter, J.C., and Pearson, D.G., Stable Isotope Composition of the Archean Slave Subcontinental Lithospheric Mantle as a Tracer of Metasomatism, JSG Master's Saturday, Austin, TX, Oral presentation.
- 2022 **Brooker, S.E.**, Barnes, J.D., Lassiter, J.C., and Pearson, D.G., Stable Isotope Composition of the Slave Cratonic Lithospheric Mantle as a Tracer of Metasomatism, 11th Annual Jackson School Student Research Symposium, Austin, TX, Poster presentation.
- 2021 **Brooker S.E.**, Barnes J.D, Lassiter J.C, Pearson D.G., Stable Isotope Composition of Slave Cratonic Lithospheric Mantle as a Tracer of Metasomatism, American Geophysical Union Fall Meeting, New Orleans, LA, Oral presentation.
- 2021 **Brooker S.E.**, Barnes J.D, Lassiter J.C, Pearson D.G., Stable Isotope Composition of Slave Cratonic Lithospheric Mantle as a Tracer of Metasomatism, Lithosphere and Deep Earth Seminar, Austin, TX, Oral presentation.
- 2020 **Brooker S.E.**, Chemical profiles of composite intrusions of the Independence dike swarm in eastern California, Undergraduate Thesis Presentation Seminar, Chapel Hill, NC, Oral presentation.
- 2018 **Brooker S.E.**, and Liu X-M., Rare earth element analysis of soil weathering profiles in varying climate zones on the island of Hawai'i. Geological Society of America Annual Meeting, Indianapolis, IN, Poster presentation.
- 2018 **Brooker S.E.**, and Liu X-M., Rare earth element analysis of soil weathering profiles in varying climate zones on the island of Hawai'i, Summer Undergraduate Pipeline Research Symposium Chapel Hill, NC, Poster presentation.
- 2018 **Brooker S.E.**, Porter C., Thyer B., and Zabrecky J., Rockfall reconstruction and risk assessment on Chilicotol Mountain, Big Bend National Park, Texas, Anadarko Student Research Symposium, Chapel Hill, NC, Poster presentation.

- 2016 Barnes L., **Brooker S.E**, Paul. M, and Tian J., Lead concentrations in pine trees in eastern California: Variations with time period and distance from Highway 395, UNC Undergraduate Research Symposium, Chapel Hill, NC, Poster presentation.

INVITED LECTURES

- 2025 *Cu isotope composition of Paraíba tourmaline indicates hydrothermal processes follow pegmatite crystallization*, the 4th International Tourmaline Conference, Antsirabe, Madagascar, July 2025.
- 2025 *The colorful world of tourmaline and the Paraíba puzzle*, Austin Gem and Mineral Society, May 2025.
- 2025 *Apatites in mantle xenolith peridotites: petrography, mineral chemistry, and possible kimberlitic origins*, Austin Geological Society, Poster Presentation, Austin, TX, March 2025.
- 2024 *Tracking subduction signatures in subcontinental lithospheric mantle using stable isotopes*, Smithsonian National Museum of Natural History, Washington, DC, October 2024.
- 2022 *Stable Isotope Composition of Slave Cratonic Lithospheric Mantle as a Tracer of Metasomatism*, University of Southern California, Los Angeles, CA, October 2022.

TEACHING AND EDUCATIONAL OUTREACH

- 2025 – present **Graduate Research Mentor**, Jackson School of Geosciences, University of Texas at Austin, Austin, TX, mentored undergraduate students in geologic laboratory methods, providing guidance on sample preparation, analysis, and data interpretation.
- May 2025 **Guest Lecturer**, Whitaker Elementary School, Winston-Salem, NC, provided an introductory gem mineral lecture to fourth graders before their field trip to Emerald Hollow Mine. Guided students in hands-on mineral identification during the trip.
- Spring 2025 **Teaching Assistant for Gems and Gemology Course**, Jackson School of Geosciences, University of Texas at Austin, Austin, TX.
- Jan. 2025 – May 2025 **OnRamps Geoscience Course Grader Mentor**, Office of Strategy and Policy, University of Texas at Austin, Austin, TX, provided grading support and feedback for high school students enrolled in the OnRamps Geoscience course. Collaborated closely with course managers on curriculum development.
- Dec. 2024 **‘Expert Is In’**, Smithsonian National Museum of Natural History, Washington, DC, developed a program topic and shared knowledge about kimberlite volcanoes and diamonds with museum visitors.
- June 2024 **GeoFORCE Educational Coach**, Jackson School of Geosciences, University of Texas at Austin, Austin, TX, delivered lectures and supervised a weeklong geology summer camps in Southwest United States.
- April 2024 **Faceting Short Course Instructor**, American Gem Society, Conclave, Austin, TX, conducted a two-hour introductory faceting course during the American Gem Society’s annual Conclave for interested attendees.
- Spring 2024 **Teaching Assistant for Gems and Gemology Course**, Jackson School of Geosciences, University of Texas at Austin, Austin, TX.
- Aug. 2021 – Aug. 2024 **OnRamps Geoscience Course Grader Mentor**, Office of Strategy and Policy, University of Texas at Austin, Austin, TX, provided grading support and

- feedback for high school students enrolled in the OnRamps Geoscience course. Collaborated closely with course managers on curriculum development.
- July 2023 **GeoFORCE Educational Coach**, *Jackson School of Geosciences, University of Texas at Austin, Austin, TX*, delivered lectures and supervised a weeklong geology summer camps in the Pacific Northwest.
- May 2023 **GeoFORCE Educational Coach**, *Jackson School of Geosciences, University of Texas at Austin, Austin, TX*, delivered lectures and supervised a weeklong geology summer camps along the Texas Gulf Coast.
- Spring 2022 **Teaching Assistant for Physical Geology**, *Jackson School of Geosciences, University of Texas at Austin, Austin, TX*.
- Jun. 2022 **GeoFORCE Educational Coach**, *Jackson School of Geosciences, University of Texas at Austin, Austin, TX*, delivered lectures and supervised a weeklong geology summer camps in and around central Texas.
- Spring 2021 **Teaching Assistant for Gems and Gemology Course**, *Jackson School of Geosciences, University of Texas at Austin, Austin, TX*.
- Sep. 2020 – Aug. 2021 **OnRamps Geoscience Course Grader**, *Office of Strategy and Policy, University of Texas at Austin, Austin, TX*, graded quizzes, exams, and assignments for dual-enrollment geoscience courses. Provided clear, constructive feedback to ensure students understood key concepts.
- June 2021 **Remote GeoFORCE Educational Coach in Training**, *Jackson School of Geosciences, University of Texas at Austin, Austin, TX*, assisted high school students during virtual summer academy sessions by explaining geoscience concepts, answering questions, and facilitating group discussions.
- Fall 2020 **Teaching Assistant for Gems and Gemology Course**, *Jackson School of Geosciences, University of Texas at Austin, Austin, TX*.
- Fall 2019 **Undergraduate Teaching Assistant for Field Seminar Course**, *University of North Carolina at Chapel Hill, Chapel Hill, NC*.

FIELD VISITS & NETWORKING EXPERIENCES

- 2025 **Visiting** Ruby Red Madagascar tourmaline mines, Antsirabe, Madagascar
- 2025 **Visiting** Emerald Hollow Mine, Hiddenite, NC
- 2025 **Visiting** Avant Fisher Mountain Quartz Mine, Mount Ida, AR
- 2025 **Networking** trip to the Tucson Gem and Mineral Show, Tucson, AZ
- 2024 **Visiting** Geological Society of Washington monthly meetings, Washington, DC
- 2024 **Networking** at the American Geophysical Union Fall Meeting, Washington, DC
- 2024 **Networking** trip to the Tucson Gem and Mineral Show, Tucson, AZ
- 2024 **Visiting** Diavik Diamond Mine, Gahcho Kue Diamond Mine, and Ekati Diamond Mine, NWT, Canada
- 2022 **Networking** at the Geological Society of America Annual Meeting, Denver, CO

PROFESSIONAL MEMBERSHIPS

- 2023 – present American Gem Trade Association
- 2020 – present Mineralogical Society of America
- 2018 – present American Geophysical Union
- 2018 – present Geological Society of America