

ELISE B. WILKES

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EDUCATION

- | | |
|------|--|
| 2018 | Ph.D., Harvard University , Earth & Planetary Sciences
Dissertation Advisor: Ann Pearson |
| 2012 | A.B., Dartmouth College , <i>magna cum laude</i> , Chemistry with High Honors |

PROFESSIONAL EXPERIENCE

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|-----------|---|
| 2018-2022 | Caltech Division of Geological and Planetary Sciences
Agouron Postdoctoral Fellow, Postdoctoral Research Associate in Geobiology |
| 2012-2018 | Harvard University Department of Earth & Planetary Sciences
Graduate Research Fellow (Advisor: Ann Pearson) |
| 2010-2012 | Dartmouth College Department of Chemistry
Honors Thesis Researcher (Advisor: Ivan Aprahamian) |
| 2011 | NOAA Northwest Fisheries Science Center
NOAA Hollings Scholar |
| 2009-2010 | Arizona State University, School of Earth & Space Exploration
Visiting Undergraduate Researcher (Advisors: Laura Wasylenki & Ariel Anbar) |
| 2009-2010 | Dartmouth College Department of Earth Science
NASA NH Space Grant Intern (Advisor: Mukul Sharma) |

HONORS AND AWARDS

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| 2020 | Caltech Center for Environmental Microbial Interactions Pilot Grant |
| 2018-2020 | Agouron Institute Postdoctoral Fellowship |
| 2018 | Caltech Geochemistry Option Postdoctoral Fellowship (<i>superseded by Agouron</i>)
Dissertations in Chemical Oceanography DISCO XXVI Selected Participant |
| 2014-2017 | NSF Graduate Research Fellowship |
| 2013 | Smith Family Graduate Science & Engineering Fellowship, Harvard |
| 2012 | James Mills Peirce Graduate Fellowship, Harvard
Phi Beta Kappa
Elden Bennett Hartshorn Medal in Chemistry, Dartmouth
The John L. Zabriskie Jr. '61 Senior Chemistry Prize, Dartmouth |
| 2010-2011 | Hollings Scholar, National Oceanic and Atmospheric Administration |

2010	James O. Freedman Presidential Scholar, Dartmouth
2009–2011	Rufus Choate Scholar, Dartmouth

PUBLICATIONS

- [9] **Wilkes EB**, Sessions A, Zeichner S, Dallas B, Schubert B, Jahren AH, and Eiler J. (2022) Position-specific carbon isotope analysis of serine by gas chromatography Orbitrap mass spectrometry, and an application to plant metabolism. *Rapid Communications in Mass Spectrometry*, doi:10.1002/rcm.9347

- [8] Zeichner SS, **Wilkes EB**, Hofmann AE, Chimiak L, Sessions AL, Makarov A, and Eiler JM (2022) Methods and limitations of stable isotope measurements via direct elution of chromatographic peaks using gas chromatography-Orbitrap mass spectrometry. *International Journal of Mass Spectrometry*, 116848. doi:10.1016/j.ijms.2022.116848

- [7] *Silverman SN, *Phillips AA, *Weiss GM, **Wilkes EB**, Eiler JM, and Sessions AL. (2022). Practical considerations for amino acid isotope analysis. *Organic Geochemistry*, 164, 104345, 2022. (***equal authorship**)

- [6] **Wilkes EB** and Pearson A (2019) A general model for carbon isotopes in red-lineage phytoplankton: Interplay between unidirectional processes and fractionation by RubisCO. *Geochimica et Cosmochimica Acta*, **265**, 163–181, 2019.

- [5] Pearson A, Hurley SJ, Elling FJ, and **Wilkes EB** (2019) CO₂-dependent carbon isotope fractionation in Archaea, Part I: Modeling the 3HP/4HB pathway. *Geochimica et Cosmochimica Acta*, **261**, 368–382, 2019.

- [4] **Wilkes EB**, Lee RBY, McClelland HLO, Rickaby REM, and Pearson A (2018) Carbon isotope ratios of coccolith-associated polysaccharides of *Emiliania huxleyi* as a function of growth rate and CO₂ concentration. *Organic Geochemistry*, **119**, 1–10, 2018.

- [3] **Wilkes EB**, Carter S, and Pearson A (2017) CO₂-dependent carbon isotope fractionation in the dinoflagellate *Alexandrium tamarense*. *Geochimica et Cosmochimica Acta*, **212**, 48–61, 2017.

- [2] Bryan AL, Dong S., **Wilkes EB**, and Wasylenki LE (2015) Zinc isotope fractionation during adsorption onto Mn oxyhydroxide at low and high ionic strength. *Geochimica et Cosmochimica Acta*, **157**, 182–197, 2015.

- [1] *Foy JT, **Wilkes EB**, and Aprahamian I (2012) Self-assembly of benzyl cyclopentadienyl lithium. *Crystal Engineering Communications*. **14**, 6126–6128, 2012. (***co-first authors**)

INVITED SEMINARS & CONFERENCE TALKS

- 2022 | **University of British Columbia**, Virtual
Department of Earth, Ocean, and Atmospheric Sciences
- Gordon Research Conference (GRC) on Geobiology**, Oxnard, CA
Session: The evolution of stable isotope geobiology from product to process
*Conference rescheduled due to COVID-19
- 2021 | **University of California, Los Angeles**, Los Angeles, CA
Geocheminar; Earth, Planetary, and Space Sciences Department
- Princeton University**, Virtual
Environmental Geology & Geochemistry Seminar
- Goldschmidt Conference**, Virtual
Keynote speaker, session: Organic geochemical tools for understanding the oceans and atmosphere now and through time
- Bigelow Laboratory for Ocean Sciences**, Virtual
- 2020 | **University of Washington**, Virtual
Banse Oceanography Seminar Series
- University of Chicago**, Chicago, IL
Department of the Geophysical Sciences Seminar
- 2019 | **American Geophysical Union (AGU) Fall Meeting**, San Francisco, CA
Session: Biomarkers from source to sink—Bridging the transition from empirical relationships to mechanistic theory
- University of California, Davis**, Davis, CA
Department of Earth and Planetary Sciences Seminar
- 2018 | **Dissertations in Chemical Oceanography, XXVI**, Kailua-Kona, HI
- Gordon Research Conference (GRC) on Organic Geochemistry**, Holderness, NH
Session: Stable C, H, S, O isotope geochemistry—in honor of John Hayes
- Princeton University**, Princeton, NJ
Environmental Geology & Geochemistry Seminar

LOCAL INVITED SEMINARS

- 2019 | **Caltech Geoclub Seminar**, Pasadena, CA.
International Geobiology Course, Research Seminar, Pasadena, CA.
- 2017 | **Harvard Microbial Sciences Initiative Chalk Talk**, Cambridge, MA.

- 2017 | **Harvard Origins of Life Initiative Chalk Talk**, Cambridge, MA.
Harvard-MIT Mixer, Cambridge, MA.
- 2016 | **Harvard GSPD Seminar**, Cambridge, MA.
Harvard Solid Earth Graduate Student Seminar, Cambridge, MA.

SELECTED CONFERENCE SUBMISSIONS (PRESENTING AUTHOR ONLY)

- 2020 | **Wilkes EB**, Sessions A, Eiler J. Development of a position-specific isotopic proxy for photorespiration. *Goldschmidt 2020*, Virtual. Speaker.
- 2019 | **Wilkes EB**, Sessions A, Dallas B, Yashiro H, and Eiler J. Position-specific isotope analysis of serine by GC Orbitrap mass spectrometry. *AGU Fall Meeting*, San Francisco, CA. Speaker.
- 2018 | **Wilkes EB** and Pearson A. Understanding algal photosynthetic carbon isotope fractionation. *Goldschmidt*, Boston, MA. Speaker.
- Wilkes EB**, Lee RBY, McClelland HLO, Rickaby REM, and Pearson A. Evaluating $\delta^{13}\text{C}$ values of coccolith-associated polysaccharides (CAPs) for paleobarometry applications. *Gordon Research Seminar on Organic Geochemistry*, Holderness, NH. Poster.
- 2017 | **Wilkes EB**, Carter S, and Pearson A. Enzymatic controls on carbon isotope fractionation in marine phytoplankton. *Goldschmidt*, Paris, France. Speaker.
- Wilkes EB**, Carter SJ, and Pearson A. The CO_2 -dependence of carbon isotope fractionation in a dinoflagellate employing Form II RubisCO. *Northeastern Geobiology Symposium*, Mansfield, CT. Poster.
- 2016 | **Wilkes EB** and Pearson A. Photosynthetic carbon isotope fractionation by the dinoflagellate *Alexandrium tamarense*. *Northeastern Geobiology Symposium*. Cambridge, MA. Speaker.
- Wilkes EB** and Pearson A. Photosynthetic carbon isotope fractionation by *Alexandrium tamarense* in chemostat culture. *Gordon Research Conference on Organic Geochemistry*, Holderness, NH. Poster.
- 2015 | **Wilkes EB**, Carter S, and Pearson A. Photosynthetic carbon isotope fractionation of the marine dinoflagellate *Alexandrium tamarense*: A chemostat investigation of taxonomic and physiological controls on the carbon isotope record. *AGU Fall Meeting*, San Francisco, CA. Poster.
- 2010 | **Wilkes EB**, Wasylenki L, and Anbar AD. Zinc finger takes on a whole new meaning: Reducing and monitoring zinc blanks in the isotope lab. *AGU Fall Meeting*, San Francisco, CA. Poster.

TEACHING & MENTORING EXPERIENCE

	Research Mentor
2021	Jarek Kwiecinski, graduate student researcher, Caltech
2021	Celine Boucher, undergraduate researcher, Caltech
2015–2018	Katie Mabbott, student intern, Smith College
2017	Gayane Kaligian, student intern, Belmont High School
2019	Lead Teaching Assistant, International Geobiology Course Course directors: Alex Sessions, Victoria Orphan, Woody Fischer
	Teaching Fellow, Harvard University
2017	The Fluid Earth: Oceans, Atmosphere, Climate, and Environment Peter Huybers, Ann Pearson
2016	The Fluid Earth: Oceans, Atmosphere, Climate, and Environment Peter Huybers, Ann Pearson
2013	The Dynamic Earth: Geology and Tectonics through Time Francis Macdonald, Rick O’Connell

SYNERGISTIC ACTIVITIES

LEADERSHIP

2018-2022	Conference Chair* 2020 Gordon Research Seminar (GRS) on Organic Geochemistry *Rescheduled for 2022 due to COVID-19
2022	Discussion Leader, Late-Breaking Topics Session 2022 Gordon Research Conference (GRC) on Organic Geochemistry
2017	Faculty Search Student Advisory Committee Harvard Earth & Planetary Sciences
2016–2017	Harvard Agassiz Visiting Lecturer Committee
2012–2017	Harvard Graduate Women in Science & Engineering Executive Board Mentoring Program Co-Chair (2015–2017) Cambridge, Longwood Co-Chair (2013–2014) Board Member (2012–2013) Panel Moderator, WISE Beyond Your Years Symposium (Spring 2016) Organizing Committee, Fireside Chat with MIT President Emerita (Spring 2013)

SERVICE

Reviewer:

Nature; Science Advances; Nature Communications Earth & Environment; Geochimica et Cosmochimica Acta; Marine Chemistry; Organic Geochemistry; Deep-Sea Research Part I: Oceanographic Research Papers; Biogeosciences Discussions; Geochemistry, Geophysics, Geosystems; Quaternary Science Reviews; Free Radical Biology and Medicine; Frontiers in Microbiology.

SHORT COURSES/WORKSHOPS

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| 2017 | Cenozoic $p\text{CO}_2$ reconstructions workshop
Lamont-Doherty Earth Observatory, Columbia University |
| 2017 | Teaching Skills Course
Harvard Bok Center for Teaching & Learning |
| 2014 | Algal Culturing Techniques Course
Bigelow Laboratory, NCMA |
| 2013 | Microbial Sciences Initiative Microscopy Short Course
Harvard University |

FIELD EXPERIENCE

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| 2019 | International Geobiology Field Course Co-Lead Teaching Assistant |
| <i>Sep.</i> | Mono Lake, CA |
| <i>June</i> | Mono Lake, Little Hot Creek, and Panoche Hills, CA |
| <i>May.</i> | Mono Lake, CA |
| <i>Apr.</i> | Santa Paula Creek, CA |
| 2016 | Scientific Party, R/V <i>Endeavor</i> Research Cruise
Led by Carol Arnosti, UNC Chapel Hill |
| 2013 | Teaching Fellow for two geology field trips, NY, MA
Led by Francis Macdonald, Harvard University |
| 2011 | Columbia River, Pacific NW |
| 2009 | Murray Springs Clovis Site, AZ |

OUTREACH

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| 2019 | Content contributor, Women Doing Science
Science communication and outreach platform |
| 2017 | Contributor to www.p-CO2.org
Website synthesizing information about marine CO ₂ proxies for expert and non-expert audiences. |
| 2014–2017 | Scientific Editor, Journal of Emerging Investigators
Scientific journal for middle school and high school students' original research |
| 2016 | Content Contributor, CuSTEMized
Non-profit that provides personalized STEM-related motivational kids storybooks |
| 2016 | Acknowledged Contributor
<i>What Every Science Student Should Know</i> , U. Chicago Press |