

## Sebastian Kopf

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### 1. Research Interests

Geomicrobiology, stable isotope geochemistry, microbial physiology & genetics

### 2. Education

2008 BS in Geosciences & Astrophysics, Jacobs University, Bremen, Germany

2010 MS in Geochemistry, MIT, Cambridge, MA

2014 PhD in Geobiology, California Institute of Technology, Pasadena, CA

### 3. Employment

2016-present Assistant Professor, Department of Geological Sciences, CU Boulder

2015-2016 Postdoctoral Research Fellow, Princeton University

Summer 2015 Teaching Assistant, Microbial Diversity Course, Marine Biological Laboratory, Woods Hole, MA

2010-2014 Graduate Research and Teaching Assistant, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, CA

2008-2010 Graduate Research Assistant, Department of Earth Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, Cambridge, MA

2003-2008 Lead Software Engineer and Co-Founder, CleverSoft GmbH, Freiburg, Germany

### 4. Awards, and Honors

2020 NSF CAREER Grant

2015 Postdoctoral Fellowship Award, Agouron Institute

2014 Lawrence L. and Audrey W. Ferguson Prize for the outstanding doctoral thesis of the year, Division of Biology, California Institute of Technology

2012 Best Talk Award, Southern California Geobiology Symposium

2011 International Student Predoctoral Fellowship Award, Howard Hughes Medical Institute

2008 Charles Vest Presidential Fellowship Award, Massachusetts Institute of Technology

2007 Young Scientist's Outstanding Poster Paper Award, European Geosciences Union

### 5. Research and Creative Works

#### Peer-Reviewed Publications

Hilkert, A, Böhlke, JK, Mroczkowski, SJ, Fort, KL, Aizikov, K, Wang, XT, Kopf, SH, Neubauer, C. Exploring the Potential of Electrospray-Orbitrap for Stable Isotope Analysis Using Nitrate as a Model. *Analytical Chemistry*, 93 (2021). <http://doi.org/10.1021/acs.analchem.1c00944>

Raberg, JH, Harning, DJ, Crump, SE, de Wet, G, Blumm, A, Kopf, S, Geirsdóttir, Á, Miller, G H, and Sepúlveda, J. Revised fractional abundances and warm-season temperatures substantially improve brGDGT calibrations in lake sediments. *Biogeosciences*, 18(12): 3579–3603 (2021). <http://doi.org/10.5194/bg-18-3579-2021>

- Kopf, SH, Davidheiser-Kroll, B, Kocken, I. IsoReader: An R package to read stable isotope data files for reproducible research.. *Journal of Open Source Software*, 6(61): 2878 (2021). <https://doi.org/10.21105/joss.02878>
- Asamoto, C K, Rempfert, KR, Luu, VH, Younkin, AD, Kopf, SH. Enzyme-Specific Coupling of Oxygen and Nitrogen Isotope Fractionation of the Nap and Nar Nitrate Reductases. *Environmental Science & Technology*, 55, 8 (2021). <https://doi.org/10.1021/acs.est.0c07816>
- Lengger, SK, Weber, Y, Taylor, KWR, Kopf SH, Berstan R, Bull ID, Mayser J-P, Leavitt WD, Blewett J, Pearson A, Pancost RD. Determination of the  $\delta^2\text{H}$  values of high molecular weight lipids by high-temperature gas chromatography coupled to isotope ratio mass spectrometry. *Rapid Communications in Mass Spectrometry*, 35 (2020). <https://doi.org/10.1002/rcm.8983>
- Bhatnagar S, Cowley E, Kopf S, Pérez Castro S, Kearney S, Dawson S, Hanselmann K, Ruff SE. Microbial community dynamics and coexistence in a sulfide-driven phototrophic bloom. *Environmental Microbiome* 15, 3 (2020) doi:10.1186/s40793-019-0348-0
- Silverman S, Kopf S, Gordon R, Bebout B, Som S. Morphological and isotopic changes of heterocystous cyanobacteria in response to  $\text{N}_2$  partial pressure. *Geobiology*. 2019, 17(1), 60-75, doi: 10.1111/gbi.12312
- McRose D, Lee A, Kopf S, Baars O, Kraepiel A, Sigman D, Morel F, Zhang X. Effect of Iron Limitation on the Isotopic Composition of Cellular and Released Fixed Nitrogen in *Azotobacter vinelandii*. *Geochimica Et Cosmochimica Acta*, 2019, 244, doi: 10.1016/j.gca.2018.09.023
- Neubauer C, Sessions A, Booth I, Bowen B, Kopf S, Newman D, Dalleska N. Towards measuring growth rates of pathogens during infections by  $\text{D}_2\text{O}$ -labeling lipidomics. *Rapid Communications in Mass Spectrometry*, 2018, 32, 2129-2140, doi: 10.1002/rcm.8288
- Neubauer C, Kasi A, Grahl N, Sessions A, Kopf S, Kato R, Hogan D, Newman D. Refining the application of microbial lipids as tracers of *Staphylococcus aureus* growth rates in cystic fibrosis sputum. *Journal of Bacteriology*, 2018, 200 (24), doi: 10.1128/JB.00365-18
- Miller H, Chaudhry N, Conrad M, Bill M, Kopf S, Templeton A. Large carbon isotope variability during alkaline methanogenesis. *Geochimica Et Cosmochimica Acta*, 2018, 237, 18-31, doi: 10.1016/j.gca.2018.06.007
- Marconi D, Kopf S, Rafter P, Sigman D. Aerobic respiration along isopycnals leads to overestimation of the isotope effect of denitrification in the ocean water column. *Geochimica et Cosmochimica Acta*, 2017, 197, 417-432, doi: 10.1016/j.gca.2016.10.012
- Pasulka A, Thamtrakoln K, Kopf S, Guan Y, Poulos B, Moradian A, Sweredoski M, Hess S, Sullivan M, Bidle K, Orphan V. BONCAT and nanoSIMS-based methods for the direct measurement of newly synthesized viral particles and the flow of carbon and nitrogen after host lysis. *Environmental Microbiology*, 2017, 20(2), 671-692, doi: 10.1111/1462-2920.13996
- Kopf S, Sessions AL, Cowley ES, Reyes C, Van Sambeek L, Hu Y, Orphan VJ, Kato R, Newman DK. Trace incorporation of heavy water reveals slow and heterogeneous pathogen growth rates in cystic fibrosis sputum. *PNAS*, 2016, 113 (2), doi: 10.1073/pnas.1512057112
- Kopf S, McGlynn S, Green-Saxena A, Guan Y, Newman DK, Orphan VJ. Heavy water and  $^{15}\text{N}$  labelling with NanoSIMS analysis reveals growth rate dependent metabolic heterogeneity in chemostats. *Environmental Microbiology*, 2015, 17 (7), doi: 10.1111/1462-2920.12752
- Kramer D, Kopf S, Bau M. Oxidative mobilization of cerium and uranium and enhanced release of “immobile” high field strength elements from igneous rocks in the presence of the biogenic

- siderophore desferrioxamine B. *Geochimica Cosmochimica Acta*, 2015, 165, 263-279, doi: 10.1016/j.gca.2015.05.046
- Cowley ES, Kopf S, LaRiviere A, Ziebis W, Newman DK. Pediatric cystic fibrosis sputum can be chemically dynamic, anoxic and extremely reduced due to hydrogen sulfide formation. *mBio*, 2015, 6 (4), e00767-15, doi: 10.1128/mBio.00767-15
- Kopf S, Henny C and Newman DK. Ligand-enhanced abiotic iron oxidation and the effects of chemical versus biological iron cycling in anoxic environments. *Environmental Science & Technology*, 2013, 47(6), 2602-2611, doi: 10.1021/es3049459
- Kopf S and Ono S. Sulfur mass-independent fractionation in liquid phase chemistry: UV photolysis of phenacylphenylsulfone as a case study. *Geochimica Et Cosmochimica Acta*, 2012, 85, 160-169, doi: 10.1016/j.gca.2012.02.008
- Kopf S and Newman DK. Photomixotrophic growth of *Rhodobacter capsulatus* SB1003 on ferrous iron. *Geobiology*, 2011, 10(3), 216-222, doi: 10.1111/j.1472-4669.2011.00313.x
- Kopf S, Hallegatte S, Ha-Duong M. Using maps of city analogues to display and interpret climate change scenarios and their uncertainty. *Natural Hazards and Earth System Sciences*, 2008, 8 (4), 905-918, [www.nat-hazards-earth-syst-sci.net/8/905/2008](http://www.nat-hazards-earth-syst-sci.net/8/905/2008)

### Non-Peer-Reviewed Publications

- Bose A, Kopf S, Newman DK. From geocycles to genomes and back. In: *Microbial metal and metalloid metabolism: advances and applications* (Stolz JF & Oremland RS, Eds). ASM Press, 2010.

### Other Products

- Kopf S. R package isoreader: Interface to the raw data file formats commonly encountered in scientific disciplines that make use of stable isotopes. First released on the Comprehensive R Archiving Network (CRAN) in 2020.
- Kopf S. R package lans2r: Interface for working with nanometer scale secondary ion mass spectrometry (NanoSIMS) data in the open-source statistical programming language R. First released on the Comprehensive R Archiving Network (CRAN) in 2017.

## 6. Grants (at CU Boulder)

### Funded Proposals

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|-----------|--|
| 2021-2024 | Army Research Office Life Sciences Branch (W911NF2120119). Kopf (PI). <i>Microbial activity in a changing Arctic</i> . \$357,002 to CU Boulder / total.  |
| 2020-2025 | NSF EAR Geobiology & Low Temperature Geochemistry (1945484). Kopf (PI). <i>CAREER: Uncovering the origins and biological purpose of the orphaned branched GDGT temperature biomarker</i> . \$537,699 to CU Boulder / total.  |
| 2020-2021 | NSF OCE Chemical Oceanography (2041539). Kopf (PI), Neubauer (Co-I, INSTAAR). <i>EAGER: Unlocking the clumped isotope signatures of marine nitrate</i> . \$185,920 to CU Boulder / total.  |
| 2019-2022 | NSF EAR Geobiology and Low Temperature Geochemistry (1928303). Kopf (PI at CU Boulder), Leavitt (PI at Dartmouth). <i>Collaborative Research: Establishing the hydrogen isotopic window into Archaeal lipid biomarkers</i> . \$280,180 to CU Boulder, \$555,115 total. |

- 2019-2020 CU Boulder RIO SEED Grant. Kopf (PI), Fierer (Co-I, EBio), Wieder (Co-I, NCAR). *Measuring the pulse of global change at the interface of Earth & Life*. \$49,990 total (CU internal).
- 2017-2020 NASA Exobiology (80NSSC17K0667). Kopf (PI at CU Boulder), Zhang (PI at Princeton / lead institution), Kraepiel (CoI, Princeton). *What Controls the Nitrogen Isotope Fractionation of N<sub>2</sub> Fixation?* \$119,613 to CU Boulder, \$569,419 total.

## 7. Invited Presentations (since at CU Boulder)

### Conferences

- 2020 GSA Annual Meeting. Kopf, S. Into the isoverse: open-source data tools for stable isotope ratio mass spectrometry.
- 2019 Geobiology Society Meeting. Kopf, S. Geobiological approaches to studying the environmental chemistry and microbial ecology of chronic infections.
- 2016 Telluride Science Research Conference on Iron Biogeochemistry. Kopf, S. The role of iron in anoxic nitrogen transformations.

### Seminars

- 2021 Earth Sciences & Society of Fellows Seminars, Dartmouth College, NH.
- 2019 INSTAAR Seminar, University of Colorado Boulder, Boulder, CO.
- 2017 Lamont Doherty Earth Observatory Colloquium, Columbia University, NY.
- 2017 USGS Colloquium, Federal Center, Denver, CO.
- 2017 Civil & Environmental Engineering Seminar, Colorado School of Mines, Golden, CO.
- 2016 Geography and Environmental Engineering Colloquium, John's Hopkins University, Baltimore, MD.

### Workshops

- 2019 IsoBank workshop at the University of New Mexico.

### Summer Courses

- 2021 Isocamp Sumer Course on Stable Isotope Biogeochemistry & Ecology, University of New Mexico
- 2019 Isocamp Sumer Course on Stable Isotope Biogeochemistry & Ecology, University of Utah.
- 2016 International Geobiology Summer Course at the Wrigley Institute/University of Southern California/Colorado School of Mines.

## 8. Teaching (at CU Boulder)

- GEOL 1180: Our Microbial Planet (Fall 2018, Spring 2020)  
New 3 credit lower division course, enrollments of 12 and 44
- GEOL/MCDB/ENVS 4185 / GEOL 5185 : Geomicrobiology (Fall 2017, Fall 2019)  
New 3 credit upper division course, enrollments of 20 and 29
- GEOL 5253 : Stable Isotope Fractionation (Fall 2016, Spring 2018, Fall 2020)  
New 3 credit graduate course, enrollments of 12, 5, and 10
- GEOL 5042 : Computational Tools (Fall 2018, Fall 2020)  
New 2 (2018) / 3 (2020) credit graduate course, enrollments of 11 and 10

GEOL 5700 : Data Visualization Special Topics Seminar (Fall 2021)  
New 1 credit graduate seminar, enrollment of 10

## 9. Mentoring (at CU Boulder)

### Postdoctoral Researchers

*2019-present* Dr. Jamie McFarlin

### Graduate Students

*2020-present* GEOL PhD student Harp Batther (co-advised with A. Templeton)

*2020-present* GEOL PhD student Tristan Caro (co-advised with A. Templeton)

*2019-present* GEOL PhD student Toby Halamka

*2017-present* GEOL PhD student Ciara Asamoto

### Undergraduate Students

*Summer 2021* Summer research assistant Josie Mottram

*Summer 2021* Summer research assistant Christopher Mulligan

*2019-2021* ChBE UROP student Joely Depoy

*Summer 2019* RECCS summer student Alec Elder

*2016-2017* MCDB Honors thesis student Shaelyn Silverman

### IQ Biology Rotation Students

*2019/2020* Tristan Caro

*2018/2019* Corinne Walsh

*2016/2017* Kelsey Dahlgren

*2016/2017* Elise Cowley

### Graduate Student Committees

*2021-present* EBIO MSc student Molly Huber

*2021-present* EBIO PhD student Sierra Jech

*2018-present* EBIO PhD student Corinne Walsh

*2017-present* GEOL PhD student Ellie Hara

*2017-present* GEOL PhD student Jennifer Reeve

*2017-present* GEOL PhD student Jonathan Raberg

*2017-present* GEOL PhD student Sebastian Cantarero

*2017-present* GEOL PhD student Lina Perez Angel

*2019-2021* GEOL PhD student Katie Rempfert

*2018-2021* EBIO MSc student Amy Barfield

*2016-2021* GEOL PhD student Mike Zawaski

*2017-2020* INSTAAR/CEAE PhD student Anna Bergstrom

*2017-2020* GEOL PhD student Daniel Nothaft

*2017-2020* GEOL PhD student Garrett Boudinot

*2016-2018* GEOL/USGS MSc student Tyler Kane

**10. Service & Outreach (since at CU Boulder)****Department**

|                  |                                   |
|------------------|-----------------------------------|
| <i>2020/2021</i> | Diversity & Inclusivity Committee |
| <i>2019/2020</i> | Executive Committee               |
| <i>Fall 2018</i> | Graduate Curriculum Committee     |
| <i>Fall 2017</i> | Committee of the Future           |
| <i>2017-2018</i> | Web Committee (Chair)             |
| <i>2016/17</i>   | Space Committee                   |

**University**

|                     |   |
|---------------------|---|
| <i>2019-present</i> | ASSETT Inclusive Data Science Innovation Incubator                |
| <i>2017-2018</i>    | RIO Campus Computing Resources Workgroup                          |
| <i>2017</i>         | IQBiology Admissions Committee                                    |
| <i>2016</i>         | RIO Advisory Board Subcommittee on Engaging Faculty in Innovation |

**Community**

|                     |   |
|---------------------|---|
| <i>2020-present</i> | Founder and lead organizer of the CU Boulder visit days for community college students from the Denver Metro STEM Alliance for Minority Participation (comprising Community College of Aurora, Arapahoe Community College and Front Range Community College). |
| <i>2020</i>         | Founder and lead organizer for the 1 <sup>st</sup> Isoverse Workshop on reproducible stable isotope data processing, University of Colorado Boulder, CO.  |
| <i>2019</i>         | Lead faculty organizer for the 3 <sup>rd</sup> Rocky Mountain Geobiology Symposium, University of Colorado Boulder, CO.   |
| <i>2018</i>         | Co-Chair for AGU Conference Session: “Understanding the Biogeochemistry of Nitrogen Inputs and Outputs from Molecular to Global Scales”   |
| <i>2018</i>         | Co-Chair for Goldschmidt Conference Session: “Traditional and Non-Traditional Stable Isotopes in Geobiology and Biogeochemistry”  |
| <i>2017</i>         | Co-Chair for Goldschmidt Conference Session: “Novel tools and approaches for investigating biogeochemical cycling and organic signatures of microbial activity”   |
| <i>2016-present</i> | Developer of open-source software and hardware for the geochemistry and geomicrobiology research communities.   |
| <i>2016-present</i> | Manuscript Reviewer for: Geobiology, Environmental Microbiology, Geochimica et Cosmochimica Acta, Nature Communications, Microbial Ecology, mBio, PLOS One, Environmental Microbiology, Chemical Geology, PNAS  |
| <i>2016-present</i> | Proposal Reviewer for: NASA Astrobiology, NSF Geobiology and Low Temperature Geochemistry, Department of Energy Office of Science, American Chemical Society Petroleum Research Fund  |
| <i>2016</i>         | Co-Instructor for GSA Short course: “Organic, Light and Clumped Stable Isotope Geochemistry in the 21st Century: Principles, Practices and Novel Applications” with K. Snell, J. Sepulveda, and B. Davidheiser-Kroll  |

**11. Professional Development (since at CU Boulder)**

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|-------------|--|
| <i>2020</i> | Small World Initiative Workshop: Designing and implementing Course-based Undergraduate Research Experience (CURE) lab classes. |
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- 2018 CU Boulder PI Academy Workshop: Navigating Resources for Research, Scholarship and Creative Work
- 2018 CU Boulder PI Academy Workshop: Research and Seed Grant Mixer
- 2018 CU Boulder PI Academy Workshop: Packard & Keck Fellowships Workshop
- 2018 CU Boulder FTEP Workshop: Flipping the classroom
- 2017 CU Boulder FTEP Workshop: Student pushback in active classrooms
- 2017 Goldschmidt Workshop: Team-based-learning (TBL) for flipping Earth Sciences classrooms
- 2017 CU Boulder LEAP Workshop: Introductory Leadership
- 2016 NAGT/SERC Early Career Geoscience Workshop for Teaching, Research and Career Management

## 12. Other Conference Presentations (since at CU Boulder)

- Sebastian Kopf, Brett Davidheiser Kroll, Kathryn Snell. 2019. Open source to rule them all, one script to bind them, one call to read them in, and reproducibly bind them. Seventh International Clumped Isotope Workshop. Los Angeles, CA, USA. Poster.
- Yuki Weber, Ann Pearson, Sebastian Kopf, Alice Zhou, Alec Cobban, Beverly Chiu, Felix Elling, Wil Leavitt. 2019. Stable hydrogen isotope fractionation in archaeal glycerol tetraether lipids is largely independent from metabolism and culture conditions. AGU Fall Meeting. San Francisco, CA, USA. Talk.
- Ashley Maloney, Sebastian Kopf, Xinning Zhang. 2019. Effect of growth rate on the carbon and hydrogen isotopic composition of biomass and lipids in *Saccharomyces cerevisiae*. Rocky Mountain Geobiology Symposium. Boulder, CO, USA. Poster.
- Daniel Nothaft, Hannah Miller, Jeemin H. Rhim, David T. Wang, Shuhei Ono, Sebastian Kopf, Juerg Matter, Mark Conrad, Eric Boyd, Alexis Templeton. 2019. Origin and cycling of methane in the Samail Ophiolite, Oman. Rocky Mountain Geobiology Symposium. Boulder, CO, USA. Talk.
- Ciara Asamoto, Sebastian Kopf. Untangling the roles of enzymatic variation in nitrate reduction isotope effects. 2019. Rocky Mountain Geobiology Symposium. Boulder, CO, USA. Talk
- Sebastian Kopf, Matthew Sallie, Corinne Walsh, Jamie Williamson. 2019. What is your microbiome up to? Stable isotope advances towards quantifying microbial activity in complex environments. Front Range Microbiome Symposium. Fort Collins, CO, USA. Poster.
- Ciara Asamoto, Sebastian Kopf. 2019. Integrating microbial physiology and geochemistry to examine enzyme-specific isotope effects of nitrate reduction. Astrobiology Science Conference. Seattle, WA, USA. Poster.
- Srijak Bhatnagar, Elise S. Cowley, Sebastian H. Kopf, Sherlynette Perez Castro, Sean Kearney, Scott C. Dawson, Kurt Hanselmann, S. Emil Ruff. 2019. Microbial community dynamics and coexistence in a sul<sub>2</sub> de-driven phototrophic bloom. Gordon Research Conference on Applied & Environmental Microbiology. South Hadley, MA, US. Poster.
- McFarlin, J., Kopf, S., Sepulveda, J., Miller, G., Thomas, E. 2019. Linking the H isotopic composition of in situ brGDGTs to meteoric water in Arctic Canada. Water Isotopes and Climate Workshop. Boulder, CO, USA. Poster.
- Rempfert K., Kraus E., Nothaft D., Poudel S., Spear J., Boyd E., Kopf S., Templeton A. 2018. Subsurface Biogeochemical Cycling of Nitrogen in an Ultramafic Aquifer. Rocky Mountain Geobiology Symposium, Colorado School of Mines, Golden, CO. Poster.

- Walsh C, Kopf S, Salie M. 2018. Microbial Tortoise and Hare: Deciphering the proteome of slow growing and fast-growing microorganisms. Rocky Mountain Geobiology Symposium, Colorado School of Mines, Golden, CO. Poster.
- McRose DL, Lee A, Kopf SH, Baars O, Kraepiel AML, Sigman D, Morel FMM, Zhang X. 2018. Effect of iron limitation on the isotopic composition of cellular and released fixed nitrogen in *Azotobacter vinelandii*. Goldschmidt Conference, Boston, MA, USA. Abstract 2018001741. Poster.
- Kopf S. 2018. Open-source data processing in stable isotope ratio mass spectrometry: new software packages for efficient, transparent and reproducible IRMS data reduction. Front Range Isotope Day, Fort Collins, CO. Talk.
- Han E, Maloney A, Kopf S, Zhang X. 2018. Alteration of the a-70 “gatekeeping” residue of the Mo-nitrogenase active site increases cellular scale nitrogen isotope fractionation during biological nitrogen fixation. AGU Fall Meeting (B53K-2214). Poster.
- Asamoto C, Kopf S. 2018. Untangling the Roles of Membrane Transport and Enzymatic Variation in Denitrification Isotope Effects. AGU Fall Meeting (B53K-2216). Poster.
- Nothaft D, Miller H, Rhim J, Wang D, Ono S, Kopf S, Matter J, Conrad M, Boyd E, Templeton A. 2018. Origin and Cycling of Methane and Short Chain Alkanes in the Samail Ophiolite, Oman. AGU Fall Meeting (V12B-06). Poster.
- Rempfert K, Poudel S, Kraus E, Spear J, Boyd E, Matter J, Kopf S, Templeton A. 2018. Subsurface Cycling of Nitrogen in the Actively Serpentinizing Samail Ophiolite, Oman. AGU Fall Meeting (V12B-08). Poster.
- Kopf S. 2018. Open-source Data Processing in Stable Isotope Ratio Mass Spectrometry: New Software Packages for Efficient, Transparent and Reproducible IRMS Data Reduction. AGU Fall Meeting (V23I-0166). Poster.
- Han E, Darnajoux R, Kopf S & Zhang X. 2018. Active Site Constraints on Nitrogen Stable Isotope Fractionation by Mo-Dependent Nitrogenase. Goldschmidt Conference, Boston, MA, USA. Abstract 2018004647. Poster.
- Han E, Darnajoux R, Kopf S, Zhang X. 2018. Active site constraints on nitrogen stable isotope fractionation by Mo-dependent nitrogenase. Northeastern Geobio Symposium, Woods Hole Oceanographic Institution, Woods Hole, MA. Poster.
- Sepúlveda J, Boudinot FG, Dildar N, Kopf S, Jones M, Sageman B, Bralower T, Leckie M. 2018. A high-resolution record of marine productivity and carbon cycling across Oceanic Anoxic Event 2 in the western interior seaway. GSA Annual Meeting in Indianapolis, Indiana, USA. Poster.
- McRose D, Lee A, Kopf S, Baars O, Kraepiel A, Sigman D, Morel F, Zhang X. 2018. Effect of Iron Limitation on the Isotopic Composition of Cellular and Released Fixed Nitrogen in *Azotobacter vinelandii*. Northeastern Geobio Symposium, Woods Hole Oceanographic Institution, Woods Hole, MA. Poster.
- Asamoto C, Kopf S. 2018. Uncovering the role and isotopic impact of membrane nitrate transport in the nitrogen cycle. Rocky Mountain Geobiology Symposium, Colorado School of Mines, Golden, CO. Poster.
- S. N. Silverman, S. Kopf, R. Gordon, B. Bebout, S. Som. 2017. Measuring Ancient N<sub>2</sub> Pressure Using Fossilized Cyanobacteria. Astrobiology Science Conference, Mesa, AZ. Abstract #3242. Talk.
- S. N. Silverman, S. Kopf, R. Gordon, B. Bebout, S. Som. 2017. Measuring N<sub>2</sub> Pressure Using Cyanobacteria. Geobiology Society Conference (2017), Banff, Canada. Poster.



- Baars O, Kopf S, Zhang X, Seyedsayamdost M & Morel F. 2017. Characterization and Regulation of Weak and Strong Siderophores by Soil Nitrogen-Fixing *Azotobacter* sp. Goldschmidt conference (2017), Paris, France. Abstract 2017001525. Poster.
- Orphan V, Trembath-Reichert E, Chadwick G, McGlynn S, Kopf S, Hatzenpichler R, Skennerton C, Morono Y & Inagaki F. 2017. Taking the Pulse of the Subseafloor Biosphere, Strategies for Studying Microbial Activity and Slow Growth. Goldschmidt conference. Paris, France. Abstract 2017006235. Talk.
- Kopf S & Sigman D. Insights into the Effect of Growth Rate and Temperature on Nitrogen Isotope Fractionation during Denitrification. 2017. Goldschmidt conference, Paris, France. Abstract 2017006172. Talk.
- S. N. Silverman, S. Kopf, R. Gordon, B. Bebout, S. Som. 2017. Measuring N<sub>2</sub> Pressure Using Cyanobacteria. Geological Society of America Meeting, Seattle, WA. Abstract 299364. Poster.
- Lee, A., Kopf, S., Zhang, X. 2016. Iron availability influences <sup>15</sup>N-isotope fractionation during nitrogen fixation by aerobic chemoheterotroph *Azotobacter vinelandii*. AGU Fall Meeting, Abstract B41A-0391. Poster.
- Silverman, S., Kopf, S., Som, S., Gordon, R., Bebout B. 2016. Measuring Ancient Air Pressure Using Fossilized Cyanobacteria. AGU Fall Meeting, Abstract PP31A-2258. Poster.
- Kearney, S., Kopf, S., Hanselmann, K., Newman D., Leadbetter, J. 2016. Surface-attached phototrophic communities assemble in situ with narrow-spectrum LED illumination. American Society for Microbiology (ASM) Microbe Meeting. Abstract 288-169. Poster.