

Curriculum Vitae
Bruce William Fouke

Department of Earth Science & Environmental Change
University of Illinois Urbana-Champaign

Education

Ph.D. Geology, Stony Brook University, Stony Brook, New York 1993
M.Sc. Paleobiology, University of Chicago, Hyde Park, Chicago, Illinois 1986
M.Sc. Geology, University of Iowa, Iowa City, Iowa, 1984
B.Sc. Geology, Bradley University, Peoria, Illinois 1982

Academic Faculty Experience

Director, Roy J. Carver Biotechnology Center ([CBC](#)), Office of the Vice Chancellor for Research and Innovation, University of Illinois Urbana-Champaign, 2012-present (13 years)
Professor, Department of Earth Science & Environmental Change ([ESEC](#)), University of Illinois Urbana-Champaign, 2011-present, Assistant Professor 1997-2003; Associate Professor 2003-2009; Professor 2009-present
Affiliate Professor, Cancer Center at Illinois ([CCIL](#)), University of Illinois Urbana-Champaign, 2020-present
Health Innovation Professor, Department of Biomedical and Translational Sciences, Carle Illinois College of Medicine ([CIMED](#)), University of Illinois Urbana-Champaign, 2021-2023
Affiliate Professor, Department of Evolution, Ecology, and Behavior ([EEB](#)), School of Integrated Biology, University of Illinois Urbana-Champaign, 2020-present
Affiliate Professor, Carl R. Woese Institute for Genomic Biology ([IGB](#)), University of Illinois Urbana-Champaign, 2005-2022
Affiliate Professor, Department of [Microbiology](#), School of Molecular and Cellular Biology, University of Illinois Urbana-Champaign, 2002-2020
Affiliate Professor, Samuel von [Pufendorf Institute](#) for Advanced Studies, Lund University, Sweden, 2011-2015
Affiliate Professor, Caribbean Research and Management of Biodiversity ([CARMABI](#)), Willemstadt, Curaçao, 1997-2019
Affiliate Professor, Thermal Biology Institute ([TBI](#)), Montana State University, 1997-2017

Academic Postdoctoral Experience

NASA Ames Research Center, [Exobiology Branch](#), Postdoctoral Research Fellow, National Research Council Fellowship, Moffett Field, Mountain View, California, 1997
University of California Berkeley, Postdoctoral Research Associate and Instructor, Department of Earth and Planetary Science ([EPS](#)), Berkeley, California, 1996-1997
Free University ([VU](#)), Amsterdam, The Netherlands, Postdoctoral Research Fellow, Department of Earth Sciences, Netherlands National Science Foundation Fellowship, 1993-1996

Awards, Honors and Recognitions

Ralph E. Grim Professorship, Department of Earth Science & Environmental Change, School of Earth, Society, and the Environment, University of Illinois Urbana-Champaign, 2022-present
2022 Yellowstone Superintendent's Career Award, Yellowstone National Park (YNP), U.S.

Department Interior, awarded for career contributions to YNP research, teaching, and service
2020 Mayo Clinic Heritage Films: A World in a Grain of Sand: New Discoveries in Kidney Stones: <http://history.mayoclinic.org/books-films/heritage-films.php>

2021 Impact Award, College of Liberal Arts & Sciences, recognizing significant contributions during COVID-19 on the University of Illinois Urbana-Champaign campus

2021 Whitman Fellowship, Marine Biological Laboratory, Woods Hole, Massachusetts: Impact of Sea Surface Temperature on Coral Skeletal Density Banding in *Astrangia poculata*

2014 American Association of Petroleum Geologists, Roy M. Huffington Distinguished Lecturer, lectured at universities in India, Japan, China, Vietnam, Australia, New Zealand, and USA, awarded for career contributions to subsurface energy exploration research

2013 Provost's Award for Excellence in Undergraduate Teaching, University of Illinois Urbana-Champaign, campus-wide award made annually amongst 2,600 faculty

2013 LAS Dean's Award for Excellence in Undergraduate Teaching, University of Illinois Urbana-Champaign, college-wide award made annually amongst 750 faculty

2010-2011 Visiting Professorship, Samuel von Pufendorf Fellowship, Institute for Advanced Studies, Lund University, Lund, Sweden, for career contributions in Astrobiology sciences

2009-2010 King Broadrick-Allen Award for Excellence in Honors Teaching, Campus Honors Program, University of Illinois Urbana-Champaign, Urbana, Illinois

2002 Research Fellow, Center for Advanced Study, University of Illinois Urbana-Champaign, awarded for advanced studies in *Coral Reef Biocomplexity*, Urbana, Illinois

2000-2002 Research Fellow, Center for Petroleum Research, Instituto Mexicano del Petróleo (IMP/Pemex), Chicxulub Meteor Impact Hydrocarbon Plays, Mexico City, Mexico

Fields of Specialization

The survival of all forms of Life on Earth through geological time has depended on successfully responding to, and eventually controlling, mineral growth within the environment. This process, called *biomineralization*, has been an essential, unavoidable, and ubiquitously distributed force of nature that has provided essential benefits (such as coral skeletons and dinosaur teeth), as well as profound practical problems and impediments (such as kidney stones and cardiovascular calcification). The scientific renaissance being driven by convergence of the geological, biological, and medical sciences (called *GeoBioMed*) that reframes our basic approach to tackling the grand challenges that face society regarding environmental change, energy sustainability, human health, and space exploration. Fouke Lab research concentrates on geobiological interactions in coral reefs (Curaçao, Australian, Vietnam), hot springs (Yellowstone), Earth's deep subsurface (Illinois, Alaska, Scotland), Roman aqueducts (Italy), and the human body (Mayo Clinic Rochester and Jacksonville, ULCA Health, Northwestern Medicine).

Publication Recognitions

2022 *Nature Geoscience*, Invited Comment: An Apatite for Kidney Stones:
<https://doi.org/10.1038/s41561-022-01013-1>

- 2022 *AAPG Bulletin*, **Cover Image Award**: Sulfate Reducing Bacteria Streamers and Iron Sulfide Biomineralization Rapidly Occlude Proppant-Filled Shale Fractures: <https://doi.org/10.1306/07132120124>
- 2021 *Nature Reviews Urology*, **Invited Review**: Human Kidney Stones: A Natural Record of Universal Biomineralization: <https://www.nature.com/articles/s41585-021-00469-x>
- 2021 *Kidney360*, **Cover Image Award**: *In Vivo* Entombment of Bacteria and Fungi during Urolithiasis <https://kidney360.asnjournals.org/content/2/2.cover-expansion>
- 2020 *Nature Reviews Urology*, **Invited Comment**: GeoBioMed Sheds New Light on Kidney Stones: <https://www.nature.com/articles/s41585-019-0256-5>
- 2020 *Nature Reviews Urology*, **Cover Image Award**: GeoBioMed Sheds New Light on Human Kidney Stone Crystallization and Dissolution: <https://www.nature.com/nrurol/>
- 2019 *Astrobiology*, **Cover Image Award**: Physiology, Metabolism and Fossilization of Hot-Spring Filamentous Microbial Mats: <https://www.liebertpub.com/doi/10.1089/ast.2018.1965>
- 2018 *Scientific Reports*, **Journal Top 100 Award**: Geobiology Reveals How Human Kidney Stones Dissolve *In Vivo*: <https://www.nature.com/articles/s41598-018-31890-9/metrics>

Newspaper and Magazine Coverage, Documentary Films, and Radio Interviews

- 2024 *Scientific Inquirer*: Exploring the Science of Heart Calcification: <https://scientificinquirer.com/2024/08/02/conversations-with-bruce-fouke-and-mayandi-sivaguru-exploring-the-science-of-heart-calcification/amp/>
- 2021 *Scientific American*: New Tool Shows Geology Behind Kidney Stone Crystallization: <https://www.scientificamerican.com/article/new-tool-shows-geology-behind-kidney-stone-crystallization/>
- 2021 *940 feet*: A Faculty Interview at the University of Illinois at Urbana-Champaign <https://youtu.be/NOQJXzyArLc>
- 2021 *Discover Magazine*: The Dynamic, Geological Process Happening in Your Kidney: <https://www.discovermagazine.com/health/the-dynamic-geological-process-happening-in-your-kidney>
- 2020 *Mayo Clinic Heritage Films*: A World in a Grain of Sand: New Discoveries in Kidney Stones: <http://history.mayoclinic.org/books-films/heritage-films.php>
- 2019 *Big10 Network*, *Live10 Halftime Vignette*: Corals in Warming Seas: <https://www.youtube.com/watch?v=QyTSz1fup6s>
- 2018 *The New York Times***: Kidney Stones Are More Beautiful Than You Might Think: <https://www.nytimes.com/2018/09/19/health/kidney-stones-geology.html>
- 2018 *National Public Radio***, *The People's Pharmacy*: What Can You Do About Kidney Stones: <https://www.peoplespharmacy.com/articles/show-1148-what-can-you-do-about-kidney-stones>

Coursera Massive Open Online Course (MOOC)

- 2014-present *Emergence of Life*, >450,000 enrolled students from 154 countries globally: <https://www.coursera.org/lecture/emergence-of-life/emergence-of-life-trailer-2P7Ia>

Selected Press Releases

- 2025 Illinois News Bureau: Beyond the mammogram: Study reveals differences between benign and cancerous breast calcifications: <https://cancer.illinois.edu/beyond-the-mammogram-study-finds-differences-between-benign-and-cancerous-breast-calcifications/>

- 2024 Illinois News Bureau: A heart of stone: Study defines the process of and defenses against cardiac valve calcification:
https://news.illinois.edu/view/6367/1193190770?utm_medium=email&utm_campaign=tchshagrl&utm_source=storyemail
- 2022 Illinois News Bureau: Layered limestone deposits give unique insight to Roman Aqueducts: <https://news.illinois.edu/view/6367/1338472145>
- 2021 MayoACCESS: GeoBioMed: How Geologic Rock Formations Inform Novel Treatments for Kidney Stones – Part 1: <https://news.mayocliniclabs.com/2021/06/01/geobiomed-how-geologic-rock-formations-inform-novel-treatments-for-kidney-stones/>
- 2021 MayoACCESS: GeoBioMed: How Geologic Rock Formations Inform Novel Treatments for Kidney Stones – Part 2: <https://news.mayocliniclabs.com/2021/06/01/geobiomed-how-geologic-rock-formations-inform-novel-treatments-for-kidney-stones-part-ii/>
- 2021 AAAS EurekAlert: Quantum Leaps in Understanding How Living Corals Survive: https://www.eurekalert.org/pub_releases/2021-02/crwi-qli021521.php
- 2019 Illinois News Bureau: New Insight from Great Barrier Reef Coral Provides Correction Factor to Global Climate Records: <https://news.illinois.edu/view/6367/799496>
- 2019 Frontiers in Marine Science Blog: New Insights from Barrier Reef Coral Provides Correction Factor to Climate Records: <https://blog.frontiersin.org/2019/09/06/marine-science-coral-climate-predictions/>
- 2019 Illinois News Bureau: Fettucine May Be the Most Obvious Sign of Life on Mars: <https://news.illinois.edu/view/6367/792185>
- 2019 Illinois News Bureau: Redefining the Scholar-Athlete <https://news.illinois.edu/view/6367/801796>
- 2018 Illinois News Bureau: Kidney Stones have Distinct Geological Histories: <https://news.illinois.edu/view/6367/693531>
- 2016 NASA Astrobiology Institute: Art of Yellowstone Science <https://astrobiology.nasa.gov/news/the-art-of-yellowstone-science/>
- 2016 Carl R. Woese Institute for Genomic Biology, The Art of Yellowstone Science <https://artofyellowstonescience.igb.illinois.edu/>
- 2015 Yellowstone Science: Mammoth Microbes [https://www.geology.illinois.edu/UserFiles/Servers/Server_127588/File/Documents/fouke/2015 Yellowstone Science Magazine.pdf](https://www.geology.illinois.edu/UserFiles/Servers/Server_127588/File/Documents/fouke/2015%20Yellowstone%20Science%20Magazine.pdf)
- 2015 PHYS.ORG: Travertine Reveals Ancient Roman Water Supply: <https://phys.org/news/2015-06-travertine-reveals-ancient-roman-aqueduct.html>
- 2013 Illinois News Bureau: Oil- and Metal-Munching Microbes <https://news.illinois.edu/view/6367/204681>

Published Book

Fouke, B. W., and Murphy, T., 2016. *The Art of Yellowstone Science: Mammoth Hot Springs as a Window on the Universe*. Crystal Creek Press, 300 p. ISBN-13 978-0997303926
<https://astrobiology.nasa.gov/news/the-art-of-yellowstone-science/>

Published Monograph

Fouke, B. W., 1994, Deposition, Diagenesis and Dolomitization of the Neogene Serroé Domi Formation Coral Reef Limestone on Curaçao, Netherlands Antilles. *Publications Foundation*

for *Scientific Research in the Caribbean Region*, Amsterdam, Vol. 135, 197 p., ISBN-13: 978-90746224039

Published Book Chapters

- Fouke, B.W., Fouke, K.W., Murphy, T., Cook, C.N., Michelson, B.F., Cross, J.L., DeStefano, L., Fried, G.A., Solai, K., Wittmer Malinowski, J., Kelly, S.B., Louer, E., Fenlon, C.C., Vasi, N.P., Gulley, A.M., and Sivaguru, M., 2018, Online, Classroom and Wilderness Teaching Environments: Reaching Astrobiology Learners of All Ages Around the World. CRC Handbook of Astrobiology, ed. V.M. Kolb, Taylor and Francis Press, p. 27-44, [ISBN 978-1-1380-6512-3](#)
- Fouke, B.W., Solai, K., Jones, S., Smith, E.M., Fouke, K.W., Fouke, K.E., Sivaguru, S., Fried, G.A., 2018, Carl R. Woese and the Journey Toward a Universal Tree of Life. CRC Handbook of Astrobiology, ed. V.M. Kolb, Taylor and Francis Press, p. 555-566, [ISBN 978-1-1380-6512-3](#)
- Fouke, B.W., 2014. A Sense of the Earth. In Winkelmes, M-A., and Burton, A. (Eds.). An Illinois Sampler Teaching and Research on the Prairie. University of Illinois Press, 1-7 pp., [ISBN 978025096570](#)
- Martin, H.G., Veysey, J., Bonheyo, G.T., Goldenfeld, N., and Fouke, B.W., 2010, Statistical evaluation of bacterial 16S rRNA gene sequences in relation to travertine mineral precipitation and water chemistry at Mammoth Hot Springs, Yellowstone National Park: (ed. Barton, J.) in *Geomicrobiology: Molecular and Environmental Perspectives*. Springer, p. 239-249, https://link.springer.com/chapter/10.1007/978-90-481-9204-5_11

Published and Submitted Articles

- Kathryn Scafidi, Kyle W. Fouke, Mayandi Sivaguru, Bruce W. Fouke, and Peter J. Edmunds, (*accepted*). Remnant hollowed out dead coral skeleton branches defer coral community recovery. *PlosOne*.
- Xiaohong Zhu, Sejung Rosie Chae, Stuart McElhany, Chengyao Liang, Qi Zheng, Jiaqi Li, Veronica Fondi, Sergio Del Ferro, Ascanio Modena Altieri, Harry Lisabeth, Arun Bhattacharjee, Bruce W. Fouke, Hans-Rudolf Wenk, Paulo J. M. Monteiro, (*accepted*). Mineralized carbonates contribute to the millennial durability of Roman concrete. *Science Advances*.
- Sivaguru, Mayandi, Kyle W. Fouke, and Bruce W. Fouke, (*in prep.*). The Phantom Menace of Amorphous Calcium Phosphate in Human Heart, Breast and Kidney Disease *Science*.
- Mayandi Sivaguru, Sarah E. Schrup, Kyle W. Fouke, Mark E. Sherman, Ashok Z. Samuel, Santo Maimone, Rohit Bhargava, and Bruce W. Fouke, 2025. Mechanisms of Osteopontin-Stabilized Amorphous Calcium Phosphate Calcification in Benign and Pre-Malignant Breast Disease. *Nature Scientific Reports* 15, 23849. <https://doi.org/10.1038/s41598-025-08903-5>
- Sivaguru, Mayandi, Shumpei Mori, Kyle W. Fouke, Olujimi A. Ajijola, Kalyanam Shivkumar, Ashok Z. Samuel, Rohit Bhargava, and Bruce W. Fouke, 2024. Osteopontin Stabilization and Collagen Containment Slows Amorphous Calcium Phosphate Transformation during Human Aortic Valve Leaflet Calcification. *Nature Scientific Reports* 14, no. 1: 12222. <https://doi.org/10.1038/s41598-024-62962-8>.
- Fuchs, Samantha, Dustin Crandall, Johnathan E. Moore, Mayandi Sivaguru, Bruce W. Fouke, D. Nicolas Espinoza, Ange-Therese Akono, and Charles J. Werth. 2023. Impacts of Heterogeneously Distributed Acidified Brine Flow on Geo-Chemo-Mechanical Alteration in

- an Artificial Shale Fracture Under Differential Stress. *SSRN Scholarly Paper*.
<https://doi.org/10.2139/ssrn.4432933>.
- Todorov, Lauren G., Mayandi Sivaguru, Amy E. Krambeck, Matthew S. Lee, John C. Lieske, and Bruce W. Fouke, 2022. GeoBioMed Perspectives on Kidney Stone Recurrence from the Reactive Surface Area of SWL-Derived Particles. *Nature Scientific Reports* 12, no. 1 (November 1, 2022): 18371. <https://doi.org/10.1038/s41598-022-23331-5>
- Fouke, Bruce W. 2022. An Apatite for Kidney Stones. *Nature Geoscience* 15, no. 9: 692–93. <https://doi.org/10.1038/s41561-022-01013-1>
- Lauren G. Todorov, Mayandi Sivaguru, Amy E. Krambeck, Matthew S. Lee, John C. Lieske and Bruce W. Fouke, 2022. GeoBioMed perspectives on kidney stone recurrence from the reactive surface area of SWL-derived particles. *Nature Scientific Reports*, 18371. <https://doi.org/10.1038/s41598-022-23331-5>
- Sivaguru, Mayandi, and Bruce W. Fouke. 2022. Renal Macrophages and Multinucleated Giant Cells: Ferrymen of the River Styx?" *Kidney360* 3, no. 9: 1616–19. <https://doi.org/10.34067/KID.0003992022>
- Zhou, Lang, Kyle Michelson, Glenn Fried, Robert A. Sanford, Mayandi Sivaguru, Ananda S. Bhattacharjee, Jinzi Deng, Bruce W. Fouke, Albert J. Valocchi, and Charles J. Werth, 2022. "Rates of Sulfate Reduction by Microbial Biofilms That Form on Shale Fracture Walls within a Microfluidic Testbed." *ACS ES&T Engineering* 2, no. 9: 1619–31. <https://doi.org/10.1021/acsestengg.2c00048>
- Ranoa, Diana Rose E., Robin L. Holland, Fadi G. Alnaji, Kelsie J. Green, Leyi Wang, Richard L. Fredrickson, Tong Wang, et al., Bruce W. Fouke, 2022. Mitigation of SARS-CoV-2 Transmission at a Large Public University. *Nature Communications* 13, no. 1: 3207. <https://doi.org/10.1038/s41467-022-30833-3>
- Assmus, Mark A., Matthew S. Lee, Mayandi Sivaguru, Deepak K. Agarwal, Tim Large, Bruce W. Fouke, and Amy E. Krambeck. 2022. Laser Fiber Degradation Following Holmium Laser Enucleation of the Prostate Utilizing Moses Technology versus Regular Mode. *World Journal of Urology* 40, no. 5: 1203–9. <https://doi.org/10.1007/s00345-022-03951-2>
- Sivaguru, M., Fouke, K.W., Keenan-Jones, D., Motta, D., Garcia, M.H., and Fouke, B.W., 2022. Depositional and Diagenetic History of Travertine Deposited in the Anio Novus Aqueduct of Ancient Rome. In Koeberel, C., Claeys, P., and Montanari, S. (Eds.) From the Guajira Desert to the Apennines, and from the Sardinia/Corsica Microplate to the Killer Asteroid: Honoring the Career of Walter Alvarez. *GSA Special Paper 557*: doi.org/10.1130/2022.2557(26): <https://pubs.geoscienceworld.org/gsa/books/book/2351/From-the-Guajira-Desert-to-the-Apennines-and-from>
- Keenan-Jones, Duncan, Davide Motta, Marcelo H. Garcia, Mayandi Sivaguru, Mauricio Perillo, Ryan K. Shosted, and Bruce W. Fouke. 2022. Travertine Crystal Growth Ripples Record the Hydraulic History of Ancient Rome's Anio Novus Aqueduct. *Nature Scientific Reports* 12, no. 1: 1239. <https://doi.org/10.1038/s41598-022-05158-2>
- Fouke, Bruce W., Ananda S. Bhattacharjee, Glenn A. Fried, Mayandi Sivaguru, Robert A. Sanford, Lang Zhou, Reinaldo E. Alcalde, 2022 "Sulfate-Reducing Bacteria Streamers and Iron Sulfides Abruptly Occlude Porosity and Increase Hydraulic Resistance in Proppant-Filled Shale Fractures." *AAPG Bulletin* 106, no. 1 (January 2022): 179–208. <https://doi.org/10.1306/07132120124>.
- Fuchs, Samantha J., Dustin Crandall, Johnathan E. Moore, Mayandi Sivaguru, Bruce W. Fouke, D. Nicolas Espinoza, Ange-Therese Akono, and Charles J. Werth., 2021. Geochemically

- Induced Shear Slip in Artificially Fractured Dolomite- and Clay-Cemented Sandstone. *International Journal of Greenhouse Gas Control* 111: 103448. <https://doi.org/10.1016/j.ijggc.2021.103448>
- Sivaguru, M., Saw, J.J., Wilson, E.M., Lieske, J., Krambeck, Williams, J.C., Romero, M.F., Fouke, K.W., Curtis, M.W., Kear-Scott, J.L., Chia, N., and Fouke, B.W., 2021. Human Kidney Stones: A Natural Record of Universal Biomineralization. *Nature Reviews Urology* 18:404-432. <https://www.nature.com/articles/s41585-021-00469-x>
- Fouke, B.W., and Sivaguru, M., 2021. Calcium Kidney Stones Naturally Undergo 50% by Volume *In Vivo* Dissolution and Recrystallization via Universal Biomineralization. *AUA News*, 26 (5): 16-19. <https://uofi.box.com/s/0yxppd2ud6fygflj0te9idg661bai3y7>
- Zhou, L., Alcalde, R.A., Deng, J., Zuniga, B., Sanford, R.A., Fouke, B.W., and Werth, C.A., 2021. Impact of antibiotics on microbial metabolism and cycling of nitrate evaluated in a microfluidic gradient chamber. *Science of the Total Environment*, <https://www.sciencedirect.com/science/article/pii/S0048969721015710?via%3Dihub>
- Alcalde, R., Dunda, M., Dong Y., Sanford, R.A., Keitz, B.K., Fouke, B.W., and Werth, C.J., 2021. The Role of Chemotaxis and Efflux Pumps on Nitrate Reduction in the Toxic Regions of a Ciprofloxacin Concentration Gradient. *The ISME Journal*, <https://www.nature.com/articles/s41396-021-00975-1>
- Sivaguru, M., Todorov, L.G., Miller, C.A.H., Fouke, C.E., Munro, C.M.O., Fouke, K.W., Fouke, K.E., and Fouke, B.W., 2021. Corals Regulate the Distribution and Abundance of Symbiodiniaceae and Biomolecules in Response to Increasing Water Depth and Sea Surface Temperature. *Nature Scientific Reports* 2230:1-19, <https://www.nature.com/articles/s41598-021-81520-0>
- Saw, J., Sivaguru, S., Wilson, E.M., Dong, Y., Sanford, R.A., Fields, C.J., Cregger, M.A., Merkel, A.C., Bruce, W.J., Weber, J.R., Lieske, J., Krambeck, A.E., Romero, M., Krambeck, A.E., Rivera, M.E., Large, T., Lange, D., Bhattacharjee, A.S., Romero, M.F., Chia, N., and Fouke, B.W., 2021. *In Vivo* Entombment of Bacteria and Fungi during Calcium Oxalate, Brushite and Struvite Urolithiasis. *Kidney360* 2(2):298-311, <https://kidney360.asnjournals.org/content/2/2/298>
- Sivaguru, M., Lieske, J.C., Krambeck, A.E., Fouke, B.W., 2020. GeoBioMed sheds new light on human kidney stone crystallization and dissolution. *Nature Reviews Urology* 17:1-2, <https://www.nature.com/articles/s41585-019-0256-5>
- Dong, Y., Sanford, R.A., Boyanov, M.I., Flynn, T.M., O'Loughlin, E.J., Kemner, K.M., George, S., Fouke, K.E., Fouke, B.W., 2020. Controls on Iron Reduction and Biomineralization over Broad Environmental Conditions as Suggested by the Firmicutes *Orenia metallireducens* Strain Z6. *Environmental Science & Technology* 54(16)10128-10140, <https://pubs.acs.org/doi/10.1021/acs.est.0c03853>
- Sivaguru, M., Fouke, K.W., Todorov, L.G., Kingsford, M.J., Werth, C.J., Fouke, K.E., Trop, J.M., and Fouke, B.W., 2019. Correction Factors for $\delta^{18}\text{O}$ -Derived Global Sea Surface Temperature Reconstructions from Diagenetically Altered Intervals of Coral Skeletal Density Banding. *Frontiers in Marine Science*, Vol. 6, 30;1-24, <https://www.frontiersin.org/articles/10.3389/fmars.2019.00306/full>
- Dong, Y., Sanford, R.A., Inskeep, W.P., Srivastava, S., Bulone, V., Fields, C., Yau, P.M., Sivaguru, M., Ahren, D., Fouke, K.W., Weber, J., Werth, C.R., Cann, I. K., Keating, M. K., Khetani, R., Hernandez, H.G., Wright, C., Band, M., Imai, B.S., Fried, G.A., and Fouke, B.

- W., 2019. Physiology, Metabolism and Fossilization of Hot-Spring Filamentous Microbial Mats. *Astrobiology* 19(12):1-17, <https://www.liebertpub.com/doi/10.1089/ast.2018.1965>
- Deng, Jinzi, Lang Zhou, Robert A. Sanford, Lauren A. Shechtman, Yiran Dong, Reinaldo E. Alcalde, Mayandi Sivaguru, Glenn A. Fried, Charles J. Werth, and Bruce W. Fouke. “Adaptive Evolution of Escherichia Coli to Ciprofloxacin in Controlled Stress Environments: Contrasting Patterns of Resistance in Spatially Varying versus Uniformly Mixed Concentration Conditions.” *Environmental Science & Technology* 53, no. 14 (July 16, 2019): 7996–8005. <https://doi.org/10.1021/acs.est.9b00881>.
- Alcalde, Reinaldo E., Kyle Michelson, Lang Zhou, Emily V. Schmitz, Jinzi Deng, Robert A. Sanford, Bruce W. Fouke, and Charles J. Werth. “Motility of Shewanella Oneidensis MR-1 Allows for Nitrate Reduction in the Toxic Region of a Ciprofloxacin Concentration Gradient in a Microfluidic Reactor.” *Environmental Science & Technology* 53, no. 5 (March 5, 2019): 2778–87. <https://doi.org/10.1021/acs.est.8b04838>.
- Gregg, J.M., Kaczmarek, S.E., Bish, D.L., Machel, H.G., and Fouke, B.W., 2019. A dolomitization event at the oceanic thermocline during the Permian-Triassic. Forum Comment, *Geology*, 47 (7): e467, <http://doi.org/10.1130/G46203C.1>
- Cross, Joseph L., and Bruce W. Fouke. “Redefining the Scholar-Athlete.” *Frontiers in Sports and Active Living* 1 (August 16, 2019): 10. <https://doi.org/10.3389/fspor.2019.00010>.
- Schmitt, Susan, Jessica L. Conroy, Theodore M. Flynn, Robert A. Sanford, Melinda C. Higley, Mingfei Chen, and Bruce W. Fouke. “Salinity, Microbe and Carbonate Mineral Relationships in Brackish and Hypersaline Lake Sediments: A Case Study from the Tropical Pacific Coral Atoll of Kiritimati.” *The Depositional Record* 5, no. 2 (2019): 212–29. <https://doi.org/10.1002/dep2.71>.
- Sivaguru, Mayandi, Jessica J. Saw, James C. Williams, John C. Lieske, Amy E. Krambeck, Michael F. Romero, Nicholas Chia, et al. “Geobiology Reveals How Human Kidney Stones Dissolve in Vivo.” *Scientific Reports* 8, no. 1 (September 13, 2018): 13731. <https://doi.org/10.1038/s41598-018-31890-9>.
- Thomer, Andrea K., Karen M. Wickett, Karen S. Baker, Bruce W. Fouke, and Carole L. Palmer. “Documenting Provenance in Noncomputational Workflows: Research Process Models Based on Geobiology Fieldwork in Yellowstone National Park.” *Journal of the Association for Information Science and Technology* 69, no. 10 (October 2018): 1234–45. <https://doi.org/10.1002/asi.24039>.
- Singh, Rajveer, Mayandi Sivaguru, Glenn A. Fried, Bruce W. Fouke, Robert A. Sanford, Martin Carrera, and Charles J. Werth. “Real Rock-Microfluidic Flow Cell: A Test Bed for Real-Time in Situ Analysis of Flow, Transport, and Reaction in a Subsurface Reactive Transport Environment.” *Journal of Contaminant Hydrology* 204 (September 2017): 28–39. <https://doi.org/10.1016/j.jconhyd.2017.08.001>.
- Botto, Julien, Samantha J. Fuchs, Bruce W. Fouke, Andres F. Clarens, Jared T. Freiburg, Peter M. Berger, and Charles J. Werth. “Effects of Mineral Surface Properties on Supercritical CO₂ Wettability in a Siliciclastic Reservoir.” *Energy & Fuels* 31, no. 5 (May 18, 2017): 5275–85. <https://doi.org/10.1021/acs.energyfuels.6b03336>.
- Palmer, Carole L., Andrea K. Thomer, Karen S. Baker, Karen M. Wickett, Christie L. Hendrix, Ann Rodman, Stacey Sigler, and Bruce W. Fouke. “Site-Based Data Curation Based on Hot Spring Geobiology.” Edited by Juan A. Añel. *PLOS ONE* 12, no. 3 (March 2, 2017): e0172090. <https://doi.org/10.1371/journal.pone.0172090>.
- Motta, D., D. Keenan-Jones, M. H. Garcia, and B. W. Fouke. “Hydraulic Evaluation of the

- Design and Operation of Ancient Rome's Anio Novus Aqueduct." *Archaeometry* 59, no. 6 (2017): 1150–74. <https://doi.org/10.1111/arcm.12303>.
- Kaczmarek, Stephen E., Jay M. Gregg, David L. Bish, Hans G. Machel, and Bruce W. Fouke. "DOLOMITE, VERY HIGH-MAGNESIUM CALCITE, AND MICROBES—IMPLICATIONS FOR THE MICROBIAL MODEL OF DOLOMITIZATION." In *Characterization and Modeling of Carbonates—Mountjoy Symposium 1*, by Alex J. Macneil, Jeff Lonnee, and Rachel Wood. SEPM (Society for Sedimentary Geology), 2017. <https://doi.org/10.2110/sepm.109.01>.
- Dong, Yiran, Robert A. Sanford, Maxim I. Boyanov, Kenneth M. Kemner, Theodore M. Flynn, Edward J. O'Loughlin, Randall A. Locke, Joseph R. Weber, Sheila M. Egan, and Bruce W. Fouke. "Tepidibacillus Decaturensis Sp. Nov., a Microaerophilic, Moderately Thermophilic Iron-Reducing Bacterium Isolated from 1.7 Km Depth Groundwater." *International Journal of Systematic and Evolutionary Microbiology* 66, no. 10 (October 1, 2016): 3964–71. <https://doi.org/10.1099/ijsem.0.001295>.
- Dong, Yiran, Robert A. Sanford, Yun-juan Chang, Michael J. McInerney, and Bruce W. Fouke. "Hematite Reduction Buffers Acid Generation and Enhances Nutrient Uptake by a Fermentative Iron Reducing Bacterium, Orenia Metallireducens Strain Z6." *Environmental Science & Technology* 51, no. 1 (January 3, 2017): 232–42. <https://doi.org/10.1021/acs.est.6b04126>.
- Dong, Yiran, Robert A. Sanford, Maxim I. Boyanov, Kenneth M. Kemner, Theodore M. Flynn, Edward J. O'Loughlin, Yun-juan Chang, et al. "Orenia Metallireducens Sp. Nov. Strain Z6, a Novel Metal-Reducing Member of the Phylum Firmicutes from the Deep Subsurface." *Applied and Environmental Microbiology* 82, no. 21 (November 2016): 6440–53. <https://doi.org/10.1128/AEM.02382-16>.
- Srivastava, Vaibhav, Joseph R. Weber, Erik Malm, Bruce W. Fouke, and Vincent Bulone. "Proteomic Analysis of a Poplar Cell Suspension Culture Suggests a Major Role of Protein S-Acylation in Diverse Cellular Processes." *Frontiers in Plant Science* 7 (April 12, 2016). <https://doi.org/10.3389/fpls.2016.00477>.
- Singh, Rajveer, Hongkyu Yoon, Robert A. Sanford, Lynn Katz, Bruce W. Fouke, and Charles J. Werth. "Metabolism-Induced CaCO₃ Biomineralization During Reactive Transport in a Micromodel: Implications for Porosity Alteration." *Environmental Science & Technology* 49, no. 20 (October 20, 2015): 12094–104. <https://doi.org/10.1021/acs.est.5b00152>.
- Keenan-Jones, Duncan, Davide Motta, Marcelo H. Garcia, and Bruce W. Fouke. "Travertine-Based Estimates of the Amount of Water Supplied by Ancient Rome's Anio Novus Aqueduct." *Journal of Archaeological Science: Reports* 3 (September 1, 2015): 1–10. <https://doi.org/10.1016/j.jasrep.2015.05.006>.
- Dong, Yiran, Robert A. Sanford, Randall A. Locke, Isaac K. Cann, Roderick I. Mackie, and Bruce W. Fouke. "Fe-Oxide Grain Coatings Support Bacterial Fe-Reducing Metabolisms in 1.7–2.0 Km-Deep Subsurface Quartz Arenite Sandstone Reservoirs of the Illinois Basin (USA)." *Frontiers in Microbiology* 5 (September 30, 2014). <https://doi.org/10.3389/fmicb.2014.00511>.
- Piceno, Yvette M., Francine C. Reid, Lauren M. Tom, Mark E. Conrad, Markus Bill, Christopher G. Hubbard, Bruce W. Fouke, et al. "Temperature and Injection Water Source Influence Microbial Community Structure in Four Alaskan North Slope Hydrocarbon Reservoirs." *Frontiers in Microbiology* 5 (August 7, 2014). <https://doi.org/10.3389/fmicb.2014.00409>.

- Fouke, B.W., 2014, A Sense of the Earth. In Eds. Winkelmes, M.A., and Burton, A., *An Illinois Sampler*, University of Illinois Press, p. 1-7, ISBN:978-0-252-03864-8.
<https://www.press.uillinois.edu/books/?id=p080234>
- Gust, Kurt A, Fares Z Najar, Tanwir Habib, Guilherme R Lotufo, Alan M Piggot, Bruce W Fouke, Jennifer G Laird, et al. "Coral-Zooxanthellae Meta-Transcriptomics Reveals Integrated Response to Pollutant Stress." *BMC Genomics* 15, no. 1 (2014): 591.
<https://doi.org/10.1186/1471-2164-15-591>.
- Sivaguru, Mayandi, Glenn A. Fried, Carly A. H. Miller, and Bruce W. Fouke. "Multimodal Optical Microscopy Methods Reveal Polyp Tissue Morphology and Structure in Caribbean Reef Building Corals." *Journal of Visualized Experiments*, no. 91 (September 5, 2014): 51824. <https://doi.org/10.3791/51824>.
- Dong, Yiran, Charu Gupta Kumar, Nicholas Chia, Pan-Jun Kim, Philip A. Miller, Nathan D. Price, Isaac K. O. Cann, et al. "Halomonas Sulfidaeris-Dominated Microbial Community Inhabits a 1.8 Km-Deep Subsurface Cambrian Sandstone Reservoir." *Environmental Microbiology* 16, no. 6 (2014): 1695–1708. <https://doi.org/10.1111/1462-2920.12325>.
- Boyd, Victoria, Hongkyu Yoon, Changyong Zhang, Mart Oostrom, Nancy Hess, Bruce Fouke, Albert J. Valocchi, and Charles J. Werth. "Influence of Mg²⁺ on CaCO₃ Precipitation during Subsurface Reactive Transport in a Homogeneous Silicon-Etched Pore Network." *Geochimica et Cosmochimica Acta* 135 (June 15, 2014): 321–35.
<https://doi.org/10.1016/j.gca.2014.03.018>.
- Takacs-vesbach, Cristina, William P. Inskeep, Zackary J. Jay, Markus J. Herrgard, Douglas B. Rusch, Susannah G. Tringe, Mark A. Kozubal, et al. "Metagenome Sequence Analysis of Filamentous Microbial Communities Obtained from Geochemically Distinct Geothermal Channels Reveals Specialization of Three Aquificales Lineages." *Frontiers in Microbiology* 4 (May 29, 2013). <https://doi.org/10.3389/fmicb.2013.00084>.
- Kim, Wonsuck, Bruce W. Fouke, Andrew L. Petter, Terrence M. Quinn, Charles Kerans, and Fred Taylor. "Sea-Level Rise, Depth-Dependent Carbonate Sedimentation and the Paradox of Drowned Platforms." *Sedimentology* 59, no. 6 (2012): 1677–94.
<https://doi.org/10.1111/j.1365-3091.2012.01321.x>.
- Webb, Nathan D., David A. Grimley, Andrew C. Phillips, and Bruce W. Fouke. "Origin of Glacial Ridges (OIS 6) in the Kaskaskia Sublobe, Southwestern Illinois, USA." *Quaternary Research* 78, no. 2 (September 1, 2012): 341–52.
<https://doi.org/10.1016/j.yqres.2012.06.005>.
- Freiburg, J.T., Fouke, B.W., Lasemi, Z., 2012. New insights on Upper Mississippi Valley mineralization based on solution cavities in the Ordovician Galena Group at the Conco Mine, North Aurora, Illinois, USA. Illinois State Geological Survey, Circular 581, 54 p.
<https://resources.isgs.illinois.edu/publications/c581>
- Fouke, Bruce W. "Hot-Spring Systems Geobiology: Abiotic and Biotic Influences on Travertine Formation at Mammoth Hot Springs, Yellowstone National Park, USA." *Sedimentology* 58, no. 1 (2011): 170–219. <https://doi.org/10.1111/j.1365-3091.2010.01209.x>.
- Klaus, James S, Ingmar Janse, and Bruce W Fouke. "Coral Black Band Disease Microbial Communities and Genotypic Variability of the Dominant Cyanobacteria (CD1C11)." *Bulletin of Marine Science* 87, no. 4 (October 1, 2011): 795–821.
<https://doi.org/10.5343/bms.2010.1050>.

- Hostetter, E., Fouke, B.W., and Lundstrom, C.G., 2011. The last flow of water to, and through, the Baths of Caracalla: Age, Temperature and Chemistry. *Journal of Ancient Hydrology*, Vol. 21, p. 53-90.
- Anders, Mark H., Bruce W. Fouke, Aubrey L. Zerkle, Enrico Tavarnelli, Walter Alvarez, and George E. Harlow. "The Role of Calcining and Basal Fluidization in the Long Runout of Carbonate Slides: An Example from the Heart Mountain Slide Block, Wyoming and Montana, U.S.A." *The Journal of Geology* 118, no. 6 (September 2010): 577–99. <https://doi.org/10.1086/656383>.
- Zhang, Changyong, Karl Dehoff, Nancy Hess, Mart Oostrom, Thomas W. Wietsma, Albert J. Valocchi, Bruce W. Fouke, and Charles J. Werth. "Pore-Scale Study of Transverse Mixing Induced CaCO₃ Precipitation and Permeability Reduction in a Model Subsurface Sedimentary System." *Environmental Science & Technology* 44, no. 20 (October 15, 2010): 7833–38. <https://doi.org/10.1021/es1019788>.
- Inskeep, W.P., Rusch, D.B., Jay, Z., Herrgard, M.J., Kozubal, M.A., Richardson, T.B., Macur, R.E., Hamamura, N., Jennings, R., Fouke, B.W., Reysenbach, A.L., Roberto, F., Young, M., Bateson, M., Schwartz, A., Boyd, E., Badger, J., Geesey, G., Mathur, E., Frazier, M., 2010, Metagenomes from high-temperature chemotrophic systems reveal importance of geochemical controls on microbial community structure and function. *PLoS One* 5(3):1-15, doi:10.1371/journal.pone.0009773
- Inskeep, William P., Douglas B. Rusch, Zackary J. Jay, Markus J. Herrgard, Mark A. Kozubal, Toby H. Richardson, Richard E. Macur, et al. "Metagenomes from High-Temperature Chemotrophic Systems Reveal Geochemical Controls on Microbial Community Structure and Function." *PLOS ONE* 5, no. 3 (March 19, 2010): e9773. <https://doi.org/10.1371/journal.pone.0009773>.
- Piggot, Alan M., Bruce W. Fouke, Mayandi Sivaguru, Robert A. Sanford, and H. Rex Gaskins. "Change in Zooxanthellae and Mucocyte Tissue Density as an Adaptive Response to Environmental Stress by the Coral, *Montastraea Annularis*." *Marine Biology* 156, no. 11 (October 2009): 2379–89. <https://doi.org/10.1007/s00227-009-1267-1>.
- Panno, Samuel V., Craig C. Lundstrom, Keith C. Hackley, Brandon B. Curry, Bruce W. Fouke, and Zaofeng Zhang. "Major Earthquakes Recorded by Speleothems in Midwestern U.S. Caves." *Bulletin of the Seismological Society of America* 99, no. 4 (August 1, 2009): 2147–54. <https://doi.org/10.1785/0120080261>.
- Kandianis, Michael T., Bruce W. Fouke, Roy W. Johnson, John Veysey II, and William P. Inskeep. "Microbial Biomass: A Catalyst for CaCO₃ Precipitation in Advection-Dominated Transport Regimes." *GSA Bulletin* 120, no. 3–4 (March 1, 2008): 442–50. <https://doi.org/10.1130/B26188.1>.
- Veysey, John, II, Bruce W. Fouke, Michael T. Kandianis, Thomas J. Schickel, Roy W. Johnson, and Nigel Goldenfeld. "Reconstruction of Water Temperature, pH, and Flux of Ancient Hot Springs from Travertine Depositional Facies." *Journal of Sedimentary Research* 78, no. 2 (February 1, 2008): 69–76. <https://doi.org/10.2110/jsr.2008.013>.
- Fouke, B.W., 2008. ⁸⁷Sr/⁸⁶Sr Depositional and diagenetic chronology from altered skeletal material. *West Texas Geological Society*, Vol. 47(5): 14-26. <https://www.wtgs.org/>
- Klaus, James S., Ingmar Janse, Jeffrey M. Heikoop, Robert A. Sanford, and Bruce W. Fouke. "Coral Microbial Communities, Zooxanthellae and Mucus along Gradients of Seawater Depth and Coastal Pollution." *Environmental Microbiology* 9, no. 5 (May 2007): 1291–1305. <https://doi.org/10.1111/j.1462-2920.2007.01249.x>.

- Klaus, James S, Ann F Budd, Jeffrey M Heikoop, and Bruce W Fouke. "Environmental Controls on Corallite Morphology in the Reef Coral *Montastraea annularis*." *Bulletin of Marine Science* 80, no. 1 (2007).
<https://www.ingentaconnect.com/contentone/umrsmas/bullmar/2007/00000080/00000001/art00015#>
- Frias-Lopez, J., Klaus, J.S., Fouke, B.W., 2006. Cytotoxic activity of Black Band Disease (BBD) extracts against the symbiotic dinoflagellate *Symbiodinium sp.*, Proceedings of the 10th International Coral Reef Symposium, Okinawa, Japan, p. 785-788.
- Klaus, J.S., Frias-Lopez, J., Fouke, B.W., 2006. The effect of temperature on bacterial communities inhabiting healthy tissues of *Diploria strigosa*, Proceedings of the 10th International Coral Reef Symposium, Okinawa, Japan, p. 794-799.
- Bonheyo, G.T., Frias-Lopez, J., and Fouke, B.W., 2006. A test for airborne dispersal of thermophilic bacteria from hot springs. In Inskeep, W.P., and McDermott, T.R., Geothermal Biology and Geochemistry in Yellowstone National Park. Proceedings of the Thermal Biology Institute Workshop, Yellowstone National Park, WY. Montana State University Publications, p. 327-342. <http://rcn.montana.edu/Publications/Detail.aspx?id=65>
- Pope, Kevin O., Adriana C. Ocampo, Alfred G. Fischer, Francisco J. Vega, Doreen E. Ames, David T. King Jr., Bruce W. Fouke, Richard J. Wachtman, and Gunther Kletetschka. "Chicxulub Impact Ejecta Deposits in Southern Quintana Roo, México, and Central Belize." In *Large Meteorite Impacts III*, edited by Thomas Kenkmann, Friedrich Hörz, and Alex Deutsch, 384:0. Geological Society of America, 2005. <https://doi.org/10.1130/0-8137-2384-1.171>.
- Zhou, J., Lundstrom, C., Fouke, B.W., Panno, S., Hackley, K., and Curry, B., 2005, Paleoclimate and paleohydrologic record of the Midwest from a speleothem in Southern Illinois. *Chemical Geology*. 221:1-20. <https://doi.org/10.1016/j.chemgeo.2005.02.005>
- Fouke, B.W., Schlager, S., Vandamme, M.G.M., Henderiks, J., Van Hilten, B. 2005, Basin-to-platform chemostrigraphy and diagenesis of the Early Cretaceous Vercors carbonate platform, SE France. *Sedimentary Geology*, Vol. 175, p. 297-314.
<https://doi.org/10.1016/j.sedgeo.2004.12.020>
- Klaus, J.S., Frias-Lopez, J., Bonheyo, G.T., and Fouke, B.W., 2005, Bacterial communities inhabiting the healthy tissues of two Caribbean reef corals: interspecific and spatial variation. *Coral Reefs*, Vol. 24, p. 129-137. <https://doi.org/10.1007/s00338-004-0447-1>
- Pope, K.O., Ocampo, A.C., Fischer, A.G., Vega, F.J., Ames, D.E., King Jr., D.T., Fouke, B.W., Wachtman, R.J., and Kletetschka, 2002, Chicxulub impact ejecta deposits in southern Quintana Roo, Mexico, and central Belize. *Geological Society of America, Special Paper 384*, 171-1909. ISBN-13: 978-0813723846
- Frias-Lopez, J., Klaus, J., Bonheyo, G.T., and Fouke, B.W., 2004, The bacterial community associated with black band disease in corals: *Applied and Environmental Microbiology*. Vol. 70, p. 5055-5062. doi:[10.1128/AEM.70.10.5955-5962.2004](https://doi.org/10.1128/AEM.70.10.5955-5962.2004)
- Frias-Lopez, J., Bonheyo, G.T., and Fouke, B.W., 2004, Identification of differential gene expression in bacteria associated with coral black band disease using RNA-arbitrarily primed PCR. *Applied and Environmental Microbiology*. Vol. 70, p. 3687-3694. doi:
[10.1128/AEM.70.6.3687-3694.2004](https://doi.org/10.1128/AEM.70.6.3687-3694.2004)
- Zhang, C.L., Fouke, B.W., Bonheyo, G.T., White, D., Huang, Y., and Romanek, C.S., 2004, Lipid biomarkers and carbon isotopes of modern travertine deposits (Yellowstone National

- Park, USA): Implications for biogeochemical dynamics in hot-spring systems: *Geochimica et Cosmochimica Acta*. Vol. 68, p. 3157-3169. doi:10.1016/j.gca.2004.03.005
- Kirk M.F., Holm, T.R., Park, J., Jin, Q., Sanford, R.A., Fouke, B.W., Bethke, C.M., 2004, Bacterial Sulfate Reduction Limits Natural Arsenic Contamination in Groundwater. *Geology*, v. 32:953-956, doi:10.1130/G20842.1
- Wang, H., Ambrose, S.H., and Fouke, B.W., 2004, Evidence of long-term seasonal forcing in rhizolith isotopes during the last glaciation. *Geophysical Research Letters*, 31:L13203, 1-4. doi:10.1029/2004GL020207
- Fouke, B.W., Bonheyo, G.T., Sanzenbacher, E., and Frias-Lopez, J., 2003, Partitioning of bacterial communities between travertine depositional facies at Mammoth Hot Springs, Yellowstone National Park, USA. *Canadian Journal Earth Sciences*, 40:1531-1548. doi:10.1139/e03-067
- Frias-Lopez, J., Bonheyo, G.T., Jin, Q., and Fouke, B.W., 2003, Cyanobacteria associated with coral black band disease in Caribbean and Indo-Pacific reefs: *Applied and Environmental Microbiology*, v. 69, p. 2409-2413. doi:10.1128/AEM.69.4.2409-2413.2003
- Frias-Lopez, J., Zerkle, A.L., Bonheyo, G.T., and Fouke, B.W., 2002, Partitioning of bacterial communities between seawater and healthy, black band diseased, and dead coral surfaces. *Applied and Environmental Microbiology*, Vol. 68, No. 5, p. 2214-2228. doi:10.1128/aem.68.5.2214-2228.2002
- Fouke, B.W., Zerkle, A.L., Alvarez, W., Pope, K.O., Ocampo, A.C., Wachtman, R.J., Grajales-Nishimura, J.M., Claeys, P., Fischer, A.G., 2002, Cathodoluminescence petrography and isotope geochemistry of KT impact ejecta deposited 360 km from the Chicxulub crater at Albion Island, Belize. *Sedimentology*, Vol. 49, 117-138. doi:10.1046/j.1365-3091.2002.00435.x
- Fouke, B.W., and Rakovan, J., 2001, An integrated cathodoluminescence video-capture microsampling system, *Journal of Sedimentary Research*, Vol. 71, 509-513. doi: 10.1306/2DC4095C-0E47-11D7-8643000102C1865D
- Fouke, B.W., 2001, Depositional facies and aqueous-solid geochemistry of travertine-depositing hot springs (Angel Terrace, Mammoth Hot Springs, Yellowstone National Park, USA)-REPLY. *Journal of Sedimentary Research*, Vol. 71, 497-500. doi:10-1306/2DC40959-OE47-11D7-8643000102C1865D
- Scott, R.W., Schlager, W., Fouke, B.W., and Nederbragt, A.J., 2000, Are Mid-Cretaceous eustatic events recorded in Middle East carbonate platforms?, Middle East Models of Jurassic/Cretaceous Carbonate Systems, SEPM Special Publication No. 69, p. 77-88.
- McArthur, J.M., Donovan, D.T., and Thirlwall, M.F., Fouke, B.W., 2000. Strontium isotope stratigraphy in the Jurassic: Early Toarcian-Late Pliensbachian timescale revision and its implications. *Earth and Planetary Science Letters* Vol. 179, p. 269-285. <https://doi.org/10.1086/319243>
- Fouke, B.W., Farmer, J.D., Des Marais, D.J., Pratt, L., Sturchio, N.C., Burns, P.C., and Discipulo, M.K., 2000, Depositional facies and aqueous-solid geochemistry of travertine-depositing hot springs (Angel Terrace, Mammoth Hot Springs, Yellowstone National Park, USA): *Journal of Sedimentary Research*, Vol. 70, p. 565-585. 10.1306/2DC40929-OE47-11D7-8643000102C1865D
- Pope, K.O., Ocampo, A.C., Fischer, A.G., Alvarez, W., Fouke, B.W., Webster, C.L., Vega, F.J., Smit, J., Fritsche, E., and Claeys, P., 1999, Chicxulub impact ejecta from Albion Island,

- Belize, *Earth and Planetary Science Letters*, v. 170, p. 351-364. [10.1016/S0012-821X\(99\)00123-5](https://doi.org/10.1016/S0012-821X(99)00123-5)
- Nederbragt, A.J., Fouke, B.W., Erlich, R.N., and Ganssen, G.M., 1998, Paleoecology of the biserial planktonic foraminifer *Heterohelix moremani* (Cushman) in Late Albian to Middle Turonian circum North Atlantic. *Palaeogeography, Palaeoclimatology, Palaeoecology*, v. 144, p.115-133. [10.106/S0031-0182\(98\)00089-3](https://doi.org/10.106/S0031-0182(98)00089-3)
- Kenter, J.A.M., Reinders, M., Fouke, B.W., van der Gaast, S.J., Stafleu, J., Sonnenfeld, M.D. and Schlager, W., 1997, Parameters controlling sonic velocities in a mixed carbonate-siliciclastic Permian shelf margin (Upper San Andres, Last Chance Canyon, New Mexico). *Geophysics*, v. 62, p. 502-520. [10.1190/1.1444161](https://doi.org/10.1190/1.1444161)
- Kenter, J.A.M., Fouke, B.W., Reinders, M., and Schlager, W., 1997, Effects of differential compaction on the acoustic properties and permeability of high porosity Upper Cretaceous limestones (SE Netherlands). *Journal of Sedimentary Research*, V. 67, P. 178-185. [10.1306/D4268527-2B26-11D7-8648000102C1865D](https://doi.org/10.1306/D4268527-2B26-11D7-8648000102C1865D)
- Fouke, B.W., Meyers, W.J., Hanson, G.N., and Beets, C.J., 1996, Chronostratigraphy and dolomitization of the Seroe Domi Formation, Curaçao, Netherlands Antilles. *Facies*, v. 35, p. 293-320. [10.1007/BF02536966](https://doi.org/10.1007/BF02536966)
- Fouke, B.W., Everts, A.J.W., Zwart, E.W., Schlager, W., Smalley, P.C., and Weissert, H. 1996. Subaerial exposure unconformities in the Vercors carbonate platform (SE France) and their sequence stratigraphic significance. In: Howell, J. and Atkin, J. (eds.) High-Resolution Sequence Stratigraphy. *Geological Society London Special Publication* No. 104, p.295-320. [10.1144/GSL.SP.1996.104.01.01](https://doi.org/10.1144/GSL.SP.1996.104.01.01)
- Fouke, B.W., Zwart, E.W., Everts, A.J.W., and Schlager, W., 1995, Carbonate platform stratal geometries and the question of subaerial exposure: *Sedimentary Geology*, v. 97, p. 9-19. [10.1016/0037-0738\(95\)00015-Z](https://doi.org/10.1016/0037-0738(95)00015-Z)
- Everts, A.J.W., Stafleu, J., Schlager, W., Fouke, B.W., and Zwart, E.W., 1995, Stratal patterns, sediment composition, and sequence stratigraphy at the margin of the Vercors carbonate platform (Lower Cretaceous, SE France): *Journal of Sedimentary Research*, v. B65: 119-131. doi:[10.1306/D42681FB-2B26-11D7-8648000102C1865D](https://doi.org/10.1306/D42681FB-2B26-11D7-8648000102C1865D)
- Fouke, Bruce W., and Richard J. Reeder. "Surface Structural Controls on Dolomite Composition: Evidence from Sectoral Zoning." *Geochimica et Cosmochimica Acta* 56, no. 11 (November 1992): 4015–24. [https://doi.org/10.1016/0016-7037\(92\)90013-9](https://doi.org/10.1016/0016-7037(92)90013-9).
- Fouke, B.W., 1986, The functional significance of spiculation within the connective tissues of *Teribratulina unguicula* (Carpenter, 1894). in Rachebeuf, P.R. and Emig, C. (eds.) *Les Brachiopodes Fossiles et Actuelles, Biostratigraphie du Pelozoique 4*, Universite de Bretagne Occidentale, Brest, France. p. 271-280.

Invited Non-Peer Reviewed Articles

- Fouke, B.W., 2015, Mammoth Microbes and Their Role in Understanding Warming Coral Reefs. *Yellowstone Science* 23(1):73-74.
- Houseal, A., Fouke, B.W., Sanford, R. and Fuhmann, R., 2010, Mammoth Hot Springs: Where Change is Constant. *Yellowstone Science* 18(3):15-22.
- Fouke, B.W., 1993. A Geological Perspective on Caribbean Coral Reefs. *The Commonwealth, Journal of the Commonwealth Club of California*, v. 21, p.302-303.

Published Field Guidebooks

- Lasemi, Z., Norby, R.D., Devera, J.A., Fouke, B.W., Leetaru, H.E., and Denny, F.B., 199. Middle Mississippian Carbonates and Siliciclastics in Western Illinois. Illinois State Geological Survey, Field Guidebook 31, 60 p., <http://hdl.handle.net/2142/32232>
- Fouke, B.W., Schlager, W., Everts, A.J.W., and Stafleu, J., 1996, Anatomy and Sea Level History of the Vercors Carbonate Platform (SE France). *SEPM/IAS Field Guide*, 101p.

Internal Proprietary Oil Company Reports 1984-1986

- Fouke, B.W., 1986. Timing of dolomitization with respect to hydrocarbon migration in the Cretaceous Knowles Formation, Gulf Coast Louisiana, Shell Offshore Incorporated, *Shell Oil Company*, New Orleans, Louisiana
- Fouke, B.W., 1985. Summary of the geology and exploration potential of divergent margin basins in the South Atlantic. Pecten International, *Shell Oil Company*, Houston, Texas
- Fouke, B.W., 1984. Holocene molluscan biostratigraphy of Florida Bay. Amoco Research Center, *Amoco Production Company*, Tulsa, Oklahoma

Published Meeting Abstracts and Proceedings Since 2010

- Fouke, B.W., 2025. Invited Keynote. Mechanisms of Amorphous Calcium Phosphate Calcification in Benign and Pre-Malignant Breast Disease, Morsani College of Medicine, USF Health, University of South Florida, November 2025
- Fouke, B.W., 2024. Invited Keynote. Biomineralization of Human Soft Tissues: From Cardiovascular Calcification to Coral Skeletons, UCLA-Caltech MSTP Symposium, August 2, 2024, <https://mstp.healthsciences.ucla.edu/>
- Fouke, B.W., 2024. Invited Keynote. Convergence of Universal Biomineralization Sciences (CUBS): Harnessing Next Generation Breakthroughs in Biotechnology, Bioengineering and Medicine, 2024 World Congress, Society for In Vitro Biology (SIVB), St. Louis, Missouri June 9, 2024, <https://sivb.org/meetings/>
- Fouke, K.W., Sivaguru, M., and Fouke, B.W., 2024. A Heart of Stone: Mechanisms Underlying Human Cardiovascular Calcification, AGU Annual Meeting, Washington, D.C. GH23B-2545
- Fouke, K.W., Sivaguru, M., and Fouke, B.W., 2022. Calcium Human Kidney Stones Naturally Undergo 50% by Volume In Vivo Dissolution during Repeated Events of Diagenetic Alteration. AGU Annual Meeting, Chicago, IL GH15C-0463
<https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1171292>
- Fuchs, Samantha, et al., 2022. Acidic flow through artificially fractured shale under differential stress. AGU Annual Meeting, Chicago, IL
<https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1098819>
- Fouke, B.W., 2021. Depositional and Diagenetic History of Travertine Deposited within the Anio Novus Aqueduct of Ancient Rome. Geological Society of America Abstracts with Programs, Portland, OR, v. 53, no. 6, <https://doi.org/10.1130/abs/2021AM-365733>.
- Fouke, B.W., 2021. The GeoBioCell: A Microfluidic Testbed Window into the Ecology and Metabolism of Subsurface Reservoir Microbes. 27th Reservoir Microbiology Forum (RMF2021), Energy Institute, London, https://www.energyinst.org/whats-on/search/events-and-training?meta_eventId=62111B
- Saw, J.J., Sivaguru, M., Wilson, E.M., Lange, D., Sanford, R.A., Dong, Y., Cregger, M.A., Bruce, W.J., Merkel, A.C., Lieske, J.C., Krambeck, A.E., Rivera, M.E., Large, T., Chia, N.,

- Romero, M.F., Fouke, B.W., 2020. Fungi and Bacteria Entombed within Human Calcium Oxalate-Apatite Kidney Stones. American Urological Society Annual Meeting, San Diego, CA <https://www.auajournals.org/doi/10.1097/JU.0000000000000946.01>
- Saw, J.J., Sivaguru, M., Wilson, E.M., Lange, D., Sanford, R.A., Dong, Y., Cregger, M.A., Bruce, W.J., Merkel, A.C., Lieske, J.C., Krambeck, A.E., Rivera, M.E., Large, T., Chia, N., Romero, M.F., Fouke, B.W., 2020. The Entombment of Bacterial and Fungal Communities within Calcium Oxalate, Struvite and Brushite Kidney Stones. World Congress of Endourology and Uro-Technology, Hamburg, Germany
- Chen, M., Conroy, J.L., and Fouke, B.W., 2020. The Distribution of Organic Matter in Aragonite Spherules: Insights into Potential Biotic Mechanisms of Spherule Formation. Geological Society of America (GSA) Connects Online 2020.
- Werth, C.J., Bhattacharjee, A., Sivaguru, M., Fried, G.A., and Fouke, B.W., 2019, Microfluidic Analysis of Porosity Occlusion due to Microbial Biofilm and Mineral Growth within Shale Fractures. *invited presentation*, American Geophysical Union Annual Meeting <https://agu.confex.com/agu/fm19/meetingapp.cgi/Paper/558309>
- Zhou, L., Alcalde, R.A., Deng, J., Zuniga, B., Sanford, R.A., Fouke, B.W., and Werth, C.A., 2019. Effects of spatial gradients of antibiotics with different modes of action on the survival, migration, and metabolic activity for nitrate reduction of *Shewanella oneidensis* MR-1 in a microfluidic device. American Geophysical Union Annual Meeting, <https://agu.confex.com/agu/fm19/meetingapp.cgi/Paper/620551>
- Cross, J.L., and Fouke, B.W., 2020. Collaborative Efforts to Redefine the Scholar Athlete. NASPA Annual Conference, Student Affairs Administrators in Higher Education, University of Texas Austin, Austin, Texas, <https://conference.naspa.org/>, delayed to 2021
- Wielicki, M., Perez-Huerta, A., Sivaguru, M. and Fouke, B.W., 2019. On the Composition of Human Kidney Stone Nano-Layers at Atomic Scale. American Geophysical Union Annual Meeting, <https://agu.confex.com/agu/fm19/meetingapp.cgi/Paper/496419>
- Dong, Y., Shi, L., Sanford, R.A., and Fouke, B.W., 2019. Integrated Approaches to Explore the Biosphere Inhabiting the Deep Subsurface of the Illinois Basin, USA. 2019. Acta Geologica Sinica, Special Issue: Abstracts of the International Symposium on Deep Earth Exploration and Practices, October 24-26, Beijing, China, Vol. 93, Issue S1: 201, doi.org/10.1111/1755-6724.14039
- Fouke, K.W., Sivaguru, M., Todorov, L., Kingsford, M.J., Werth, C.J., Fouke, K.E., Trop, J.M., and Fouke, B.W., 2018. Impact of Seafloor Diagenetic Alteration on Sea Surface Temperature Reconstructions from Coral Skeletons. GSA Annual Meeting, Indianapolis, IN
- Saw, J., Sivaguru, S., Williams, J.C., Lieske, J., Krambeck, A.E., Romero, M., Krambeck, A., Williams, J., Chia, N., Wildman, D.E., Fried, G.A., Schwaderer, A.L., Werth, C.A., Reeder, R.J., Yau, P., Sanford, R.A., Bruce, W.J., and Fouke, B.W., 2018. Geobiology Reveals How Human Kidney Stones Dissolve *In Vivo*. R.O.C.K.S. Kidney Stone Urology, Rochester, NY
- Deng J., Dong, D., Shechtman, L.A., Zhou, L., Alcalde, R.E., Sanford, R.A., Werth, C.J., Fouke, B.W., 2017. Evolutionary Adaptation of *E. coli* to Spatial and Temporal Gradients of the Antibiotic Ciprofloxacin. American Geophysical Union, Annual Meeting, New Orleans, LA.
- Dong, Y., Sanford, R., Srivastava, V., Bulone, V., Keating, K.M., Khteani, R.S., Fields, C., Inskip, W., Yau, P.M., Imlai, B., Hernandez, A., Wright, C., Band, M., Weber, J., Cann, I.K., Sivaguru, S., Fried, G.A., Werth, C.J., Fouke, K.E., and Fouke, B.W., 2017. Hot-Spring Filamentous Microbial Mats: Evolutionary Optimization in Response to Steep Environmental gradients in redox Potential, Mineral Precipitation and Water Flow. American Geophysical

- Union, Annual Meeting, New Orleans, LA.
- Dong, Y., Sanford, R., and Fouke, B.W., 2016. Integrated Approaches to Exploration of the Subsurface Biosphere Inhabiting the Cambrian Mt. Simon Sandstone, Illinois Basin, USA. ISMOS-6, San Diego, CA, June.
- Fried, G.A., Sivaguru, M., Fried, E., Singh, R., Sanford, R.A., Carrera, M., Werth, C.J., and Fouke, B.W., 2017. The Real Rock GeoBioCell: A Microfluidics Testbed for Quantifying Subsurface Oil Field Microbe-Water-Rock Interactions. ISMOS-6, San Diego, CA, June.
- Dong, Y., Sanford, R., Boyanov, M., Kenner, K.M., Flynn, T.M., O'Laughlin, E.O., George, S., Fouke, K.E., and Fouke, B.W., 2016. Mineralogical, physical and chemical factors that drive microbial reduction of iron oxides and diagenesis under a broad range of environmental conditions. American Geophysical Union, Annual Meeting, San Francisco, CA. Poster presentation.
- Deng, J., Dong, Y., Schechtman, L.A., Zhou, L., Alcaldo, R.E., Sanford, R.A., Werth, C.J., Fouke, B.W., 2016. Evolutionary Adaptation of *Escherichia coli* to spatial and temporal gradients of the antibiotic Ciprofloxacin. American Geophysical Union, Annual Meeting, San Francisco, CA. Poster presentation.
- Fouke, B.W., and Murphy, T., 2016. The Art of Yellowstone Science: Mammoth Hot Springs as a Window on the Universe. 13th Biennial Scientific Conference of the Greater Yellowstone Ecosystem, Jackson Hole, WY
- Saw, J., Chia, N., Dong, Y., Merkel, A., Sivaguru, M., Fried, G., Bruce, J., Weber, J., Krambeck, A.E., Lieske, J.C., and Fouke, B.W., 2016. Kidney stones: a product of dynamic interaction between the microbiome and mineral precipitation. ISN Forefronts Symposium 2016: The Metabolome and Microbiome in Kidney Disease, San Diego, CA
- Fouke, B.W., Saw, J., Chia, N., Dong, Y., Merkel, A., Sivaguru, M., Fried, G., Bruce, J., Weber, J., Krambeck, A.E., and Lieske, J.C., 2016. Shedding New Light on Kidney Stone Microbiome Mineralization Dynamics. American Urological Association (AUA), Annual Meeting, San Diego, CA
- Deng, J., Dong, Y., Sanford, R., Werth, C.W., Fouke, B.W. 2016. Multiphase flow and reactive transport at the pore scale: direct comparison of experiments and numerical simulations. InterPore Conference, Cincinnati, OH
- J Deng, LA Shechtman, RA Sanford, Y Dong, CJ Werth, BW Fouke, 2016. Adaptation of *Escherichia coli* to Ciprofloxacin in a microfluidic pore network: The emergence of resistance along a concentration gradient. Interpore, Cincinnati, OH
- Singh R., Sanford R. A., Werth C. J, and Fouke, B. W., 2016. The Real Reservoir Rock GeoBioCell: A Novel Microfluidic Flowcell for Real-Time *In-Vitro* Tracking of Subsurface Microbe-Water-Rock Interactions. North-Central GSA Meeting, Champaign, IL
- Alcade, R., Zhou, L., Sanford, R., Fouke, B.W., Werth, C.W., 2016. Physiological response of nitrate reducing microorganisms to steep antibiotic concentration gradients. North-Central GSA Meeting, Champaign, IL
- Zhou, L., Alcade, R., Sanford, R., Fouke, B.W., Werth, C.W., 2016. Bacterial Response to Microfluidic Stress Gradients. North-Central GSA Meeting, Champaign, IL
- Deng, J., Dong, Y., Sanford, R., Werth, C.W., Fouke, B.W. 2016. Adaptation of *Escherichia coli* to *Ciprofloxacin* gradients in a porous microfluidic device. North-Central GSA Meeting, Champaign, IL
- Dong, Y., Sanford, R. A., Werth, C.W., and Fouke, B. W., 2015. Effect of mineralogy, pH, temperature, salinity and anions on the ability of Bacteria to reduce Ferric Iron Oxides and

- drive deep subsurface diagenesis. North-Central GSA Meeting, Champaign, IL
- Keenan-Jones, D., Motta, D., Fried, G., Sivaguru, M., Perillo, J., Garcia, M.H. and Fouke, B.W. 2016. High-Resolution Environmental Record of Turbulent Open Channel Flow from Crystalline Travertine Ripple Bedforms within Imperial Rome's Anio Novus Aqueduct. North-Central GSA Meeting, Champaign, IL
- Larmon, J., Ambrose, S., McDonald, G., Fouke, B.W., Wang, H., and Lucero, L.J., 2016. What The Wild Things Ate: Isotopic Analysis of an Extinct Giant Sloth Tooth from Cara Blanca, Belize. North-Central GSA Meeting, Champaign, IL
- Dong, Y., Sanford, R.A., Boyanov, M.I., Kemner, K.M., Flynn, T.M., O'Laughlin, E.J., George, S., Fouke, K., and Fouke, B.W., 2015. Effects of mineralogy, pH, temperature, salinity and anions on ferric iron oxide bioreduction and the precipitation of secondary minerals. Midwest Geobiology Conference, Bloomington, IN, October 2015.
- Fried, G.A., Sivaguru, M., Fried, E.M., Sivaguru, B., Sivaguru, V., Fouke, K.W., Bouwmeester, J., Fouke, B.W., 2015. Intra-head coral skeletal growth dynamics: Inference from petrography and x-radiography of coral skeletal density banding. Midwest Geobiology Conference, Bloomington, IN, October 2015.
- Deng, J., Lang, Z., Schechtman, L.A., Singh, R., Dong, Y., Sanford, R.A., Werth, C.J., and Fouke, B.W., 2015. Bacterial chemotaxis in a novel microfluidic device as early stage evolutionary adaptation. Midwest Geobiology Conference, Bloomington, IN, October 2015.
- De Boever, E., Foubert, A., Oligschlaeger, D., Soete, S., Claes, S., Bertier, P., Virgone, Swennen, R.A., Sivaguru, M., Fouke, B.W., 2015. Water-Microbe-Mineral Interactions that control the origin and distribution of micro-porosity within travertine depositional facies. Bathurst Conference of Carbonate Sedimentologists, Edinburgh, Scotland, July 2015.
- Keenan-Jones, D. and Fouke, B.W. 2015. Combining archaeology, geomicrobiology and hydraulic modeling to reconstruct the management of the Anio Novus. Water Management in Italy: Expert Workshop. Koninklijk Nederlands Instituut Rome. Rome, Italy, June 3, 2015
- Dong, Y., Sanford, R. A., Chang, Y., Mackie, R., Cann, I. K., Fouke, B. W., 2015. Subsurface Ferric Iron Minerals Act as Natural Buffer and Electron Sink that Enhance Nutrient Uptake by a Fermentative Iron-reducing Bacterium, *Orenia sp.* Strain Z6, 115 American Society of Microbiology Annual General Conference, New Orleans, LA
- Alcalde, R.E., Zhou, L., Cann, I.K.O., Mackie, R.I., Wietsma, T.W., Oostrom, M., Sanford, R.A., Fouke, B.W., and Werth, C.J., 2015. Culturing Methanogenic Archaea in Controlled Stress Microenvironments. Astrobiology Science Conference (AbSciCon 2015), Chicago, IL
- Zhou, L., Alcalde, R., Cann, I.O., Mackie, R., Fouke, B.W., and Werth, C.J., 2015. Bacterial Response and Evolution under a Gradient of Environmental Stress Created in a Microfluidic Cell. Astrobiology Science Conference (AbSciCon 2015), Chicago, IL
- Zhou, L., Alcalde, R., Cann, I.O., Mackie, R., Fouke, B.W., and Werth, C.J., 2015. Adaptation and Evolution of Microorganisms to Pollutants in Subsurface Environments. 6th International Conference on Porous Media, Milwaukee, WI
- Fouke, B.W., Palmer, C., DiLauro, T., Thomer, A., Gordon, S., and Hendrix, C., 2014. Fostering Interdisciplinary Science through Data Curation: Geobiology at Yellowstone National Park as Exemplar. 12th Biennial Scientific Conference on the Greater Yellowstone Ecosystem, Mammoth Hot Springs, Yellowstone National Park.
- Murphy, E., Sivaguru, M., and Fouke, B.W., 2014. Physiological Response of the Caribbean Coral *O. annularis* to Pollution Gradients. American Geophysical Union (AGU) Annual Meeting, San Francisco, CA

- Asangba, A., Dong, Y., Lindo, J., Malhi, R.S., Foubert, A., Ozkul, M., Sweenan, R., Fouke, B.W., 2014. Reconstruction of ancient microbial biodiversity and metabolism from fossil travertine. American Geophysical Union (AGU) Annual Meeting, San Francisco, CA
- DeMott, L.M., Sivaguru, M., Fried, G., Sanford, R., and Fouke, B.W., 2014. Quantification of dynamic water-rock-microbe interactions in a travertine-depositing hot spring, Mammoth Hot Springs, Yellowstone National Park, USA. American Geophysical Union (AGU) Annual Meeting, San Francisco, CA
- De Boever, E., Foubert, A., Oligschlaeger, D., Soete, J., Claes, S., Bertier, P., Virgone, A., Swennen, R., Fouke, B.W., 2014. Water-Microbe-Mineral Interactions that control the origin and distribution of micro-porosity within travertine facies. Bathurst Meeting, Manchester, UK
- De Boever, E., Foubert, A., Anselmetti, F.S., Soete, J., DeMott, L., Claes, H., Özkul, M., Virgone, A., Swennen, R., Fouke, B.W., 2014. Drilling modern to ancient continental spring carbonates – Comparison of facies and petrophysics from travertine cores in the Ballik area (Pleistocene, Denizli, Turkey) and Mammoth Hot Springs (Holocene, Yellowstone, USA). 12th Swiss Geoscience Meeting (Drilling the Earth), Fribourg, Switzerland.
- Alcalde, R.E., Zhou, L., Cann, I., Sanford, R., Fouke B.W., Werth C.J., 2014. Understanding Stress-Induced Microbial Evolutionary Mechanisms via Microfluidic Cells. Astrobiology Graduate Conference 2014, Troy, NY
- Murphy, E., Sivaguru, M., and Fouke, B.W., 2014. Biotic Response of the Caribbean Coral *O. annularis* to Environmental Gradients. Geobiology Conference, Midwest Region, Chicago, IL
- Asangba, A., Dong, Y., Lindo, J., Malhi, R.S., Foubert, A., Ozkul, M., Sweenan, R., Fouke, B.W., 2014. Reconstruction of ancient microbial biodiversity and metabolism from fossil travertine. Geobiology Conference, Midwest Region, Chicago, IL
- DeMott, L.M., Sivaguru, M., Fried, G., Sanford, R., and Fouke, B.W., 2014. Water-rock-microbe interactions at Mammoth Hot Springs, Yellowstone National Park, USA. Geobiology Conference, Midwest Region, Chicago, IL
- Zhou, L., Alcalde, R., Mackie, R., Cann, I.O., Fouke, B.W., and Werth, C.J., 2014. Using Microfluidics to Explore Adaptation and Evolution of *Escherichia coli* under Constraint Environmental Conditions. Astrobiology Graduate Conference 2014, July 2014, Troy, NY
- De Boever, E., Foubert, A., Lopez, B., Swennen, R., Özkul, M., Virgone, A., Fouke, B.W., 2014. System-Scale Travertine Facies Distributions: a comparison of modern (Mammoth Hot Springs, Yellowstone, USA) and ancient deposits (Denizli Basin, Turkey). International Sedimentological Congress (ISC), Geneva, Switzerland
- Foubert, A., De Boever, E., Dong, Y., Mayandu, S., Fried, G., Swennen, R., Virgone, A., Fouke, B.W., 2014. Microbial controls on the distribution of micro-porosity within travertine facies. International Sedimentological Congress (ISC), Geneva, Switzerland
- Keenan-Jones, D., Foubert, A., Motta, D., Fried, G., Sivaguru, M., Perillo, J., Waldsmith, J., Wang, H., Garcia, M.H. and Fouke, B.W. 2014 *Hierarchical Stratigraphy of Travertine Deposition in Ancient Roman Aqueducts*. Atti del Convegno Lazio e Sabina X, 4-6 giugno 2013, Sopr. per i Beni Archeologici del Lazio, Vol 10:293-295.
- Dong Y., Keating M. K., Khetani R. S., Fields C., Guang S., Sanford R. A., Yau P., Weber J., Srivastava V., Bulone V., Cann I. K., Mackie R. I., Fouke B. W., 2014. Phylogenetic and Metabolic Activity of an Aquificales-dominated Microbial Community Inhabiting the Apron and Channel Facies of Mammoth Hot Springs, Yellowstone National Park, USA, Midwest Geobiology Symposium, Chicago, IL (*invited oral presentation*).
- Dong, Y., Sieber, J.R., Sanford, R.A., Kim, J., Merkel, A., Mackie, R.I., Cann, I.K.O., and Fouke,

- B.W., 2014. Ecology, Diversity and Physiology of Microorganisms Populating the Upper Devonian Heavy-Oil-Containing Grosmont Carbonate Reservoir of Northern Alberta, Canada, 110 ASM Annual General Conference, Boston, MA
- Singh R., Sanford R. A., Werth C. J., and Fouke, B. W., 2014. The Reservoir Rock GeoBioCell: A Microfluidic Flowcell Developed for Controlled Experiments on Subsurface Microbe-Water-Rock Interactions. American Geophysical Union Fall Meeting, San Francisco, CA
- Singh R., Werth C. J., Sanford R.A., and Fouke B.W., 2014. Microscopic investigation of CaCO₃ Biomineralization and its Implications for Coupled CO₂ Sequestration and Enhanced Hydrocarbon Recovery. NASA Astrobiology Graduate Conference, Troy, NY
- Singh R., Werth C.J., Sanford R.A., and Fouke B.W., 2014. CaCO₃ Biomineralization During Reactive Transport in Subsurface Porous Media: Implications for Coupled CO₂ Sequestration and Enhanced Hydrocarbon Recovery. 6th International Conference on Porous Media. Milwaukee, WI
- Bruce, J., Merkel, A., Dong, Y., Sivaguru, M., Cregger, M., Walther-Antonio, M., Lieske, J., Krambeck, A., Barnett, B., Chia, N., Fouke, B.W., 2014. The Urinary Microbiome and Renal Biomineralization, Research on Calculus Kinetics Society (ROCK) Annual Meeting, Ft. Lauderdale, FL
- Keenan-Jones, D., and Fouke, B.W., 2014. Water supply on shaky ground: life leading up to the eruption of Vesuvius. 114th Archaeological Institute of America (AIA) Annual Meeting, Chicago, Illinois
- Sean C Gordon, Andrea K. Thomer, Timothy DiLauro, Jacob G. Jett, Bruce W. Fouke, Carole L. Palmer, 2014. Site based data curation: Developing a data portal for geobiologists at yellowstone national park: Site Based Data Curation: Developing a Data Portal for Geobiologists at Yellowstone National Park. Proceedings of the American Society for Information Science and Technology; 51(1). DOI:10.1002/meet.2014.14505101167
- D. Keenan-Jones A. Foubert, G. Fried, M. Sivaguru, D. Motta, M. H. Garcia, M. Perillo, J. Waldsmith, Wang, H. and B. W. Fouke. 2013. Hierarchical Stratigraphy of Travertine Deposition in Ancient Roman Aqueducts. 10th Incontro di studi 'Lazio e Sabina', Rome, Italy
- Ardisana, R., Miller, C.H., Sivaguru, M., and Fouke, B.W., 2013. Synchronous changes in coral chromatophore tissue density and skeletal banding as an adaptive response to environmental change. AGU Annual Meeting, San Francisco, CA
- Asangba, A.E., Dong, Y., Fouke, B.W., 2013, Reconstruction Of Ancient Microbial Biodiversity And Metabolism From Fossil Travertine, AGU Annual Conference, San Francisco, CA,
- Dong Y., Kumar C. G., Chia, N., Kim, P., Miller, P. A., Price, N. D., Cann, I. S. O., Flynn, T. M., Sanford, R. A., Krapac, I. G., Locke, R. A. II, Mackie, R. I., Fouke, B. W., 2013. Halomonas sulfidaeris-dominated Communities Inhabit 1.8km-deep Saline Sandstone Reservoirs, Second Annual Midwest Geobiology Symposium, Bloomington, Indiana
- Dong, Y., Sanford, R. A., Locke, R. A. II, Weber, J. R., Egan, S. M., Cann, I. K. O., Mackie, R. I., Fouke, B. W., 2013. Bacterial Ferric Iron Reduction by a Fermentative Orenia sp. (Strain 6634) Isolated from 2.02 KM Depth Cambrian-age Mt. Simon Sandstone, Illinois Basin, USA, 113 ASM General Meeting, May 18-21, 2013, Denver, Colorado
- Werth C. J., Singh R., Boyd, V., Sanford R. A., and Fouke B. W., 2013. "Mechanisms that control CaCO₃ biomineralization during reactive transport and their implication for pore space occlusion. American Chemical Society 246th National Meeting and Exposition, 8-12 Sept., Indianapolis Indiana
- Singh R., Sanford R. A., Werth C. J., and Fouke B. W., 2013. "GeoBioCell: A microfluidic test

- bed for oil field biosouring. Energy Bioscience Institute Retreat, 14-17 July, Urbana-Champaign, Illinois
- Singh R., Sanford R. A., Werth C. J., and Fouke B. W., 2013. "Microbial catalyzed calcium carbonate precipitation in simulated subsurface porous media. AEESP conference, 14-17 July, Golden, Colorado
- Palmer, C.L., Thomer, A.K., Baker, K.S., Wickett, K.M., Varvel, V., Choudhury, S., DiLauro, T., Asangba, A.E., Rodman, A., Fouke, B.W., 2013. Building a framework for site-based data curation Proceedings of the American Society for Information Science and Technology, 50(1). DOI:10.1002/meet.14505001144
- Keenan-Jones, D., and Fouke, B.W., 2013. High-Resolution Records of Ancient Rainfall, Turbulent Open Channel Flow and Microbial Communities from Travertine Deposits in Roman Aqueducts. Reconstruction of Paleoclimate from Layered Sedimentary Deposits, High-Resolution Proxies of Paleoclimate Workshop, University of Wisconsin, Madison, Wisconsin
- Keenan-Jones, D., and Fouke, B.W., 2013. Hierarchical Stratigraphy of Travertine Deposition in Ancient Roman Aqueducts. 113th Archaeological Institute of America (AIA) Annual Meeting, Seattle, Washington
- Keenan-Jones, D., Foubert, A., Fried, G., Sivaguru, M., Motta, D. Garcia, M.H., Perillo, M., Waldsmith, J., Wang, H. and Fouke, B.W., 2012. Ancient Roman Aqueducts as a Geoarchaeological Laboratory to understand Travertine Formation. COCARDE Workshop and Field Seminar, Nördlingen, Germany
- Gianluca Blois, Kenneth Christensen, James Best, Gregory Elliott, Joanna Austin, J. Craig Dutton, Michael Bragg, Marcelo Garcia, Bruce Fouke, 2013. A versatile refractive-index-matched flow facility for studies of complex flow systems across scientific disciplines. 50th AIAA Aerospace Sciences Meeting (New Horizons Forum and Aerospace Exposition)
- Dong, Y., Sanford, R., Cann, I., Mackie, R., Locke, R., and Fouke, B.W., 2013. Iron-Reduction Microbial Activities in the Deep Subsurface. *ASM General Meeting*, San Francisco, CA
- Dong, Y., Sanford, R. A., Werth, J. C., Fouke B. W., 2012, Understanding the Impact of CO₂ Injection on the Subsurface Microbial Community in an Illinois Basin CCS Reservoir: Integrated Student Training in Geoscience and Geomicrobiology, Carbon Storage R&D Project Review Meeting ¾ Developing the Technologies and Building the Infrastructure for CCUS, U.S. Department of Energy, Pittsburgh, Pennsylvania
- Dong, Y., Sanford, R. A., Cann, I. K. O., Mackie, R. I., Locke, R. A. II, Fouke, B. W., 2012, W., Detection and Preliminary Characterization of Active Iron-Reducing Bacterial Populations in Deeply Buried (1.7-2.0 KM) Saline Sandstone Reservoirs of the Illinois Basin, Midcontinent, USA, 2012 General Meeting for the American Society of Microbiology, San Francisco, California
- Keenan-Jones, D., and Fouke, B.W., 2012. Ancient Roman Aqueducts as a Geoarchaeological laboratory to understand Travertine Formation. Cold Water Carbonate Mounds in Shallow & Deep Time Workshop, Nördlingen, Germany
- Dong, Y., Sanford, R., Cann, I., Mackie, R., Locke, R., and Fouke, B.W., 2012. Detection and Preliminary Characterization of Active Iron-Reducing Bacterial Populations in Deeply Buried (1.7-2.0 KM) Saline Sandstone Reservoirs of the Illinois Basin, Midcontinent, USA. *ASM General Meeting*, San Francisco, CA
- Kim, W., Fouke, B.W., et al., 2011. Sea-Level Rise, Depth-Dependent Carbonate Growth, And The Paradox Of Drowned Platforms. *GSA Annual Meeting*, Minneapolis, MN., *GSA Abstracts with Programs* Vol. 43, No. 5

- Persson, E., Dunér, D., Ahrén, D., Dravins, Sofia, D., Feltzig, D., Fouke, B.W., Holmberg, G., Persson, P., Vajda, V., 2011. Astrobiology: Past, Present, and Future. Geobiology in Space Exploration, Marrakech, Morocco
- Keenan-Jones, D., and Fouke, B.W., 2011. *Lead contamination in the water supply of Pompeii. Archaeological Institute of America, Champaign, Illinois*
- Kumar, C. G., Dong Y., Kim, P., Olsen, G. J, Cann, I. K. O., Mackie, R. I., Fouke, B. W., Price, N. D. Comparative metabolic predictions for Halomonas sulfidaeris inhabiting km-deep marine hydrothermal vents and subsurface sedimentary rocks. 11th Cold Spring Harbor Laboratory/Wellcome Trust conference on Genome Informatics, Cold Spring Harbor, New York, NY, November 2-5 2011
- Dong, Y., Cann I. K. O., Mackie, R. I., Price, N. D., Flynn, T. M., Sanford, R. A., Miller, P., Chia, N., Kumar, C. G., Kim, P., Sivaguru, M., Fouke, B. W. Discriminating Native Subsurface Microbes from Drilling Mud Contaminants at Depths of 1.0-2.2 KM in the Illinois Basin Using 454 Pyrotag Sequencing, 3rd Annual Argonne Soil Metagenomics Workshop, Chicago, IL, October 5-7, 2011
- Dong, Y., Flynn, T. M., Sanford, R. A., Miller, P. A., Chia, N., Kumar, C. G., Kim, P., Cann, I. K. O., Mackie, R. I., Price, N. D., Sivaguru, M., Nolte, M., Fouke, B. W. Phylogenetic Diversity, Stratigraphic Distribution of Indigenous Microbes Revealed from a 2KM Well in Decatur, IL. Midwest Geological Sequestration Consortium Annual Meeting and Workshop, Champaign, IL, November 7-9, 2011
- Fouke, B.W., 2010, Yellowstone microbes, heated corals and their global carbonate connection. Goldschmidt 2010: Earth, Energy and the Environment, Knoxville, TN. *Geochimica Et Cosmochimica Acta* 74(12) Sup. 1:A301-A301
- Dong, Y., and Fouke, B.W., 2010. Finding a needle in a haystack: *Halomonas sulfidaeris* communities at at 1.8 km burial depths in the Illinois Basin, USA. American Geophysical Union Annual Meeting, San Francisco, California.

External Funding

- Fouke, B.W., PI, 2025. Next Generation Protein Microscopy with the [Waters DESI XS Mass Spectrometry Imaging](#), \$625,000 (direct), from the *Roy J. Carver Charitable Trust*, housed, operated and maintained in the Metabolomics Facility of the Roy J. Carver Biotechnology Center ([CBC](#)), University of Illinois Urbana-Champaign
- Fouke, B.W., PI, 2022-2027, Phosphate Cycling in Human and Natural Calcification. *Weil Astrobiology Foundation*. \$300,000 (direct), to support research, teaching and service activities in the Fouke Labs at the University of Illinois Urbana-Champaign
- Fouke, B.W., PI, 2022. A Quantum Leap in Advancing Translational Biomedical and Biogeochemical Research: Integrating Ultrahigh-Resolution Microscopy with Ultrahigh-Throughput Omics Sciences, *University of Illinois Urbana-Champaign Campus Consortium*, \$915,000, [North Star Instruments X5000 MicroCT](#), housed, operated and maintained in the Carl R. Woese Institute for Genomic Biology ([IGB](#))
- Fouke, B.W., PI, 01/2022. A Quantum Leap in Advancing Translational Biomedical and Biogeochemical Research: Integrating Ultrahigh-Resolution Microscopy with Ultrahigh-Throughput Omics Sciences, *Roy J. Carver Charitable Trust*, \$500,000 (direct), [WITec Alpha300 Raman-AFM-SNOM](#), housed, operated and maintained in the Carl R. Woese Institute for Genomic Biology ([IGB](#))

- Von Der Donk, W., and Fouke, B.W., 01/2020. A Quantum Leap in Advancing Translational Biomedical and Biogeochemical Research: Integrating Ultrahigh-Resolution Microscopy with Ultrahigh-Throughput Omics Sciences, *Howard Hughes Medical Institute*, \$850,000 for purchase and installation of a Q Exactive Ultra-High Mass Range Hybrid Quadrupole-Orbitrap Mass Spectrometer, housed in the Carl R. Woese Institute for Genomic Biology, <https://www.thermofisher.com/order/catalog/product/0726090#/0726090>
- Fouke, B.W., 01/2020. A Quantum Leap in Advancing Translational Biomedical and Biogeochemical Research: Integrating Ultrahigh-Resolution Microscopy with Ultrahigh-Throughput Omics Sciences, \$725,000 for purchase and installation of [Dornier Delta III ESWL Lithotripter and Dornier Solvo H35 Laser Lithotripter](#), housed, operated and maintained in the Fouke Lab 2073 NHB, University of Illinois Urbana-Champaign.
- Fouke, B.W., PI, and Werth, C.J., Co-PI, 06/2017-07/2020. Next-Generation Oil Field Geobiochemistry and Microfluidic Testing. *Dow DuPont Chemical Company*, \$1,237,000, PI Fouke component = \$870,000 (70%)
- Wagoner Johnson, A., Fouke, B.W., Juarez, G., Marhaver, K. Wegley Kelly, L., *Engineering Coral Reef Recovery*, 09/18-09/21, *Convergence: RAISE*: \$1,000,000, NSF-RAISE-1848671, PI Fouke component = \$100,000 (10%)
- Lieske, J., Krambeck, A., Chia, N., and Fouke, B.W., 06/2017-12/2023, Clinical CT Scanner Data Integrated with Laser Scanning Microscopy of Human Kidney Stones. *Mayo Clinic Urology O-Brien Research Center*, \$2,500,000 for 5 years, Co-PI Fouke component = \$250,000 (10%)
- Fouke, B.W., and Werth, C., 01/2013-06/2016, EBI 2012: GeoBioCell Experimentation of Microbial Sulfur Cycling during Oil Field Biosouring. *BP Energy Biosciences Institute (EBI)*, \$150,000 for 1.5 years, PI Fouke component = \$150,000 (100%)
- Goldenfeld, N., Fouke, B.W., Cann, I., Werth, C., Olsen, G., Whitaker, R., Branscomb, E., Schultzy-Luther, J., Rosenburg, S., Hastings, S., Mackie, R., 01/2013-12/2017, Towards Universal Biology: Constraints from Early and Continuing Evolutionary Dynamics of Life on Earth. *NASA Astrobiology Institute (NAI)*, \$8,044,931 for 5 years, Co-PI Fouke component = \$640,000 (36%)
- Fouke, B.W., Fried, G., and Sivaguru, M., 06/2017-12/2020, Stones of the Mayo Clinic. *Mayo-UIUC Alliance*, \$20,000 for 2.5 years, PI Fouke component = \$20,000 (100%)
- Palmer, C., and Fouke, B.W., 10/2012-09/2016, Site-Based Data Curation for Small Science: Building a Living Science Museum and Advancing the National Data Network. *Institute of Museum and Library Services (IMLS)*, *National Leadership Grant Program*, \$499,919 for 2 years Co-PI Fouke component = \$167,000 (35%)
- Lieske, J., Krambeck, A., Chia, N., and Fouke, B.W., 06/2013-12/2016, Visualization and Pathophysiology of Renal Stone Precursor Lesions: Improving Stone Disease Treatment by Accurate Phenotyping and Risk Stratification. *Mayo Clinic Urology O-Brien Research Center*, \$600,000 for 2.5 years, Co-PI Fouke component = \$90,000 (15%)
- Fouke, B.W., Goldenfeld, N., Chia, N., Lieske, J., Krambeck, A., 06/2016-12/2018, Microbiome Controls on Human Kidney Stone Biomineralization and Human Health. *Mayo-Illinois Alliance*, \$160,000 for 2.5 years, PI Fouke component = \$160,000 (100%)
- Fouke, B.W., Foubert, A., and Sweenan, R., 08/2012-07/2016, Depositional, Diagenetic and Microbial Controls on the Three-Dimensional Distribution of Porosity and Permeability within Travertine Reservoir Analogs. *Total Oil Company*, \$319,720 for 3 years, PI Fouke component = \$319,720 (100%)

- Fouke, B.W., and Werth, C., 01/2014-06/2015, EBI 2016: Geological and Geochemical Assessment of Biosouring Mitigation Strategies at the Cardinal Field Using Core Samples, Oil Field Fluids and GeoBioCell Interrogation. *BP Energy Biosciences Institute (EBI)*, \$300,000 for 3 years, PI Fouke component = \$234,000 (78%)
- Fouke, B, Werth, C., Cann, I., Christensen, K., and Fried, G., 01/2011-12/2012, EBI 2011: Distribution and Diversity of Metabolic Processes in Subsurface Microbial Communities Integrated with Reservoir Environmental Conditions and Geological History: A Template for MEHR. *BP Energy Biosciences Institute (EBI)*, \$401,671 for 2 years, PI Fouke component = \$401,671 (100%)
- Fouke, B, Werth, C., Cann, I., Christensen, K., and Fried, G., 01/2010-12/2011, EBI 2010: Distribution and Diversity of Metabolic Processes in Subsurface Microbial Communities Integrated with Reservoir Environmental Conditions and Geological History: A Template for MEHR. *BP Energy Biosciences Institute (EBI)*, \$382,721 for 2 years, PI Fouke component = \$382,721 (100%)
- Fouke, B.W., Sanford, R., and Marshak, S., 12/2009-11/2013, Understanding the Impact of CO₂ Injection on the Subsurface Microbial Community in an Illinois Basin CCS Reservoir: Integrated Student Training in Geosciences and Geomicrobiology. *US Department of Energy (DOE)*, \$299,338 for 3 years, PI Fouke component = \$299,338 (100%)
- Leetaru, H., Fouke, B.W. and others, 12/2009-11/2013. An Evaluation of the Carbon Sequestration Potential of the Cambro-Ordovician Strata of the Illinois and Michigan Basins. *US Department of Energy (DOE)*, \$1,234,000 for 3 years, Co-PI Fouke component = \$180,000 (15%)
- Best, J.L., Fouke, B.W., Garcia, M.H. Parker, G.N., Rhoads, B.L., 01/2009-12/2011, Acquisition of a State-of-the-Art Shallow-Water Multibeam Echo-Sounding System at the University of Illinois Urbana-Champaign (UIUC MBES), *National Science Foundation (NSF) Major Research Instrumentation*, \$456,706 for 2 years
- Fouke, B.W., and C., Cann, I.O., 01/2009-12/2010. EBI 2009: Distribution, Frequency and Expression of Genes in Subsurface Microbial Communities Using Metagenomic and Metatranscriptomic approaches integrated with Reservoir Geology and Geochemistry. *BP Energy Biosciences Institute (EBI)*, \$446,993 for 3 years, PI Fouke component = \$446,993 (100%)
- Fouke, B.W., Goldenfeld, N., and Murray, A., 1/2002-12/2004, *Geobiology and the Emergence of Terraced Architecture during Carbonate Mineralization*, National Science Foundation, NSF-EAR-0221743) Biocomplexity in the Environment: Coupled Biogeochemical Cycles, \$1,114,000 for 3 years, PI Fouke component = \$430,000 (39%)
- Fouke, B.W., 08/2007 – 07/2009, Integration of Expedition Yellowstone with Biocomplexity Studies at Mammoth Hot Springs, *National Science Foundation (NSF) Biocomplexity in the Environment, Research Experience for Teachers (RET)*, \$200,000 for 2 years, PI Fouke component = \$200,000 (100%)
- Fouke, B.W., 06/2003–05/2006, The Role of Shipyard Pollutants in Structuring Coral Reef Microbial Communities: Monitoring Environmental Change and the Potential Causes of Coral Disease, *Office of Naval Research (ONR) Harbor Processes*, \$300,000 for 3 years, PI Fouke component = \$300,000 (100%)

- Fouke, B.W., 06/200–06/2002, Microsampling of Fluid Inclusions and Microbes, *ExxonMobil Upstream Company*, \$10,000 for 1 year, PI Fouke component = \$10,000 (100%)
- Fouke, B.W., and McAllister, M., 12/2005 – 11/2008, Effect of Dissolved Explosives on Coral Microbial Communities. *Office of Naval Research (ONR) Harbor Processes*, \$300,000 for 3 years, PI Fouke component = \$300,000 (100%)
- Fouke, B.W., and Salyers, A.A., 06/2000 – 05/2003, The Role of Shipyard Pollutants in Structuring Coral Reef Microbial Communities: Monitoring Environmental Change and the Potential Causes of Coral Disease, *US Office of Naval Research (ONR)*, \$320,000 for 3 years, PI Fouke component = \$320,000 (100%)
- Fouke, B.W., 01/2000-12/2001, Proximal Carbonate Ejecta and Breccias from the Cretaceous-Tertiary Chicxulub Impact: Ballistic Sedimentation and Brecciation, ⁸⁷Sr/⁸⁶Sr Chronology, and Diagenetic Alteration, *National Science Foundation (NSF) Geology and Paleontology*, \$72,000 for 2 years, PI Fouke component = \$72,000 (100%)
- Fouke, B.W., 08/1999 – 08/2002, Circum-Mexico Hydrocarbon Exploration Plays in Cretaceous-Tertiary Meteor Impact Ejecta Deposits, *Petroleos Mexicanos (Pemex)* \$78,000 for 2 years, PI Fouke component = \$78,000 (100%)
- Fouke, B.W., 09/1999 – 08/2001, A Time-Series Process Model of Carbonate Diagenesis and DNA Preservation in Hot Spring Travertine, Yellowstone National Park, Wyoming, and Gardiner, Montana, *American Chemical Society (ACS) Petroleum Research Fund (PRF)*, \$25,000 for 2 years, PI Fouke component = \$25,000 (100%)
- Fouke, B.W., 03/2000 – 03/2001, Geomicrobiology of Trinity Springs, Paradise, Idaho, *Trinity Springs Research Grant*, \$24,000 for 2 years, PI Fouke component = \$24,000 (100%)

Internal University of Illinois Funding - Completed Research Grants

- Fouke, B.W., Feser, E. and Cook, C., 01/2010-12/2010. SciFlix: A Series of 5-Minute Distance Learning Podcasts Highlighting Scientific Discovery. *University of Illinois Urbana-Champaign, Office of the Vice President for Public Engagement*, \$12,000 for 1 year, PI Fouke component = \$12,000 (100%)
- Feser, E., Fouke, B.W., Schneider, D., and Deal, B., 01/2008 – 12/2008, Caribbean Island Sustainable Development Planning: A Roadmap for Curacao, Creative Arts Program, \$11,000 for 1 year, PI Fouke component = \$11,000 (100%)
- Fouke, B.W., 09/2008-12/2009. Calcium Carbonate (CaCO₃) Biomineralization: A Geologic Record of Biological Response to Rapid Environmental Change, *UIUC Research Board*, \$6,000 for 1 year, PI Fouke component = \$6,000 (100%)
- Fouke, B.W., 06/2000 – 09/2000, Geomicrobiology of Papua New Guinea Coral Reefs, *UIUC Hewlett International Research Grant Award*, \$4,000 for 1 year, PI Fouke component = \$4,000 (100%)
- Hostetter, E., and Fouke, B.W., 06/2002 – 06/2003, U-Series Dating of the Latest Water Flow in the Baths of Caracalla and the ‘Deurbanization’ of Rome, *Research Board*, \$4,000 for 1 year, PI Fouke component = \$4,000 (100%)
- Fouke, B.W., Salyers, A.A., and Sweedler, J., 07/1998 – 12/2001, Geological, Microbiological, and Biochemical Mechanisms of Microbial Fossilization: A Template for Interpreting the History of Life, *University of Illinois Critical Research Initiative*, \$112,000 for 2 years, PI Fouke component = \$112,000 (100%)

Speaking Invitations and Workshops 2012-Present

- 2025 Human Pathological Calcification: A Microcosm of Earth Processes. Department of Cancer Biology, Mayo Clinic, Jacksonville, FL, November 13, 2025
- 2025 Invited Keynote. Human Pathological Calcification: A Microcosm of Earth Processes. USF Health 8th Annual Interprofessional Education Day 2025, Breaking Silos, Building Solutions: The Power of Multi, Inter and Transdisciplinary Research, November 11, 2025
<https://www.usf.edu/health/news/2025/usf-health-ipe-day-2025.aspx>
- 2025 Human Pathological Calcification: A Microcosm of Earth Processes. Department of Geosciences, Fort Lewis College and Four Corners Geological Society. Durango, Colorado, September 24, 2025
- 2025 Human Pathological Calcification: A Microcosm of Earth Processes. Thermal Biology Institute, Montana State University, Bozeman, MT, March 11, 2025
- 2025 Mammoth Hot Springs: A Lexicon for Deciphering the Last Flow of Ancient Roman Aqueduct. Center for Biofilm Engineering, Montana State University, Bozeman, MT, March 11, 2025,
- 2025 3.8 Billion years of Life on Earth: Mammoth Hot Springs as a Window on the Universe. Yellowstone Summit, Gardiner, MT, February 3, 2025.
<https://www.yellowstonesummit.com/>
- 2024 Invited Keynote. Biomineralization of Human Soft Tissues: From Cardiovascular Calcification to Coral Skeletons, UCLA-Caltech MSTP Symposium, Los Angeles, CA, August 2, 2024, <https://mstp.healthsciences.ucla.edu/>
- 2024 Invited Keynote. Convergence of Universal Biomineralization Sciences (CUBS): Harnessing Next Generation Breakthroughs in Biotechnology, Bioengineering and Medicine, 2024 World Congress on In Vitro Biology (SIVB), St. Louis, MO June 9, 2024,
<https://sivb.org/meetings/>
- 2024 UCLA Cardiac Arrhythmia Center, Neurocardiology Research Program of Excellence, David Geffen School of Medicine, UCLA Health, Los Angeles, CA, Title: Mechanisms of Cardiovascular Calcification
- 2024 Carver Trust Foundation, Muscatine, Iowa, Title: Future of the Roy J. Carver Biotechnology Center
- 2024 Iowa State University, Department of Geological and Atmospheric Sciences, Title: Life on the Edge of Entombment: A geobiologists Guide to the Universe
- 2024 California State University Northridge, Distinguished Visitors Speaker Program, Title: Soft Tissue Biomineralization throughout the Human Body
- 2024 Colorado State University, Geosciences, Warner College of Natural Sciences, Title: 3.8 Billion Years of Biomineralization
- 2023 Carver Trust Foundation, Muscatine, Iowa, Title: Roy J. Carver Biotechnology Center Spotlight: Heart and Kidney Calcification
- 2023 SUNY Geneseo, American Rock Salt Endowed Lecture, Title: 3.8 Billion Years of Biomineralization
- 2022 UCLA Cardiac Arrhythmia Center, Neurocardiology Research Program of Excellence, David Geffen School of Medicine, UCLA Health, Los Angeles, CA, Title: New GeoBioMed Approaches to Cardiovascular Calcification
- 2022 DeFord Lecture, Jackson School of Geosciences, University of Texas at Austin, 3.8 Billion Years of Biomineralization, Austin, TX, Title: 3.8 Billion Years of Biomineralization

- 2022 Net-Zero Emissions Materials Workshop, Energy Biosciences Institute, University of California Berkeley, Berkeley, CA, Title: New Strategies for 4D Control of Carbonate Biomineralization
- 2022 Museum Talk, Bohemian Grove, Russian River, CA, Title: Life on the Edge of Entombment: A geobiologists Guide to the Universe
- 2022 American Chemical Society, Department of Chemistry, Northwestern University, Chicago, IL, Title: 3.8 Billion Years of Biomineralization
- 2022, American Rock Salt Lecture, Department of Geosciences, SUNY Geneseo, Geneseo, NY, Title: GeoBioMed
- 2022 Yellowstone Resources Center, National Park Service, and the Thermal Biology Institute, Montana State University, Keynote Speaker, *Life on the Edge of Entombment: Microbe Biomineralization in Yellowstone*, 15th Biennial Scientific Conference on the Greater Yellowstone Ecosystem, in Celebration of the 150th Anniversary of Yellowstone National Park <https://www.gyescienceconference.org/>
- 2021 Environmental Engineering and Science Symposium, Department of Civil and Environmental Engineering, University of Illinois Urbana-Champaign, Keynote Speaker, *Universal Biomineralization: Life-Water-Mineral Interactions through Geological Time* <https://publish.illinois.edu/2022-environmentalsymposium/>
- 2021 Mayo Clinic Individualizing Medicine Conference, Mayo. Clinic, Rochester, MN, invited speaker and panelist: *GeoBioMed*
- 2021 Midwest Geobiology Symposium, Indiana University Purdue University, Indianapolis, Keynote Speaker: *Universal Biomineralization*. <https://midwestgeobiology.org/>
- 2021 Reservoir Microbiology Forum, Subsurface Microbiology, Keynote Speaker: *The GeoBioCell: A Microfluidic Testbed Window into the Ecology and Metabolism of Subsurface Oilfield Microbes* https://www.energyinst.org/whats-on/search/events-and-training?meta_eventId=62111B
- 2021 North Star Imaging (NSI), Keynote Speaker, *Universal Biomineralization*, Aliso Viejo, California. <https://nsi2021symposium.vfairs.com/>
- 2021 The Chicago Council on Science and Technology: *Biomineralization: Life Harnessing Mineral Growth over Four Billion Years*, <https://www.c2st.org/>
- 2021 American Chemical Society, Chicago ACS Chapter: *Art of Yellowstone Science*: <https://artofyellowstonescience.igb.illinois.edu/>
- 2020 Mayo Clinic Heritage Film, invited keynote lecture for documentary release of *A World in a Grain of Sand: New Discoveries in Kidney Stones*, delayed until 2022: <http://history.mayoclinic.org/books-films/heritage-films.php>
- 2020 Mayo Clinic & Illinois Alliance for Technology-Based Healthcare, Workshop on Computational, Data, & Digital Approaches to Advance Health, invited lecture, *New Advances in Kidney Stone Medicine*, NCA Auditorium, University of Illinois Urbana-Champaign, Urbana, Illinois
- 2020 Advanced Diagnostics & Therapeutics, invited lecture, *GeoBioMed: Integration of the Natural and Life Sciences*, University of Notre Dame, Notre Dame, Indiana
- 2020 Department of Integrative Biology, invited lecture, *Universal Biomineralization: Coral Reefs to Kidney Stones*, University of Illinois Urbana-Champaign, Urbana, Illinois
- 2020 Carl R. Woese Institute for Genomic Biology, invited lecture, *GeoBioMed Sheds New Light on Kidney Stone Crystallization and Dissolution*, External Advisory Board Meeting, University of Illinois Urbana-Champaign

- 2019 American Urological Association (AUA), invited lecture, *Kidney Stone Geobiology – What’s Next?*, AUA Headquarters, Linthicum, Maryland:
<https://auau.auanet.org/content/stonelab-scientific-symposium-thinking-outside-box-kidney-stone-disease-2019>
- 2019 Northern Illinois Science Educators (NISE), invited to present two keynote lectures, entitled *Carl R. Woese and the Journey Toward a Universal Tree of Life*, and *Yellowstone Extremophiles in NASA’s Cosmic Search for Life: “I Want to Believe”* at Northern Illinois University, presented to 500 high school teachers, <http://www.nise.us/>
- 2019 Illini Day, invited lecture, *Reinventing Kidney Stone Medicine*, presented to 60 University of Illinois Alumni at the Illini Center, Chicago, Illinois
- 2019 National Academies of Sciences (NAS), invited lecture, *Biom mineralization Through Geological Time: My What Big Teeth You Have!*, provided four lectures to more than 600 visitors to the NAS in Washington D.C.:
<https://www8.nationalacademies.org/pa/eventview.aspx?key=30>
- 2019 Rayburn Executive Building, World of Genomics, invited poster, *Yellowstone as a Scientific Window on the Universe*, Washington D.C.
- 2019 Jackson School of Geosciences, University of Texas Austin, participant, *NSF Summit on the Future of Graduate Education in the Geosciences*, Austin, Texas:
<https://www.jsg.utexas.edu/events/summits/summit-on-improving-geoscience-graduate-student-preparedness-for-the-future-workforce/>
- 2018 Vietnam National University, invited speaker, *Calibrating Coral Sea Surface Temperature (SST) Reconstructions and the Process of Universal Biom mineralization*, Towards Sustainable Development: Climate Change Response for Sustainability and Security, Hanoi, Vietnam:
<http://vju.vnu.edu.vn/news/academics/climate-change-response-for-sustainability-and-security-nde99.html>
- 2018 Iowa City Public Library, invited keynote lecture, *The Art of Yellowstone Science*, Annual ICPL Fund Raiser *Looking Forward* Event. Iowa City, Iowa
- 2018 St. Louis Science Center, World of Genomics, invited lecture, *Ancient Oceans and Coral Reefs of St. Louis*, St. Louis, Missouri, presented to 250 St. Louis Public School students
- 2018 Dow Chemical Company, invited lecture, *Oil Field Geobiology and the GeoBioCell Microfluidic Testbed*, Collegeville, Pennsylvania
- 2017 Field Museum, World of Genomics, invited lecture, *Yellowstone as a Window on the Universe*, Chicago, Illinois, presented to 500 Chicago Public School students: https://smd-prod.s3.amazonaws.com/science-red/s3fs-public/atoms/files/29%20JUNE%20Astrobiology-FieldMuseum_Astro%3DTAGGED.pdf
- 2017 Old Faithful Visitor Center, National Park Service, invited lecture, *The Art and Science of Mammoth Hot Springs*, Yellowstone National Park, Wyoming, presented to YNP 100 visitors
- 2017 Yellowstone Conservation Core (YCC), National Park Service, invited lecture, *The Art of Yellowstone Science*, Yellowstone National Park, Wyoming, presented to YNP 30 YCC staff
- 2017 Yellowstone Forever Institute (YFI), invited lecture, *The Art of Yellowstone Science*, Gardiner, Wyoming, presented to 50 life-long learner students taking YFI courses
- 2017 Montana State University, Center for Biofilm Engineering, invited lecture, *The Art of Yellowstone Science*, Bozeman, Montana
- 2017 Mayo Clinic, Department of Nephrology and Hypertension, invited lecture, *Geobiology Proves Kidney Stones Dissolve In Vivo*, Rochester, Minnesota

- 2017 MATTER Health Care Incubator, invited lecture, *The Art of Yellowstone Science*, Merchandise Mart, Chicago, Illinois: <https://matter.health/>
- 2016 NASA Astrobiology Institute Executive Council (NAI EC), invited lecture *Yellowstone Astrobiology*, Flathead Lake, Montana, presented to 50 NAI Scientists
- 2016 Taft-Nicholson Center, University of Utah, invited lecture, *The Art of Yellowstone Science*, presented to 30 in-residence artists and scientists: <https://taft-nicholson.utah.edu/>
- 2016 NASA Astrobiology Institute Executive Council (NAI EC), invited lecture, *Quantification of the Rate of Evolution Across Steep Environmental Gradients: Applications of the GeoBioCell*, Palm Springs, CA, presented to 50 NAI EC scientists and staff
- 2016 American Urological Association (AUA), Annual Meeting, invited lecture, *Shedding New Light on Kidney Stone Microbiome Mineralization Dynamics*, San Diego, California
- 2016 Mayo Clinic, Genome Core, invited lecture, *The Illinois Carver Biotechnology Center: Microbiome Biomineralization and Kidney Stone Genesis*, Rochester, Minnesota
- 2015 University of Iowa, Department of Geology, AAPG Distinguished Lecturer, invited lecture, *Genome-Driven Advancements in Oil Field Geobiology*, Iowa City, Iowa
- 2015 Oklahoma State University, AAPG Distinguished Lecturer, invited lecture, *Genome-Driven Advancements in Oil Field Geobiology*, Stillwater, Oklahoma
- 2015 Tulsa University, AAPG Distinguished Lecturer, invited lecture, *Genome-Driven Advancements in Oil Field Geobiology*, Tulsa, Oklahoma
- 2015 University of California Berkeley, AAPG Distinguished Lecturer, invited lecture, *Oil Field Geobiology*, Berkeley, California,
- 2014 University of Petroleum and Engineering Sciences (UPES), AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Genome-Driven Advancements in Oil Field Geobiology*, Dehradun, India
- 2014 Geosciences University of China, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Oil Field Geobiology*, Wuhan, China
- 2014 Hong Kong University, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Oil Field Geobiology*, Hong Kong, China
- 2014 Vietnam National University, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Oil Field Geobiology*, Hanoi, Vietnam
- 2014 Okinawa Institute of Science and Technology, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Genome-Driven Advances in Oil Field Geobiology*, Okinawa, Japan
- 2014 James Cook University, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Oil Field Geobiology*, Townsville, Australia
- 2014 Dunedin University, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Oil Field Geobiology*, Dunedin, New Zealand
- 2014 University of New South Wales, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, invited lecture, *Oil Field Geobiology*, Sydney, Australia
- 2014 BP Energy Biosciences Institute (EBI), invited lecture, *Fossil Fuel Geobiology*, University of California Berkeley, Berkeley, California
- 2014 BP Aberdeen, Exploration and Production, North Sea Reservoir Management Team, invited lecture, *Fossil Fuel Geobiology*, Aberdeen, Scotland
- 2014 Swedish Royal Institute of Technology (KTH), invited lecture, *Genomics and Biomineralization*, School of Biotechnology, Stockholm, Sweden

- 2014 Caribbean Marine Biological Institute (CARMABI), invited lecture, *The Future of Coral Reefs on a Warming Planet*, Curaçao, Netherlands Antilles
- 2013 NASA Astrobiology Institute, invited lecture, *Yellowstone Astrobiology*, Education and Public Outreach, Planetary and Earth Sciences, Arizona State University, Phoenix, Arizona
- 2013 BP Energy Biosciences Institute (EBI), invited lecture, *Fossil Fuel Geobiology*, University of California Berkeley, Berkeley, California
- 2013 Institute for Museum and Library Sciences (IMLS), plenary speaker, *Site Based Data Curation*, Mammoth Hot Springs, Yellowstone National Park, Wyoming
- 2013 International Association of Sedimentologists (IAS), plenary speaker, *Microbial Enhanced Porosity and Permeability Occlusion in Travertine*, 30th IAS Meeting of Sedimentology, Manchester University, Manchester, United Kingdom
- 2013 Petroleum Microbiology, plenary speaker, *Subsurface GeoBioCell Microfluidic Studies*, International Symposium on Applied Microbiology and Molecular Biology (ISMOS4), BR Petrobras Exploration and Production Center, Rio de Janeiro, Brazil
- 2013 Computational Genomics Initiative, invited lecture, *Subsurface Oil Field Biosphere*, Tata Institute of Fundamental Research, Bangalore, India
- 2013 Ancient DNA Initiative, plenary speaker, *Hot-Spring Geobiology*, Departments of Geology and Microbiology, Pamukkale University, Denizli, Turkey
- 2013 Microbiolite Hydrocarbon Reservoirs, invited lecture, *Oil Field Geobiology*, Total Oil Company, Exploration and Production, Pau, France
- 2013 Caribbean Marine Biological Institute (CARMABI), invited lecture, *Ancient Coral Reefs of the Seroe Domi Formation*, Curaçao, Netherlands Antilles, Willemstad, Curaçao
- 2013 Arizona State University, invited lecture, *Future Directions of Carbonate Sedimentology and Geochemistry*, Planetary and Earth Sciences
- 2012 Reservoir Microbiology Forum, invited lecture, *Subsurface Biosourcing Microbe-Water-Rock Interactions*, Energy Institute, London, England, United Kingdom
- 2013 Department of Atmospheric Sciences, University of Illinois Urbana-Champaign, invited lecture, *Yellowstone Astrobiology*, Urbana, Illinois
- 2012 Royal Swedish Institute of Technology, invited lectures, *A Changing Arctic*, Illinois-Swedish International Exchange in Research and Education (INSPIRE), Stockholm, Sweden
- 2012 University of Norway in Svalbard (UNIS), invited lectures and field trip leader, *A Changing Arctic*, a program within the Illinois-Swedish International Exchange in Research and Education, Svalbard, Spitsbergen, Norway
- 2012 Caribbean Marine Biological Institute (CARMABI), invited lecture, *Coral Skeletal Density Banding*, Willemstad, Curaçao
- 2012 Microbiolite Hydrocarbon Reservoirs, invited lecture, *GeoBioCell: A Microfluidic Testbed*, Exploration and Production, Total Oil Company, Pau, France

Editorships and Reviewing

Associate Editor, *Coral Reefs*, 2010-2015

Associate Editor, *Geology*, 2012-2014

Associate Editor, *Palaos*, Society of Sedimentary Geologists, 2002-2006

Regular Reviewer for *Science*, *Nature*, *Journal of Sedimentary Research*, *Sedimentology*, *Geobiology*, *Geochimica et Cosmochimica Acta*, *Marine Biology*, *Environmental Microbiology*, *Applied and Environmental Microbiology*, *Geology*, *Chemical Geology*

Offices Held with Professional Societies

American Association of Petroleum Geologists, National Research Committee, 2008-2010
Co-Chair, Technical Session on Microbial Carbonates, 2003 American Association of Petroleum Geologists, Annual Meeting, Denver, Colorado
Vice Chairman, 2003, Division of Geobiology, Geological Society of America, Boulder, CO
Chairman, Carbonate Research Group, 1998 - 1999, American Association of Petroleum Geologists, Annual Meetings in Salt Lake City and San Antonio
Alumni Board, 1999-2005, Department of Geology, University of Iowa, Iowa City, Iowa

Professional Memberships

Geological Society of America	International Association of Sedimentologists
Sigma Xi Scientific Research Society	American Association of Petroleum Geologists
Society for Sedimentary Geology	American Association for the Advancement of Science
Mineralogical Society of America	American Society for Microbiology

Teaching and Instruction at the University of Illinois Urbana-Champaign

GEOL 440 Sedimentology and Stratigraphy, Spring 1997-2016. *Sedimentology and Stratigraphy* had an enrollment of 30 students in each class and consisted of classroom lectures, a weekly laboratory and a capstone field trip to measure and analyze outcrops in either Indiana or Illinois. The class was designed to provide both undergraduate and graduate students with an integrated overview of sedimentology and stratigraphy. State-of-the-art analytical tools were integrated with the latest theoretical concepts on sediment deposition and water-rock interaction to provide a comprehensive answer to the question *What is the origin of a sedimentary rock?*. Emphasis was placed on: 1) quantitative description and classification of the composition and layering of sedimentary rocks; 2) spatial and temporal models for reconstructing depositional environments (*facies*); 3) application of quantitative models for sediment deposition and water-rock interaction; 4) reconstructing sea level as a link to gauging ancient climate, oceanic circulation, biotic evolution, and tectonic regimes.

GEOL 117 The Oceans, Fall 1997- 2002. *The Oceans* had an enrollment of 200 students in each class and consisted of three classroom lectures each week. This introductory oceanography course explored the composition and history of sea floor sediments, the physical and chemical nature of sea water (including chemical equilibria and the physics of currents, waves, and tides), marine life, cause-and-effect linkages between ocean circulation and atmospheric climate, and society's impact on the oceans.

GEOL 290/292 and MCB 290/292 Directed Undergraduate Research, 1997-2020. *Directed Undergraduate Research* is designed to provide undergraduate students with experience in conducting geoscience research in the library, laboratory and field. This includes how to develop and test relevant scientific hypotheses and how to write and read scientific papers. Topics have included carbonate sedimentology and stratigraphy, sedimentary geochemistry, hot-spring geobiology, coral reef disease, hydrocarbon exploration, meteor impact processes Roman aqueduct geoarcheology and the development of human kidney stones.

GEOL 415/515 Field Geology, Fall 1997-2009. *Field Geology* had an enrollment of 30 students and consisted of classroom lectures, a weekly laboratory practical and a capstone field trip during January to the coral reefs of either Curaçao or Bonaire, Netherlands Antilles, in the southern Caribbean. On Curaçao, our base of operation was the Caribbean Marine Biological Institute (Carmabi), while on Bonaire we stayed at a 150-year old Dutch plantation house

(*landhuis*) located in Washington-Slagbaai National Park. This was a field geology class with emphasis placed on cross-disciplinary field concepts and techniques in sedimentology, stratigraphy, paleontology, geochemistry, coral reef ecology, geomicrobiology, anthropology and the local cultural history and language development. All of the students become SCUBA certified, which permitted more advanced experiments to be conducted in the field, allowing the students to test hypotheses they developed during the semester.

GEOL 493 Carbonate Sedimentology, Fall 1997-1999. *Carbonate Sedimentology* had an enrollment of 6 students and consisted of classroom lectures and a weekly laboratory practical, followed by a capstone field trip to analyze limestone outcrops in Illinois and Missouri. The course gave advanced undergraduate and graduate students a rigorous theoretical foundation in carbonate sedimentary geochemistry. This included practical hands-on experience in cutting-edge techniques of cathodoluminescence petrography and mass balance water-rock interaction modeling. Student projects included accurate reconstruction of: (1) marine and terrestrial environments of carbonate sedimentation, including sea level at the time of deposition; and (2) the composition, timing, hydrology, and diagenetic effects of waters that have flowed through these sediments since their deposition.

GEOL 143 History of Life, Fall 2003-2010. *History of Life* had an enrollment of 162 students in each class and consisted of three classroom lectures each week and a weekly laboratory that provided an overview of the dynamically linked co-evolution of Life and Earth. A detailed evaluation was undertaken of the successive evolutionary stages of all forms of life from bacteria to dinosaurs and humans over the last 4.0 billion years. In addition, students learned about the profound influence of mass extinctions caused by meteor impacts and how these geological processes have shaped modern ecosystems and biodiversity on our planet.

CHP 390 Yellowstone Biocomplexity, Fall 2006-2016. *Yellowstone Biocomplexity* had an enrollment of 18 students in each class and consisted of classroom lectures, a weekly laboratory and a capstone field trip in the winter to Mammoth Hot Springs in Yellowstone National Park. The course focused on a progressive new integration of the natural and applied sciences, called *Biocomplexity*, that is revolutionizing our understanding of how Life has evolved and survived on an ever-changing Earth. Microbes (bacteria and archaea) are the most long-standing, abundant, and diverse forms of life on our planet, and are therefore involved in virtually all biocomplexity interactions. Students established working hypotheses during the semester that they tested with hands-on experiments in the field in Yellowstone.

CHP 390 Coral Reef Biocomplexity, Spring 2009-2016. *Coral Reef Biocomplexity* had an enrollment of 18 students and consisted of classroom lectures, a laboratory practical and a capstone field trip to the coral reefs of Curaçao, Netherlands Antilles, in the southern Caribbean. The program was based out of the Caribbean Marine Biological Institute (Carmabi) on Curaçao. Students investigated how coral reef biology, geology, ecology, and oceanography are intimately connected with human history and activities on the island. Biocomplexity studies are now yielding revolutionary benefits for society that range from the discovery of powerful human medicines to identifying sustainable energy resources and understanding how key ecosystems respond to rapid global warming. The course addressed a broad spectrum of expansive scientific and cultural environmental issues facing our planet, and gave students experience in SCUBA-based research techniques required to answer these questions. An outreach project was conducted in which students contributed to educational programs on Curaçao including high school outreach and SCUBA refuse pick-up on the reef.

GEOL 497 Geology and Microbiology of CO₂ Sequestration, Spring 2010. *Geology and Microbiology of CO₂ Sequestration* had an enrollment of 20 students and consisted of classroom lectures. Several guest lecturers contributed who specialized in CO₂ sequestration from the Illinois State Geological Survey (ISGS). The US Department of Energy has identified carbon sequestration (long-term carbon dioxide capture and storage, CCS) as a fundamental means by which to stabilize climate-forcing CO₂ emissions. Knowledge of the primary geological, geochemical and microbiological components of the shallow crustal subsurface were reviewed, which control the effectiveness and impact of subsurface carbon sequestration. Topics included global carbon cycles on the ancient and modern earth, state-of-the-art CCS technologies and concepts, and the future economic and policy implications of carbon sequestration, as well as other alternative approaches to CO₂ reduction.

GEOL 497/UP 494 Sustainable Island Development, Fall 2010. *Sustainable Island Development* had an enrollment of 60 students and consisted of classroom lectures. I co-taught this course with Professor Ed Feser in Urban and Regional Planning. The course emphasized the global connections of economics (economic development, innovation, public policy), planning (land use, regulation, plan making) and environmental geoscience (geology, microbiology, oceanography, chemistry, and physics). This resulted in a unique course content that was unmatched with respect to its integrative scope and emphasis on predictive modeling. Students learned how to approach a broad spectrum of expansive scientific, cultural, economic and planning issues in the context of both social and environmental sciences based on a broad core set of working first principles. As a result, the course was of broad interest and utility for students across the Illinois campus.

GEOL 111 Emergence of Life, Spring 2015-2020. *Emergence of Life* has an annual enrollment of 200 students and focuses on the pioneering work of Professor Carl R. Woese on the University of Illinois Urbana-Champaign campus, who revolutionized our understanding of the fundamental structure and evolutionary relatedness of all living entities on Earth. This work resulted in a new "Tree of Life" and a first ever understanding of life before the base of the root of the Tree had evolved. These concepts are central to cutting-edge genome-enabled research in all fields from medicine to energy. This course evaluates the entire history of Life on Earth, including reconnaissance of ancient primordial life before the first cell had evolved, the entire ~4 billion-year development of single- and multi-celled life through the lens of the Tree, and the influence of Earth System processes (meteor impacts, volcanoes, ice sheets) on shaping and structuring the Tree. This synthesis emphasizes the universality of the emergence of Life as a prelude for the search for extraterrestrial life.

Coursera Massive Open Online Course (MOOC) *Emergence of Life*, 2015-present. An *Emergence of Life* MOOC was developed, filmed, and produced over a two-year period in collaboration and has been offered on the Coursera MOOC platform since 2015. This no-tuition course summarizes and updates the research of Carl R. Woese that established the three-domain Tree of Life. The class delves into the implications of the Tree of Life for NASA astrobiology missions, while exploring the history of life and earth. The target audience is learners of all ages and incentives from around the world. More than 200,000 participants representing 160 countries have enrolled to date. Participants include middle and high school students, college and graduate students, postgraduate students, professionals, lifelong learners, and teachers who receive continuing professional development units (CPDUs) for completing the course. The course is offered in a constantly available "On Demand" format. The 8-week EoL MOOC is composed of 80 video lectures, each approximately four-to-seven minutes in

duration

Illinois Osher Lifelong Learning Institute (OLLI) *Emergence of Life*, Spring 2016 and 2017.

Emergence of Life had enrollments of 100 students (50 years of age and older) each year and focuses on the pioneering work of Professor Carl R. Woese on the University of Illinois Urbana-Champaign campus, who revolutionized our understanding of the fundamental structure and evolutionary relatedness of all living entities on Earth. This work resulted in a new "Tree of Life" and a first ever understanding of life before the base of the root of the Tree had evolved. These concepts are central to cutting-edge genome-enabled research in all fields from medicine to energy. This course evaluates the entire history of Life on Earth, including reconnaissance of ancient primordial life before the first cell had evolved, the entire ~4 billion-year development of single- and multi-celled life through the lens of the Tree, and the influence of Earth System processes (meteor impacts, volcanoes, ice sheets) on shaping and structuring the Tree. This synthesis emphasizes the universality of the emergence of Life as a prelude for the search for extraterrestrial life.

Illinois Osher Lifelong Learning Institute (OLLI) *Life Makes Rock: 4 Billion Years of Biomineralization*, Spring 2020. Enrollment of 100 students (50 years of age and older).

Life Makes Rock is an expansive and unconventional course that considers a wholly new perspective on how the successful coevolution of Life-Earth (~4 billion years to date) has resulted from the natural combination of non-biological (*abiotic*) and biological (*biotic*) processes that were evolved to control the formation of crystalline mineral deposits (*rock and skeleton*). These *biomineralization* processes, in which *life makes rock* during Life-Water-Mineral interaction, are an essential, unavoidable and ubiquitously distributed force of nature at all scales of time and space. Biomineralization is considered for its profound practical implications for all of Life on the ancient and modern-day Earth, ranging from being the key to survival to the cause of extinction.

Off-Campus Teaching

Agouyon Institute, Summers 2007-2008. For the University of Southern California, taught a lecture and laboratory module on *Systems Geobiology* to 30 graduate students from institutions around the world at the Wrigley Marine Laboratory on Catalina Island.

Thermal Biology Institute, January 2008. For Montana State University and the Yellowstone National Science Foundation (NSF) Research Coordination Network, taught a 1-day field course to 30 meeting participants at Mammoth Hot Springs in Yellowstone National Park.

EnviroVet Summer Institute, Veterinary Medicine, Summers 2007-2008. This course was established by Professor Val Beasley in Illinois Veterinary Medicine and was taught at the Harbor Branch Oceanographic Institute (HBOI) in Florida. This course had an enrollment of 30 Veterinary Medicine students from around the world and consisted of classroom lectures, laboratories and field work in Florida. I lectured on the emergence of coral reef diseases.

Yellowstone Association Institute, taught a 2-day field course to 15 adult education participants at Mammoth Hot Springs in Yellowstone National Park, January 2008. The course, entitled *Mammoth Microbes and Coral Reefs: Their Global Connections*, was also available for formal course credits through Montana State University.

NASA Astrobiology Institute, May 2007. University of Washington Seattle, taught a 1-day field course for 30 graduate students at Mammoth Hot Springs in Yellowstone.

National Science Foundation (NSF), April 2003. Cutting-Edge Workshop on Teaching Biocomplexity in the Geosciences, Systems Geobiology, taught a 1-day field course to 30 workshop participants at Mammoth Hot Springs in Yellowstone National Park.

Microbial Diversity Course, July 1999. This course was directed by Professor Abigail Salyers in Microbiology and was taught at the Marine Biological Laboratory at Woods Hole, Massachusetts. The course had an enrollment of 30 Microbiology and Geology graduate students from around the world and consisted of classroom lectures, laboratories and field work on Cape Cod. I lectured on the ecology and geology and thermophilic bacteria in Yellowstone National Park.

Research Professors and Visiting Research Professors in Fouke Lab

Robert Sanford (Ph.D. Michigan State), Microbial Biogeochemist and Ecologist, Research Associate Professor, UIUC, 2003-present

Eva De Boever (Ph.D. KU Leuven University), Carbonate Sedimentologist, Winter 2014 now an Assistant Research Professor at Fribourg University, Switzerland

Anneleen Foubert (Ph.D. KU Leuven University), Carbonate Sedimentologist, Summer 2012 now a Professor at Fribourg University, Switzerland

Mentoring of Research Associates and Postdoctoral Research Scientists

Ananda Bhattacharjee (Ph.D. University of Utah), Microbial Ecology, 2019-present

Heng Wu (Ph.D. University of Illinois), Civil Engineer, 2019, now a Research Scientist at the Okinawa Institute of Science and Technology, Okinawa, Japan

Jinzi Deng (Ph.D. University of Connecticut), Microbial Engineering, 2014-2018, now a Research Scientists at the University of Florida, Florida

Dong, Yiran (Ph.D. Oklahoma Microbiology), Microbial Ecology, 2009-2017, now a professor at the China University of Geosciences, Wuhan, China

Raj Singh (Ph.D. Drexel University), Microbial Engineering, 2011-2017, now a Research Scientist at Drexel University, Philadelphia, Pennsylvania

Jessica Bouwmeester (Ph.D. KAUST University), Coral Ecology, 2014-2016, now a Research Scientist at the Smithsonian Institution, Washington, D.C.

Duncan Keenan-Jones (Ph.D. Sydney University), Archaeology and the Classics, 2011-2015, now a professor at the University of Queensland, Brisbane, Australia

Youneng Tang (Ph.D. Arizona State University), Civil Engineering, now a professor at Florida State University, Tallahassee, Florida

Pan-Jun Kim (Ph.D. Seoul National University), Bioinformatics, 2012, now a professor at Seoul National University, Seoul, Korea

Gupta, Charu (Ph.D. University of Illinois), Animal Sciences, 2009, now a Research Professor at the University of Illinois Urbana-Champaign

Michael Kandianis, (Ph.D. University of Illinois), Geology, 2008, now a Research Division Head at Shell Oil Company, Houston, Texas

Roy Johnson (DVM University of Illinois), Veterinary Medicine, 2006-2008, now a Research Scientist at Trinity Springs Water Company, Boise, Idaho

Ingmar Janse (Ph.D. University of Amsterdam), Molecular Microbial Ecology, now a Senior Research Scientist, National Institute for Public Health and Environment, The Netherlands

George Bonheyo (Ph.D. University of Illinois), Molecular Microbial Ecologist, 2001-2005, now a Senior Research Scientist and Project Manager Pacific Northwest Lab, Sequim, Washington

Jorge Frias-Lopez (Ph.D. University of Barcelona), Molecular Microbial Ecologist, 2001-2004, now an Associate Professor, Department Oral Biology, University of Florida, Gainesville, FL

Mentoring of Graduate Student Advisees (Ph.D. with dissertation)

Jessica Saw (M.D. Mayo Clinic/Ph.D. University of Illinois *in progress*), Nephrology, I am serving as the primary advisor, but her home department is Molecular and Integrative Physiology in Molecular and Cellular Biology at Illinois, expected graduation in May 2020

Carly A. Hill Miller (M.Sc. 2010 and Ph.D. 2015 University of Illinois), Geology, now an Exploration Geologist in Houston, Texas

Ana Houseal (Ph.D. 2012 University of Illinois), College of Education, now an Outreach Science Educator, University of Wyoming, Laramie, Wyoming

James Klaus (Ph.D. 2007 University of Illinois), Geology, now an Associate Professor in marine Geosciences at University of Miami, Coral Gables, Florida

Michael Kandianis (Ph.D. 2007 University of Illinois), Geology, now a Research Division Head at Shell Oil Company in Houston, Texas

John Veysey (Ph.D. 2007 University of Illinois), Physics, co-advised with Professor Nigel Goldenfeld, Executive Officer, National Science Foundation, Washington DC

Patrick Chan Ph.D. 2007 University of Illinois), Physics, co-advised with Professor Nigel Goldenfeld, Executive Director, Goldman Sachs, New York City, New York

Hector Garcia Martin (Ph.D. 2007 University of Illinois), Physics, now Director of Metabolic Modeling, Lawrence Berkeley Laboratory, Berkeley, California

Mentoring of Graduate Student Advisees (M.Sc. with thesis)

Lauren Todorov, B.Sc. 2022, Department of Geology, University of Illinois, now a Ph.D. candidate in Molecular and Cellular Biology at Princeton University

Abigail Asangba, M.Sc. 2015 University of Illinois, Animal Sciences, now a Ph.D. candidate in Anthropology at the University of Illinois

Erin Murphy, M.Sc. 2015 University of Illinois, Geology, now a Ph.D. candidate at the Wrigley Global Institute of Sustainability at Arizona State University, Phoenix, Arizona

Ryanne Ardissana, M.Sc. 2014 University of Illinois, Geology, now working as a zookeeper at the Dallas Zoo in Dallas, Texas

Brooke Eickhoff, M.Sc. 2013 University of Illinois, Geology, now a Research Geologist with the Engineer Research and Development Center (CERL), Champaign, Illinois

Philip Miller, M.Sc. 2010 University of Illinois, Geology, now an Exploration Geologist at Shell Oil Company, Houston, Texas

Samantha Dwyer, M.Sc. 2010 University of Illinois, Geology, now an Exploration Geologist at Shell Oil Company, Houston, Texas

Carly A. Hill Miller, M.Sc. 2010 University of Illinois, Geology, now a Research Geologist in Houston, Texas

Nathan Webb, M.Sc. 2010 University of Illinois, Geology, now a Research Geologist at the Illinois State Geological Survey. Champaign, Illinois

Jared Freiburg, M.Sc. University of Illinois, Geology, now a Research Geologist at the Illinois State Geological Survey. Champaign, Illinois

Holly Vescogni, M.Sc. 2008 University of Illinois, Geology, now a Research Geologist at Shell Oil Company, Houston, Texas

Allan Piggot, M.Sc. 2008 University of Illinois, Geology, completed Ph.D. at Miami, Education Outreach Coordinator in Geosciences at the University of Miami, Coral Gables, Florida

Shane Butler, M.Sc. 2007 University of Illinois, Geology, now a Research Geologist at the Illinois State Geological Survey. Champaign, Illinois

Emily Wisseman, M.Sc. 2007, University of Illinois, Geology, now a secondary school teacher in the Dominican Republic

Thomas Schickel, M.Sc. 2006 University of Illinois, Geology, now President of Schickel Resources, Pittsburgh, Pennsylvania

Kelly Hutchings, M.Sc. 2006 University of Illinois, Geology, now a Research Geologist in Houston, Texas

Michael Fortwengler, M.Sc. 2005 University of Illinois, Geology, now a Research Geologist in Houston, Texas

Rick Wachtman, M.Sc. 2001 University of Illinois, Geology, now a Research Geologist at Exxon Mobil in Houston, Texas

Anthony Gibson, M.Sc. 2001 University of Illinois, Geology, now President of Mervin Oil Company, Olney, Illinois

Stephanie Gillian, M.Sc. 2000 University of Illinois, Geology, now a high school teacher in New York City, New York

Serena Lee, M.Sc. 2001 University of Illinois, Geology, now a Research Geologist at Schlumberger, Houston, Texas

Dylan Canavan, M.Sc. 2000 University of Illinois, Geology, now Secondary Education Teacher in Chicago, Illinois

Aubrey Zerkle, M.Sc. 2000 University of Illinois, Geology, now a professor in Biogeochemistry at St. Andrews University, Fife, Scotland, United Kingdom

Mentoring of Undergraduate Student Advisees (B.Sc. with thesis)

Elena Wislon, B.Sc. 2020, University of Illinois, Molecular and Cellular Biology, now a Research Scientist at NIH in Bethesda, MD

Lauren Todorov, B.Sc. 2020, University of Illinois, Molecular and Cellular Biology, now a graduate student at the University of Illinois Urbana-Champaign

Lauren Shechtman, B.Sc. 2017 University of Illinois, Molecular and Cellular Biology, now in the medical school at the University of California San Francisco

Mary Casagrande, B.Sc. 2017 University of Illinois, Molecular and Cellular Biology

Samantha George, B.Sc. 2014 University of Illinois, Molecular and Cellular Biology

Annette Merkel, B.Sc. 2017 University of Illinois, Molecular and Cellular Biology, now in the DVD graduate program at Loyola University in Chicago, IL

Jiwon Kim, B.Sc. 2014 University of Illinois, Molecular and Cellular Biology

Nicholas Sandoval, B.Sc. 2014 University of Illinois, Molecular and Cellular Biology

James Bruce, B.Sc. 2014 University of Illinois, Molecular and Cellular Biology, completed an MD at Loyola University in Chicago, Illinois, and now practicing in Chicago

Sheila Egan, B.Sc. 2013 University of Illinois, Molecular and Cellular Biology, now in Teach America program in New York City, New York

Joseph Weber, B.Sc. 2014 University of Illinois, Molecular and Cellular Biology, 2014 Fullbright to KTH, Stockholm, completed an MD at Loyola University in Chicago, Illinois, and now practicing in Chicago

Daniel Beach, B.Sc. 2012 University of Illinois, Geology

Kamil Stelmach, B.Sc. 2012 University of Illinois, Molecular and Cellular Biology, now in a PhD program at Duke University in Durham, NC

Julia Waldsmith, B.Sc. 2012 University of Illinois, Molecular and Cellular Biology, now a Research Geologist at Nevada Mining, Nevada

Samantha Dwyer, B.Sc. 2009 University of Illinois, Geology, now an exploration geologist at Shell Oil Company, Houston, Texas

Amanda Oehlert, B.Sc. 2009 University of Illinois, Spanish, completed a Ph.D. at Miami, now an Assistant Professor in Geosciences at Miami University, Coral Gables, Florida

Philip Miller, B.Sc. 2009 University of Illinois, Geology, now an exploration geologist at Shell Oil Company, Houston, Texas

Paige Wallace, B.Sc. 2009 University of Illinois, Molecular and Cellular Biology, completed Ph.D. at the University of Wisconsin, Madison, Wisconsin

Jed Pangbinian, B.Sc. 2009 University of Illinois, Molecular and Cellular Biology, completed DVM at the University of Illinois College of Veterinary Medicine

Joannah Metz, 2004 Illinois Physics/Geology, received the 2004 Gates Fellowship at Cambridge and 2005 MIT Presidential Fellowship, and Ph.D. at Cal Tech, now a Research Scientist at Shell Oil Company, Houston, Texas

David Fike, 2003, Illinois Physics/Geology), received 2003 Churchill Fellowship at Cambridge and 2004 MIT Presidential Fellowship, completed a Ph.D. at MIT, a postdoc at Cal Tech, and now a Professor in Geosciences at Washington University, St. Louis, Missouri

Heather Hentschel, B.Sc. 2004 University of Illinois, Molecular and Cellular Biology

Malka Zipperstein, B.Sc. 2004 University of Illinois, Molecular and Cellular Biology

Beth Sanzenbacher, B.Sc. 2003 University of Illinois, Molecular and Cellular Biology

Krista McCoy, B.Sc. 2004 University of Illinois, Molecular and Cellular Biology

Andrew Collins , B.Sc. 2009 University of Illinois, Geology, now a geologist at Schlumberger

Scott Lepley, B.Sc. 2002 University of Illinois, Geology, completed a Ph.D. at University of Iowa, now a Research Scientists at BP in Houston, Texas

Kristine Mize, B.Sc. 2001 University of Illinois, Geology, completed a Ph.D. in geosciences at University of Texas Austin and now a Research Scientists at Texaco in Houston, Texas

Andrea Gavurnik, B.Sc. 2003 University of Illinois, Molecular and Cellular Biology, completed an M.D. at Johns Hopkins University in Baltimore, Maryland

Additional Selected Speaking Invitations 2012-Present

Bohemian Club Museum Talk, *invited lecture*, Universal Biomineralization, Russian River Encampment, Northern California, July 2022

Northern Illinois Science Educators (500 high school science teachers), *invited lecture 1*, Yellowstone Extremophiles in NASA's Cosmic Search for Life: "I Want to Believe" Naperville, IL, October 2019

Northern Illinois Science Educators (500 high school science teachers), *invited lecture 2*, How Many Forms of Life Are There Anyway? Naperville, IL, October 2019

Dow Chemical Company, Oil Field Geobiology and the GeoBioCell, *invited lecture*, Oilfield Geobiology. Collegeville, Pennsylvania. March 2018

Rayburn Executive Building, World of Genomics, *invited lecture*, Yellowstone as a Scientific Window on the Universe, Washington D.C., May 2019

St. Louis Science Center, World of Genomics, *invited lecture*, Ancient Oceans and Coral Reefs of St. Louis, St. Louis, Missouri, October 2018

Iowa City Public Library, *invited keynote lecture*, The Art of Yellowstone Science, Annual ICPL Fund Raiser *Looking Forward* Event. Iowa City, Iowa, April 2018

Dow Chemical Company, Oil Field Geobiology and the GeoBioCell, *invited lecture*, Oilfield Geobiology. Collegeville, Pennsylvania. March 2018

Field Museum, Chicago, invited lecture, World of Genomics, Spring 2018

Mayo Clinic, Department of Nephrology, *invited lecture*, Geobiology Proves Kidney Stones Dissolve *In Vivo*, Rochester, Minnesota, October 2017

Field Museum, World of Genomics, *invited lecture*, Yellowstone as a Scientific Window on the Universe, Chicago, Illinois, May 2017

Old Faithful Visitor Center, National Park Service, *invited lecture*, The Art and Science of Mammoth Hot Springs, Yellowstone National Park, WY, July 2017

Yellowstone Forever Institute, *invited lecture*, The Art of Yellowstone Science, WY, July 2017

Montana State University, *invited lecture*, The Art of Yellowstone Science, Biofilm Engineering, Bozeman, Montana, October 2017

Mayo Clinic, *invited lecture*, Dynamics of Kidney Stone Dissolve, Nephrology and Urology, Rochester, Minnesota, September 2017

- MATTER, *invited lecture*, The Art of Yellowstone Science, Merchandise Mart, Chicago, Illinois, August 2017

NASA Astrobiology Institute Executive Council (NAI EC), Flathead Lake, MT, *invited lecture*, Yellowstone Astrobiology. September 2016

Taft-Nicholson Center, University of Utah, Centennial Valley, MT, *invited lecture*, The Art of Yellowstone Science. September 2016

NASA Astrobiology Institute Executive Council (NAI EC), Palm Springs, CA, *invited lecture*, Quantification of the Rate of Evolution Across Steep Environmental Gradients: Applications of the GeoBioCell. May 2016

American Urological Association (AUA), Annual Meeting, San Diego, CA, *invited lecture*, Shedding New Light on Kidney Stone Microbiome Mineralization Dynamics, May 2016

Mayo Clinic, Genome Core, Rochester, MN, The Illinois Carver Biotechnology Center: Microbiome Biomineralization and Kidney Stone Genesis, March 2016

University of Iowa, Iowa City, Iowa, AAPG Distinguished Lecturer, *invited lecture*, Genome-Driven Advancements in Oil Field Geobiology, February 2015

Oklahoma State University, Stillwater, Oklahoma, AAPG Distinguished Lecturer, *invited lecture*, Genome-Driven Advancements in Oil Field Geobiology, February 2015

Tulsa University, Tulsa, Oklahoma, AAPG Distinguished Lecturer, *invited lecture*, Genome-Driven Advancements in Oil Field Geobiology, February 2015

University of California Berkeley, Berkeley, California, AAPG Distinguished Lecturer, *invited lecture*, Oil Field Geobiology, April 2015

University of Petroleum and Engineering Sciences (UPES), Dehradun, India, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Genome-Driven Advancements in Oil Field Geobiology, November, 2014

Geosciences University of China, Wuhan, China, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Oil Field Geobiology, November, 2014

Hong Kong University, Hong Kong, China, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Oil Field Geobiology, November, 2014

Vietnam National University, Hanoi, Vietnam, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Oil Field Geobiology, November, 2014

Okinawa Institute of Science and Technology, Okinawa, Japan, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Genome-Driven Advances in Oil Field Geobiology, November, 2014

James Cook University, Townsville, Australia, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Oil Field Geobiology, November, 2014

Dunedin University, Dunedin, New Zealand, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Oil Field Geobiology, November, 2014

University of New South Wales, Sydney, Australia, AAPG Roy M. Huffington Distinguished Lecturer of the Asia-Pacific Region, *invited lecture*, Oil Field Geobiology, November, 2014

BP Energy Biosciences Institute (EBI), *invited lecture*, Fossil Fuel Microbiology, University of California Berkeley, Berkeley, California, April 2014

BP Aberdeen, Exploration and Production, North Sea Reservoir Management Team, *invited lecture*, Fossil Fuel Microbiology, Aberdeen, Scotland, February 2014

Swedish Royal Institute of Technology (KTH), *invited lecture*, Genomics and Biomineralization, School of Biotechnology, Stockholm, Sweden, February 2014

Caribbean Marine Biological Institute (CARMABI), *invited lecture*, The Future of Coral reefs on a Warming Planet, Curaçao, Netherlands Antilles, May 2014

NASA Astrobiology Institute, *invited lecture*, Yellowstone Astrobiology, Education and Public Outreach, Planetary and Earth Sciences, Arizona State University, Phoenix, AZ, May 2013

BP Energy Biosciences Institute (EBI), *invited lecture*, Fossil Fuel Microbiology, University of California Berkeley, Berkeley, California, May 2013

Institute for Museum and Library Sciences (IMLS), *plenary speaker*, Site Based Data Curation, Mammoth Hot Springs, Yellowstone National Park, Wyoming, April 2013

International Association of Sedimentologists (IAS), *plenary speaker*, Microbial Enhanced Porosity and Permeability Occlusion in Travertine, 30th IAS Meeting of Sedimentology, Manchester University, Manchester, UK, September 2013

Petroleum Microbiology, *plenary speaker*, Suubsurface GeoBioCell Studies, International Symposium on Applied Microbiology and Molecular Biology (ISMOS4), BR Petrobras Exploration and Production Center, Rio de Janeiro, Brazil, August 2013

Computational Genomics Initiative, *invited lecture*, Subsurface Oil Field Biosphere, Tata Institute of Fundamental Research, Bangalore, India, July 2013

Ancient DNA Initiative, *plenary speaker*, Hot-Spring Geobiology, Departments of Geology and Microbiology, Pamukkale University, Denizli, Turkey, July 2013

Microbiolite Hydrocarbon Reservoirs, *invited lecture*, Oil Field Geobiology, Total Oil Company, Exploration and Production, Pau, France, February 2013

Caribbean Marine Biological Institute (CARMABI), *invited lecture*, Ancient Coral Reefs of the Seroe Domi Formation, Curaçao, Netherlands Antilles, May 2013

Arizona State University, *invited lecture*, Future Directions of Carbonate Sedimentology and Geochemistry, Planetary and Earth Sciences, May 2013

Reservoir Microbiology Forum, *invited lecture*, Subsurface Biosouring Microbe-Water-Rock Interactions, Energy Institute, London, England, United Kingdom, November 2012

University of Illinois Urbana-Champaign, *invited lecture*, Yellowstone Astrobiology, Atmospheric Sciences, January 2013

Royal Swedish Institute of Technology (KTH), *invited lectures*, A Changing Arctic course within the Illinois-Swedish International Exchange in Research and Education (INSPIRE), Stockholm, Sweden, July 2012

University of Norway in Svalbard (UNIS), *invited lectures and field trip leader*, A Changing Arctic course within the Illinois-Swedish International Exchange in Research and Education, Svalbard, Spitsbergen, Norway, July 2012

Caribbean Marine Biological Institute (CARMABI), *invited lecture*, Coral Skeletal density Banding, Curaçao, Netherlands Antilles, May 2012

Microbiolite Hydrocarbon Reservoirs, *invited lecture*, GeoBioCell: A Microfluidic Testbed, Exploration and Production, Total Oil Company, Pau, France, February 2012

University of Illinois Urbana-Champaign Campus Speaking Invitations 2012-Present

2025 *The Eternal Triangle: Life-Water-Mineral Interactions through Geological Time*. 75th Anniversary of Illinois Geology. Alumni Foundation. University of Illinois Urbana-Champaign, Urbana, IL, May 2, 2025

2021 Environmental Engineering and Science Symposium, Department of Civil and Environmental Engineering, University of Illinois Urbana-Champaign, Keynote Speaker, *Universal Biomineralization: Life-Water-Mineral Interactions through Geological Time* <https://publish.illinois.edu/2022-environmentalsymposium/>

2020 Mayo Clinic & Illinois Alliance for Technology-Based Healthcare, Workshop on Computational, Data, & Digital Approaches to Advance Health, invited lecture, *New Advances in Kidney Stone Medicine*, NCA Auditorium, University of Illinois Urbana-Champaign, Urbana, Illinois

2020 Department of Integrative Biology, invited lecture, *Universal Biomineralization: Coral Reefs to Kidney Stones*, University of Illinois Urbana-Champaign, Urbana, Illinois

2020 Carl R. Woese Institute for Genomic Biology, invited lecture, *GeoBioMed Sheds New Light on Kidney Stone Crystallization and Dissolution*, External Advisory Board Meeting, University of Illinois Urbana-Champaign

2019 Illini Day, invited lecture, *Reinventing Kidney Stone Medicine*, presented to 60 University of Illinois Alumni at the Illini Center, Chicago, Illinois, <https://illinicenter.illinois.edu/>

2018 Carl R. Woese Institute for Genomic Biology, UIUC IGB Fellows Symposium, invited keynote lecture, *Life Makes Rock: The Curious Case of Human Kidney Stones*

2017 UIUC Departmental of Geology, *colloquium lecture*, Biomineralization, November 2017

2017 Carl R. Woese Institute for Genomic Biology, External Advisory Board Meeting, invited lecture, *Universal Biomineralization: Hot Springs to Kidney Stones*

2017 Admitted Students Weekend, invited speaker, *Geobiology: A Universe of Possibilities*, 8 lectures at the Illini Union, Illinois College of Liberal Arts and Sciences

2016 Admitted Students Weekend, invited speaker, *Geobiology: A Universe of Possibilities*, 8 lectures at the Illini Union, Illinois College of Liberal Arts and Sciences

Council on Equity and Diversity, *keynote speaker*, Diversity and the Geosciences, UIUC College of Liberal Arts and Sciences, March 2015

Admitted Students Weekend, *invited speaker*, Geobiology: A Universe of Possibilities. 8 lectures at the Illini Union, Illinois College of Liberal Arts and Sciences, March-April 2015

Faculty Teaching Academy, *plenary speaker*, Reaching Geobiology Learners of All Ages Around the World, UIUC College of Liberal Arts and Sciences campus event, April 2014

Faculty Teaching Retreat, *plenary speaker*, A Sense of the Earth: Field and Laboratory Research and Teaching, UIUC Office of the Vice Chancellor for Research, April 2014

Department of Atmospheric Sciences, *colloquium lecture*, Bioaerosols in Yellowstone National Park, University of Illinois Urbana-Champaign, March 2013

Department of Geology, *colloquium lecture*, Hot-Spring Geobiology in Yellowstone National Park, University of Illinois Urbana-Champaign, November 2012

Faculty Campus-Level Committees at the University of Illinois Urbana-Champaign

UIUC Campus Equity and Access Commission 2011-present

UIUC Teaching Advisory Board 2014-present

UIUC Campus SCUBA Diving Control Board 2004-present

UIUC LAS Corporate Relations Committee 2008-2012

UIUC LAS General Education Committee 2006-2009

UIUC LAS Special Awards Committee 2006-2011

Faculty Department-Level Committees at the University of Illinois Urbana-Champaign

Department of Geology Graduate Admissions Committee (*Chair): 2002-03*, 2003-04*, 2005-06, 2006-07*, 2007-08*, 2009-20

Department of Geology Graduate Studies Committee (*Chair): 1997-98, 1998-99, 2000-01, 2005-06, 2006-07, 2009-10, 2010-11, 2011-12, 2012-13*, 2015-2020

Department of Geology Placement Committee (*Chair, +Volunteer): 1997-08*, 1998-99*, 1999-00*, 2000-01*, 2001-02*, 2002-03, 2003-04, 2004-05, 2006-07+, 2007-08+, 2008-09, 2009-10, 2010-11*, 2011-12*, 2012-16*

Department of Geology Advisory Committee to the Department Head: 1999-00, 2000-02, 2011-12, 2012-13

Department of Geology Microscope/Sectioning Facilities: ongoing since 1997

Department of Geology Undergraduate Committee: 1997-08, 1998-09, 1999-00, 2000-02

Department of Geology Student Activities Liason: 2005-06, 2006-07

Department of Geology Supervisor for Geology Club (*Chair): 2001-02*, 2002-03*

Department of Geology Supervisor for GEOL 591: 2004-05

Department of Geology Library Committee: 2003-04, 2004-05

Department of Geomicrobiology Faculty Search Committee 1999-04

Department of Geology Web Site Committee: 1999-00, 200-01, 2001-02

Department of Geology Educational Outreach Committee (*Chair): 1997-98*, 1998-99*

Additional Previous Work Experience

Research Geologist Internship, Amoco Oil Company, Tulsa, Oklahoma, Summer 1984

Exploration Geologist Internship, Shell Oil Company, Houston, Texas, Summer 1985

Exploration Geologist Internship, Shell Oil Company, New Orleans, Louisiana, Summer 1986

Land Surveyor, Cadastral Land Survey, Colorado Bureau of Land Management, US Department of the Interior, Leadville, Winter Park and Canyon City, Colorado, Summers 1979-1982

Field Instructor, School for Field Studies, St. John, US Virgin Islands, Summer 1989

Additional Invited Lectures for Short Courses and Workshops

CompGen, UIUC-Tata Workshop on Computational Genomics, Bangalore, India, July 2013

NASA Astrobiology Institute, Executive Committee, June 2013

NASA Astrobiology Institute, Education and Public Outreach Workshop, May 2013

Site Based Data Curation Workshop, Mammoth Hot Springs, April 2013

Montana State University, Department of Engineering, Biofilms Workshop, August 2012

Montana State University, Department of Geology and Thermal Biology Institute, Systems Geobiology of Mammoth Hot Springs, Yellowstone National Park, February 2010
 National Science Foundation Research Coordination Network (NSF RCN), March 2009, Joint Genome Institute (JGI), Yellowstone Sequencing Project, Walnut Creek, California
 Harbor Branch Oceanographic Institute, University of Illinois Urbana-Champaign Envirovet Program, Ecology of Infectious Disease, Florida, July 2009
 Campus Honors Program, University of Illinois Urbana-Champaign, International CST Coral Reef Biocomplexity, Curaçao, Netherlands Antilles, May 2009
 Campus Honors Program, November 2008, University of Illinois Urbana-Champaign, Biocomplexity in the Environment, Mammoth Hot Springs, Yellowstone National Park, WY
 Agoroun Institute (University of Southern California), Geobiology Course, Wrigley Laboratory, Catalina Island, California, June 2008
 Harbor Branch Oceanographic Institute, University of Illinois Urbana-Champaign Envirovet Program, Ecology of Infectious Disease, Florida, July 2007
 Campus Honors Program, University of Illinois Urbana-Champaign, Yellowstone Biocomplexity, Mammoth Hot Springs, Yellowstone National Park, November 2008
 Yellowstone Association Institute, January 2006, Yellowstone Geobiology, Mammoth Hot Springs, Yellowstone National Park, Wyoming
 Unisense, Applications of Microsensors in Coral Reefs and Hot Springs, Aarhus, Denmark, November 2006.
 Campus Honors Program, University of Illinois Urbana-Champaign, Biocomplexity in the Environment, Mammoth Hot Springs, Yellowstone National Park, October 2006
 National Science Foundation and NASA Astrobiology, Yellowstone Biocomplexity, Mammoth Hot Springs, Yellowstone National Park, October 2006
 Harbor Branch Oceanographic Institute, University of Illinois Urbana-Champaign Envirovet Program, Ecology of Infectious Disease, Florida, July 2006
 University of Southern California and Agouron Institute, June 2008, Geobiology Advisory Panel and Summer Institute Lecturer, Wrigley Marine Lab, Catalina Island, California
 Harbor Branch Oceanographic Institute, University of Illinois Urbana-Champaign Envirovet Program, Ecology of Infectious Disease, Florida, July 2005
 University of Southern California, Agouron Institute, June 2003, Geobiology field trip and workshop leader, Yellowstone National Park, Wyoming
 Woods Hole Oceanographic Institute, Microbial Diversity Course, Marine Biology Laboratory, Woods Hole, MA, June 1999

Additional Invited International Presentations

Total Oil Company Research Headquarters, Pau, France, February 2013
 Svalbard University, Norway, July 2012
 Royal Institute of Technology, Stockholm, Sweden, July 2012
 Lund University, Sweden, June 2011
 Royal Institute of Technology, Stockholm, Sweden, May 2011
 Lund University, Sweden, October 2010
 Free University, Amsterdam, The Netherlands, February 2008
 Wageningen University, Wageningen, The Netherlands, February 2008
 Shell Oil Company, Den Hague, The Netherlands, February 2008
 Delft Hydraulics, Delft, The Netherlands, February 2008

National University of Singapore, Marine Sciences, January 2008
National University of Singapore, A*STAR Program, January 2008
Unisense, University of Aarhus, Denmark November 2007
Caribbean Marine Biological Institute, Curaçao, Netherlands Antilles, September 2007
Soprintendenza Archeologica Di Roma, March 2007
Island Government of Curacao, Netherlands Antilles, May 2003, 2004, 2005, 2007, 2008
Caribbean Marine Biological Institute, Curaçao, Netherlands Antilles, January 2001, 2002
Instituto Mexicano del Petroleos, Mexico City, Mexico, 1999, 2000
Monhonia Di Nari Laboratory, New Britain, Papua New Guinea, August 2000
Caribbean Marine Biological Institute, Curaçao, Netherlands Antilles, July 2000
Universidad Nacional Autonoma de Mexico, Department of Geology, October 1998
Istituto Nazionale di Geofisica, Rome, Italy, September 1998

Invited Leader for International Field Courses

Illinois-Swedish program for Educational and Research Exchange, Arctic Change Field Course, Svalbard, Spitsbergen, Norway, July 2012
Society of Sedimentary Geologists/West Texas Geological Survey, Modern-Ancient Carbonates Field Course, Curaçao, Netherlands Antilles, Field Trip Leader, May 2007
NASA Astrobiology Institute, University of Washington, Biocomplexity Program, Field Trip Leader, Yellowstone National Park, October 2006
National Institutes of Health, *Natural Products in Coral Reef Ecosystems*, Rabaul, New Britain, Papua New Guinea, August 2000, invited presentation entitled *Coral Reef Ecology and Geology of the New Britain Coast, Papua New Guinea*
Vercors, French Alps: Anatomy and History of a Cretaceous Carbonate Platform. Society of Economic Geologists and International Association of Sedimentologists, Spring 1996.
Vercors, France: Sequence Stratigraphy of an Early Cretaceous Carbonate Platform. American Association of Petroleum Geologists, Field Trip Leader, Fall 1993.
Cerro Rabon Project: Systematic Exploration of Uncharted Mexican Caves in the Sierra Mazateca, Mexico. US-Swiss Caving Expeditions, invited participant, Fall 1987.

Additional Workshops and Field Trips

Field Trip Leader and Guest Speaker May 2013, Illinois Institute for Genomic Biology and Beijing Genomic Institute, held at Starved Rock State Park, Illinois
Field Trip Co-Leader, Lund University Astrobiology Theme at the Pufendorf Institute, held at the Kaali Meteor Impact Field, in Estonia.
Field Trip Co-Leader, Lund University Astrobiology Theme at the Pufendorf Institute, held at the Stevns Klint white chalks of southeastern Denmark.
Field Trip Leader and Guest Speaker October 2008, University of Illinois Urbana-Champaign Alumni Association, Starved Rock State Park, Illinois
Yellowstone Association Institute January 2004, Yellowstone Biocomplexity, Yellowstone National Park, Wyoming
Yellowstone Resource Center and Montana State University Workshop, June 2005, Yellowstone National Park, Wyoming
NSF Biocomplexity Workshop, Yellowstone National Park, April 2003
Field Trip Leader, University of Illinois Urbana-Champaign Alumni Association, 2000
Field Trip Leader, North-Central Geological Society of America Sectional Meeting, 1999

Symposium Chairman, North-Central Geological Society of America Sectional Meeting, 1999
Co-Chair, Workshop on Midcontinent Ordovician Sedimentology, Stratigraphy, and
Geochemistry, Illinois State Geological Survey, 1998
Mineralogical Society of America Geomicrobiology Short Course, Alta, UT, 1997
NASA Ames Research Center Open House, Moffett Field, CA, 1997

Additional Invited Lectures at the University of Illinois Urbana-Champaign

LAS Dean Admitted Student Days (8 lectures), 2015-17
Council on Equity and Diversity, April 2015
Faculty Teaching Workshop, March 2014
Campus-Wide Faculty Teaching Retreat, February 2014
Institute for Genomic Biology, February 2014
Campus Honors Program, February 2014
Atmospheric Sciences, February 2013
Campus Honors Program, March 2013
Institute for Genomic Biology, Biocomplexity Theme, February 2012
Veterinary Medicine, Envirovet, October 2010
YMCA, Know Your Campus Lecture Series, September 2011
Veterinary Medicine, Envirovet, October 2009
Integrated Biology, Belize Field Course, April 2009
Department OF Microbiology, colloquium series, March 2008
Veterinary Medicine, Ecology of Infectious Diseases, May 2007
Institute for Genomic Biology, March 2007
Veterinary Medicine, Envirovet, May 2007
Veterinary Medicine, Envirovet, September 2006
Institute for Genomic Biology, March 2005
Department OF Microbiology, colloquium series, February 2003
Physics Department colloquium, October 2000, 2001
Campus Honors Program, September 1999, 2000, 2001
YMCA Know Your Campus Lecture Series, September 2001
Department of Microbiology, colloquium 1999, 2000, 2001
Illinois State Geological Survey, colloquium, 1997, 1998, 1999, 2000, 2001
Program on Ancient Technologies and Archaeological Materials, April 2000
Beckman Institute, Visualization Laboratory, January 2000
Department of Astronomy, March 1998
Department of Aerospace Engineering, November 1997

Additional Invited Research Workshops, Panels and Steering Committees

National Science Foundation, February 2018, Science and Technology Center, Review Panel for
the C-DEBI program at the University of Southern California, Los Angeles, California.
Science Advisory Panel and Science Steering Committee, 2011-present, European Science
Foundation, Committee for Life, Earth and Environmental Sciences, COCARDE-ERN
National Science Foundation, April 2010, Complex Systems in the Geosciences Workshop,
Carleton College, Department of Geology, Carleton, Minnesota.
US Department of Energy (DOE), February 2010, Genomes to Life Annual Meeting,
Washington DC.

US Department of Energy (DOE), January 2010, Microbial Genome Annotation, Joint Genome Institute, Walnut Creek, California

US Department of Energy (DOE), May 2009, New Frontiers in Biological Sciences, Steering Committee, Washington DC

British Petroleum Energy Biosciences Institute (BP EBI), March 2009, lecture on Microbially Enhanced Hydrocarbon Recovery, University of California Berkeley and Lawrence Berkeley Laboratory, Berkeley, California

National Science Foundation Integrated Graduate Education and Research Training (NSF IGERT) Program, May 2009, Advisory Panel, Montana State University, Bozeman, Montana

China National Science Foundation, October 2008, Geobiology Workshop and Steering Committee, Beijing, China

University of Illinois Urbana-Champaign, Data Creation and Management Institute, June 2008, Librarians and Scientists Information Technology Panel, Champaign, Illinois

University of Southern California and Agouron Institute, June 2008, Geobiology Advisory Panel and summer institute lecturer, Wrigley Marine Lab, Catalina Island, California

Thermal Biology Institute, February 2008, Montana State University, Program Review Panel, Bozeman, Montana and Yellowstone National Park, Wyoming

British Petroleum Energy Biosciences Institute, October 2007, Steering Committee on Subsurface CO₂ Sequestration, University of California Berkeley and Lawrence Berkeley Laboratory, Berkeley, California

American Association of Petroleum Geologists 2007-2010, National Research Committee

NASA Astrobiology Program, May 2004, Executive Board Panel, Science Review Panel, Washington DC

NASA Exobiology Program, May 2004, Chair, Science Review Panel, Washington DC

NSF Geosciences Program, April 2003, Geobiology field trip and workshop leader, Yellowstone National Park, Wyoming

University of Southern California, Agouron Institute, June 2003, Geobiology field trip and workshop leader, Yellowstone National Park, Wyoming

NSF Geology and Paleontology Program, each January and July in 2001, 2002, 2003, Research Proposal Review Panel, NSF Headquarters, Washington DC

NASA Astrobiology ASTID Program, June 2002, Science Review Panel, Washington DC

National Research Council, June 2002, Geobiology Panel invited lecturer, National Academies of Science, Washington DC

American Society for Microbiology 2000, Geobiology, American Academy of Microbiology

NSF Research and Education Committee, May 2000, Research Proposal Review Panel, NSF Headquarters, Washington DC

NSF/North Atlantic Treaty Organization (NATO) Postdoctoral Fellowships in Earth Sciences Panel, January 1999 and January 2000, Research Proposal Review Panel, NSF Headquarters, Washington DC

American Society for Microbiology, June 2001, American Academy of Microbiology, Geobiology Steering Committee, Washington DC