

Alison Olcott
Curriculum Vitae

Department of Geology • University of Kansas • Lawrence, KS 66045 • Olcott@ku.edu

EDUCATION

2006 Ph.D., Geological Sciences, University of Southern California
1999 B.S., Department of Geophysical Sciences, University of Chicago

EMPLOYMENT HISTORY

2016-present University of Kansas, Department of Geology, Associate Professor
2008-2016 University of Kansas, Department of Geology, Assistant Professor

2015-2018 University of Kansas, Office of First Year Experience, Faculty Fellow
2006-2007 Woods Hole Oceanographic Institute, Department of Marine Chemistry and Geochemistry, Postdoctoral Scholar

AWARDS AND HONORS

2017 Faculty Fellow for Office of First Year Experience
2016 Winner of the Christopher H. Haufler Award for KU Core Innovation for Geology 121 course redesign
2016 Jan F and Mary van Sant Award of Excellence in Geology, University of Kansas Department of Geology
2015 Faculty Fellow for Office of First Year Experience (2-year term)
2015 My transformed class selected as a model course by the National Center for Science and Civic Engagement

RESEARCH HIGHLIGHTS

I am an astrobiologist and chemical paleontologist who researches how chemical traces of life can be preserved across geological time, allowing an understanding of biological and environmental processes in places and times that do not preserve more traditional types of fossils, which in turn allows a better understanding of ancient environments and climates, both on Earth and beyond.

I also research how high impact educational processes can be integrated into STEM classes to improve student learning, success, and retention, particularly for students from populations that are traditionally underrepresented in STEM fields.

GRANTS

Principal Investigator; external peer-reviewed grant

- 2017-2018 Principal Investigator. *Pilot Study: Biomarker Preservation Potential of a Sulfur-rich Evaporative Mars Analog*. NASA Exobiology \$33,104
- 2015-2016 Principal Investigator. *SSI 2014 Post-Institute Implementation Award*. NSF subaward granted by the National Center for Science and Civic Engagement, \$3000

Co-Investigator; external peer-reviewed grant

- 2018-2023 Co-Investigator (PI: Dr. Britney Schmidt, Georgia Tech). *Oceans Across Space and Time*. NASA Astrobiology Institute Grant. Final award amount pending.

Industry funding

- 2018-2019 Co-Investigator (PI: Dr. Jennifer Roberts). *Elucidating the Conditions of Microbial Dolomite Formation in Neoproterozoic Dolomites, Central Sichuan Basin*. PetroChina \$152,467
- 2014-present Principal Investigator. *Delineating Sources of Organic Matter in the Woodford Shale Formation*. Chesapeake Faculty Research Award \$50,000
- 2012 Principal Investigator. *Pilot Study: Potential biological affinity of porosity producing organic carbon in shale carbonates: a predictive approach*. ConocoPhillips \$5,361

Primary Mentor on student grants

- 2018 Awarded to Morgan Johannesen. *Preservation of life in gypsum*. University of Kansas Center for Undergraduate Research. \$1,000
- 2017 Awarded to Niall Whalen. *Biomarkers of Coprolites*. University of Kansas Center for Undergraduate Research. \$1,000 (three times)
- 2010-2011 Awarded to Vincent Nowaczewski. *Biomarker and Paleontological Investigations of the Devonian Extinctions in the Woodford Shale*. ExxonMobil \$5,000

Principal Investigator; internal grant

- 2017 Principal Investigator. *The preservation of life in calcium sulfate and implications for the search for life on Mars*. University of Kansas General Research Fund \$1,800
- 2016 KU Libraries Research Sprint. *Creating an Online Geology Lab*. This competitive internal grant provided a dedicated team of librarians to provide 40 hours each on my project.
- 2014 Principal Investigator. *Microscale investigation of the geochemical controls on organic porosity distribution in tight carbonate reservoirs*. Kansas Interdisciplinary Carbonates Consortium Grant \$13,000
- 2013 Principal Investigator. *Pilot Project: Determining the Biogenicity of Stromatolites*. University of Kansas General Research Fund \$1,500

REFEREED PUBLICATIONS

In all entries below, my name is **bolded**, graduate students are underlined, undergraduates are underlined with an asterix (*).

Astrobiology and Chemical Paleontology Research

- 2017 Marshall, C.P., **Olcott Marshall, A.**, Aitken, J.B., Lai, B., Vogt, S., Breuer, P., Steemans, P., Lay, P.A. (2017). Imaging of Vanadium in microfossils: A new potential biosignature. *Astrobiology*.
- 2016 Emry, J. R., **Olcott Marshall, A.**, & Marshall, C. P. (2016). Evaluating the Effects of Autofluorescence during Raman Hyperspectral Imaging. *Geostandards and Geoanalytical Techniques*. doi: 10.1111/j.1751-908X.2015.00354.x
- 2015 Hays, L., et al. "NASA Astrobiology Strategy." (2015). (I am a contributor)
- 2015 Platt, B. F., Smith, J. J., Ludvigson, G. A., Sawin, R. S., Marshall, C. P., & **Olcott Marshall, A.** (2015). Enigmatic red beds exposed at Point of Rocks, Cimarron National Grassland, Morton County, Kansas: Chronostratigraphic constraints from U-Pb dating of detrital zircons. *Kansas Geological Survey, Current Research in Earth Sciences, Bulletin 261* 17 p., 1 appendix <http://www.kgs.ku.edu/Current/2015/Smith/index.html>.
- 2015 **Olcott Marshall A.** & Cestari N. A. (2015) Biomarker analysis of samples visually

- identified as microbial in the Eocene Green River Formation: An analog for Mars. *Astrobiology* doi:10.1089/ast.2015.1339.
- 2015 Marshall, C. P., & **Olcott Marshall, A.** (2015). Challenges analyzing gypsum on Mars by Raman spectroscopy. *Astrobiology* doi:10.1089/ast.2015.1334.
- 2015 Harris, L. V., McHough, M., Hutchinson, I. B., Ingley, R., Malherbe, C., Parnell, J., **Olcott Marshall, A.** & Edwards, H. G. M. (2015). Avoiding misidentification of bands in planetary Raman spectra. *Journal of Raman Spectroscopy*. doi: 10.1002/jrs.4667.
- 2015 Harris, L., Hutchinson, I. B., Ingley, R., Marshall, C. P., **Olcott Marshall, A.,** & Edwards, H. G. M. (2015). Selection of portable spectrometers for planetary exploration - A comparison of 532 nm and 785 nm Raman spectroscopy of reduced carbon in Archaean cherts. *Astrobiology*, 15(6): 420-9.
- 2015 **Invited: Olcott Marshall, A.,** & Marshall, C. P. (2015). Vibrational Spectroscopy of Fossils. *Journal of Palaeontology*, 58(2), 201-211.
- 2014 *Glauser, A. L., Harper, C. J., Taylor, T. N., Taylor, E. L., Marshall, C. P., & **Olcott Marshall, A.** (2014). Reexamination of microspore contents in Pennsylvanian spores and pollen grains. *Review of Palaeobotany and Palynology*, 210, 62-68.
- 2014 **Invited:** Marshall, C. P., & **Olcott Marshall, A.** (2014). Raman spectroscopy as a screening tool for ancient life detection on Mars. *Philosophical Transactions of the Royal Society, A*, 372(2030), pii: 20140195. doi: 10.1098/rsta.2014.0195.
- 2014 **Olcott Marshall, A.,** Jehlička, J., Rouzaud, J.-N., & Marshall, C. P. (2014). Multiple generations of carbonaceous material deposited in Apex chert by basin-scale pervasive hydrothermal fluid flow. *Gondwana Research*, 25(1), 284-289.
- 2013 Marshall, C. P., & **Olcott Marshall, A.** (2013). Raman hyperspectral imaging of microfossils: potential pitfalls. *Astrobiology*, 13, 920-931.
- 2013 **Olcott Marshall, A.,** Nowaczewski, V. S., & Marshall, C. P. (2013). Microchemical differentiation of conodont and scolecodont microfossils. *Palaios*, 28, 433-437.
- 2013 **Olcott Marshall, A.,** & Marshall, C. P. (2013). Comment on "Biogenicity of Earth's earliest fossils: A resolution of the controversy" by J.W. Schopf and A. B. Kudryavtsev. *Gondwana Research*, 22(3-4), 761-771. doi:10.1016/j.gr.2012.12.006
- 2013 **Olcott Marshall, A.,** & Marshall, C. P. (2013). Field-based Raman spectroscopic analyses of an Ordovician stromatolite. *Astrobiology*, 13, 814-820.

- 2013 Rothschild, B., Martin, L., Anderson, B. A., **Olcott Marshall, A.**, & Marshall, C. P. (2013). Raman spectrographic documentation of Oligocene bladder stone. *Naturwissenschaften*, 100, 789-794.
- 2012 **Olcott Marshall, A.**, Emry, J. R., & Marshall, C. P. (2012). Multiple Generations of Carbon in the Apex Chert and Implications for Preservation of Microfossils. *Astrobiology*, 12(2), 160-166.
- 2012 **Olcott Marshall, A.**, Wehrbein, R. L., Lieberman, B. S., & Marshall, C. P. (2012). Raman spectroscopic investigations of Burgess Shale-type preservation: a new way forward. *Palaios*, 27(5), 288-292.
- 2011 Marshall, C. P., & **Olcott Marshall, A.** (2011). Hematite and carbonaceous materials in geological samples: a cautionary tale. *Spectrochimica Acta*, 80, 133-137.
- 2011 Marshall, C. P., Emry, J. R., & **Olcott Marshall, A.** (2011). Haematite pseudomicrofossils present in the 3.5 billion year old Apex Chert. *Nature Geoscience*, 4, 240-243. doi:10.1038/NGEO1084
- 2010 Marshall, C. P., & **Olcott Marshall, A.** (2010). The Potential of Raman spectroscopy for the analysis of diagenetically transformed carotenoids. *Philosophical Transactions A*, 368, 3137-3144.
- 2009 **Olcott Marshall, A.**, Corsetti, F. A., Sessions, A. L., & Marshall, C. P. (2009). Raman spectroscopy and biomarker analysis reveal multiple carbon inputs to a Precambrian glacial sediment. *Organic Geochemistry*, 40, 1115-1123.
- 2007 **Olcott, A. N.** (2007). The utility of biomarkers as paleoenvironmental indicators. *Palaios*, 22(2), 111.
- 2006 Corsetti, F. A., **Olcott, A. N.**, & Bakermans, C. (2006). The biotic response to Neoproterozoic snowball Earth. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 232(114), 114-130.
- 2005 **Olcott, A. N.**, Sessions, A. L., Corsetti, F. A., Kaufman, A. J., & de Oliveira, T. F. (2005). Biomarker evidence for photosynthesis during Neoproterozoic glaciation. *Science*, 319 (5747), 471-477.
- 2004 Ricardo, A., Carrigan, M. A., **Olcott, A. N.**, & Benner, S. A. (2004). Borate minerals stabilize ribose. *Science*, 303(5655), 196.

High Impact Educational Practices Research

In press **Invited: Olcott Marshall, A.** (*in press*) Adding Active Learning Techniques into Paleontology Classes. *Paleontological Society Special Publications*.

In press Becker, J. , **Olcott Marshall, A.** (*in press*) How do I know if they learned anything? Evidence-based learning and reflective teaching in a first-year learning community. In: *The Grounded Instruction Librarian: Participating in the Scholarship of Teaching and Learning*. Association of College and Research Librarians.

In review Roberts, J.A., **Olcott Marshall, A.**, McLean, N., Baker, G.S., & Möller, A. (*in review*) Demonstrating the Impact of Classroom Transformation on STEM Inequality in DFW Rates (“D” or “F” grade or Withdraw) for First-time Freshmen, Females, and Underrepresented Minorities Through a Decadal Study of Introductory Geology Courses. *Journal of Geoscience Education*.

2017 **Olcott Marshall, A.** & Crawford Parker, S. (2017) Exploring Mars: A science-focused First Year Seminar for non-science majors. In: *Case Studies on High-Impact Practices in First Year Seminars*. National Resource Center for the First-Year Experience and Students in Transition.

2017 Bitting K. S. & **Olcott Marshall A.** (2017) Case Study: Flipping a Paleontology Class for Non-Majors. In: *The Flipped College Classroom: Conceptualized and Re-Conceptualized*. Springer Books. (Educational Communications and Technology: Issues and Innovations).

2016 **Olcott Marshall, A.**, & Bitting, K. S. (2016). Teaching through Human-Driven Extinctions and Climate Change: Adding Civic Engagement to an Introductory Geology Course for Non-Majors. *International Journal of Science Education and Civic Engagement*. http://seceij.net/seceij/winter16/teaching_through.html

EXTERNAL PRESENTATIONS

Invited Seminars and Conference Presentations

Astrobiology and Chemical Paleontology Research

2018 “Signs of Microbial Life in Cryogenian Rocks”, Southwest Petroleum University, School of Geosciences and Technology, Chengdu, China, Departmental Seminar (2018).

2018 **Olcott Marshall, A.** & Lockamy, D. “Interplay between microbial signatures and mineral precipitation in a geological evaporite,” American Chemical Society Annual Meeting, New Orleans, USA (2018).

- 2013 **Olcott Marshall, A.**, Jelička, J., Rouzaud, J.-N., & Marshall, C. P., "Novel Application of High-Resolution Transmission Electron Microscopy to Archean Paleontology," Geological Society of America Annual Meeting, Denver, USA. (2013).
- 2013 Harper, C. J., Taylor, T. N., Krings, M., **Olcott Marshall, A.**, & Marshall, C. P., "Wood-rotting fungi have a dark history: Evidence from the fossil record," American Phytopathological Society-Mycolology Society of America Joint Meeting, Austin, USA. (2013).
- 2012 Marshall, C. P., Emry, J. R., & **Olcott Marshall, A.**, "The search for the earliest evidence of life on Earth: A Cautionary Tale," 23rd International Conference on Raman Spectroscopy, Bangalore, India. (2012).
- 2011 Marshall, C. P., & **Olcott Marshall, A.**, "The search for the evidence of the earliest life on Earth, a cautionary tale," Federation of Analytical Chemistry and Spectroscopy Societies Conference, Reno, USA. (2011).
- 2011 "Oldest Life or Chemical Artifacts? A Reassessment of the Apex Chert," University of Minnesota, Department of Geology, Department Seminar. (2011).
- 2008 **Olcott, A. N.**, & Eglinton, T. I., "Ruthenium tetroxide oxidation of macromolecular organic matter in marine sediments," Ocean Sciences Meeting 2008, Orlando, USA. (2008).
- 2008 "Chemotaxonomy of Tasmanites," Agouron/NSF/USC Wrigley Institute International Geobiology Course, Colloquium on novel chemical methods to characterize fossils. (2008).
- 2007 "Signs of Photosynthesis on a Snowball Earth," University of Uppsala, Sweden, Department of Geology, Departmental Symposium. (2007).
- 2006 "Biomarkers of a Neoproterozoic Glaciation," California Institute of Technology, Division of Geological and Planetary Sciences, Geology Club Seminar. (2006).
- 2006 "Biomarkers of a Neoproterozoic Glaciation," Hamilton College, Department of Geology, Departmental Seminar. (2006).
- 2006 "Biomarkers of a Neoproterozoic Glaciation," Massachusetts Institute of Technology, Department of Earth, Atmosphere and Planetary Sciences, Geobiology Seminar Series. (2006).
- 2006 "Biomarkers of a Neoproterozoic Glaciation," University of Kansas, Department of Geology, Department Seminar. (2006).

- 2006 "Biomarkers of a Neoproterozoic Glaciation," University of Washington, Department of Earth Sciences, Departmental Seminar. (2006).
- 2005 "Life During Snowball Earth," UC Santa Barbara, Department of Geology, Departmental Seminar. (2005).

High Impact Educational Practices Research

- 2018 "Adding Active Learning into a Paleontology Class" Geological Society of America Short Course. (2018)

Conference Presentations

Astrobiology and Chemical Paleontology Research

- 2017 **Olcott Marshall, A.** & Lockamy, D. "Gypsum-hosted Biomarkers in an Iron-rich Environment." Astrobiology Science Conference 2017, Mesa, USA. (2017).
- 2016 Lockamy, D. & **Olcott Marshall, A.** "Preservation potential of biomarkers for paleoenvironmental investigations of Permian red-bed evaporites." Geological Society of America Annual Meeting, Denver, USA. (2016).
- 2016 Marshall, C.P. & **Olcott Marshall, A.** "The analyses of gypsum on Mars by Raman Spectroscopy: Potential pitfalls." Geological Society of America Annual Meeting, Denver, USA. (2016).
- 2016 Marshall, C.P., Keel, M.B., **Olcott Marshall, A.** "Organic porosity of geological carbonaceous materials." Carbon, State College, PA, USA. (2016).
- 2015 Platt, B. F., Smith, J. J., Ludvigson, G. A., Sawin, R. S., Marshall, C. P., & **Olcott Marshall, A.** "Enigmatic redbeds exposed at Point of Rocks, Cimarron National Grassland, Morton County, Kansas: Chronostratigraphic constraints from U-Pb dating of detrital zircons." Geological Society of America Annual Meeting, Baltimore, USA. (2015).
- 2015 Harper, C. J., **Olcott Marshall, A.**, Marshall, C. P., Taylor, T. N., Krings, M. & Taylor, E. L., "Biomarkers in paleomycology – A case study using fungus-infected Permian woods from Antarctica," Botanical Society of America Annual Meeting, Edmonton, Canada. (2015).
- 2015 Emry, J. R., **Olcott Marshall, A.**, & Marshall, C. P, "Life Detection Limitations Due To Fluorescence In Raman Imaging," Astrobiology Science Conference 2015, Chicago, USA. (2015).

- 2015 Marshall, C. P., **Olcott Marshall, A.**, Aitken, J. B., Lai, B., Vogt, S., & Lay, P. A., "Imaging Of Vanadium And Nickel In Microfossils: A New Potential Biosignature." Astrobiology Science Conference 2015, Chicago, USA. (2015).
- 2015 **Olcott Marshall, A.**, & Cestari, N. A., "Searching For Biomarkers At The Outcrop Scale," Astrobiology Science Conference 2015, Chicago, USA. (2015).
- 2015 **Olcott Marshall, A.**, & Marshall, C. P., "Limitations on Raman Spectroscopy on Mars: Lessons from Oklahoma," Astrobiology Science Conference 2015, Chicago. (2015).
- 2014 Emry, J. R., **Olcott Marshall, A.**, & Marshall, C. P., "Complementary Methods for Addressing Fluorescence Issues in Raman Hyperspectral Datasets," 11th International Conference on Raman Spectroscopy Applied to the Earth Sciences, St. Louis, USA. (2014).
- 2014 Harris, L. V., Hutchinson, I. B., Ingley, R., Marshall, C. P., **Olcott Marshall, A.**, & Edwards, H. G. M., "Planetary Exploration with a Raman Spectrometer: A Study of Carbonaceous Material Using Portable Instrumentation (532 and 785 nm)." 11th International Conference on Raman Spectroscopy Applied to the Earth Sciences, St. Louis, USA. (2014).
- 2014 Marshall, C. P., & **Olcott Marshall, A.**, "Examining Enameloid Chemistry in Lower Vertebrates to Determine Conodont Taxonomic Affinity," 11th International Conference on Raman Spectroscopy Applied to the Earth Sciences, St. Louis, USA. (2014).
- 2014 **Olcott Marshall, A.**, & Marshall, C. P., "Field Raman Analyses of Mars Analog Sites: Test Cases for Future Rover Missions." 11th International Conference on Raman Spectroscopy Applied to the Earth Sciences, St. Louis, USA. (2014).
- 2014 Lowry, J. G., Rankey, E., & **Olcott Marshall, A.**, "Controls on Sedimentology and Organic Matter of a Coquina Beach Ridge: Fine-Grained Carbonate Lagoon System on a Holocene Carbonate Ramp: Yucatan Peninsula, Mexico," American Association of Petroleum Geologists Annual Meeting, Houston, USA. (2014).
- 2013 *Glaser, A., Harper, C. J., Taylor, T. N., Taylor, E., Marshall, C. P., & **Olcott Marshall, A.**, "Reexamination and analysis of microspore contents in Pennsylvanian spores and pollen grains," Botanical Society of America Annual Meeting, New Orleans, USA. (2013).
- 2013 Marshall, C P, & **Olcott Marshall, A.**, "Raman Hyperspectral Imaging of Carbonaceous Materials and Hematite: Potential Misinterpretations." V.M. Goldschmidt Conference, Florence, Italy. (2013).

- 2013 **Olcott Marshall, A.**, Jelička, J., Rouzaud, J.-N., & Marshall, C. P., "Delineating Biotic and Abiotic Carbonaceous Material in the Apex Chert," V.M. Goldschmidt Conference, Florence, Italy. (2013).
- 2012 Anderson, B. M., & **Olcott Marshall, A.**, "A new dataset of Phanerozoic Marine Konservat-Lagerstätten: Patterns in secular distribution," Geological Society of America Annual Meeting, Charlotte, USA. (2012).
- 2012 Emry, J. R., Marshall, C. P., & **Olcott Marshall, A.**, "Paragenetic Description and Environment of Formation of a Terrestrial Mars Analog," Astrobiology Science Conference 2012, Atlanta, USA. (2012).
- 2012 Marshall, C. P., Emry, J. R., & **Olcott Marshall, A.**, "Multiple Generations of carbonaceous material in the ~3.5 Ga. Apex Chert: A cautionary tale for the preservation of ancient microfossils," 10th International Conference on Raman Spectroscopy Applied to the Earth Sciences, Nancy, France. (2012).
- 2012 **Olcott Marshall, A.**, Wehrbein, R. L., Lieberman, B. S., Lin, J.-P., & Marshall, C. P., "Application of Raman spectroscopy to Burgess Shale-Type Preservation," 10th International Conference on Raman Spectroscopy Applied to the Earth Sciences, Nancy, France. (2012).
- 2011 Nowaczewski, V. S., & **Olcott Marshall, A.**, "Biomarker and paleontological investigations of the upper and lower Woodford Shale, south-central Oklahoma," Geological Society of America Annual Meeting, Minneapolis, USA. (2011).
- 2011 Nowaczewski, V. S., **Olcott Marshall, A.**, & Marshall, C. P., "FTIR microspectroscopy of scolecodont and conodont microfossils from the Woodford Shale, south-central Oklahoma," Geological Society of America Annual Meeting, Minneapolis, USA. (2011).
- 2011 Wehrbein, R. L., Marshall, C. P., Lin, J.-P., Lieberman, B. S., & **Olcott Marshall, A.**, "Application of Raman spectroscopy on Burgess Shale-type preservation," Geological Society of America Annual Meeting, Minneapolis, USA. (2011).
- 2011 Nowaczewski, V. S., & **Olcott Marshall, A.**, "Microfauna and biomarkers of the Woodford Shale: Western Arkoma Basin, Oklahoma," Geological Society of America South-Central Section Annual Meeting, New Orleans, USA. (2011).
- 2010 Emry, J. R., **Olcott Marshall, A.**, & Marshall, C. P., "Astrobiological Implications of the Apex Chert Microfossils," Geological Society of America Annual Meeting, Denver, USA. (2010).

- 2010 **Olcott Marshall, A.**, Lieberman, B. S., & Marshall, C. P., "Preservation of Burgess Shale Type Fossils Revealed by Raman Spectroscopy," Geological Society of America Annual Meeting, Denver, USA. (2010).
- 2010 Emry, J. R., **Olcott Marshall, A.**, and Marshall, C. P., "The Search for Novel Biosignatures in the Apex Chert," V.M. Goldschmidt Conference, Knoxville, USA. (2010).
- 2010 Marshall, C. P., & **Olcott Marshall, A.**, "Oil Shale Geochemistry," V.M. Goldschmidt Conference, Knoxville, USA. (2010).
- 2010 **Olcott Marshall, A.**, & Marshall, C. P., "Multiple Generations of Organic Carbon Revealed in a Neoproterozoic Glacial Succession," V.M. Goldschmidt Conference, Knoxville, USA. (2010).
- 2009 Marshall, C. P., Lieberman, B. S., & **Olcott Marshall, A.**, "Preservation of Burgess Shale Type Fossils Revealed by Raman Spectroscopy," Burgess Shale 100th anniversary Meeting, Banff, Canada. (2009).
- 2009 **Olcott Marshall, A.**, Willman, S., Moczydlowska, M., & Marshall, C. P., "Neoproterozoic Acritarchs Pelagic Lifestyle Revealed by Carbon Isotopes," Burgess Shale 100th anniversary Meeting, Banff, Canada. (2009).
- 2008 Marshall, C. P., & **Olcott, A. N.**, "A New Parameter to Predict Successful Oil Shale Retorting," Geological Society of America Annual Meeting, Houston, USA. (2008).
- 2008 **Olcott, A. N.**, & Marshall, C. P., "Chemotaxonomy of oil shales," Geological Society of America Annual Meeting, Houston, USA. (2008).
- 2008 Marshall, C. P., & **Olcott, A. N.**, "Raman Spectroscopy of Carotenoids," Federation of Analytical Chemistry and Spectroscopy Societies Annual Conference, Reno, NV. (2008).
- 2008 Marshall, C. P., & **Olcott, A. N.**, "The hydrocarbon generation potential of oil shales based on chemical content," American Association of Petroleum Geologists Annual Meeting, San Antonio, USA. (2008).
- 2008 **Olcott, A. N.**, Marshall, C. P., and Eglinton, T. I., "Chemotaxonomy of oil shales," American Association of Petroleum Geologists Annual Meeting, San Antonio, USA. (2008).
- 2008 Marshall, C. P., & **Olcott, A. N.**, "The potential of Resonance Raman spectroscopy for the analysis of diagenetically transformed carotenoids," 8th International Conference on Raman Spectroscopy Applied to the Earth Sciences, Ghent, Belgium. (2008).

- 2007 **Olcott, A. N.**, & Eglinton, T. I., "Products from Ruthenium tetroxide oxidation of macromolecular organic matter in marine sediments," International Meeting of Organic Geochemists 2007, Torquay, England. (2007).
- 2006 **Olcott, A. N.**, Li, C., Sessions, A. L., Corsetti, F. A., & Feng, P., "Biogeochemistry of Neoproterozoic Low Latitude Glaciations," V.M. Goldschmidt Conference, Melbourne, Australia. (2006).
- 2006 **Olcott, A. N.**, Sessions, A. L., Corsetti, F. A., & Kaufman, A. J., "Photosynthesis during Snowball Earth," Snowball Earth Conference 2006, Ancona, Italy. (2006).
- 2005 **Olcott, A. N.**, Corsetti, F. A., & Sessions, A. L., "Biomarkers of a Neoproterozoic Glaciation," Earth System Processes II, 2005, Calgary, Canada. (2005).
- 2005 **Olcott, A. N.**, Corsetti, F. A., Sessions, A. L., & Kaufman, A. J., "Signs of Photosynthesis in a Low-Latitude Neoproterozoic Glaciation," Geological Society of America, 2005 Annual Meeting, Salt Lake City, USA. (2005).
- 2005 **Olcott, A. N.**, Sessions, A. L., Corsetti, F. A., & Kaufman, A. J., "Biomarkers of a Neoproterozoic Glaciation," American Geophysical Union, 2005 Annual Meeting, San Francisco. (2005).
- 2004 **Olcott, A. N.**, Lorentz, N. J., Corsetti, F. A., & Berelson, W. M., "Reevaluation gravimetric determination of carbonate associated sulfate concentrations," Geological Society of America, 2004 Annual Meeting, Denver, USA. (2004).
- 2002 **Olcott, A. N.**, Corsetti, F. A., & Awramik, S. M., "A new look at stromatolite form diversity," Geological Society of America, 2002 Annual Meeting, Denver, USA. (2002).

High Impact Educational Practices Research

- 2017 **Olcott Marshall, A.**, Crawford-Parker, S. & Long, A. "Revising Rubrics to Better Map the Landscape of Student Learning." International Society for the Scholarship of Teaching and Learning Annual Meeting, Calgary, Canada (2017).
- 2017 Smith, M. & **Olcott Marshall, A.** "Pedagogical Efficacy And Student Spatial Ability Concerning The AR Sandbox: A Study Design." Geological Society of America Annual Meeting, Seattle, USA (2017).
- 2017 Roberts, J.A.; **Olcott Marshall, A.**, McLean, N., Baker, G.S., & Möller, A. "Positive Impact of Classroom Transformation on STEM Inequality in DFW Rates ("D" or "F" grade or Withdraw) for First-time Freshmen, Females, and Underrepresented Minorities

- Through a Decadal Study of Introductory Geology Courses.” Geological Society of America Annual Meeting, Seattle, USA (2017).
- 2017 **Olcott Marshall, A.** “PaleoCon: An authentic undergraduate research experience exploring climate change and human-driven extinctions in a large gen-ed geoscience course.” Earth Educators' Rendezvous 2017, Albuquerque, USA. (2017).
- 2017 Smith, M. & **Olcott Marshall, A.** “Augmented Reality Sandboxes: Determining Efficacy as a Pedagogical Tool in Intro Geology Courses.” Earth Educators' Rendezvous 2017, Albuquerque, USA. (2017).
- 2017 **Olcott Marshall, A.** & Steffens, K. “Supporting An Undergraduate-Created Astrobiology Museum Public Outreach Event.” Astrobiology Science Conference 2017, Mesa, USA. (2017).
- 2016 **Olcott Marshall, A.,** Smith, M.C., Bitting, K.S. “Applying cognitive science findings to the redesign of a paleontology course for non-majors.” Geological Society of America Annual Meeting, Denver, USA. (2016).
- 2016 Smith, M.C & **Olcott Marshall, A.** “Increasing climate change literacy in non-geology undergraduate majors at the University of Kansas.” Geological Society of America Annual Meeting, Denver, USA. (2016).
- 2015 Bitting, K. S., & **Olcott Marshall, A.,** "Student Learning Outcomes and Experiences Associated with Student-Centered Redesign of a General Education Geology Course," Earth Educators' Rendezvous 2015, Boulder, USA. (2015).
- 2015 **Olcott Marshall, A.,** & Bitting, K. S., "Creating A First Year Seminar In Astrobiology." Astrobiology Science Conference 2015, Chicago, USA. (2015).
- 2014 Bitting, K. S., **Olcott Marshall, A.,** & Roberts, J. A, "Student perceptions of active learning in redesigned introductory geology courses at a U.S. public university," Geological Society of America Annual Meeting, Vancouver, Canada. (2014).
- 2014 Roberts, J. A., **Olcott Marshall, A.,** & Bitting, K. S., "Approaches to transforming instructor teaching philosophy," Geological Society of America Annual Meeting, Vancouver, Canada. (2014).

Invited Talks, symposia and workshops at KU

- 2018 “Searching for life on Earth and Beyond,” Red Hot Research, The Commons
- 2017 “Teaching First Year Students: The First Six Weeks” KU Center for Teaching

Excellence Annual Teaching Summit

- 2017 “Creating Assignments Assessable for the KU Core” KU Center for Teaching Excellence Annual Teaching Summit
- 2017 “Assessing Critical Thinking in Geol 121” KU Student Learning Symposium
- 2016 Helped train University GTAs through CTE
- 2016 “Undergraduate Assessment” KU Student Learning Symposium (panel member)
- 2015 “No More Finals: Replacing the Traditional Final Exam” KU Center for Teaching Excellence Annual Teaching Summit
- 2015 “Motivating Undergraduate Students by Teaching Disciplinary Content through Civic Engagement” KU Center for Teaching Excellence
- 2014 “Models and Approaches for Course Transformations” KU Center for Teaching Excellence Annual Teaching Summit

Public Presentations for a General Audience

- 2016 “Mars Attacks” A Myths and Mayhem Film Event at the KU Natural History Museum, Lawrence KS (2016)
- 2016 “Spiders on Mars and other Space Oddities” Nerd Nite in conjunction with the Lawrence Public Library *Read across Lawrence*, Lawrence, KS (2016)
- 2016 “Unlocking the Mysteries of Mars” Science on Tap, Lawrence, KS (2016)
- 2016 “Exploring Mars” Science Café, Topeka, KS (2016)

TEACHING RECORD

List of Courses Taught

Taught	Level	Title	Average number of students each year
F17	Intro (online)	Life Through Time: DNA to Dinos Online Laboratory	30
F17; F16; F15; F14; S13; F12; S11; S09	Intro	Life Through Time: DNA to Dinos	90
F17	First Year Seminar	The Scientist: Women and the Culture of Science	19
F16; F15	First Year Seminar	Exploring Mars: Our Evolving View of the Red Planet	19
S17	Graduate	Unconventional Mudrock Analysis	25
S14; S10	Graduate	Microbial Carbonates	10
F13; F11; F09; F08	Graduate	Chemical Paleontology	10
S11; S10	Intro (online)	History of the Earth	20
F16; F10; F09	Intro	Field Techniques in Geobiology	20
F10; S10	Graduate	Geobiology Seminar	10
F08	Graduate	Nature and Evolution of Earth's Early Biosphere	10

Undergraduate Student Research Mentees

Current Students: Niall Whalen, BS Geology. Taylor Plattner, BS Astronomy. Morgan Johannesen, BS Chemistry and Geology. Jack Webster, BS Astronomy [beginning Summer 18]. I have also been a College of Liberal Arts and Sciences Faculty Mentor since the inception of the program.

2017 Reed Bohar, BS EEB (Honors College). Joy Chowdry, BS Anthropology. Wade Welton, BS Geology.

2016 Aaron Goldstein, BS Geology.

2015 Abby Glauser, BS in Biology. Placement: Graduate student at University of Oregon.

Undergraduate Honors Committee Service, by year of graduation

2017 Aislin Reynolds

Graduate Students Advised, by year of graduation

Current Students: Matt Smith, Ph.D., Adrienne Seiden, MS

2018 Dru Lockamy. Placement: UES Consulting

2015 Julienne Emry, Ph.D. (co-chaired with Dr. Craig Marshall).

2015 Michael Brenden Keel, MS (co-chaired with Dr. Craig Marshall). Placement: British Gas.

2015 Nicholas Cestari, MS. Placement: Occidental Petroleum Corporation.

2013 Brendan Anderson, MS. Placement: Ph.D. program at Cornell University.

2011 Vincent Nowaczewski, MS. Placement: Chesapeake Energy.

Graduate Committee Service, by year of graduation

Current Students: Jill Becker; Ph.D. (Department of Educational Leadership and Policy); Sarah Childs, Ph.D.; Becky Dorward, Ph.D.; Matt Downen, Ph.D.; Tabatha Gabay, MS; Brittney Oleniacz, Ph.D.; Bryan Rodriguez-Colon, MS.; Ryan Shanks, MS.; Adam Yoerg, MS.

2017 Sarah Gibson, Ph.D.

2017 Hannah Hubert, MS

2016 Maritha Huber, MS

2016 Jennifer Lowery, MS

2015 Carla Harper, Ph.D. (Department of Environmental and Evolutionary Biology)

2014 Ian Wesley Gapp, Ph.D.

2012 Neil Kinnebrew, MS

2011 Anya Hess, MS

Public Educational Outreach

2016 “Exploring Mars” Science Saturday event at the KU Natural History Museum. Public event organized with students in Geol 177

2015 “Exploring Mars” Science Saturday event at the KU Natural History Museum. Public event organized with students in Geol 177

PROFESSIONAL SERVICE

Journal Referee

Astrobiology; Geochimica Cosmochimica Acta; Geology; Geological Magazine; GSA Bulletin; Journal Geological Society; Journal of Paleontology; Journal of Raman Spectroscopy; Journal of Sedimentology; Nature Geoscience; Organic Geochemistry; Palaeogeography, Palaeoclimatology and Palaeoecology; Paleontological Contributions; Palaios; PLoS One; Precambrian Research; Space Science Research; Springer

National and International Service

2017 Examiner of Student Research Thesis, Macquarie University, Australia

2017 NSF Geobiology and Low Temperature Geochemistry Division, Reviewer of Research Proposals.

2016 NASA Exobiology, Panel Chair for Reviewing Research Proposals

2016 NSF Geobiology and Low Temperature Geochemistry Division, Reviewer of Research Proposals.

2014 NASA 2020 Mars Rover Mission, Reviewer of Research Proposals.

2014 NSF Geobiology and Low Temperature Geochemistry Division, Reviewer of Research Proposals.

2013 American Chemical Society Petroleum Research Fund, Reviewer of Research Proposals.

- 2013 CRDF Global Small Grants Funds (a US Congress mandated grant program to encourage scientific endeavors in the former Soviet Republics), Reviewer of Research Proposals.
- 2012-2014 Division of Geobiology and Geomicrobiology, Geological Society of America, Secretary.
- 2012 University of Missouri Research Board, Grant Reviewer.
- 2012 NASA Astrobiology Institute Grant Review Panel, Invited Panel Member.
- 2011 Geological Society of America Annual Meeting session: New Ideas on Studying Exceptionally Preserved Fossils: What to Do Next?, Co-Convener.
- 2011 NASA ExoMars Review Panel, Invited Panel Member.
- 2011 NASA Mars Science Laboratory Grant Review Panel, Invited Panel Member. NASA Mars Science Laboratory Grant Review Panel, Invited Panel Member.
- 2011 SEPM Society for Sedimentary Geology Honorary Membership Committee, Member.
- 2010-2012 Division of Geobiology and Geomicrobiology, Geological Society of America, Treasurer.
- 2010 NASA Exobiology Grant Review Panel, Invited Panel Member.
- 2008 NASA Exobiology Grant Review Panel, Invited Panel Member.

University Service

- 2018 Member, College's Committee on Undergraduate Students and Advising
- 2018 Student Marshal, College of Arts and Sciences Highest Honors and Masters Hooding Graduation
- 2018 KU Common Book Selection Committee
- 2017 Student Marshal, College of Arts and Sciences Fall Graduation
- 2017 Appointed reviewer, Undergraduate Biology and Human Biology Programmatic Review
- 2017 Appointed member, Dean's special committee on Graduate Studies

- 2017 Member, AA&U KU STEM Analytics Program
- 2016 Member, Search Committee to hire IARI Research Curator Spencer Art Museum
- 2016-present CLAS Faculty Mentor
- 2015-2018 Faculty Fellow, First Year Seminar, Office of First Year Experience
- 2015 Invited Panelist, “Perspectives: Science and Society”, KU Honors College
- 2015 Discussion Leader, Common Book Discussion Groups
- 2015 Speaker, “In the Classroom with a KU Professor”, Orientation Event
- 2015 Faculty Judge, Graduate Student Research Competition.
- 2013 Grant Reviewer for University Undergraduate Research Award.
- 2009-present College Academic Misconduct Board. Member.
- 2008 Faculty Judge, Graduate Student Research Competition.

Departmental Service

- 2015-present Chair, KU Core Coordination Committee
- 2015-present Co-Chair, Undergraduate Assessment Committee
- 2013 Head of Search Committee to hire Departmental Teaching Fellow
- 2012-2013 Member, Departmental Undergraduate Studies Committee
- 2012 Panel Member: Advising graduate students on how to pursue a career in academia.
- 2010 Panel Member: Advising undergraduate students on how to apply to graduate school.
- 2009-2015 Department Safety Officer.
- 2008-2012 Member, Departmental Graduate Admissions Committee.

SELECTED MEDIA COVERAGE OF RESEARCH

Science:

<http://www.sciencemag.org/news/2017/12/life-may-have-originated-earth-4-billion-years-ago-study-controversial-fossils-suggests>

Kansas City Star <http://www.kansascity.com/news/nation-world/article38094312.html>

Bangalore Mirror:

<http://www.bangaloremirror.com/others/sci-tech/Life-on-Mars-Rock-samples-show-way/articleshow/49197538.cms>

Nature: <http://www.nature.com/news/2011/110220/full/news.2011.110.html>

CBSNews.com: <http://www.cbsnews.com/news/debunking-earths-oldest-fossil-find/>

New Scientist:

<http://www.newscientist.com/article/dn20222-alienlife-claims-spark-monster-mudslinging.html>

Wired:

<http://www.wired.com/2011/03/aliens-riding-meteorites-arsenic-redux-or-something-new/>

Astrobiology Magazine:

<http://www.astrobio.net/news-exclusive/new-study-finds-apex-fossils-arent-life/>

Analytical Scientist: <https://theanalyticalscientist.com/issues/0815/life-on-mars>