

Sarah P. Slotznick

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Education

California Institute of Technology, Pasadena, CA	
Ph.D. in Geobiology	2016
M.S. in Geobiology	2012
Massachusetts Institute of Technology, Cambridge, MA	
S.B. in Earth, Atmospheric, and Planetary Sciences	2009

Academic Appointments

Dartmouth College, Hanover, NH	
Assistant Professor in the Department of Earth Sciences	Winter 2020
Visiting Scholar in the Department of Earth Sciences	Fall 2019
University of California, Berkeley, Berkeley, CA	
Department of Earth and Planetary Sciences	2019
Miller Institute Postdoctoral Fellow	2016-2019

Professional Experience

NPS Interpretive Park Ranger	Summer 2010
<i>North Cascades National Park, Stehekin District, Stehekin, WA</i>	
Intern, Exhibits Department	Spring 2010
<i>Montshire Museum of Science, Norwich, VT</i>	
Intern, Mauna Loa Geology, USGS Hawaii Volcano Observatory,	Fall 2009
<i>Hawaii National Park, HI</i>	
Interpreter, GSA GeoCorps America Intern,	Summer 2009
<i>Glacier National Park, West Lakes District, West Glacier, MT</i>	

Honors and Awards

2020 Editors' Citation for Excellence in Refereeing	May 2021
<i>Geochemistry, Geophysics, Geosystems</i>	
Institute for Rock Magnetism U.S. Student Fellowship	Sept. 2015
GSA Student Research Grant, Outstanding Mention	May 2015
P.E.O. Scholar Award, Betty Cook Karrh Memorial Endowed Scholar	March 2015
Belt Association Student Research Grant	April 2014
Tobacco Root Geological Society Scholarship	April 2014
NASA Earth and Space Science Fellow	Sept. 2014-June 2016
NSF Graduate Research Fellow	Sept. 2010-Aug. 2014
California Institute of Technology Benjamin M. Rosen Fellow	Sept. 2010-Sept. 2011

Peer-Reviewed Publications

- [17] Farrell, U. C., ... Slotznick, S. P., ... Planavsky, N. J., Lau, K. V., Johnston, D. J., Sperling, E.A. (2021) The Sedimentary Geochemistry and Paleoenvironments Project. *Geobiology*.
- [16] Mitchell, R. N., Thissen, C. J., Evans, D. A. D., Slotznick, S. P., Coccinoni, R., Yamazaki, T., Kirschvink, J. L. (2021) A Late Cretaceous true polar wander oscillation. *Nature Communications*. **12**, 3629.
- [15] Milanese, F. N., Olivero, E. B., Slotznick, S. P., Tobin, T. S., Raffi, M. E., Skinner, S. M., Kirschvink, J. L., Rapalini, A. E. (2020). Coniacian-Campanian magnetostratigraphy of the Marambio Group: The Santonian-Campanian boundary in the Antarctic Peninsula and the complete Upper Cretaceous–Lowermost Paleogene chronostratigraphical framework for the James Ross Basin. *Palaeogeography, Palaeoclimatology, Palaeoecology*, **555**, 109871.
- [14] Tobin, T.S., Roberts, E.M., Slotznick, S.P., Biasi, J.A., Clarke, J.A., O’Connor, P.M., Skinner, S.M., West, A.R., Snyderman, L.S, Kirschvink, J.L., Lamanna, M.C. (2020) New evidence of a Campanian age assignment for the Cretaceous fossil-bearing strata of Cape Marsh, Robertson Island, Antarctica. *Cretaceous Research*, **108**, 104313.
- [13] Slotznick, S.P., Sperling, E.A., Tosca, N J., Miller, A.J., Clayton, K., van Helmond, N.A.G.M., Slomp, C.P., Swanson-Hysell, N.L. (2020) Unraveling the mineralogical complexity of sediment iron speciation using sequential extractions. *Geochemistry, Geophysics, Geosystems*, **20**, e2019GC008666.
- [12] Swanson-Hysell, N.L., Fairchild, L.M., Slotznick, S.P. (2019) Primary and secondary red bed magnetization constrained by fluvial intraclasts. *Journal of Geophysical Research—Solid Earth*, **124**, 4276–4289.
- [11] Slotznick, S.P., Webb, S.M., Kirschvink, J.L., Fischer, W.W. (2019) Mid-Proterozoic ferruginous conditions reflect post-depositional processes. *Geophysical Research Letters*, **46**, 3114–3123.
- [10] Milanese, F.N., Rapalini, A.E., Slotznick, S.P., Tobin, T.S., Kirschvink, J.L., Olivero, E.B. (2019) Late Cretaceous paleogeography of the Antarctic Peninsula: New paleomagnetic pole from the James Ross Basin. *Journal of South American Earth Sciences*, **91**, 131-143.
- [9] Slotznick, S.P., Swanson-Hysell, N.L., and Sperling, E.A. (2018) Oxygenated Mesoproterozoic lake revealed through magnetic mineralogy, *Proceedings of the National Academy of Sciences*. **15**(51), 12938-12943.
- [8] Slotznick, S.P., Eiler, J.M., Fischer, W.W. (2018) The effects of metamorphism on iron mineralogy and the iron speciation redox proxy. *Geochimica et Cosmochimica Acta*, **224**, 96-115.
- [7] Present, T.M., Bergmann, K.D., Myers, C., Slotznick, S.P., Creveling, J.C., Zieg, J., Fischer, W.W., Knoll, A.H., Grotzinger, J.P. (2017) Pyrite-walled tube structures in a Mesoproterozoic SEDEX massive sulfide deposit. *GSA Bulletin*, **130**(3-4), 598-616.
- [6] Trembath-Reichert, E., Ward, L.M., Slotznick, S.P., Bachtel, S.L., Kerans, C., Grotzinger, J.P., Fischer, W.W. (2016) Gene Sequencing-Based Analysis of Microbial-Mat Morphotypes, Caicos Platform, British West Indies. *Journal of Sedimentary Research*, **86**(6), 629-636.
- [5] Slotznick, S.P., Winston, D., Webb, S.M., Kirschvink, J.L., Fischer, W.W. (2016) Iron mineralogy and redox conditions during deposition of the Mid-Proterozoic Appekunny Formation, Belt Supergroup, Glacier National Park. *GSA Special Paper*, **522**, 221-242.
- [4] Slotznick, S.P., Fischer, W.W. (2016). Examining Archean Methanotrophy. *Earth and Planetary Science Letters*, **441**, 52-59.

- [3] Slotznick, S.P., Zieg, J., Webb, S.M., Kirschvink, J.L., Fischer, W.W. (2015) Iron mineralogy and redox chemistry of the Mesoproterozoic Newland Formation in the Helena Embayment, Belt Supergroup, MT. *Northwest Geology*, **44**, 55-72.
- [2] Hansma, J., Tohver, E., Yan, M., Trinajstić, K.M., Roelofs, B., Peek, S., Slotznick, S.P., Kirschvink, J.L., Playton, T., Haines, P.W., Hocking, R.M. (2015) Late Devonian carbonate magnetostratigraphy from the Oscar and Horse Spring Ranges, Lennard Shelf, Canning Basin, Western Australia. *Earth and Planetary Science Letters*, **409**, 232-242.
- [1] Slotznick, S. P., Shim, S.-H. (2008) In situ Raman spectroscopy measurements of MgAl₂O₄ spinel up to 1400 °C. *American Mineralogist*, **93**(2-3), 470-476.

Other Publications

- [4] Satolli, S., Ferré, E.C., Kars, M., Slotznick, S.P., and Trindade, R.I.F. (2021) Editorial: Advances in Magnetism of Soils and Sediments. *Frontiers in Earth Sciences* **9**, 722670.
- [3] Slotznick, S.P. (2016) Complex iron mineralogy of the 1.4 Ga lower Belt Supergroup: iron oxides, siderite and (nanophase) pyrrhotite. *Institute for Rock Magnetism Quarterly*, **26**(2), 3-4.
- [2] Slotznick, S.P. (2016) Coupling textural, magnetic, and modeling techniques to understand Precambrian paleoenvironments. PhD Dissertation, Advisors Joseph Kirschvink and Woodward Fischer, California Institute of Technology. doi:10.7907/Z9HT2M8X.
- [1] Slotznick, S. P. (2009) A paleomagnetic study of the angrite Sahara 99555. Undergraduate Thesis, Advisor Benjamin Weiss, Massachusetts Institute of Technology.

Invited Research Presentations

Lehigh University, EES Department Seminar	Sept. 2021
Lamont-Doherty Earth Observatory, Geodynamics Seminar	Sept. 2021
Princeton University, Geosciences Department Seminar	April 2019
University of Cambridge, Department of Earth Sciences, Seminar	March 2019
Harvard University, Earth and Planetary Sciences Department Colloquium	March 2019
Stony Brook University, Geosciences Department Seminar	February 2019
University of California, Davis, Department Seminar	February 2019
University of Victoria, School of Earth and Ocean Sciences Seminar	February 2019
University of California, Santa Cruz, Whole Earth Department Seminar	January 2019
Dartmouth College, Earth Sciences Friday Department Seminar	January 2019
UC Berkeley Photosynthesis, Carbon Fixation and the Environment Symposium	June 2018
University of California, Berkeley, EPS Department Seminar	March 2018
University of Maryland, College Park, Geology Department Colloquium	February 2018
Stanford University, Geological Sciences Department Seminar	February 2018
University of Chicago, Geophysical Sciences Department Seminar	February 2018
American Museum of Natural History, Department Seminar	March 2017
University of California, Berkeley, Isotope Geochemistry Seminar	March 2017

Select Conference Abstracts

Slotznick, S.P., Swanson-Hysell, N.L., Kirschvink, J. L., Fischer, W. W., Sperling, E., Fairchild, L., Zhang, Y., Webb, S.M., Winston, D. (invited, 2021) “Deep-time” Environmental Magnetism: Untangling Redox Conditions, Diagenesis, Metamorphism. 12th Institute for Rock Magnetism Conference.

- Slotznick, S.P., Evans, D.A.D., Sousa, F., Swanson-Hysell, N.L. (2020) Paleogeographic constraints from the Kaapvaal Craton (South Africa) in the immediate aftermath of the Great Oxidation Event. GSA Abstracts with Program.
- Carrero, S., Arora, B., Slotznick, S.P., Wan, J., Steefel, C., Banfield, J., Gilbert, B. (2020) Redox Controls on Trace Element Mobility during Shale Weathering from Microscale Analyses, Goldschmidt2020.
- Slotznick, S. P., Swanson-Hysell, N.L., Wellman, C.H., Strother, P.K. (2018) Paleolake Nonesuch: A paleoenvironmental and biological record at the end of the Midcontinent Rift. *GSA Abstracts with Programs*. Vol. 50, No. 6, Paper No. 68-11.
- Slotznick, S. P., Evans, D.A.D., and Swanson-Hysell, N.L. (2017) Paleomagnetic directions from the Pretoria Group of South Africa: Hints at the position of the Kaapvaal Craton at 2.2 – 2.1 Ga. GAC-MAC Joint Annual Meeting, Vol. 40, 350.
- Slotznick, S. P., Kirschvink, J. L., and Fischer, W. W. (2017) Rotational remanent magnetization (RRM): Identifying pyrrhotite and siderite in natural samples. 2017 MagIC Science and Database Workshop.
- Kim, W., Slotznick, S.P., Shin, J., Park, C.K., Moon, J.-W. (2015) Magnetostratigraphy of the ferromanganese crust in the northwest equatorial Pacific. 8th International Conference on Asian Marine Geology, Abstract S10-P05.
- Fischer, W.W., Slotznick, S.P., Johnson, J.E., Webb, S.M., Rasmussen, B., Raub T.D. & Kirschvink, J.L. (2014) Archean ‘Whiffs of Oxygen’ Tied to Post-Depositional Processes. Goldschmidt2014, Abstract 701.
- Slotznick, S. P., Raub, T. D., Barbeau, Jr., D.L., and Kirschvink, J. L. (2012) Unraveling the paleomagnetic record of King George Island, South Shetlands, Antarctica. International Geological Congress, 34th Annual Brisbane, Australia, Abstract #1654.

Teaching Experience

EARS 1 How the Earth Works	Spring 2020, Fall 2020
<i>Co-instructor with Dr. Ed Meyer, Prof. Meredith Kelly</i>	
EARS 36 Astrobiology	Summer 2020, Fall 2021
EARS 58 Stratigraphy and Sedimentary Petrology	Winter 2021
EARS 201 Fundamentals and Pedagogy in Earth Sciences	Fall 2020, 2021
<i>Co-instructor with Prof. Meredith Kelly, Prof. Justin Strauss</i>	
EARS 272 Topics in Historical Geobiology	Winter 2021
<i>Co-instructor with Prof. Brenhin Keller</i>	

Supervisory Experience

Supervised and Co-Supervised Postdoctoral Scholars

Joseph Biasi, NSF Postdoctoral Fellowship	2021-2023
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Supervised and Co-Supervised Graduate Students

Josephine Benson, MSc Student, Co-advised with Wil Leavitt	2021-2023
Abdullah al Maruf, MSc Student, Primary Advisor	2021-2023
Alexander Cox, MSc Student, Committee Member	2020-2023
Laura Blum, MSc Student, Committee Member	2020-2022

Supervised and Co-Supervised Undergraduate Students

Jack Kreisler, Leave Term Grant and Senior Thesis, Advisor	Spring 2021-Spring 2022
Sami Lofman, Undergraduate Research Assistantship, Advisor	Summer 2021-Winter 2022
Theodore Green, Senior Fellowship, Secondary Advisor	Summer 2020-Spring 2021
Dylan Davis, Presidential Scholar Assistantship, Advisor	Fall 2020-Spring 2021

Field Expeditions

Ashland, Iron, Gogebic, Ontonagon Counties, WI and MI <i>Co-leader of stratigraphic measurement trip</i>	June-July 2021
Ashland, Iron, Gogebic, Ontonagon Counties, WI and MI <i>Co-leader of stratigraphic measurement and paleomagnetic sampling trip</i>	July-Aug. 2018
Mpumalanga, Gauteng, and North West Provinces, South Africa <i>Leader of paleomagnetic sampling for Paleoproterozoic paleogeography</i>	Aug. 2016, Sept. 2017
James Ross, Snow Hill, Vega, and Seymour Islands, Antarctica <i>Second-in-Command for paleomagnetic and paleontological sampling</i>	Feb.-March 2016
Glacier National Park, MT <i>Leader of sample collection trips to understand iron redox in Belt-Purcell Supergroup</i>	Aug. 2014, July 2015
Agouon Field Course, Belt-Purcell Supergroup, MT and ID <i>Assistant Organizer, collection/educational trip to explore Mesoproterozoic strata</i>	July 2013
Belle Fourche and Hot Springs, SD <i>Logistics coordinator, long-core and paleomagnetic sampling</i>	June-July 2013
Apiro and San Severino, Italy <i>Logistics coordinator, long-core and paleomagnetic sampling</i>	July 2012
Sand Creek, Rumsey Hills, CA <i>Logistics coordinator, long-core sampling to understand Cordilleran tectonics</i>	March 2012
Isla Angel de la Guarda, Baja California, Mexico <i>Field assistant, paleomagnetic sampling to understand opening of the Gulf of California</i>	November 2011
James Ross, Snow Hill, Vega, and Seymour Islands, Antarctica <i>Field assistant, paleomagnetic sampling for late Cretaceous magnetostratigraphy</i>	Feb.-March 2011

Funding

NSF EAR-2018253, Major Research Instrumentation Grant <i>MRI: Acquisition of a Superconducting Rock Magnetometer System for Earth Sciences Research (\$509,952)</i>	2020-2023
NAGT Early Career Geoscience Faculty Workshop Stipend <i>Stipend to cover conference fees (\$850)</i>	2021
Institute for Rock Magnetism Visiting Fellowships <i>Quantifying Goethite in Sedimentary Rocks (2021; \$4,000); Probing Sequential Chemical Extractions for Iron Mineralogy using Magnetic Methods (2018; \$4,000); Investigating Ocean Redox and Plate Tectonics during the Lomagundi-Jatuli (2.2 Ga to 2.0 Ga) using magnetic techniques (2017; \$4,000)</i>	2017, 2018, 2021

Professional Service

Reviewer for Earth and Planetary Science Letters, Geology, G-Cubed, Precambrian Research
Review Editor for Frontiers in Earth Science, Geomagnetism and Paleomagnetism Section
Topic Editor for Frontiers in Earth Science Research Topic: *Advances in Magnetism of Soils and Sediments*

Panelist for NASA Exobiology Program
Reviewer for American Chemical Society Petroleum Research Fund

Session Convener and Chair for AGU Fall Meeting	Dec. 2021
Session Convener, Chair, and OSPA Liaison for AGU Fall Meeting	Dec. 2020
Session Convener, Chair, and OSPA Liaison for AGU Fall Meeting	Dec. 2019
Judge for AGU's Outstanding Student Presentation Award	Dec. 2018
Judge for American Geophysical Union's Virtual Poster Showcase	Nov. 2017
American Geophysical Union, Student Representative	Sept. 2013-Dec. 2016
<i>Geomagnetism and Paleomagnetism Section</i>	

Mentor with UC Berkeley's Society of Women in the Physical Sciences	Sept. 2016-2019
Mentoring Coordinator for Society of Women in the Physical Sciences	Sept. 2018-2019
MIT Educational Counselor, alumni interviewer of undergrad applicants	Oct. 2010-present
Seminar Speaker for "Popping the Science Bubble" at Berkeley Public Library	Nov. 2018
Lab Tour Guide for SWPS's Berkeley High School STEMInist Shadow Day	Oct. 2018
Mentor in Caltech's Women Mentoring Women Program	Oct. 2013-June 2016
Caltech Graduate Honor Council	Oct. 2010-June 2016
Judge at Caltech's Perall Undergraduate Research Speaking Competition	Nov. 2014, 2015
Lab Tour Guide for Junior Watson Program for a local high school class	Nov. 2014
Moderator and Judge at Caltech's Summer Undergrad Research Seminar Day	August 2013