

Sarah P. Slotznick

Department of Earth Sciences
Dartmouth College
HB6105 Fairchild Hall
Hanover, NH 03755
sslotz@dartmouth.edu

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	Winter 2020
Department of Earth Sciences	
University of California, Berkeley, Berkeley, CA	
Miller Institute Postdoctoral Fellow	2016-2019
Department of Earth and Planetary Sciences	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

Institute for Rock Magnetism Visiting Fellowship	May 2018
Institute for Rock Magnetism Visiting Fellowship	March 2017
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

[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**. doi:10.1029/2018JB017067.

- [11] Slotznick, S.P., Webb, S.M., Kirschvink, J.L., and Fischer, W.W. (2019) Mid-Proterozoic ferruginous conditions reflect post-depositional processes. *Geophysical Research Letters*, **46**. doi: 10.1029/2018GL081496.
- [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

- [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

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., Carrero, S., Sharrar, A., Sitar, M.C., Banfield, J., Swanson-Hysell, N., and Gilbert, B. (2019) Iron mineral transformations during weathering of sulfide-bearing shales and sandstones. American Geophysical Union, Fall Meeting.
- Tobin, T.S., Roberts, E.M., Slotznick, S.P., Biasi, J.A., Clarke, J., O'Connor, P.M., Skinner, S.M., West, A.R., Kirschvink, J.L., and Lamanna, M.C. (2019) Biostratigraphic and detrital zircon geochronological age assignment of late Cretaceous sedimentary exposures on Robertson Island, Antarctica. *GSA Abstracts with Programs*, Vol. 50.
- Carrero, S., Sharrar, A., Slotznick, S., Swanson-Hysell, N., Banfield, J. and Gilbert, B. (2019) Trace Metals are Retained during the Circumneutral Weathering of the Pyritic Mancos Shale. Goldschmidt2019.
- Slotznick, S. P., Sperling, E.A., Tosca, N.J., Miller, A.J., Clayton, K., van Helmond, N., Slomp, C.P., and Swanson-Hysell, N.L. (2018) Probing the Iron Speciation Extraction using Magnetic Techniques and X-ray Diffraction. Geobiology 2019.
- 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.
- Mitchell, R., Thissen, C., Kirschvink, J. L., Shrag, D., Montanari, A., Coccioni, R., Slotznick, S. P., Tamazaki, T., Penserini, B., Abrahams, J., Cruz-heredia, M., Evans, D. (2015) Milankovitch wobble?. American Geophysical Union, Fall Meeting, Abstract GP23B-1313.
- 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

Ge124a Paleomagnetism and Magnetostratigraphy Spring 2015
Field Teaching Assistant and Lab Teacher for Prof. Joseph Kirschvink
Ge11b / Ge104 Earth and the Biosphere / Introduction to Geobiology Winter 2014
Lab and Lecture Teaching Assistant for Profs. Joseph Kirschvink and Woodward Fischer
Ge124a and b Paleomagnetism and Magnetostratigraphy Spring 2013
Field, Lab, and Lecture Teaching Assistant for Prof. Joseph Kirschvink
Ge136b Regional Field Geology of the Southwestern United States Winter 2012
Teaching Assistant for Prof. Joseph Kirschvink

Supervisory Experience

Mentor for Undergraduate Research Apprenticeship Program Student Spring 2018-2019
Supervised an undergraduate student in UC Berkeley's Paleomagnetism Laboratory
Mentor for College Prep's STEM Research Program Summer 2017, 2018, 2019
Research mentor for local high school students in summer internship at UC Berkeley
Lab Safety Officer and Lab Use Training Aug. 2011-June 2016
Trained 14 graduate students and visitors to use Caltech's Paleomagnetism Laboratory
Co-mentor for Summer Undergraduate Research Students Summer 2011-2015
Co-mentored 11 undergraduate students with Prof. Joseph Kirschvink

Field Expeditions

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

Professional Service

Reviewer for Earth and Planetary Science Letters, G-Cubed, Precambrian Research

Review Editor for Frontiers in Earth Science, Geomagnetism and Paleomagnetism Section
Panelist for NASA Exobiology Program

Session Convener, Chair, and OSPA Liason 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
Participant in 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 Peripall Undergraduate Research Speaking Competition	Nov. 2014, 2015
Moderator and Judge at Caltech's Summer Undergrad Research Seminar Day	August 2013