

Sarah P. Slotznick

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Academic Appointments

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

Education

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

Professional Experience

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

Teaching and Supervising Experience

Ge136b Regional Field Geology of the Southwestern United States Winter 2012
Teaching Assistant for Prof. Joseph Kirschvink
Ge124a and b Paleomagnetism and Magnetostratigraphy Spring 2013
Field, Lab, and Lecture Teaching Assistant 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 Paleomagnetism and Magnetostratigraphy Spring 2015
Field Teaching Assistant and Lab Teacher for Prof. Joseph Kirschvink
Co-mentor for Summer Undergraduate Research Students Summer 2011-2015
Co-mentored 11 undergraduate students with Prof. Joseph Kirschvink
Lab Safety Officer and Lab Use Training Aug. 2011-June 2016
Trained 14 graduate students and visitors to use Caltech's Paleomagnetism Laboratory
Mentor for College Prep's STEM Research Program Summer 2017, 2018
Research mentor for local high school students in summer internship at UC Berkeley
Mentor for Undergraduate Research Apprenticeship Program Student Spring 2018-2019
Supervised an undergraduate student in UC Berkeley's Paleomagnetism Laboratory

Select Service Experience

Reviewer for Precambrian Research, Earth and Planetary Science Letters
Review Editor for Frontiers in Earth Science Jan. 2017-present
Geomagnetism and Paleomagnetism Specialty Section
Panelist for NASA Exobiology Program Summer 2018

American Geophysical Union, Student Representative <i>Geomagnetism and Paleomagnetism Section</i>	Sept. 2013-Dec. 2016
Mentor with UC Berkeley's Society of Women in the Physical Sciences	Sept. 2016-present
Mentoring Coordinator for Society of Women in the Physical Sciences	Sept. 2018-present
MIT Educational Counselor, alumni interviewer of undergrad applicants	Oct. 2010-present
Mentor in Caltech's Women Mentoring Women Program	Oct. 2013-June 2016
Caltech Graduate Honor Council <i>Teach and support Caltech's Honor Code, hold trials to deal with academic infractions</i>	Oct. 2010-June 2016
Participant in HYPE-LA's "Shadow a Graduate Student Day"	June 2012
Grad. Student Panelist at APS's Conference for Undergrad. Women in Physics	January 2013
Moderator and Judge at Caltech's Summer Undergrad Research Seminar Day	August 2013
Judge at Caltech's Perall Undergraduate Research Speaking Competition	Nov. 2014, 2015
Judge for American Geophysical Union's Virtual Poster Showcase	Nov. 2017
Participant in SWPS's Berkeley High School STEMist Shadow Day	Oct. 2018
Seminar Speaker for "Popping the Science Bubble" at Berkeley Public Library	Nov. 2018
Judge for AGU's Outstanding Student Presentation Award	Dec. 2018

Field Expeditions

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

Fellowships

California Institute of Technology Benjamin M. Rosen Fellow	Sept. 2010-Sept. 2011
NSF Graduate Research Fellow	Sept. 2010-Aug. 2014
NASA Earth and Space Science Fellow	Sept. 2014-June 2016

Grants

Tobacco Root Geological Society Scholarship	April 2014
Belt Association Student Research Grant	April 2014

Institute for Rock Magnetism Summer School Scholarship	March 2015
P.E.O. Scholar Award, Betty Cook Karrh Memorial Endowed Scholar	March 2015
GSA Student Research Grant, Outstanding Mention	May 2015
Institute for Rock Magnetism U.S. Student Fellowship	Sept. 2015
Institute for Rock Magnetism Visiting Fellowship	March 2017
Esper S. Larsen Jr. Research Fund Grant (with PI Nicholas Swanson-Hysell)	June 2017
Institute for Rock Magnetism Visiting Fellowship	May 2018

Invited Research Presentations

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

Peer-Reviewed Publications

- 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.
- 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.
- 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.
- Slotznick, S.P., Fischer, W.W. (2016). Examining Archean Methanotrophy, *Earth and Planetary Science Letters*, **441**, 52-59.
- 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.
- 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.
- 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.

- 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.
- 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.
- 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.
- 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.
- Swanson-Hysell, N.L., Fairchild, L.M., Slotznick, S.P. (in press) Primary and secondary red bed magnetization constrained by fluvial intraclasts, *Journal of Geophysical Research—Solid Earth*. doi:10.1029/2018JB017067.

Other Publications

- Slotznick, S. P. (2009) A paleomagnetic study of the angrite Sahara 99555. Undergraduate Thesis, Advisor Benjamin Weiss, Massachusetts Institute of Technology.
- 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.
- 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.

Select Abstracts

- 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.
- 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.
- 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.
- 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.
- 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.
- 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., Swanson-Hysell, N.L., and Sperling, E.A. (2017) A preserved Mesoproterozoic oxycline and a hospitable lacustrine environment for early eukaryotes. *GSA Abstracts with Programs*, Vol. 49, No. 6, Paper No. 324-6.
- Slotznick, S. P., Swanson-Hysell, N.L., Sperling, E.A., Miller, A.J., van Helmond, N., and Slomp, C.P. (2018) Probing Sequential Chemical Extractions for Iron Speciation Using Magnetic Methods. *Goldschmidt2018*.
- 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.
- 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*.