

Sarah P. Slotznick

Department of Earth Sciences
Dartmouth College
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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

* Graduate student/Postdoc mentee ** Undergraduate student mentee

- [20] Roberts, E. M., O'Connor, P. M., Clarke, J. A., Slotznick, S. P., Placzek, C. J., Tobin, T. S., Hannaford, C., Orr, T., Jinnah, Z. A., Claeson, K. M., Salisbury, S., Kirschvink, J. L., Pirrie, D. and Lamanna, M. C. (2022) New age constraints support a K/Pg boundary interval on Vega Island, Antarctica: implications for latest Cretaceous vertebrates and paleoenvironments. *Geological Society of America Bulletin*.
- [19] Slotznick, S. P., Johnson, J. E., Rasmussen, B. Raub, T. D., Webb, S. M., Zi, J.-W., Kirschvink, J. L., Fischer, W. W. (2022) Re-examination of 2.5 Ga “Whiff” of Oxygen Interval Points to Anoxic Ocean Before GOE. *Science Advances*. **8**, eabj7190.
- [18] Green, T.**, Slotznick, S. P., Jaqueto, P., Raub, T. D., Tohver, E., Playton, T. E., Haines, P. W., Kirschvink, J. L., Hocking, R. M., Montgomery, P. (2021) High-resolution late Devonian magnetostratigraphy from the Canning Basin, Western Australia: A re-evaluation. *Frontiers in Earth Sciences*. **9**, 757749.
- [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*. **19**(6), 545-556.
- [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., Trinajstic, 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

Earth-Life Science Institute, Tokyo Institute of Technology, 10 th Symposium	Jan. 2022
Lamont-Doherty Earth Observatory, Geodynamics Seminar	Sept. 2021
Lehigh University, EES Department 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

- Kreisler, J.** , Slotznick, S.P. (2021) Diagenetic and Deep-Time Implications of Magnetite Preservation in Marine Sediments. American Geophysical Union, Fall Meeting.
- Carrero, S., Slotznick, S.P., Swanson-Hysell, N., Banfield, J., Gilbert, B. (2021) Geochemical and Mineralogical Controls on the Weathering of Hydrothermally Mineralized Sandstone. American Chemical Society Conference.
- 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.
- 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., 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.
- 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 <i>Co-instructor with Dr. Ed Meyer, Prof. Meredith Kelly</i>	Spring 2020, Fall 2020
EARS 36 Astrobiology	Summer 2020, Fall 2021
EARS 45-46-47 Field Methods	Fall 2021, 2022, Spring 2022
EARS 58 Stratigraphy and Sedimentary Petrology	Winter 2021
EARS 201 Fundamentals and Pedagogy in Earth Sciences <i>Co-instructor with Prof. Meredith Kelly, Prof. Justin Strauss</i>	Fall 2020, 2021, 2022
EARS 272 Topics in Historical Geobiology	Winter 2021

Co-instructor with Prof. Brenhin Keller

Supervisory Experience

Supervised and Co-Supervised Postdoctoral Scholars

Joseph Biasi, NSF Postdoctoral Fellowship 2021-2023

Supervised and Co-Supervised Graduate Students

Laurie Zielinski, PhD Student, Primary Advisor 2022-2027

Olivia Moehl, MSc Student, Advisor 2022-2024

Abdullah al Maruf, MSc Student, Advisor 2022-2024

Fernando Montaña Lopez, PhD Student, Committee Member 2021-2026

Josephine Benson, MSc Student, Co-advised with Wil Leavitt 2021-2023

Hannah Robutka, MSc Student, Committee Member, University of Victoria 2021-2023

George Geier, MSc Student, Committee Member 2021-2023

Alexander Cox, MSc Student, Committee Member 2020-2023

Laura Blum, MSc Student, Committee Member 2020-2022

Supervised and Co-Supervised Undergraduate Students

London Warburton, Senior Thesis, Advisor Summer 2022-Spring 2023

Maria Groveza, Leave Term Grant & Presidential Scholar, Secondary Advisor 2022- 2023

Sophia Haley, Undergraduate Research Assistantship, Advisor Summer 2022

Sami Lofman, Undergraduate Research Assistantship, Advisor Summer 2021-Summer 2022

Jack Kreisler, Leave Term Grant and Senior Thesis, Advisor Spring 2021-Fall 2022

Theodore Green, Senior Fellowship, Secondary Advisor Summer 2020-Spring 2021

Dylan Davis, Presidential Scholar Assistantship, Advisor Fall 2020-Spring 2021

Field Expeditions

Digby, Annapolis, and Kings Counties, Nova Scotia, Canada June 2022

Stratigrapher and second-in-command for paleomagnetic sampling

Grand Canyon National Park, AZ April 2022

Co-PI of sample collection trip

Ashland, Iron, Gogebic, Ontonagon Counties, WI and MI June-July 2021

Co-leader of stratigraphic measurement trip

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

Funding

G. Norman Albree Trust Fund 2022
Co-PI Wil Leavitt, Acquisition of field spectrophotometer and chlorophyll probes
 (\$9,600.01)
 NAGT Early Career Geoscience Faculty Workshop Stipend 2021
Stipend to cover conference fees (\$850)
 NSF EAR-2018253, Major Research Instrumentation Grant 2020-2023
MRI: Acquisition of a Superconducting Rock Magnetometer System for Earth Sciences
Research (\$509,952)
 Institute for Rock Magnetism Visiting Fellowships 2017, 2018, 2022
Quantifying Goethite in Sedimentary Rocks (2022; \$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)

Professional Service

Reviewer for Earth and Planetary Science Letters, Geology, G-Cubed, Precambrian Research,
 Geochimica et Cosmochimica Acta, Catena
 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, Chair, and OSPA Liaison/Judge for AGU Fall Meeting Dec. 2021
 Session Convener, Chair, and OSPA Liaison/Judge 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
Geomagnetism and Paleomagnetism Section

 Science Advisor for PBS/BBC NOVA series Jan. 2022-present
 Expert Science Reviewer for ARC Educational Books Sept. 2021-present
 MIT Educational Counselor, alumni interviewer of undergrad applicants Oct. 2010-present
 Mentoring Coordinator for Society of Women in the Physical Sciences Sept. 2018-2019
 Mentor with UC Berkeley's Society of Women in the Physical Sciences Sept. 2016-2019
 Mentor in Caltech's Women Mentoring Women Program Oct. 2013-June 2016

Caltech Graduate Honor Council

Oct. 2010-June 2016