

Kelsey B. Prissel

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- Research Interests** I am interested in combining high-temperature experiments with geochemical sample analyses and remote-sensing data in order to characterize the nature and timing of petrologic processes that occur during planetary differentiation and magmatism.
- Education**
- Washington University in St. Louis, MO**
Ph.D., Earth and Planetary Science, *in progress*
M.A., Earth and Planetary Science, May 2016
Dissertation Topic: “Experimental Constraints on Igneous Iron Isotopic Fractionation”
Advisor: Michael J. Krawczynski
- Brown University, Providence, RI**
Sc.B., Geology-Chemistry, Honors, May 2014
Thesis Advisor: Stephen W. Parman
- Research Experience**
- Washington University in St. Louis, MO**
Graduate Student August 2014 - present
- Aided in installation and calibration of experimental geochemistry laboratory, including vertical gas-mixing furnaces and Boyd and England type piston cylinders
 - Conducted diffusion couple experiments (piston cylinder); analyzed diffusion profiles with JEOL JXA-8200 electron microprobe, Probe for EPMA software (WashU)
 - Performed isotopic fractionation experiments and glass syntheses (gas-mixing furnace); conducted sample major element analysis (electron microprobe, WashU), hand-separation of mineral phases (under optical microscope), sample dissolution (in Origins Lab at U.Chicago), and isotopic analysis (MC-ICPMS at U.Chicago)
 - Characterized Apollo sample 70275,51 using petrographic microscope and electron microprobe (point analyses and X-ray maps, WashU)
 - Computed: equilibrium and kinetic isotopic fractionation during magmatic processes, quantitative fitting of diffusion profiles, mass balance of phase compositions, diffusive exchange in volcanic systems, synthesis of literature data (LEPR, GEOROC, PetDB, etc.), multicomponent mixing (major and trace elements, isotopes, Monte Carlo simulations)
- Lunar and Planetary Institute, Houston, TX**
Summer Research Intern with Dr. Allan Treiman June - August 2013
- Identified and analyzed amphiboles within melt inclusions in Martian meteorites: preparation, characterization (petrographic microscope), and geochemical analysis (Cameca SX-100 electron microprobe, JSC) of Martian meteorite thin sections; calculated parent magma volatile compositions from amphibole compositions
- Brown University, Providence, RI**
Undergraduate Research Assistant June 2012 - May 2014
- Conducted internally-heated pressure vessel experiments to investigate the phase equilibria of Mercury-like compositions (as determined by MESSENGER); analyzed samples with Cameca SX-100 electron microprobe (Brown)
 - Correlated spectral features with spinel chemistry; synthesized spinel samples (gas-mixing furnace); analyzed samples with electron microprobe (Brown) and reflectance spectroscopy (ASD, FTIR, and RELAB facility at Brown)

Publications

AM Gaffney, J Gross, ...**KB Prissel** et al., Magmatic Evolution I: Initial Differentiation of the Moon, *Reviews in Mineralogy and Geochemistry*, in review.

KB Prissel, MJ Krawczynski, NX Nie, N Dauphas, H Couvy, MY Hu, EE Alp, M Roskosz (2018) Experimentally Determined Effects of Olivine Crystallization and Melt Titanium Composition on Iron Isotopic Fractionation in Planetary Basalts, *Geochimica et Cosmochimica Acta*, 238, 580-598. <http://doi.org/10.1016/j.gca.2018.07.028>

KB Williams, CRM Jackson, LC Cheek, KL Donaldson-Hanna, SW Parman, CM Pieters, MD Dyar, TC Prissel (2016) Reflectance Spectroscopy of Chromium-bearing Spinel with Application to Recent Orbital Data from the Moon, *American Mineralogist*, 101 (3), 726-734. <http://doi.org/10.2138/am-2016-5535>

B Fegley Jr., NS Jacobson, **KB Williams**, JMC Plane, L Schaefer, K Lodders (2016) Solubility of Rock in Steam Atmospheres of Planets, *Astrophysical Journal*, 824 (2), 103. <http://doi.org/10.3847/0004-637X/824/2/103>

CRM Jackson, LC Cheek, **KB Williams**, K Donaldson-Hanna, CM Pieters, SW Parman, RF Cooper, MD Dyar, M Nelms, MR Salvatore (2014) Visible-Infrared Spectral Properties of Iron-bearing Aluminate Spinel Under Lunar-like Redox Conditions, *American Mineralogist*, 99 (10), 1821-1833. <http://doi.org/10.2138/am-2014-4793>

Selected Abstracts

*Poster **Oral Presentation

KB Prissel**, MJ Krawczynski, JA Van Orman (2018), Insights into the magmatic ascent rates of kimberlites from Fe-Mg interdiffusion rates in ilmenite, GSA Annual Meeting, No. 237-10.

KB Prissel*, MJ Pratt, P Skemer (2018), Pilot study on the use of augmented reality in an undergraduate field geology course, GSA Annual Meeting, No. 252-9.

KB Prissel**, MJ Krawczynski, JA Van Orman (2018), Experimental Determination of Cation Diffusivities in Ilmenite, Goldschmidt 2018.

KB Prissel*, MJ Krawczynski, N Dauphas, NX Nie (2018), Evaporative Iron Loss During One-Atmosphere Gas-Mixing Experiments, Sixteenth International Symposium on Experimental Mineralogy, Petrology, and Geochemistry.

KB Williams**, MJ Krawczynski, JA Van Orman (2016), Two-Oxide Disequilibrium: A New Geospeedometer Based on Diffusion in Ilmenite, AGU Fall Meeting, V13F-08.

KB Williams**, MJ Krawczynski, NX Nie, N Dauphas, H Couvy, MY Hu, EE Alp (2016), The Role of Differentiation Processes in Mare Basalt Iron Isotope Signatures, LPSC 47, 2779.

SW Parman**, **KB Williams**, HP O'Brien, S Wang, TC Prissel, EM Parmentier, PC Hess, JW Head (2015), Phase Equilibria Constraints on Mercury Melting Conditions, LPSC 46, 2345.

KB Williams**, Y Sonzogni, AH Treiman (2014), Amphibole in the Tissint Martian Meteorite: Composition and Implication for Volatile Content of Parental Magma, LPSC 45, 1435.

KB Williams*, CRM Jackson, LC Cheek, TC Prissel, SW Parman, CM Pieters (2012), The Effect of Cr content on the Reflectance Properties of Mg-Spinel, AGU Fall Meeting, P43A-1905.

Academic Awards

NASA Earth and Space Sciences Fellowship, 2017 - present.
Student Presentation Award, EMPG XVI, June 2018.
Roger B. Chaffee Graduate Fellowship, 2014 - 2017.
McDonnell Center for the Space Sciences, Washington University in St. Louis
Brown University Department of Geological Sciences Awards:
 Senior Award for Academics and Research, May 2014
 Sarah LaMendola Undergraduate Research Award, May 2013
AGU Outstanding Student Paper Award, Planetary section, 2012

Teaching Experience

Washington University in St. Louis, MO
 Carl Tolman Teaching Prize, 2018
 Teaching certifications: [CIRTL](#) Scholar, Preparation in Pedagogy

- Conducted Teaching as Research project and presented results at Focus on Teaching and Technology Conference in St. Louis and GSA in Indianapolis (Fall 2018); attended 15+ STEM teaching workshops

Undergraduate research project mentor, Summer 2017.
 EPSc 352: Earth Materials, Graduate Student Instructor, Fall 2017.
 EPSc 441: Introduction to Geochemistry, Substitute Lecturer, Fall 2015 and 2016.

Brown University, Providence, RI
 GEOL 1370: Environmental Geochemistry, Teaching Assistant, Fall 2013.
 GEOL 0050: Introductory Geology, Teaching Assistant, Spring 2013.
 MATH 0090, MATH 0100: Introductory Calculus, Tutor, 2011-2013.

Leadership, Outreach, Service

Referee, *Geochimica et Cosmochimica Acta*
Executive Secretary, NASA Solar System Workings, Emerging Worlds
Goldschmidt 2018 Session Convener, Mantle and Core theme

ExMASS Science Advisor, Lunar and Planetary Institute 2016 - 2018
[Mentor to winning team, 2018](#); top-four finalist team, 2017

Letters to a Pre-Scientist, Scientist Advisory Board (2018 - present), Pen pal (2015 - present), Classroom coordinator (2016 - 2018)

Washington University in St. Louis, Graduate Student President (2016 - 2018), Graduate Student Peer Mentor (2016 - present), Prospective Weekend coordinator (2015 - 2017), Research as Art coordinator (2014 - 2016)

K-12 Guest Speaker 2012 - present
 Lessons on topics including mineralogy, volcanology, lunar science, and careers in planetary science (presentations given in RI, IN, MO, NJ, WI); Skype-a-Scientist participant

Last Updated: December 10, 2018