

EDUCATION

- current PhD candidate, School of Earth and Space Exploration (SESE), Arizona State University, Tempe
- Experimental Petrology
Advisor: Christy Till, Experimental Petrology and Igneous Processes Center (EPIC)
Committee: Rick Hervig, Maitrayee Bose
- 2014 B.A., University of Colorado, Boulder – *summa cum laude, with distinction*
- Geological Sciences, minor: Astrophysical & Planetary Sciences
 - Honors thesis: Understanding the History of Arabia Terra, Mars Through Crater-Based Tests
Advisor: Brian Hynke
Committee: Fran Bagenal, Stephen Mojzsis, Charles Stern
- 2003 B.Sc., Northwestern University, Evanston, IL
- Communications

RESEARCH

Diffusion chronometry using Fe-rich clinopyroxene from Yellowstone post-caldera rhyolites to determine rejuvenation-eruption timescales of highly silicic systems (2014–current)

- Developed new diffusion modeling method to use a slow-diffusing elemental profile as a proxy to the initial condition of a fast-diffusing elemental profile
- Performed analyses via LA-ICPMS, EPMA, SIMS, NanoSIMS (also operated)
- Finite differences diffusion model programmed in MATLAB

Updated a clinopyroxene-liquid geothermometer for high-Fe low-Al clinopyroxene in high-silica systems (2017–current)

- Hydrothermal pressure vessel (HPV) experiments to supplement calibration dataset

Modeling of exoplanet magmas and crusts in association with ASU-NExSS (2015–current)

- Piston-cylinder experiments to identify mineral phases in magmas of exotic composition

Parameterized geodynamic modeling of exoplanet mantles in association with ASU-NExSS (2015–2017)

- Model programmed in C

Analysis of Martian craters to determine the geological history of the Arabia Terra region (2011–2014)

- Used Igor Pro to analyze crater database data and produce plots.

X-ray diffraction study of Nicaraguan hydrothermal systems to characterize similar relic environments on Mars (2012–2013)

- Prepared samples and conducted x-ray diffraction using the inXitu Terra Field Portable XRD/XRF instrument (functionally equivalent to the CheMin instrument on the MSL/Curiosity rover).
- Analyzed diffractograms using XPowder software and the American Mineralogist Crystal Structure Database's "difdata" library.

HONORS & FELLOWSHIPS

- 2016 AGU Outstanding Student Paper Award
- 2016 ASU Graduate Education Travel Grant
- 2014–curr. NSF Graduate Research Fellowship
- 2014 Rocky Mountain Association of Geologists Outstanding Student
- 2014 CU Boulder Bruce F. Curtis Scholarship
- 2013 CU Boulder T. Keith Marks Award for Outstanding Geological Sciences Majors
- 2011–2014 CU Boulder Arts and Sciences Dean's Scholar

PUBLICATIONS & ABSTRACTS

- Till, C.B., M.E. Pritchard, C.A. Miller, K.K. Brugman, J. Ryan-Davis, 2018. Super-volcanic investigations. *Nature Geoscience* 2. doi:10.1038/s41561-018-0100-1
- Brugman, K.K., C.B. Till, 2018. A Revised Low-Al Clinopyroxene-Liquid Geothermometer for High-Silica Igneous Systems. EOS AGU Chapman: Merging Geophysical, Petrochronologic, and Modeling Perspectives of Large Silicic Magma Systems Abstract P-28, Quinamávida, Maule Region, Chile.
- *Brugman, K.K., C.B. Till, 2017. Taking Yellowstone's Temperature: A New Clinopyroxene Geothermometer to Improve Timescales of Pre-Eruptive Events. EOS AGU Fall Meeting Abstract U13B-03, New Orleans, LA.
- Brugman, K.K., C.B. Till, 2017. A Revised Clinopyroxene-Liquid Geothermometer for Silicic Igneous Systems with Applications to Diffusion Chronometry of the Scaup Lake Rhyolite, Yellowstone Caldera, WY. EOS AGU Fall Meeting Abstract V11C-0365, New Orleans, LA.
- Brugman, K.K., C.B. Till, 2017. Investigation of the Applicability of Clinopyroxene Geothermometers to Silicic Igneous Systems. IAVCEI Scientific Assembly Abstract ME43C-044, Portland, OR.
- Brugman, K.K., C.B. Till, M. Bose, 2016. Clinopyroxene Diffusion Chronometry of the Scaup Lake Rhyolite, Yellowstone Caldera, WY. EOS AGU Fall Meeting Abstract V13F-02, San Francisco, CA.
- Brugman, K.K., C.B. Till, M. Bose and R. Hervig, 2015. Development of Clinopyroxene as an Igneous Geospeedometer Using NanoSIMS. EOS AGU Fall Meeting Abstract V31B-3030, San Francisco, CA.
- Brugman, K.K., B.M. Hynek, S.J. Robbins, 2015. Crater-based tests unlock the mystery of the origin and evolution of Arabia Terra, Mars. Lunar and Planetary Science Conference, The Woodlands, TX.
- Hynek, B.M., T.M. McCollum, E.C. Marcucci, K.K. Brugman, K.L. Rogers (2013), Assessment of environmental controls on acid-sulfate alteration at active volcanoes in Nicaragua: Applications to relic hydrothermal systems on Mars, *Journal of Geophysical Research—Planets*, Special Issue: Early Mars, 118, 2083–2104, doi:10.1002/jgre.20140.

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SERVICE

- 2017–curr. AGU Student & Early Career Scientist Conference Planning Committee
- 2016–curr. Student representative for the AGU Volcanology, Geochemistry, and Petrology section
- 2016–curr. Graduate student representative for the ASU Technology Advisory Board
- 2015–curr. Co-chair of the SESE Women in Science Program
- 2015 Peer mentor at the AGU Fall Meeting
- 2014–2017 Graduate Council delegate for the School of Earth and Space Exploration (SESE), ASU
- 2012–2013 Student planning committee for the Geological Society of America's 125th Annual Meeting

SELECTED EMPLOYMENT

- Research Assistant, School of Earth and Space Exploration (SESE), ASU, Tempe, AZ (2014–present)
- Teaching Assistant, School of Earth and Space Exploration (SESE), ASU, Tempe, AZ (2016)
- Research Assistant, Laboratory for Atmospheric and Space Physics, Boulder, CO (2011–2014)
- Undergraduate Grader, Department of Geological Sciences, CU Boulder (2013–2014)

ArcGIS, Igor Pro, X Powder, server- and client-side programming languages including Python and C