

Megan Holycross
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EDUCATION

Doctor of Philosophy in Geology August 2017
Rensselaer Polytechnic Institute, Troy, NY
Advisor: Dr. E. Bruce Watson
Thesis: Diffusive fractionation of trace elements and their isotopes in silicate melts

Bachelor of Science in Environmental Geoscience, Honors May 2012
Michigan State University, East Lansing, MI

WORK EXPERIENCE

Peter Buck Smithsonian Institution Postdoctoral Fellow Sept. 2017-present
Mineral Sciences, National Museum of Natural History

Graduate Research Assistant 2014-2017
Earth and Environmental Sciences, Rensselaer Polytechnic Institute

Research Intern 2015
Glass Science, Corning Incorporated

Graduate Teaching Assistant 2012-2014
Earth and Environmental Sciences, Rensselaer Polytechnic Institute

NSF-REU Intern 2011
Earth and Planetary Sciences, American Museum of Natural History

Professorial Research Assistant 2008-2012
Earth and Environmental Sciences, Michigan State University

PUBLICATIONS

Holycross M.E., Watson E.B. (2016) Diffusive fractionation of trace elements in basaltic melt, *Contributions to Mineralogy and Petrology* 171: 1-15

Watson E.B., Cherniak D.J., **Holycross M.E.** (2015) Diffusion of phosphorus in olivine and molten basalt, *American Mineralogist* 100: 2053-2065

Brandt D.S., Csonka J., **Holycross M.**, McCoy V., Seitz M. (2012) In search of the *Arthophycus parallelus* tracemaker, *Palaios* 27:116-121

Publications in preparation/submitted

Holycross M.E., Watson E.B. (submitted Sept. 2017) Trace element diffusion and kinetic fractionation in wet rhyolitic melt, *Geochimica et Cosmochimica Acta*

Holycross M.E., Watson E.B., Richter F., Villeneuve J. Diffusive fractionation of Li in wet, highly silicic melts, prepared for *Geochemical Perspectives Letters*

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FELLOWSHIPS, GRANTS, AWARDS

Peter Buck Postdoctoral Fellowship, Smithsonian Institution	2017
Student Research Grant, Geological Society of America	2016
Founder's Award of Excellence, Rensselaer Polytechnic Institute	2014
James Neal Research Scholarship, Michigan State University	2011
Honors College Scholarship, Michigan State University	2008-2012

PRESENTATIONS and CONFERENCE ABSTRACTS

Holycross M.E., Watson E.B., Richter F., Villeneuve J. (2017) "Diffusive fractionation of Li in wet, highly silicic melts", for GSA Annual Meeting, Seattle WA

Holycross M.E., Watson E.B. (2017) "Complex diffusion mechanisms for Li in feldspar: re-thinking Li-in-plag geospeedometry", for AGU Fall Meeting, New Orleans, LA

Holycross M. (2017) "Kinetic controls on trace element behavior in silicate melts", Rice University, Houston, TX, *Invited*

Holycross M.E., Watson E.B. (2016) "Diffusive fractionation of 25 trace elements in basaltic and rhyolitic melt", AGU Fall Meeting, San Francisco, CA

Holycross M.E., Watson E.B. (2016) "The compensation law for trace element diffusion in silicate melts" Research Nucleation Workshop, joint initiative between Rensselaer and Corning Inc., Troy, NY

Holycross M.E., Watson E.B. (2015) "Trace element diffusion in basaltic melt", AGU Fall Meeting, San Francisco, CA

Holycross M., Watson E.B. (2014) "Trace element diffusion in hydrous rhyolitic melt" V.M. Goldschmidt conference, Sacramento, CA

Holycross, M. (2011) "Sulfur solubility in silicic melts: an experimental study", REU Summer Forum, American Museum of Natural History, New York, NY

TEACHING EXPERIENCE

Graduate Teaching Assistant, Introduction to Geochemistry	2014
Graduate Teaching Assistant, Field Methods	2012-2013 (Fall)
Graduate Teaching Assistant, Structural Geology	2013
Graduate Teaching Assistant, Geology II: Earth's Surface	2013
Graduate Teaching Assistant, Earth Materials	2012

SYNERGISTIC ACTIVITIES and COMMUNITY OUTREACH

Volunteer science presenter, Troy High Earth Day Celebration
Troy, NY

Science instructor, Hoosick Falls Schools Career Day
Troy, NY

Earth and Environmental Sciences representative
School of Science Graduate Student Council
Rensselaer Polytechnic Institute, Troy, NY

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Science activity coordinator Exxon Mobil Bernard Harris Summer Science Camp at Rensselaer Troy, NY	2014
Mentor, Emma Willard School STEM Internship Program Advisor to Xin (Sherry) He Troy, NY	2012-2013
Student volunteer, Darwin Day Celebration Science and Culture Museum, Michigan State University East Lansing, MI	2009-2012

TECHNICAL SKILLS

Laboratory

Operation of high temperature and/or high pressure equipment (piston cylinder apparatuses, internally heated pressure vessels, one atmosphere furnaces) for geochemical experiments

Preparation of charges for high pressure experiments using power and hand tools (diamond saw, benchtop lathe, drill press, blow torch, jewelry-grade welder, etc.)

Preparation of glass and crystalline samples for major, minor and trace element analysis

Instrumentation

Photon Machines Analyte 193 laser ablation work station with Bruker 820-MS inductively coupled plasma mass spectrometer

Cameca SX-100 electron microprobe, wavelength- and energy-dispersive x-ray spectroscopy

Gatan CL3 cathodoluminescence imaging and spectroscopy

JEOL JSM-840 scanning electron microscope with INCA x-sight energy dispersive x-ray spectroscopy system