

RYAN M. CURRIER

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EDUCATION

Johns Hopkins University

Ph.D., October 2011. Dissertation: The melting of granitic host rock by intruded dolerite; magma analog injection experiments; sulfide saturation via xenocrystic olivine re-equilibration.

M.A., 2008, *Specialization: Magma Dynamics*

Michigan State University

B.S., 2006, *Specialization: Volcanic Geochemistry*

WORK EXPERIENCE

- Associate Professor (Fall 2021-Current) University of West Georgia
- Assistant Professor (Fall 2019-Spring 2021) University of West Georgia—Physical Geology, Physical Geology Lab, Igneous and Metamorphic Petrology (with lab), Volcanology
- Associate Professor (Fall 2018-Spring 2019) University of Wisconsin-Green Bay
- Assistant Professor (Fall 2012-Spring 2018) University of Wisconsin-Green Bay—Physical Geology, Natural Hazards, Mineralogy and Petrology (with lab), Structural Geology and Geodynamics, Field Methods (with lab), Intro. Statistics, Nature and American History, Field Trip Course: Geology of Wisconsin, Study Abroad: Costa Rica
- Visiting Professor (Spring 2012) SUNY Oswego—Historical Geology, Historical Geology Lab, Physical Geology, Physical Geology Lab
- Teaching Assistant (2007-2011) Johns Hopkins University—Our Changing Planet, Conversations with the Earth, A Guided Tour of the Planets
- Lab Instructor (2007) Towson University—Introduction to Physical Geology
- Science Support, Rain Table (2007) joint operation with University of Chicago and University of Minnesota—assisted in developing new software applications.

PUBLICATIONS (asterisk denotes mentored student)

- **Currier, R.M.**, Forsythe, P., *Sackett, A., *Bahling, J., and *Lund, H., (*in preparation*). Dike inflation and dike collapse: Experiments on the transient nature of dike shape.
- **Currier, R.M.**, Hidalgo, P.J., Mittal, T., *Monteiro, A., Ackerson, M., and Schneider, B., in review. The Tunnel Dike, Chief Joseph Dike Swarm: Dike architecture and emplacement conditions of a choked conduit. Geological Society of America Special Publication.
- **Currier, R.M.**, Hidalgo, P.J., Mittal, T., *Nimblett, J., *Bitner, L., *Williams, T., and Schneider, B., in review. Multi-pulse and crystal-laden emplacement of the Tunnel Dike: Implications for flood basalt volcanism. Earth and Planetary Science Letters.
- **Currier, R.M.**, Mittal, T., and Hidalgo, P.J., 2024. Towards an integrated texture toolkit, 1: Unveiling the complex relationship between crystal shape and fabric in EBSD data. Contributions to Mineralogy and Petrology. DOI: 10.1007/s00410-024-02128
- **Currier, R.M.**, and Flood, T.P., 2020. The Orestes Melt Zone, McMurdo Dry Valleys, Antarctica: Spatially distributed equilibrium and disequilibrium melting with implications for the formation of rapakivi and albite granites. Journal of Petrology. DOI: 10.1093/petrology/egz065
- **Currier, R.M.**, *Ashauer, Z.M., and Norfleet, M., 2019. Textural analyses of classical rapakivi granites: Texture formation through thermal cycling, selective mantling, and stirring. Precambrian Research. DOI: 10.1016/j.precamres.2018.11.020
- **Currier, R.M.**, Forsythe, P., *Grossmeier, C., *Laliberte, M., and *Yagle, B., 2017. Experiments on the evolution of laccolith morphology in plan-view. Journal of Volcanology and Geothermal Research. DOI: 10.1016/j.volgeores.2017.02.017

- **Currier, R.M.**, and Marsh, B.D., 2015. Mapping real time growth of experimental laccoliths: The effect of solidification on the mechanics of magmatic intrusion, *Journal of Volcanology and Geothermal Research*. DOI: 10.1016/j.jvolgeores.2015.07.009
- Hidalgo, P.J., Vogel, T.A., Rooney, T.O., **Currier, R.M.**, and Layer, P., 2011. Origin of silicic volcanism in the Panamanian Arc: evidence for a two-stage fractionation process at El Valle Volcano, *Contributions to Mineralogy and Petrology*. DOI: 10.1007/s00410-011-0643-2

PRESENTATIONS AT CONFERENCES (asterisk denotes mentored student)

- *Bitner, L., and **Currier, R.M.**, 2025. Automated DIY depth from focus instrument—placing surface profilometry within reach. GSA Spring Meeting.
- *Holmes, C., and **Currier, R.M.**, 2025. Shear and dilation: Evidence of mixed mode fracturing during dike emplacement, Chief Joseph Dike Swarm. GSA Spring Meeting.
- *Ford, J., and **Currier, R.M.**, 2025. Towards a synthetic U-stage microscope—numerical modeling of plagioclase optics observed in thin-section. GSA Spring Meeting.
- *Landry, S., and **Currier, R.M.**, 2025. Bed fluidization experiments as magma chamber analogs. GSA Spring Meeting.
- *Ruhukya, J., **Currier, R.M.**, Hidalgo, P.J., Ackerson, M., *Nimblett, J., and *Bitner, L., 2024. Crystal mush emplacement and rapid cooling in the Tunnel Dike of the Chief Joseph Dike Swarm. GSA Fall Meeting.
- *Corral, S., *Hopwood, K., *Roberts, A., *Williams, T., **Currier, R.M.**, and Hidalgo, P.J., 2024. Redefining volcanic conduit dynamics: Inelastic deformation of granular media during dike emplacement in the Chief Joseph Dike Swarm. GSA Fall Meeting.
- *Bitner, L., **Currier, R.M.**, Hidalgo, P.J., *Nimblett, J., and *Ruhukya, J., 2024. Grain size evolution during emplacement of particle-laden dikes, Chief Joseph Dike Swarm. GSA Spring Meeting.
- **Currier, R.M.**, Hidalgo, P.J., *Bitner, L., *Nimblett, J., and *Ruhukya, J., 2024. Emplacement of a cool, magmatic slurry: Tunnel Dike, Chief Joseph Dike Swarm. GSA Spring Meeting.
- *Ruhukya, J., **Currier, R.M.**, Hidalgo, P.J., Ackerson, M., *Bitner, L., and *Nimblett, J., 2023. Magma emplacement as a crystal mush: Tunnel Dike, Chief Joseph Dike Swarm. GSA Fall Meeting.
- *Williams, A., Hidalgo, P.J., **Currier, R.M.**, *Farley, J., and *Archer, E., 2023. Reuse of magma ascent routes in an evolving magmatic plumbing system, Chief Joseph Dike Swarm. GSA Fall Meeting.
- *Archer, E., Hidalgo, P.J., **Currier, R.M.**, *Williams, A., and *Farley, J., 2023. Lithological and strain anisotropy during dike propagation and growth, Chief Joseph Dike Swarm, Cornucopia, Oregon. GSA Fall Meeting.
- *Farley, J., Hidalgo, P.J., **Currier, R.M.**, *Archer, E., and *Williams, A., 2023. Magmatic plumbing system evolution during synemplacement shear, Southern Wallowa Mountains, Oregon. GSA Fall Meeting.
- *Nimblett, J., **Currier, R.M.**, Hidalgo, P.J., *Ruhukya, J., and *Bitner, L., 2023. Wall-rock thermal modeling informed by textural analyses in the Tunnel Dike, Chief Joseph Dike Swarm. GSA Fall Meeting.
- **Currier, R.M.**, and Mittal, T., 2023. Towards a next generation, open-source texture toolkit. GSA Fall Meeting.
- *Bitner, L., **Currier, R.M.**, Hidalgo, P.J., *Ruhukya, J., and *Nimblett, J., 2023. Magma Crystallization during emplacement of Columbia River Flood Basalt Dikes. GSA Fall Meeting.
- **Currier, R.M.**, Hidalgo, P., *Guerrier, A., *Bitner, L., *Ruhukya, J., and *Stephens, Z., 2023. Using crystal preferred orientation (CPO) to better interpret igneous rock texture. GSA Spring Meeting.
- *Ford, H., and **Currier, R.M.**, 2022. Vesicle bands in a dike: Investigating magma dynamics in a Mount Taylor Dike, New Mexico. GSA Spring Meeting.
- **Currier, R.M.**, Hidalgo, P.J., and *Hulsey, K., 2022. Fabric Cut Effect: An EBSD cautionary

tale. GSA Spring Meeting.

- *Hulsey, K. and **Currier, R.M.**, 2021. A Tale of Two Fabrics: An EBSD investigation of crystal populations in a mafic dike. GSA Fall Meeting.
- **Currier, R.M.** and Flood, T.P. Rapakivi texture formation via plagioclase mush armoring: Evidence from the Orestes Melt Zone, Antarctica, GSA Fall Meeting 2020.
- **Currier, R.M.** and *Viquez, J., 2020. Textural analysis of layering in the Dais layered mafic intrusion, Antarctica. GSA Spring Meeting (**CANCELLED**, COVID-19)
- **Currier, R.M.**, 2019. What magmatic phenomena are encoded in dikes? GSA Fall Meeting
- Horsman, E., de Sousa, L., **Currier, R.M.**, and Giorgis, S., 2019. Detailed laccolith emplacement history demonstrates mechanical interplay between hypabyssal magma and host rock: Mount Ellen, Henry Mountains, Utah. GSA Fall Meeting.
- **Currier, R.M.** and Flood, T.P., 2018. Massive, rapid melting of the crust and the generation of disequilibrium and equilibrium melting facies, McMurdo Dry Valleys, Antarctica. GSA Fall Meeting.
- *Ashauer, Z.M. and **Currier, R.M.**, 2018. Textural analyses of rapakivi mantles: Evidence for semi-selective replacement in Proterozoic rapakivi granites. Institute on Lake Superior Geology.
- *Peterson, E.J. and **Currier, R.M.**, 2017. Textural analysis of a flow differentiated, pre-Penokean mafic dike in the Upper Peninsula, Michigan. GSA North Central Meeting.
- Horsman, E., and **Currier, R.M.**, 2016. Details of Sill and Laccolith Growth in the Shallow Crust: Comparing Results from Field Studies, Geophysics, Analog Models, and Geodesy. GSA Fall Meeting.
- **Currier, R.M.**, 2015. What's in a Pulse? GSA Fall Meeting.
- *Yagle, B.B., **Currier, R.M.**, Forsythe, P., *Laliberte, M., *Grossmeier, C., 2015. Experiments on the evolution of laccolith morphology: The maturation from elliptical to circular shaped intrusion. GSA North Central Meeting.
- *Ashauer, Z.M. and **Currier, R.M.**, 2015. The Lashly Mountains of Southern Victoria Land, Antarctica: Investigating a possible ancient volcano. GSA North Central Meeting.
- *Faga, S.L. and **Currier, R.M.**, 2015. Using GIS to uncover the link between radon potential and geology in Wisconsin. GSA North Central Meeting.
- **Currier, R.M.** and Marsh, B.D., 2013. Sill and laccolith growth by inflation and propagation—just not necessarily at the same time. AGU Fall Meeting.
- **Currier, R.M.** and Marsh, B.D., 2011. Sulfide mineralization in magmas: Investigating the effect of re-equilibrating olivine xenocrysts AGU Fall Meeting.
- **Currier, R.M.**, Marsh, B.D., and *Mittal, T., 2010. Insights from analog gelatin experiments on the effect of bedding dip on sill morphology and crystal load. AGU Fall Meeting.
- **Currier, R.M.** and Marsh, B.D., 2010. Arrested co-contamination of dolerite and granitic mush, Ferrar Igneous Complex, Antarctica. GSA Fall Meeting.
- Ferry, J.M., Ushikubo, T., Valley, J.W., and **Currier, R.M.**, 2010. Controls on crystal morphology, size, number density, and oxygen isotope composition during formation of forsterite by silicification of dolomite during contact metamorphism. GSA Fall Meeting.
- **Currier, R.M.** and Marsh, B.D., 2009. Wholesale, massive partial melting and melt separation in granite host rock, McMurdo Dry Valleys, Antarctica AGU Fall Meeting.
- Hidalgo, P.J., Vogel, T.A., **Currier, R.M.**, Layer, P., and Rooney, T., 2009. The origin of El Hato silicic ignimbrite of El Valle volcano, Panama: Evidence of deep fractionation processes. GSA Fall Meeting.
- Kirkby, K.J., Svistula, D., **Currier, R.M.**, Morin, P.J., Campbell, K., Leigh, J., and Johnson, A., 2007. Development of a visualization rain table: A hard rain's a-gonna fall. AGU Fall Meeting.
- Hidalgo, P.J., Vogel, T.A., and **Currier, R.M.**, 2006. Silicic ignimbrites of El Valle Volcano, Panama: Comparison with silicic ignimbrites of the Central American Volcanic Arc. AGU Fall Meeting.

PROPOSALS AND FUNDING

- UWG Faculty Seed Grant: Analysis of Shark Teeth Tools Using Machine Learning
 - Submitted Spring 2025
 - Funded: \$15,000
- MRI: Track1: 400 MHz Liquid- and Solid-state NMR to Advance Chemistry, Biology, Geology, and Materials Science Research and Undergraduate Research Training
 - Submitted to NSF, Fall 2024
 - Declined
- Supplementary Funding Request: Collaborative Research: RUI: How are Flood Basalts Fed? A Textural Investigation of the Chief Joseph Dike Swarm
 - Submitted to NSF, Spring 2024
 - Funded: \$29,938
- Collaborative Research: RUI: Textural Analysis of the Dais Intrusion and Basement Sill
 - Submitted to NSF-Office of Polar Programs, June 2021
 - Declined
- Faculty Research Grant-UWGB: \$5000.00 for EBSD analyses of Antarctic dolerites (Fall 2021)
- Collaborative Research: RUI: How are Flood Basalts Fed? A Textural Investigation of the Chief Joseph Dike Swarm
 - Submitted to NSF-EAR Petrology and Geochemistry
 - Funded: \$396,312.00
- Grant in Aid of Research-UWGB: \$900 for attending F18 GSA Indianapolis (Fall 2018)
- Collaborative Research: RUI: Anatomy of a Crustal Melt Zone
 - Submitted to NSF-Office of Polar Programs, July 2018
 - Declined, but reviews were encouraging.
- Grant in Aid of Research-UWGB: \$900 for EBSD analyses (Spring 2018)
- Collaborative Research: RUI: Constraints on emplacement history of sheeted intrusions, Henry Mountains, Utah.
 - Submitted to NSF Tectonics, July 2017.
 - Declined, but deemed competitive.
- Collaborative Research: RUI: Origin of Quartz Crystal Cargo by Partial Melting
 - Submitted to NSF-Office of Polar Programs, May 2017.
 - Declined, but reviews were supportive, and problems addressable. Resubmitted in 2018.
- Grant in Aid of Research-UWGB: \$900 for Microprobe time (Fall 2016)
- Collaborative Research: RUI: Constraints on emplacement history of sheeted intrusions, Henry Mountains, Utah.
 - Submitted to NSF Tectonics, July 2016.
 - Declined, but deemed competitive
- Teaching Enhancement Grant-UWGB: \$1000 for Course Development (Fall 2014)
- Grant in Aid of Research-UWGB: \$1000 for QEMSCAN analyses (Fall 2014)
- Collaborative Research: RUI: Butcher Ridge Igneous Complex (BRIC): Crustal Anatexis and Magma Mixing.
 - Submitted to NSF-Office of Polar Programs, May 2013.
 - Declined. Reviews were supportive, but the work we were essentially proposing to do was scooped in 2014.

PROFESSIONAL DEVELOPMENT

- Field Camp Instruction, Southwestern Montana Field Camp, South Dakota School of Mines
 - Six week immersive experience
- Geological Consulting: Mati Carbon (Spring 2025)
 - Assisted in rock characterization in Vietnam in advance of Mati Carbon initiating activities
- Participation in discussion panel on increasing inclusion of Hmong students (2019)

- Council on Undergraduate Research Institute (2015)
- On the Cutting Edge Workshop: Early Career Faculty (2013)
- On the Cutting Edge Workshop: Preparing for an academic career in the Geosciences (2010)
- Precambrian Research Center Short Course: Field, Petrographic, and Mineralization Characteristics of Mafic Layered Intrusions (2009)
- MARGINS: Workshop to Integrate Subduction Factory and Seismogenic Zone Studies in Central America (2007)

RECOGNITION

- Dr. Donald Wagner Honors Faculty of the Year Award (Spring 2024)
- Student Nominated Teaching Award-Recipient (Spring 2018)
- Student Nominated Teaching Award-Nominee (Spring 2013, Spring 2016)
- Letter of Commendation from the University Chancellor for Learning in Retirement lecture series (Spring 2014)

UNIVERSITY AND DEPARTMENT SERVICE

- Undergraduate Research Committee (Fall 2023-Current)
- Faculty Advisory Committee (Fall 2020-Spring 2022)
- Director, West Georgia Microscopy Center (Fall 2019-Current)
 - Presentations for students across department and campus
 - Instrumentation assistance for users across campus
 - Instrumentation maintenance and management of servicing
- Search and Screen Committee: University Provost (Spring 2019)
- Search and Screen Committee: Statistician (Spring 2019)
- Search and Screen Committee: Statistician (Spring 2018)
- Search and Screen Committee: Mathematician (Fall 2016-Summer 2017)
- Search and Screen Committee: Dean of College of Science and Technology (Spring 2016)
- Search and Screen Committee: Statistician (Fall 2015)
- Individualized Learning Committee (Fall 2015-Spring 2019)
- International Education Committee (Fall 2015-Spring 2019)
- Faculty Senator (Fall 2015-Spring 2017; Alternate Senator: Fall 2018-Spring 2019)
- Chair, Graduate Admissions Committee (Fall 2016-Spring 2018)
- Graduate Admissions Committee (Spring 2015-Spring 2019)
- Graduate Assistantship Committee (Fall 2012-Spring 2014)
- Cofrin Biodiversity Advisory Committee (Fall 2014-Spring 2017)
- Member of Quantitative Literacy Assessment (July 2014)
- Search and Screen Committee: Microbiologist (Spring 2013-Spring 2014)
- Search and Screen Committee: Applied Mathematician (Fall 2014)
- University Leadership Awards Committee (Fall 2013-Spring 2014)
- Geology Club Advisor (Fall 2012-Spring 2019)
- Judge for Sager Scholarship (Jan. 2013, 2015)
- Judge for Outstanding Student Thesis (March 2013, 2014)

MENTORING EXPERIENCE

Undergraduate Research Projects

- Lucian Bitner: Development of Depth from Focus Instrument (Spring 2025)
- Taiylor Williams: Mapping Deformation in Plagioclase Grains (Spring 2025)
- Summer Field Work, Columbia River Flood Basalts (2022-2024)
- Savanna Landry: Bed Fluidization Experiments (Fall 2024)
- Jasper Ford: Optical Modeling of Plagioclase (Spring 2023-2024)
- Lucian Bitner: EBSD Investigation of CJDS Dike (Fall 2022)

- Kaitlyn Hulsey: EBSD Investigation of a Mafic Dikelet (Fall 2021)
- Holly Ford: Bubble Analysis across a Mt. Taylor Dike (Fall 2021)
- Kristen Tracy: Rapakivi Image Analysis (Fall 2020-Spring 2021)
- Joseph Myers: Trace Elements Rapakivi (Fall 2020)
- Devin Fowler: Textural Analysis of a Triassic Dike (Fall 2019-Spring 2020)
- Jason Slawinski: Experiment Design on Granular Processes in Magmatic Intrusions (Spring 2019)
- Jennifer Bahling: Dike Pulsing through Solidification and Rupture in Gelatin (Spring 2016, Spring 2017, Fall 2017, Spring 2019)
- Cody Becker: Fabric Analysis of a Syntectonic Granite (Fall 2017)
- Cody Becker: Photogrammetry (Spring 2017)
- Emma Peterson: Crystal Analysis of a Flow Differentiated Dike (Fall 2016-Spring 2017)
- Zach Ashauer: Mt. Koger of the Lashly Mountains: Volcano or Stock? (Spring 2015)
- Alex Edler: Quantifying the Error in Maps through Time (Spring (2014)
- Brian Yagle, Michael Laliberte, Corinne Grossmeier: The Morphology of Experimental Intrusions (Fall 2013)
- Cody Applekamp: Granitoid Core Analysis and Description (Spring 2013)
- Kevin Cropper: Experimental Laccoliths in Gelatin (Spring 2013)
- Tushar Mittal: Experiments and CSD theory (Fall 2010-Fall 2011)

Graduate Research Projects

- (Committee Member, Eastern Carolina University)
 - Completed Spring 2025
- Joslyne Viquez: Implementing GIS on localized fabrics in igneous rocks (Major Prof., Advisor)
 - Completed Spring 2020
- Zach Ashauer: Rapakivi texture in the region surrounding Big Falls, WI (Major Prof.)
 - Completed Summer 2018
- Alex Edler: Groundwater recharge along the Niagara Escarpment (Committee Member)
- Amy Hamby: Deep aquifer segmentation by faults (Committee Member)
 - Completed Summer 2018
- Tyler Hischke: Stratigraphy and Diagenesis of the Cambrian Sandstone Aquifer in Northeastern Wisconsin (Committee Member)
 - Completed Summer 2018
- Brian Yagle: *In Situ* Magma-Mixing study of Ferrar system, Antarctica (Major Prof.)
 - Completed Summer 2016
- Sarah Faga: GIS study comparing radon potential with geology (Major Professor)

PRESENTATIONS

Georgia Mineral Society

- Flood Basalts: A Deluge of Noachian Proportion: Spring 2025

Georgia Mineral Society

- Crystal Optics: Spring 2024

Tellus Science Museum

- Magmatic Plumbing Systems: Spring 2022

Carrollton City High School

- The Geology of Antarctica: Fall 2019; Spring 2024

University of Wisconsin-Oshkosh

- A Portrait of Shallow Crustal Melting in the Dry Valleys of Antarctica: Spring 2019

Michigan State University:

- A Portrait of Shallow Crustal Melting in the Dry Valleys of Antarctica: Spring 2017

Lambeau Lecture:

- Magmatic Plumbing Systems: Lessons from Antarctica: Spring 2017

Pulaski High School

- How the Earth Formed and How We Know: Spring 2016, 2017

University of Wisconsin-Green Bay:

- The Flowering of Magma Bodies in the Crust: Spring 2014

Neville Public Museum Geology Lectures:

- A History of the Black Hills: 2019
- When the crust melts: 2018
- How Geology Influenced the Revolutionary War: 2015
- The McMurdo Dry Valleys of Antarctica: 2013

Neville Public Museum Astronomy Club Lecture:

- How the Earth Formed and How We Know: 2015

Neville Public Museum Fundraiser Lecture:

- Impacts! (From outer space): 2016

Green Bay Power Squad and Sail Lecture:

- Impacts! (From outer space): 2016

Learning in Retirement Courses:

- Seeing through Rocks: One day course, 2021
- Turn your Volcanoes into \$\$\$: Two day course, 2018
- Impacts! (From outer space): Two day course, 2016
- Geology and 20th Century America: Two day course, 2015
- A Geologist's View of Americans: Three day course, 2014
- Modern and Ancient Volcanoes of Antarctica: One day course, 2014

Grandparents University (UWGB)

- Volcanoes: Two day course, 2018

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (2006-Present)
- Geological Society of America (2006-Present)
- Mineralogical Society of America (2006-Present)