

JULIE A. BOWLES

Department of Geosciences • University of Wisconsin-Milwaukee
P.O. Box 413 • Lapham Hall 366 • Milwaukee, WI 53201 • 414-229-6110 • bowlesj@uwm.edu
<https://people.uwm.edu/bowlesj/>

EDUCATION

University of California, San Diego, CA	Ph.D, Earth Science, 2005
University of Washington, Seattle, WA	B.S., Oceanography (Marine Geology), 1999
University of Puget Sound, Tacoma, WA	B.A., International Business, 1993

POSITIONS HELD

Associate Professor, University of Wisconsin-Milwaukee, July 2018 – Present
Assistant Professor, University of Wisconsin-Milwaukee, August 2012 – July 2018
Research Associate/Staff Scientist, Institute for Rock Magnetism, University of Minnesota,
Minneapolis, Jan. 2008 – July 2012
Post-Graduate Researcher, University of Hawaii, Aug. 2006 – Dec. 2007
Post-Graduate Researcher/Lecturer, Scripps Institution of Oceanography, Sept. 2005 – 2007

RESEARCH INTERESTS

- Short-period variations in the geomagnetic field
- Paleomagnetism as a tool to study volcanic processes
- Paleomagnetic constraints on dynamo formation, evolution, and processes
- Marine magnetics
- Planetary magnetism
- (Paleo-)Environmental magnetism
- Application of experimental petrology and rock magnetics to the formation of magnetic minerals in igneous materials

AWARDS AND HONORS

UWM Research Foundation Award (2018)
Outstanding Reviewer, Geophysical Journal International (2012)
Selected participant in Marine Geoscience Leadership Symposium (2009)
Director's Scholar for postgraduate research and teaching, Scripps Inst. of Oceanography (2005-2006)
Recipient of National Defense Science and Engineering Graduate Fellowship (1999-2003)
Awarded National Science Foundation Graduate Fellowship (1999)

PEER-REVIEWED PUBLICATIONS

Published: 33 total; 17 first author

In review: 1 total; 1 first author

† = graduate student author

§ = postdoctoral advisee author

Bowles, J.A., A. Morris, M.A. Tivey, and I. Lascu, Magnetic mineral populations in lower oceanic crustal gabbros (Atlantis Bank, SW Indian Ridge): Implications for marine magnetic anomalies (in revision), *Geochem. Geophys. Geosys.*

Dick, H.J.B., C.J. MacLeod, P. Blum, N. Abe, D.K. Blackman, J.A. Bowles, M.J. Cheadle, K. Cho8, J. Ciałzela, J.R. Deans, V.P. Edgcomb, C. Ferrando, L. France, B. Ghosh, B. Ildefonse, B. John, M.A. Kendrick, J. Koepke, J.A.M. Leong, C. Liu, Q. Ma, T. Morishita, A. Morris, J. H. Natland, T. Nozaka, O. Pluemper, A. Sanfilippo, J.B. Sylvan, M.A. Tivey, R. Tribuzio, G. Viegas (2019), Dynamic accretion beneath a slow-spreading ridge segment: IODP Hole 1473A and the Atlantis Bank Oceanic Core Complex, *J. Geophys. Res.*, doi:10.1029/2018JB016858.

†Abdulghafur, F., and J.A. Bowles (2019), Absolute Paleointensity study of Miocene Tiva Canyon Tuff, Yucca Mountain, Nevada: Role of fine-particle grain-size variations, *Geochem. Geophys. Geosys.* doi:10.1029/2019GC008728.

Bowles, J.A., §S.-C. Lappe, M.J. Jackson, E. Arenholz, and G. van der Laan (2019), Curie temperature enhancement and cation ordering in titanomagnetites: Evidence from magnetic properties, XMCD, and Mössbauer spectroscopy variations in titanomagnetite: evidence from XMCD and Mössbauer, *Geochem. Geophys. Geosys.*, 20, 2272–2289, doi: 10.1029/2019GC008217.

Avery, M.A., J.S. Gee, J.A. Bowles, and M.J. Jackson (2018), Paleointensity estimates from ignimbrites: The Bishop Tuff revisited, *Geochemistry, Geophysics, Geosystems*, doi: 10.1029/2018GC007665.

Bowles, J.A., †D. Gerzich, and M.J. Jackson (2018), Assessing New and Old Methods in Paleomagnetic Paleothermometry: A Test Case at Mt. St. Helens, USA, *Geochemistry, Geophysics, Geosystems*, 19, doi:10.1029/2018GC007435. [Link to pdf.](#)

Jackson, M.J., and J.A. Bowles (2018), Malleable Curie temperatures of natural titanomagnetites: Occurrences, modes and mechanisms *Journal of Geophysical Research – Solid Earth*, 123, doi: 10.1002/2017JB015193. [Link to pdf.](#)

Clague, D., D. Caress, B. Dreyer, L. Lundsten, J. Paduan, R. Portner, R. Speltz-Madero, J. Bowles, P. Castillo, R. Guardado-France, M. LeSaout, J. Martin, M. Santa Rosa-del Rio, R. Zierenberg (2018), Geology of the Alarcon Rise, Southern Gulf of California, *Geochemistry, Geophysics, Geosystems*, 19, doi: 2017GC007348. [Link to pdf.](#)

Bowles, J. A., and M. J. Jackson (2016), Effects of titanomagnetite reordering processes on thermal demagnetization and paleointensity experiments, *Geochemistry, Geophysics, Geosystems*, 17, 4848– 4858, doi:10.1002/2016GC006607. [Link to pdf.](#)

†Fedorchuk, N.D., S.Q. Dornbos, F.A. Corsetti, J.L. Isbell, V.A. Petryshyn, J.A. Bowles, and D.T. Wilmeth (2016), Early non-marine life: Evaluating the biogenicity of Mesoproterozoic fluvial-lacustrine stromatolites, *Precambrian Research*, 275, 105-118, doi.org/10.1016/j.precamres.2016.01.015.

Bowles, J.A., J.S. Gee, M.J. Jackson, and M. Avery (2015), Geomagnetic paleointensity in historical pyroclastic density currents: Testing the effects of emplacement temperature and postemplacement alteration, *Geochemistry, Geophysics, Geosystems*, 16, doi:10.1002/2015GC005910, 3607-3625. [Link to pdf.](#)

Brachfeld, S., D. Shah, E. First, J. Hammer, and J.A. Bowles (2015), Influence of redox conditions on the intensity of Mars crustal magnetic anomalies, *Meteoritics & Planetary Science*, 50, 1703-1717. [Link to pdf.](#)

Feinberg, J.M., P.A. Solheid, N.L. Swanson-Hysell, M.J. Jackson, J.A. Bowles (2015), Full vector low-temperature magnetic measurements of geologic materials, *Geochemistry, Geophysics, Geosystems*, 16, 301-314, doi: 10.1002/2014GC005591. [Link to pdf.](#)

- Brachfeld, S., D. Cuomo, L. Tatsumi-Petrochilos, J.A. Bowles, D. Shah, and J. Hammer (2014), Contributions of multidomain titanomagnetite to the intensity and stability of Mars crustal magnetic anomalies, *Geophysical Research Letters*, 41, doi:10.1002/2014GL062032. [Link to pdf.](#)
- Jackson, M.J., and J.A. Bowles (2014), Ignimbrite emplacement temperatures, cooling rates and titanomagnetite Curie temperatures: Effects of exsolution and nonconvergent cation ordering, *Geochemistry, Geophysics, Geosystems*, 15, doi:10.1002/2014GC005527. [Link to pdf.](#)
- Bowles, J.A., A. Coleman, J.T. McClinton, J. Sinton, S.M. White, K. Rubin (2014), Eruptive timing and 200-year episodicity at 92°W on the hotspot-influenced Galapagos Spreading Center derived from geomagnetic paleointensity, *Geochemistry, Geophysics, Geosystems*, 15, doi:10.1002/2014GC005315. [Link to pdf.](#)
- Bowles, J.A., M.J. Jackson, T.S. Berquó, P.A. Solheid, and J.S. Gee (2013), Inferred time- and temperature-dependent cation ordering in natural titanomagnetites, *Nature Communications.*, 4, doi: 10.1038/ncomms2938. [Link to pdf.](#)
- Coleman, A., J.M. Sinton, S.M. White, J.T. McClinton, J.A. Bowles, K. Rubin, M. Behn, B. Cushman, D. Eason, T. Gregg, K. Gronvold, S. Hidalgo, J. Howell, O. Neill, C. Russo (2012), Effects of variable magma supply on mid-ocean ridge eruptions: Constraints from mapped lava flow fields along the Galápagos Spreading Center, *Geochemistry, Geophysics, Geosystems*, 13, Q08014, doi:10.1029/2012GC004163. [Link to pdf.](#)
- Bowles, J.A., L. Tatsumi-Petrochilos, J.E. Hammer, S.A. Brachfeld (2012), Multi-component cubic oxide exsolution in synthetic basalts: temperature dependence and implications for magnetic properties, *J. Geophys. Res.*, 117, B03202, doi:10.1029/2011JB008867. [Link to pdf.](#)
- Bowles, J.A., J.S. Gee, K. Burgess, and R.F. Cooper (2011), Timing of magnetite formation in submarine basaltic glass: a comparison of natural and synthetic samples with implications for geomagnetic paleointensity studies, *Geochemistry, Geophysics, Geosystems*, doi:10.1029/2010GC003404. [Link to pdf.](#)
- Burgess, K., R.F. Cooper, J.A. Bowles, J.S. Gee, and D.J. Cherniak (2010), Effects of open- and closed-system oxidation on texture and magnetic response of remelted basaltic glass, *Geochemistry, Geophysics, Geosystems*, 11, Q10007, doi:10.1029/2010GC003248. [Link to pdf.](#)
- Jackson, M., J.A. Bowles, I. Lascu, and P. Solheid (2010), Deconvolution of u-channel magnetometer data: Experimental study of accuracy, resolution and stability of different inversion methods, *Geochemistry, Geophysics, Geosystems*, 11, Q07Y10, doi:10.1029/2009GC002991. [Link to pdf.](#)
- Gee, J.S., Y. Yu, and J.A. Bowles (2010), Paleointensity estimates from ignimbrites: an evaluation of the Bishop Tuff, *Geochemistry, Geophysics, Geosystems*, 11, Q03010, doi:10.1029/2009GC002834. [Link to pdf.](#)
- Bowles, J.A., J.E. Hammer, and S.A. Brachfeld (2009), Magnetic and petrologic characterization of synthetic Martian basalts and implications for the surface magnetization of Mars, *Journal of Geophysical Research – Planets*, 114, E10003, doi:10.1029/2009JE003378. [Link to pdf.](#)
- Westerhold, T., U. Röhl, I. Raffi, E. Fornaciari, S. Monechi, V. Reale, J. Bowles, H.F. Evans (2008), Astronomical calibration of the Paleocene time scale, *Palaeogeography Palaeoclimatology Palaeoecology*, 257, 377-403. [Link to pdf.](#)
- Bowles, J. (2007), Coring-related deformation of Leg 208 sediments from Walvis Ridge: Implications for paleomagnetic data (2007), *Physics of Earth and Planetary Interiors*, 161, 161-169.
- Westerhold, T., U. Röhl, J. Laskar, I. Raffi, J. Bowles, L. Lourens, J.C. Zachos (2007), On the duration of magnetochrons C24r and C25n and the timing of early Eocene global warming events: Implications from the Ocean Drilling Program Leg 208 Walvis Ridge depth transect, *Paleoceanography*, 22, PA2201, doi:10.1029/2006PA001322. [Link to pdf.](#)
- Bowles, J. (2006), Data Report: Revised magnetostratigraphy and magnetic mineralogy of sediments from Walvis Ridge, Leg 208, *In D. Kroon, J.C. Zachos, J.C., and C. Richter (Eds.), Proc. ODP, Sci. Results*, 208: College Station, TX (Ocean Drilling Program), 1–24, doi:10.2973/odp.proc.sr.208.206.2006. [Link to report.](#)
- Bowles, J., J.S. Gee, D.V. Kent, M. Perfit, A. Soule, D. Fornari, Paleointensity results from 9° - 10°N on the East Pacific Rise: implications for timing and extent of eruptive activity (2006), *Geochemistry, Geophysics, Geosystems*, 7, Q06006, doi:10.1029/2005GC001141. [Link to pdf.](#)

Role: co-I (Lead Investigator Stefanie Brachfeld, Montclair State Univ.) \$451,342 (\$94,362 UM)

Collaborative Research: Fine-scale crustal accretion processes and rates of magma supply and replenishment at the southern Juan de Fuca Ridge neovolcanic zone

Agency: National Science Foundation -OCE Duration: 2011 - 2013
 Role: PI (with PI Brian Dreyer, UC Santa Cruz) \$321,863 (\$42,115 UM/UWM)

Facility Support: Institute for Rock Magnetism

Agency: National Science Foundation -EAR Duration: 2011 - 2014
 Role: co-PI (PI Bruce Moskowitz) \$1,396,115 (UM)

Development of a Closed Cycle Cryostat for Full-Vector, Low-Temperature Magnetic Measurements of Geologic Materials

Agency: National Science Foundation -EAR Duration: 2009 – 2011
 Role: co-PI (PI Josh Feinberg) \$73,020 (UM)

Collaborative Research: An Evaluation of Ash Flow Tuffs as Geomagnetic Paleointensity Recorders

Agency: National Science Foundation -EAR Duration: 2010 - 2012
 Role: PI (with PI Jeff Gee, UC San Diego) \$191,192 (\$53,930 UM/UWM)

Collaborative Research: Volcanic Eruptions on the Galapagos Spreading Center: Effect of Variable Magma Supply on Eruption and Magma Chamber Processes on Mid-Ocean Ridges

Agency: National Science Foundation -OCE Duration: 2009 - 2012
 Role: PI with PIs John Sinton and Ken Rubin (Univ. Hawaii) and Scott White (Univ. South Carolina) \$659,495 (\$34,827 UM/UWM)

Linking Rock Magnetic Properties to the Performance of Paleointensity Techniques

Agency: NSF-EAR Duration: 2009 - 2011
 Role: co-PI (PI Josh Feinberg) \$253,597 (UM)

Collaborative Research: Origin of magnetite and magnetic remanence in submarine basaltic glass and implications for glass paleointensities

Agency: NSF-EAR Duration: 2006 - 2009
 Role: proposal co-written with PIs Jeff Gee (UC San Diego) and Reid Cooper (Brown University)

Magnetostratigraphy for ODP Leg 208 Sites, and Paleointensity study of the mid- to late-Paleocene

Agency: Joint Oceanographic Inst./US Science Support Prog.) Duration: 2003 – 2004
 Role: sole proposal writer (PI Lisa Tauxe) \$28,186 (UCSD)

SELECTED PROFESSIONAL SERVICE ACTIVITIES

- *Review and Advisory Panel Member*, Institute for Rock Magnetism, 2019 - 2021
- *Science Evaluation Panel Member*, International Ocean Discovery Program, 2019 - 2021
- *Secretary*, AGU Geomagnetism, Paleomagnetism, and Electromagnetism (GPE) Section, 2015-2016
- *Instructor*, International Association of Geomagnetism and Aeronomy Summer School, 2015
- *Chair*, Fleming Medal Selection Committee, AGU, 2015-2016
- *Member*, Fleming Medal Selection Committee, AGU, 2013-2014
- *Member at Large*, AGU Geomagnetism and Paleomagnetism (GP) Section, 2010-2014