

KATIE E. BRISTOL

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EDUCATION

PhD in Geological Sciences, *in progress*

University of Florida, Gainesville, FL

Dissertation (tentative): "Using Paleo- and Rock Magnetism to Understand Earth and Planetary Processes"

Advisor: Courtney Sprain

MS in Geophysics, 2020

Michigan Technological University, Houghton, MI

Thesis: "Rock Magnetic Properties of the L5 Ordinary Chondrite Daule"

Advisor: Aleksey Smirnov

BS in Applied Geophysics w/ Minor in Geological Engineering, 2018

Michigan Technological University, Houghton, MI

Field Courses: University of Canterbury, Christchurch, NZ (Summer 2017)

RESEARCH INTERESTS

Planetary science including rock magnetism, paleomagnetism, paleointensity, Earth history, Solar System origin/evolution, and extraterrestrial mineral assemblages.

PEER-REVIEWED PUBLICATIONS

Smirnov, A.V., E.V. Kulakov, M.S. Foucher, **K.E. Bristol**. "Intrinsic Paleointensity Bias and the Long-Term History of the Geodynamo," *Science Advances*, vol. 3, e1602306, 2017.

PRESENTATIONS & ABSTRACTS

** = presenting author*

Sprain*, C.J., E. Hurst, G.A. Paterson, R.K. Bono, **K.E. Bristol**, and A.J. Biggin, " Constraining the behavior of ϵ -Fe₂O₃ during paleointensity experimentation", Abstract ID#940005, American Geophysical Union 2021 Fall Meeting, New Orleans, 2021. [To be presented]

Bristol*, **K.E.**, C.J. Sprain, and J.G. Meert, "Absolute paleointensity for Precambrian-aged dikes from India", Abstract 227-11, Geological Society of America Abstracts with Programs, Vol. 53, No. 6, 2021. [To be presented]

Mijum*, M., **K.E. Bristol**, M.M. Tremblay, and C.J. Sprain, "A model framework for cosmogenic nuclide production rates through deep time", Abstract 31-12, Geological Society of America Abstracts with Programs, Vol. 53, No. 6, 2021. [To be presented]

Bristol*, K.E., E.J. Piispa, and A.V. Smirnov, "Thermomagnetic Behavior of Extraterrestrial Minerals: An Overview", Abstract GP004-05, American Geophysical Union 2020 Fall Meeting, Online Everywhere, 2020. (Invited)

Sanmartin*, K.J., E.J. Piispa, C.L. Mandon, M. Roverato, **K.E. Bristol**, A.V. Smirnov, and R. Trindade, "Rock Magnetism, Paleomagnetism, and Paleointensity of Imbabura Volcano (Ecuador) – Implications for the Spatiotemporal Growth Model", Abstract GP003-09, American Geophysical Union 2020 Fall Meeting, Online Everywhere, 2020.

Bristol*, K.E., A.V. Smirnov, E.J. Piispa, A. Kosterov, E.V. Kulakov, and M. Ramirez, "Rock Magnetic Investigation of the Daule Ordinary Chondrite", Abstract GP014A-503767, American Geophysical Union 2019 Fall Meeting, San Francisco, 2019.

Piispa*, E.J., P. Larrea, K. Choez, **K.E. Bristol**, M. Roverato, A.V. Smirnov, and C. Mandon, "Paleo- and rock-magnetic record of the Imbabura volcanic units: Implications for the tectonomagmatic evolution of the volcano and for the Earth's magnetic field at equatorial latitudes," International Symposium on Andean Geodynamics, Quito, Ecuador, 2019.

Foucher, M.S., **K.E. Bristol***, E.J. Piispa, and A.V. Smirnov, "Absolute geomagnetic intensity from the ~1.1 Ga Baraga-Marquette Dike Swarm (Michigan, USA) obtained using the Shaw and pseudo-Thellier methods," Abstract GP21A-0633, American Geophysical Union 2018 Fall Meeting, Washington D.C., 2018.

Foucher*, M.S., E. Engel, **K.E. Bristol**, and A.V. Smirnov, "Evolution of large lava flows in rift setting: Paleomagnetic and rock magnetic insights into the Greenstone Flow," Abstract ME23C-082, IAVCEI 2017 Scientific American Assembly, Portland, OR, 2017.

Bristol*, K.E., "Rock magnetic investigation of the carbonaceous chondrules from the Allende meteorite," Michigan Technological University Pavlis Honors College Undergraduate Research Symposium, Houghton, MI, 2017.

RESEARCH EXPERIENCE

Research Assistant, *Neil Opdyke Paleomagnetism Laboratory, University of Florida, 2020-present*

Conducting geophysical research by performing experiments, analyzing data, and assisting with lab management procedures.

Research Assistant, *Earth Magnetism Laboratory, Michigan Technological University, 2015-2020*

Conducting geophysical research by performing experiments, analyzing data, assisting and leading field work, organizing research materials, and managing the laboratory.

NASA Michigan Space Grant Fellow, *Department of Geological and Mining Engineering and Sciences, Michigan Technological University, 2018-2019*

Led the first rock magnetic classification study on the Daule ordinary chondrite in collaboration with geophysicists at Yachay Tech University, Ecuador.

Summer Undergraduate Research Fellow, *Department of Geological and Mining Engineering and Science, Michigan Technological University, 2016-2017*

Conducted a study on the rock magnetic characterization of the carbonaceous chondrules from the Allende meteorite and their potential as high-fidelity paleointensity recorders.

NSF Summer Research Experience for Undergraduates (REU), *Department of Geological and Mining Engineering and Science, Michigan Technological University, 2015*

Worked on a project utilizing paleomagnetism and rock magnetism to gain insight into the evolution of large lava flows in rift settings.

WORK EXPERIENCE

Lab Manager, *Earth Magnetism Laboratory, Michigan Technological University, 2017-2020*

Performing routine maintenance/repair of lab instruments, coordinating measurement schedules, ordering research supplies, providing tours, and creating a complete set of lab user guides.

Teaching Assistant, *GE3040: Fundamentals of Geophysics, Michigan Technological University, Spring 2020*

Part time instruction, grading assignments, holding office hours, and adapting the course to an online format due to the COVID-19 pandemic of 2020.

Teaching Assistant, *GE4530/GE5340: Planetary Geology/Geophysics, Michigan Technological University, Fall 2019*

Full time instruction of the undergraduate and graduate course, grading assignments, holding office hours, updating/revamping lecture materials, and creating new lesson plans.

Teaching Assistant, *Summer Youth Programs, Michigan Technological University, 2015 & 2016 & 2019*

Instructed courses for middle/high school students that attended the Geology, Geological Engineering, Women in Engineering, and Engineering Exploration programs.

Teaching Assistant, *NSF K-12 STEM Teacher Outreach, Michigan Technological University, 2015*

Assisted with the mentorship of high school STEM teachers in fieldwork and scientific research methodology with the goal of strengthening high school science curriculums.

AWARDS & HONORS

Gates Cambridge Scholarship Finalist, *Gates Cambridge Trust, University of Cambridge, 2020*

The full-cost scholarship to study at the University of Cambridge is offered to intellectually outstanding postgraduate students with a capacity for leadership and a commitment to improving the lives of others. I was selected as a US finalist.

Dr Nancy Scofield Pioneering Research Award (and Memorial Scholarship), Michigan Technological University, 2019

Given to a graduate student whose work expands the boundaries of research in the Department of Geological and Mining Engineering and Sciences.

Geophysics Award, Michigan Technological University, 2019

Given to a student for their exceptional work in the field course Field Geophysics (GE3900).

Departmental Scholar, Michigan Technological University, 2017

Given to an individual who best represents student scholarship. This outstanding student is considered excellent not only by academic standards, but also for participation in research scholarship activity, levels of intellectual curiosity, creativity, and communication skills.

Goldwater Scholarship Nominee, Michigan Technological University, 2017

The most prestigious undergraduate scholarship given in the natural sciences, engineering and mathematics in the US. Universities are allowed to nominate annually four undergraduate students per year to receive the scholarship. I was selected by Michigan Tech to be a nominee.

RESEARCH SKILLS

Geophysical Laboratory Instrumentation:

Cryogenic magnetometers, thermal demagnetizers, alternating gradient field magnetometers, and magnetic susceptibility-meters.

Geophysical Field Instrumentation:

Portable rock drills, field orientation devices, sun compasses, fluxgate magnetometers, proton precession magnetometers, electromagnetic sensors, gravimeters, resistivity systems, seismometers, and ground penetrating radar systems.

Sample Preparation Equipment:

Rock saws and drills, ultrasonic cleaners, flat lap and hand polishing, etc. for core samples, reflected light/thin sections, and hand samples.

Microscopy:

Petrographic/optical, reflected light, and scanning electron microscopy.

Software and Programming:

Python, R, MATLAB, Mathematica, Git, FORCinel, and ArcGIS.

HOBBIES & MISCELLANEOUS

I enjoy biking, hiking, rock climbing, amateur astronomy, photography, and music.