Approved by the Regents
May 16, 2024

PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

Benjamin H. Passey, associate professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts, and associate professor of environment, without tenure, School for Environment and Sustainability and College of Literature, Science, and the Arts, is recommended for promotion to professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts, and professor of environment, without tenure, School for Environment and Sustainability and College of Literature, Science, and the Arts.

Academic Degrees:

Ph.D.	2007	University of Utah
M.S.	2004	University of Utah
B.S.	2001	University of Utah

Professional Record:

2016–Present	Associate Professor, Department of Earth and Environmental Sciences and Program in the Environment, University of Michigan
2015–2016	Associate Professor, Johns Hopkins University
2009–2015	Assistant Professor, Johns Hopkins University
2007–2009	Dreyfus Post-doctoral Scholar in Geochemistry, California Institute of Technology
2001–2007	Research and Teaching Assistant, University of Utah

Summary of Evaluation:

Teaching: Professor Passey provides important curricular offerings within both the Department of Earth and Environmental Sciences (Earth) and the Program in the Environment (PitE). He developed a new 100-level course, Earth Chemistry, that teaches introductory chemistry through the lens of earth science, designed to attract students who may be initially intimidated by STEM courses. His 300-level class, Climate and Climate Change, is a core course for Earth majors and attracts between fifty and seventy-five students per term, both in and outside the department, and his 500-level graduate course, Isotope Geochemistry, serves a large cross-section of graduate students. Professor Passey has advised seven Ph.D. students and three post-doctoral scholars; all now have research careers in either industry or academia, including three in tenure-track faculty positions at R1 institutions. In addition to formal supervision of graduate students and post-doctoral scholars, Professor Passey has provided substantial "hidden" mentorship. He has trained two undergraduates who went on to become lab technicians, with one now attending graduate school. Professor Passey has a reputation of generosity to the wider community through technical advising. This ranges from fielding questions about lab procedures to providing guidance to new faculty and graduate students from other universities setting up labs. This effort spans instruction and service and merits clear recognition.

Research: Professor Passey is a top scientist in the field of stable isotope geochemistry, especially in the emerging fields of clumped isotope analysis and triple oxygen isotope analysis. The combination of these two isotope systems yields information on the temperature and aridity of past environments, which is crucial for enhancing understanding of how present and future climate change will affect natural ecosystems. During his time at UM, he has built one of the most advanced stable isotope laboratories in the world, with pioneering innovations that have improved the quality of data generated and greatly expanded the kinds of natural materials that can be analyzed. He is widely known for generously sharing his technical expertise with colleagues, enabling his innovations to be broadly adopted to the benefit of the entire community of stable isotope geochemists and thus the study of paleoclimate. His creative and

groundbreaking papers on triple oxygen isotopes are widely recognized as classics and gold standards for the application of TOI to various materials (ice, soils, shells, teeth, etc.) for the extraction of paleoclimate parameters (temperature, aridity, etc.).

Recent and Significant Publications:

Ellis, N.M. and Passey, B.H. (2023). A novel method for high-precision triple oxygen isotope analysis of diverse Earth materials using high temperature conversion-methanation-fluorination and isotope ratio mass spectrometry. *Chemical Geology*, *635*, 121616. doi.org/10.1016/j.chemgeo.2023.121616

Kelson, J.R., Huth, T.E., Passey, B.H., Levin, N.E., Petersen, S.V., Ballato, P., Beverly, E.J., Breecker, D.O., Hoke, G.D., Hudson, A.M., Ji, H., Licht, A., and Quade, J. (2023). Triple oxygen isotope compositions of globally distributed soil carbonates reveal widespread soil water evaporation. *Geochimica et Cosmochimica Acta*, *355*, 138–160. doi.org/10.1016/j.gca.2023.06.034.

Passey, B.H. and Levin, N.E. (2021). Triple oxygen isotopes in meteoric waters, carbonates, and biological apatites: implications for continental paleoclimate reconstruction. *Reviews in Mineralogy & Geochemistry*, *86*, 429-462. doi.org/10.2138/rmg.2021.86.13

Passey, B.H. and Ji, H. (2019). Triple oxygen isotope signatures of evaporation in lake waters and carbonates: A case study from the western United States. *Earth and Planetary Science Letters*, *518*, 1-12. doi.org/10.1016/j.epsl.2019.04.026

Service: Professor Passey has been an active and contributing member of his scientific community, UM, and his department. His national and international service contributions extend to serving as associate editor for *Geochimica et Cosmochimica Acta*, a publication of the Geochemical Society, and the leading international forum for scholarly communication in geochemistry. He has further served as a reviewer for important scientific journals in his field, as well as grant proposals for the National Science Foundation and the American Chemical Society. Professor Passey's contributions to the UM community are important and include a leadership role as an LSA faculty representative to the Faculty Senate. He has been an active contributor to his department in numerous ways. He has chaired the department's Laboratory Advisory Committee, which coordinates analytical and technical support, an important responsibility given the high degree of research activity in this department. Significantly, he laid the foundations for successful completion of a departmental lab technician policy, addressing a longstanding need in Earth.

External Reviewers:

Reviewer (A): "[Professor Passey] has a strong research record of improving and applying clumped isotope and triple oxygen isotope methods to interesting questions related to paleo-climatology and paleo-ecology."

Reviewer (B): "Professor Passey has the breadth in his research, the experimental innovation in his laboratories, and theoretical command of stable isotope biogeochemistry that one would expect of a Full Professor at one of the best research universities in the world."

Reviewer (C): "[Professor Passey]'s work since arriving at the University of Michigan shows a progression of studies that disentangle the details of physical processes that govern the compositions we can measure, and then measuring them to provide novel insights into environments and paleoclimate."

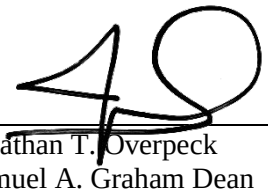
Reviewer (D): "In isotope geochemistry, as a field, most make measurements that others have pioneered and by definition, only a few ask the questions that drive the field forward. [Professor Passey] has the amazing and rare talent to pioneer new measurement techniques and apply them to really important, novel questions."

Reviewer (E): "Passey has a record of conducting substantive research and he has made significant contributions to several areas of research, including stable isotope ecology/paleoecology, clumped isotopes and triple oxygen isotopes. His published work is very well cited and his metrics are well above most of his peers at this level."

Reviewer (F): "[The] review paper by Passey and Levin (*Reviews in Mineralogy and Geochemistry, Volume 86, Triple Oxygen Isotope Geochemistry*) is an absolute masterpiece, one that will be referenced for decades to come. I and my students have spent hours going over this work and using it to expand our own research."

Summary of Recommendation:
Professor Passey has established an outstanding record of research impact and student mentoring and is a highly valued colleague both in his department and his broader scientific community. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor Benjamin H. Passey be promoted to the rank of professor of Earth and environmental sciences, with tenure, College of Literature, Science, and the Arts, and professor of environment, without tenure, School for Environment and Sustainability and College of Literature, Science, and the Arts.

Anne Curzan, Dean
Geneva Smitherman Collegiate Professor of
English Language and Literature, Linguistics,
and Education
Arthur F. Thurnau Professor
College of Literature, Science, and the Art



Jonathan T. Overpeck
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School for Environment and Sustainability

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