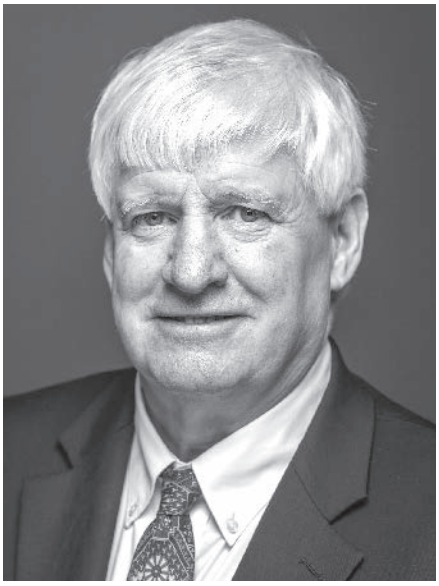
JAMES GERALD BROPHY

Jim Brophy has never met an igneous rock he didn't like. In his 35 years as a faculty member at Indiana University, his academic work—whether in the field, in the laboratory, or in the classroom—centered on understanding the origin and evolution of rocks derived from molten material in Earth's interior. His passion for igneous rocks carried him to far corners of the world—from the Aleutian Islands to Italy, Greece, Hawaii, Japan, Tanzania, and the western United States—to research and teach about the products of Earth's volcanic processes.

Recognized as one of IU's most talented instructors, Jim has taught some 20 different courses at IU, including five field-based courses. He is a five-time winner of the Trustees' Teaching Award for his outstanding ability to engage students in learning introductory geosciences. Jim served as director of IU's renowned Judson Mead Geologic Field Station (1995-2005), acting as both administrator and teacher. He oversaw many capital improvements at the station and helped to increase the breadth of the geosciences offered as summer field classes. The IU field geology program is regarded as the foremost program in the country and Jim's efforts as director were critical in establishing and sustaining this stature. In 2014, with colleagues Jackson Njau, Nick Toth, and Kathy Schick, he also initiated IU's unique program on geology and paleoanthropology at Olduvai Gorge in Tanzania.

It's unclear whether Jim's passion for geology is genetic or environmental. A child of two geologists, Jim grew up in Amherst, Massachusetts. His father, Gerald Brophy, was a distinguished professor at Amherst College, in the same discipline of igneous petrology! Jim spent his childhood surrounded by rocks, including summers at the Yellowstone-Bighorn Research Association's field station in Red Lodge, Montana. Jim joined the faculty of the IU Department of Geology in 1984, after his graduate work at Colorado School of Mines (M.S.) and Johns Hopkins University (Ph.D.). He and his wife Evelyn (also a geologist!) spent their careers in Bloomington, where they raised their two daughters, Sarah and Jennifer.

Named a fellow of the Geological Society of America, Jim has been widely recognized for his research contributions.



He published seminal papers on the genesis of a suite of rocks known as high-alumina basalts that are found at subduction zones, where one crustal plate dives beneath another. These distinctive basalts are associated with some of the world's most active and dangerous volcanoes. Jim applied both physical and chemical approaches to explain how this distinctive type of basalt forms. He elegantly described how the process of fractional crystallization could lead to development of high-alumina magma types and applied fluid dynamics principles to explain how convection in a magma could lead to retention of the key minerals that ultimately define these volcanic rocks. Jim's work on these rock types helped define a paradigm for future studies of subduction zone magmatism. His work in the field included sample collecting in the Aleutian Islands of Alaska and Russia, whose volcanoes constitute the northern periphery of the Pacific Ring of Fire. Grizzlies swim between the Alaskan mainland and the easternmost island of Unimak, requiring Jim to become proficient in handling angry grizzly bears, a skill that proved particularly useful during his term as department chair.

Jim also served as a shipboard scientist for two research cruises that were part of the ocean and deep sea drilling programs. One involved the research vessel Atlantis and its submersible, Alvin, in studies focused on the rift zone in the center of the Atlantic Ocean. Most of the volcanic rocks on the seafloor are also basalts, but associated with oceanic rifting, and distinct from those found at subduction zones. Jim's work with these mid-ocean basalts led him to investigate a poorly understood rock type associated with the basalts, known as plagiogranites. Granitic rocks are common in continental settings, but rare in oceanic rift settings. Jim examined the composition of rare-earth elements (now known for a variety of applications in space-age technology) to help decipher how these unusual plagiogranites form. Like his work on the origin of high-alumina basalts in subduction zones, his models for formation of mid-ocean ridge plagiogranites have become the accepted standard for future studies.

As a complement to his observational work in the field and microscopic analyses, Jim also made important contributions in the laboratory arena. He conducted experimental studies in his petrology lab, using high-temperature furnaces to synthesize basaltic magmas, determining key variables controlling their crystallization. He measured the solubility of metals in magma as well as factors governing the distribution of elements between crystals and magma.

Jim spent his last four years on the faculty serving valiantly as department chair during critical academic transitions, helping guide the department through a particularly complex and challenging reorganization to become a revitalized Department of Earth and Atmospheric Sciences. He oversaw a thorough revision of our undergraduate curriculum, an external department review, and several faculty searches, and provided leadership in the preparations for both the upheaval associated with a complete renovation of the Geology Building and future use of the refurbished space.

Following his retirement in December 2019, Jim and Evelyn plan to return to their New England roots, where they are building a new home along the Maine coast. We wish them well in this exciting endeavor—and we're certain that Jim will find a plethora of igneous rocks to continue to feed his insatiable curiosity!

Ed Ripley
Michael Hamburger
Simon Brassell