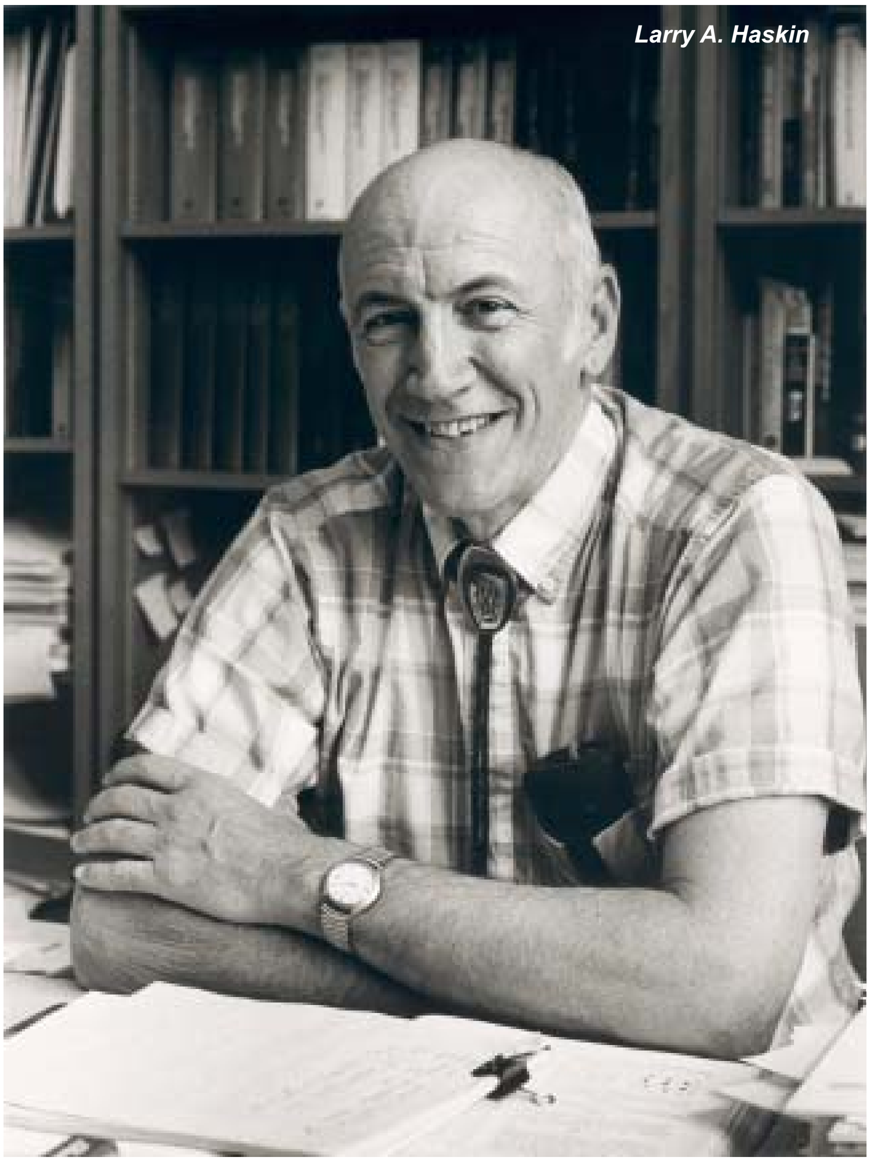
# In Memoriam: Larry A. Haskin (1934-2005)

**Larry (never Lawrence) Haskin died on March 24, 2005**, of myelofibrosis, a bone marrow disease for which he had been treated for more than 15 years. At the time of his death he was a retired but active professor of the Department of Earth and Planetary Sciences at ashington University in Saint Louis. Professionally, Larry identified himself as a teacher, geochemist, physical chemist, planetary scientist, and sometimes farmer. He described the focus of his work as follows: "to further precise, accurate geochemical analysis; gain quantitative understanding of trace element behavior through rock analysis and geochemical modeling, with experimental work to provide modeling parameters and better understanding; and introduction to the application of some methods of physical chemistry to geochemical work (neutron activation analysis, electron paramagnetic resonance, silicate electrochemistry, planetary Raman spectroscopy)."


Larry A. Haskin

Larry was born and raised on a farm west of Kansas City. He was mainly interested in agriculture and law while in high school, but he was also curious about the names of chemicals on fly- and weed-spray cans. He said that his decision to major in chemistry at Baker University was impulsive, but he discovered that the field of chemistry suited him. He earned a Ph.D. in physical chemistry from the University of Kansas in 1960 under the direction of F. Sherwood Rowland. Although his thesis research project was on hot-atom radiochemistry, he also analyzed some limestones for trace amounts of uranium by the technique of neutron activation, a diversion that first led him to conclude that rocks were chemically interesting systems.

Larry taught chemistry for nine months at Georgia Tech in 1959–60. After a summer at Argonne National Laboratory working on the effects of angular momentum on compound nuclear reactions, he was appointed Instructor in the Chemistry Department at the University of Wisconsin-Madison in 1960. He reached the rank of Professor there in 1968. At Wisconsin, he taught mainly freshman chemistry and graduate-level radiochemistry. A subbasement radiochemistry lab and roomful of gamma-ray spectrometry equipment for NAA (neutron activation analysis) were the heart of the research laboratory. Still interested in trace elements in rocks, he became one of the founders of the field of rare-earth element geochemistry and gradually abandoned work on nuclear reactions. His paper "Dispersed and not-so-rare earths" with Fred Frey, one of his early students, was the first scientific paper I ever read (Haskin and Frey, 1966) and one that I still recommend to new students in geochemistry.

In the late 1960's Larry became one of the first NASA-funded principal investigators for study of anticipated samples from the Apollo missions to the Moon. Although lunar sample studies dominated his efforts in the 1970's, Larry was simultaneously working on environmental geochemical issues and trace-element fingerprinting of obsidian artifacts. In 1973, ten months after the last Apollo mission, Larry and his research group moved from Madison to Houston, where Larry became the Chief of the Planetary and Earth Sciences Division at the NASA Johnson Space Center. His major accomplishment at JSC was to begin the task of securing the lunar sample collection for future researchers by building a safer, modern curatorial facility and moving a portion of the collection away from storm-prone Houston. Larry missed academia and was delighted in late 1976 to become Professor and Chairman of the Department of Earth and Planetary Sciences, Professor of Chemistry, and a fellow of the

McDonnell Center for the Space Sciences at Washington University. His mission was to build a foundering geology department into a first-class department of earth and planetary sciences. In 1986, Washington University promoted him to the position of Ralph E. Morrow Distinguished University Professor. He officially retired at the end of 2002.

Much of Larry's research during the 1970's and 1980's bridged lunar geochemical systems and terrestrial analogs of lunar geochemical systems. With students and post-docs, he developed better experimental methods and better models for how trace elements behave in rock-forming situations. Larry and his associates adapted electrochemical techniques used in aqueous solutions to study trace elements in silicate liquids at 1500º C. Later, they showed that electrolysis of lunar soil could produce oxygen gas and iron and silicon metals efficiently for use in space. Larry was an enthusiastic and inexorable visionary. In the mid 1990's he became convinced that it should be possible, at any point on the lunar surface, to pick up a rock and calculate the probability, for each nearby crater or basin, that the rock was part of the ejecta deposit of the crater or basin. He spent a good part of the last ten years developing a mass-balance-constrained model for lunar ejecta deposits that could answer the questions he asked as a geochemist.

In 1994 he had a casual conversation with Alian Wang, a physicist and spectroscopist working in our department. Alian mentioned that a Raman spectrometer could be made very small with modern technologies. As a physical chemist, Larry knew the potential of Raman spectroscopy for mineral characterization. The primary focus of the last ten years of his professional life was to build and fly a Raman spectrometer for use on robotic missions to Mars – the "Mars Microbeam Raman Spectrometer" or MMRS. Although the MMRS was not flown as part of the Athena payload, his work led him to be a member of the Athena science team for the Mars Exploration Rovers missions. Despite his deteriorating health, Larry spent the several months of the last year of his life in Pasadena, as a MER science team member asking hard geological questions of his younger colleagues. The last manuscript that Larry drafted was on the water alteration of the rocks and soils at Gusev Crater, Mars.

Larry was a Guggenheim fellow at the Max Planck Institute for Nuclear Physics near Heidelberg in 1966–67, and he received NASA's Exceptional Scientific Achievement Award in 1971. He served on numerous NASA committees, including the Lunar Sample Analysis Planning Team, Physical Sciences Committee, Lunar Advisory Committee, Lunar and Planetary Review Panel, Solar System Exploration Committee, Solar System Exploration Management Council, Lunar Exploration Science Working Group, Exploration Science Working Group, Space and Earth Sciences Advisory Committee, and NASA Advisory Council as well as several NRC committees, including Mercury Review Panel, U.S. National Committee on Geochemistry, and Committee on Planetary and Lunar Exploration. He served as president of the Geochemical Society (1987–1989). In 2000 he received a recognition that he valued most. He was among nine Washington University faculty who received the first Outstanding Faculty Mentor Awards following nomination by current and former students. Larry's most lasting legacy is the cadre of enthusiastic mentorees that have worked with him. Larry is survived by his wife (and early scientific colleague) Mary (Haskin and Gehl, 1962, 1963a,b; Haskin and Haskin, 1966, 1968), children Dierk, Rachel, and Jean, and four grandchildren.

## Selected Publications, in Chronological Order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