

In Memoriam: John W. Morse (1946–2009) Texas A&M University

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Professor John W. Morse, age 63, a world leader in chemical oceanography and marine geochemistry, passed away Monday, November 23, 2009, at the St. Joseph Regional Health Center in Bryan, Texas, of medical complications arising originally from lung cancer and surgery. The scientific community has lost a major player and friend to all.

John Morse was born November 11, 1946 in Ft. Dodge, Iowa to Wilbur and Velma Morse. John spent most of his professional career in the Department of Oceanography, College of Geosciences, at Texas A&M University. His eclectic approach to science is exhibited in the fact that he was a member of both the oceanography and geology faculties at Texas A&M. In 1999, he became the initial holder of the Louis and Elizabeth Scherck Chair in Oceanography.

John received his B.S. degree from the Institute of Technology at the University of Minnesota in 1969 and his M.Phil. (1971) and Ph.D. (1973) degrees from Yale University, working with Professor Robert A. Berner as his Ph.D. mentor. His Ph.D. dissertation on the dissolution kinetics of calcite was published in a series of six papers in the *American Journal of Science* and still remains a classical and well-cited series of papers today. Previous to joining the Texas A&M faculty in 1981, John also was on the oceanography and chemistry faculties of Florida State University from 1973 to 1976 and the faculty of the Division of Marine and Atmospheric Chemistry, Rosenstiel School of Marine and Atmospheric Science, at the University of Miami from 1976 to 1981. From 1979 to 1980, he was Associate Program Director for the National Science Foundation Marine Chemistry

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Program. John was also a Fulbright Traveling Scholar in 1987, a Sigma Xi Distinguished Scientist in 1998, and a Distinguished Visiting Research Scientist in the School of Earth, Ocean and Planetary Sciences at Cardiff University in Wales. John served as founding editor and Editor-in-Chief of *Aquatic Geochemistry* from 1993 to 2002 and from 2003 as Associate Editor of the journal, and from 1992 as Associate Editor of *Marine Chemistry* until his untimely death. He was also recently appointed an Associate Editor of *Geochimica et Cosmochimica Acta*. John was a Fellow of the Geological Society of America, the Geochemical Society of America, the European Association of Geochemists, and the American Geophysical Union.

John was one of a small cadre of geochemists (now more popularly called biogeochemists) of his vintage who was truly holistic and global in approaches to scientific research. He worked well in the laboratory and field and had the natural ability to take his laboratory and field observations and interpret them in the context of a sound theoretical foundation. John published one major book and more than 150 research papers during his career. He was one of the most highly cited authors in Earth science, ranking in the top 0.5% and was ranked among the top 200 Earth scientists in *Earth Science A to Z* in 2003.

At the time of his death, John's major research interests lay in the role of surface exchange reactions in nutrient cycling in estuaries; benthic biogeochemical studies of organism–sediment interactions; geochemistry of sedimentary sulfides and their influence on metal toxicity; Pitzer-equation-based ionic models for natural waters; carbonate mineral reaction kinetics; and the hydrochemistry and formation of whittings in the Bahamas. His novel insights into the chemistry of sedimentary sulfides were partly achieved in collaboration with George W. Luther III (GWL) and David Rickard, and he was in the process of writing a book on sedimentary sulfides with the latter. GWL recalls that John had developed an analytical method to determine trace metal concentrations in pyrite and other sulfur-bearing phases and found, what John thought was a strange chemistry, that did not follow a normal thermodynamics pattern. John asked GWL what he thought the reason was and GWL said kinetics! Eventually GWL and John wrote a paper showing that both thermodynamics and kinetics control the amount of trace metals found in pyrite—a major breakthrough in our understanding of the processes controlling trace metal substitutions in solid phases at sedimentary temperatures. Most recently, John had initiated a large study on the conditions of formation, properties, and phase transformations of amorphous calcium carbonate and was looking forward to the possibility of another trip to the Bahamas to do carbonate geochemistry studies with Frank Millero.

Aside from being an exceptional researcher, John was also a demanding, generous, and caring teacher and student mentor. In a system that does not necessarily reward teaching and mentoring of young students, John maintained an active teaching program in marine chemistry and geochemistry. By his own example, John encouraged all his students to work hard and at their maximum intellectual capacity. With everyone, including his students, similar to Roland Wollast and Robert M. Garrels, two deceased world-class geochemists and friends whom John aspired to, John suffered fools badly but was too kind and patient to let them know. He attempted to lead his students gently but persuasively toward self-discovery of the errors of their ways. John supervised the research work of many students, including more than 12 Ph.D. dissertations. Many of his papers are coauthored with his students. Alfonso Mucci (AM), as a former student of John's, feels that John was never a “supervisor”, mostly a mentor, but mainly a colleague and a friend. During his graduate days in Miami, John introduced AM to his *modus operandi*, “Work hard and play hard”, and dragged him into it, but AM never really managed to keep up with John then and later, but to AM it was and remains a blast trying.

John's enthusiasm for science extended over into his personal relationships with his students, colleagues, and friends. There was never a moment when you could not have a stimulating talk with John, not only about science but also about life in general. He was a master of getting at the heart of any problem. John was an epicurean at heart; he loved good food, spirits, and company. He often hauled his friends and graduate students to the finest restaurants for long-winded meals. AM remembers a lunch at a sushi bar in Chicago, while attending an ACS meeting in 1981, from which they did not emerge until well after dark with a \$200+ bill. Similar escapades occurred on occasions while AM was a graduate student in Miami, including one to Key West on the guise of a fishing trip to Islamorada, and in earlier days in Bermuda with Fred T. Mackenzie (FTM). In addition, outside the laboratory, John had a vibrant passion for bass fishing (sometimes he would fish all day in the hot sun without a strike!), playing the guitar, walking his English Springer Spaniels, and driving vintage cars, including a beautiful red Ford Mustang.

John was one of FTM's best friends and a research collaborator for nearly four decades. FTM first met John more than 40 years ago. He was a student in a class in carbonate biogeochemistry that FTM taught at the Bermuda Biological Station for Research. John, at that time, was completing his Ph.D. with Bob Berner at Yale. John's enthusiasm for science and his critical quantitative thinking skills, which he maintained throughout his career, were readily apparent at the time. His destiny was to become a world leader in marine geochemistry, which he accomplished. This "paradise" setting in Bermuda was also the beginning of a long relationship between John and FTM, which set the foundation for the writing of the book *Geochemistry of Sedimentary Carbonates*.

There is a Zen master saying: "What we call "I" is just a swinging door which moves when we inhale and exhale." So, in some way, the carbon atoms of the people we have loved and have passed away may pass through our bodies at any time. In that way, John is still here and we are all infinitely connected. John, as a carbonate geochemist, would find a great deal of humor in that!

John is survived by his loving wife, Sandy Morse; daughter, Angela Morse; sister, Kristi Morse; mother-in-law, Mildred Key; brother- and sister-in-law, Ronnie and Hazel Key; and niece, Jacqueline Henry. With John's passing, the world has lost a fine gentleman and scholar and a friend to many. All will dearly miss him.