

James E. Sturm (d. 25 November 2021)

James E. Sturm, our late faculty colleague, was much more than a caring, accomplished, and creative communicator of chemistry, although he personally would have found that description pleasingly adequate. Chemistry Chair Greg Ferguson described Jim as a “delightful colleague and an accomplished physical chemist equally well known for his friendly supportive disposition, eagerness to help others, ready sense of humor, and love of pocket watches and the poetry of Ogden Nash.”

Jim found many occasions to tap into his repertoire of Ogden Nashisms. He knew scores of limericks but was especially fond of those with a chemistry connection. He had the talent to inject just the right Nash verse – whether on an uncommon acid or on DDT -- into his classroom lecture. Two of his favorites were:

*The ant has made himself illustrious
Through constant industry industrious.
Could you be calm, could you be placid
If you were filled with formic acid?*

*A mosquito cried out in pain:
"A chemist has poisoned my brain!"
The cause of his sorrow
was para-dichloro-
diphenyl-trichloroethane.*

From Jim’s 1956 arrival at Lehigh – fresh from a PhD at Notre Dame and postdoctorate at Wisconsin – he became the “go-to” guy for students striving to master physical chemistry. Jim’s main areas of research were kinetics, photochemistry, radiation chemistry, and mass spectrometry. He and his doctoral students published more than a dozen papers and abstracts in those fields.

Jim also developed and published six teaching experiments illustrating physical chemistry principles in the *Journal of Chemical Education*. One of these (*J Chem Ed.*, 46, 851 (1969), co-authored with Robert D. Rapp, then a chemistry graduate student and now professor emeritus at Albright College, involved the dipole moment of a molecule (2-chlorocyclohexanone) that could exist in two different conformations at room temperature. The experiment involved determining the dipole moment of each conformer separately and then measuring the composite dipole moment. One is then able to determine the percent of each conformer in the mixture and the one that is most stable. The experiment proved to be a popular illustration of dipolometry and was adopted for use in a number of other colleges and universities.

The undergraduate course in physical chemistry, which Jim taught for many years, often drew 90 engineers and chemists, but Jim’s advanced course in radiation chemistry attracted only a handful ... at least until 1979. After the Three-Mile Island crisis, radiation chemistry suddenly became a popular topic and large numbers of students enrolled. As computers became available, Jim was one of the first faculty members to incorporate their use in teaching and research; he used the early computers to solve differential equations numerically.

The large undergraduate physical chemistry course used advanced graduate students to assist with exam grading. Jim never ceased to remind his assistants of the time his prepared but not properly identified answer key was accidentally mixed with the student test sheets and received a score of 85%. While Jim found that outcome humorous, he often repeated the story to stress the need for attention to accuracy on the part of the graders.

Of all of Jim's many contributions to Lehigh, probably nothing was more significant than his role in designing the physical chemistry lab when the Mudd building was being planned (1972-75). Jim provided input on the floor plan of this teaching lab. He devised a scheme where the lab was divided into 6 cubicles, each accommodating 4 students and a specific lab experiment. Each cubicle housed a different experiment. Some of the experiments involved expensive equipment, so that typically only one piece of equipment would be needed at any given time. A schedule of experiments and lab partners would be set up in a round-robin arrangement. The experiments were complex, and students needed to carry out propagation of errors in their analysis. Not only was a specific numerical answer of interest but also the uncertainty in that number. Jim had learned this technique while at Notre Dame from a friend, Aaron Kupperman, who later became a member of the chemistry faculty at the California Institute of Technology.

Jim worked up a repertoire of experiments from which the faculty member in charge could select at the beginning of a semester. A lab manual was created and updated periodically. For decades Jim was the key professor in physical-chemistry laboratory instruction.

As generous as Jim was with sharing Ogden Nash limericks and the fascinating history of pocket watches, he was even more generous with his time for struggling students. Jim could explain and illustrate in multiple ways the meanings behind the pertinent equations, and many students were profoundly grateful for his approach. He famously kept very long office hours.

For National Chemistry Week and for the Department's frequent open-houses, Jim was always the first to volunteer to give a "gee-whiz" presentation: to set up an iodine clock reaction, a radioactivity counting, or a chemical volcano. He could entertain, but more than that, he used the demos to teach. Jim also served for many years as a science fair judge and thereby got to know the rising talent in STEM areas. In one case he mentored a high school senior interested in radiation chemistry, meeting periodically with him throughout the year. The student ultimately designed a way to detect positrons by using the americium present in household smoke detectors. The student went on to get a Ph.D. in Physics from Cal Tech and is currently a research scientist at Rutgers University.

Born on 28 March 1930 in New Ulm, MN, "The most German town in America," Jim used his German fluency to administer the department's German exam, to assist colleagues in reading technical German, and to aid the County Historical Society's Library by translating the title pages of over 100 rare uncatalogued books and providing abstracts of their contents. For many decades he served as the department's glassblower, repairing many pieces of broken and expensive labware. Jim never missed a chance to be helpful.

Jim and his late wife Margaret Ruth (d. 18 October 2016) raised their family of seven children in the one-room Wassergass school house in Lower Saucon Township which they had enlarged and converted into a home. Jim jokingly referred to his home as

“Wassergass University.” He also generously shared Ogden Nash’s advice for a long, happy marriage:

*To keep your marriage brimming
With love in the loving cup
When you’re wrong admit it
And when you’re right, shut up*

Jim was a prolific and productive contributor to the chemistry department and to Lehigh University. He was tenured in 1962, promoted to full professor in 1972, and retired to emeritus status in 1995. He and Dan Zeroka researched and wrote the “History of Physical Chemistry” section in the department’s sesquicentennial history (2015). We will all miss Jim, and he will be remembered with great fondness by his many friends, colleagues, and students.

Respectfully submitted:

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