February 28, 2024
Dr. James Lock eulogy at the CSU Faculty Senate

Over his career, Jim published more than 150 peer-reviewed articles (and several post-retirement) and forged international collaborations. At CSU, he was recognized with the College Outstanding Research Award and the University Distinguished Research Award, as well as the Jennie S. Hwang Faculty Excellence Award.

Dr. James Lock (or Jim as many of us knew him) was a member of our academic institution and the Physics Department for 35 years since 1978 until his retirement at the rank of full professor in 2013. He continued past retirement as an emeritus professor in the department until his passing exactly 4 months ago to the day, on October 28, less than a year after being diagnosed with acute myeloid leukemia.

Jim has lived in and served our Northeastern Ohio community for all his life. He graduated from St. Charles Borromeo Grade School in Parma and from St. Ignatius High School in Cleveland in 1966. He showed excellent mathematical aptitudes early in his education and as a senior in high school, he was absolutely convinced that he wanted to spend his working life as a mathematician. That lasted until the spring of his freshman year at Case Western Reserve University when he realized that what he was really interested in was not mathematics itself, but rather in how mathematics was used, and in the process fortunately for our department, he discovered physics. He proceeded to earn three degrees from Case: undergraduate and master's degree in physics, followed by a PhD in theoretical nuclear physics in 1974. His advisor was a well know theoretical and nuclear physicist Leslie Lawrance Foldy, who in turn was a former student of one of the most influential physicists of the 20th century, i.e. Robert Oppenheimer, his academic grandparent as Jim used to joke. Jim carried that academic legacy with extraordinary distinction, first as a postdoctoral researcher at Case before joining CSU for the rest of his career.

When he started teaching physics in the early 1970s, Jim immediately realized that he loved to talk to others about it. He relished in showing how one can uncover new physics not only in the microscopic world not directly accessible to our senses, but in things that people can actually look at, like rainbows and diffraction from common things, like water droplets, pieces of glass and ice, and so on. This was probably the motivation behind his brave decision quite early in his career at CSU to change his research focus from nuclear physics and quantum mechanics, which dominated the physics at the time, and which was the topic in which he was trained, to the physics of everyday phenomena as observed in the scattering of light by small particles in the atmosphere such as raindrops and fog. In his own words, he could not pass the fact that "the excitement of the physics of everyday phenomena was, that these were things that people could actually look at and see, if only they took the time to do so". And Jim certainly took the time to show us. His accomplishments in the field of light scattering are abundant. He built and expanded on the work of outstanding scientists like Marcel Minnaert, author of the Physics in the Outdoors encyclopedia; Henk van de Hulst who in addition to being a founder of the field of radio astronomy, also devised the first modern wave theory of the optical phenomena; Robert Greenler, the first to use computer simulations to model sun pillars and ice crystal halos; and our own Jearl Walker with his Flying Circus of Physics collection of physics phenomena. Together they brought about a revived interest in the theoretical and mathematical richness behind the physical world that we can observe with our eyes. Jim has contributed to the literature of his discipline with over 160 referred scientific publications to date, many of them as a single author. I say to date, as he continued working until he could not hold a pen anymore, so some of his latest work has been passed to his collaborators and is being

published after his passing. While he was not especially interested in the technological uses of light scattering, Jim received numerous grants and spent many summers working as a consultant at NASA, as understanding scattering by particulate matter tuned out to have very broad applications both for Earth and in space sciences. He served as a topical editor of Applied Optics from 1994 until 2001 and was named one of its most prolific authors. He was a student of history as well, and I remember his excitement at being able to explain the theory behind a peculiar optical caustic produced by refraction, first recorded by Leonardo DaVinci in 1508 and only recently rediscovered.

Jim's excellence was recognized with multiple awards including the Dr. Jennie S. Hwang Faculty Excellence Award and the respect that he garnered in the discipline was immense. We have just recently found that this year's Laser-Light and Interactions with Particles International Conference, the premier event for the light scattering research community, will be dedicated to his memory. This follows his work being memorialized in a special article in the Journal of Quantitative Spectroscopy and Radiative Transfer.

For those of you who knew him, you know that he was and would be very humbled by all these honors, as he never sought recognition. He was a very spiritual person and a man of deep faith, which was foundational to his personality and how he lived his life. He did not see any contradiction between science and religion and invited dialog on both. He fully subscribed to the ideas of the famous scientist and theologian John Polkinghorne, one of his favorite authors, that, and I quote: "what theoretical physicists do is drill into the mind of God" to uncover how our natural world works.

Jim served as an inspiration to our students through his extraordinary insights, work ethic, and integrity. During his career he has taught 24 different classes from general physics to relativity. His elaborate lecture notes have become treasured possessions, passed from one generation of students to the next. At his and his wife's Dr. Vida Lock wish these notes have been donated to the University to continue to be made available for free to future generations of students. In fact, Dr. Vida Lock, is joining us today on behalf of the family. Many of you know her also as a faculty and former Dean of the School of Nursing. For Jim she was his loving companion, friend, and many times his very willing assistant for the optical experiments and observations he did for his research. And he worked on those around the clock.

So let us take a minute to remember a life lived with the outmost integrity in the service of searching for the truth. As one of Jim's collaborators, Gerard Gouesbet, from University of Rouen, put it and I quote again "personalities like Jim's make us still go on believing in the chances of the human species, whatever would be the foolish agitation of the world."

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