



*Shirley E. Schwartz*

# SHIRLEY E. SCHWARTZ

1935–2016

Elected in 2000

*“For contributions to lubrication engineering and for enriching the technical community through freelance writing.”*

BY KATHLEEN C. TAYLOR

SHIRLEY ELLEN SCHWARTZ, widely recognized for her work on lubrication engineering at BASF and General Motors, died May 8, 2016, at the age of 81.

She was born August 26, 1935, in Detroit to Jessie Grace Galbraith Eckwall and Emil Victor Eckwall (both her parents were known by their middle names, Grace and Victor). She grew up in nearby Pleasant Ridge, was active in sports, and spent her summers at the family cottage near Gaylord in northern Michigan.

Shirley was an exceptionally smart student. After graduating from Lincoln High School in Ferndale, MI, she went to summer school at the Sorbonne and also did a summer course of Spanish language study at the University of Illinois, which included a trip to Mexico. In fact she was quite gifted in languages; she spoke French, Spanish, and German, and later in her career learned to speak Japanese. She also spoke some Swedish and translated articles from Russian into English.

She began as a language major at the University of Michigan in Ann Arbor, but switched to chemistry, graduating with a BS in 1957. She earned an MS in biochemistry at Wayne State University in 1962; her advisor was Wendell H. Powers. In 1970 she got her PhD in physical chemistry, also at

Wayne State; her thesis advisor was Wilfried Heller and her PhD thesis was “Refractive Index Investigations of Polymers and Proteins.”

While at Wayne State she developed techniques to grow nerves in chicken embryos. This was followed by postdoctoral study with Harry Fischer, director of radiology at Wayne County General Hospital. She published her work on the “Adhesion of Barium Sulfate to Colon Tissue.”

After her postdoctoral study Shirley taught biology and chemistry part-time at Oakland Community College and later full-time at Detroit Institute of Technology (DIT), where in 1976–78 she was head of the Math-Science Division. Given her lifelong ambition to acquire new skills, she took courses in mathematics, computer programming, and engineering drawing while at DIT and received a BS degree in mathematics in 1978.

From DIT (which closed in 1981) she moved to BASF Wyandotte Corporation, where she was a research staff scientist (1978–81) and became a section head in 1981. She developed an industrial hydraulic fluid that was 95 percent water, nonflammable, noncorrosive, and as viscous as oil. The use of water as the primary ingredient saved oil and reduced pollution. BASF won an IR-100 award for this product in 1982.

In 1981 she moved to the General Motors Research and Development Center, from which she retired in 1999—and then spent two years with GM Powertrain.

Shirley made major contributions in the field of lubrication engineering. She was the primary developer of GM’s oil life monitor, a highly sophisticated, accurate, patented computer system (oil change indicator) that calculates the rate of engine degradation. The device saves up to 10 million gallons of oil a year by allowing extended oil drains without risk of engine damage. It received many awards, including Oil Daily Product of the Year in 1988.

She published more than 40 technical papers and 149 articles, and received 20 US and foreign patents. Notable publications are “An Analysis of Upper-Cylinder Wear with Fuels Containing Methanol” (*Lubrication Engineering* 42(4):292,

1986); "Development of an Automatic Engine Oil-Change Indicator System" (SAE Paper No. 87043, 1987, with Donald J. Smolenski); "Observations Through a Transparent Oil Pan During Cold-Start, Short-Trip Service" (SAE Paper No. 912387, 1991); and "A Comparison of Engine Oil Viscosity, Emulsion Formation, and Chemical Changes for M85 and Gasoline-Fueled Vehicles in Short-Trip Service" (SAE Paper No. 922297, 1992). She gave talks about lubrication subjects in the Netherlands, Toronto and Fort McMurray, Canada, and other places. She was invited to write similar essays in Japanese for the *Japanese Journal of Tribologists*, and she wrote and published articles in English and French.

For 15 years (1988–2003) she wrote monthly "Love Letters to the Lubrication Engineers" in *Lubrication Engineering*. In 1993, 45 of these articles were published in a book with artistic illustrations by her son Steve.

Shirley received many honors during her lifetime, beginning in high school when she was elected to the National Honor Society and in 1953 received an honorable mention in the *Detroit News* Scholastic Writing Competition. While at the University of Michigan she received the Regents Alumni Honor Award and two undergraduate prizes in chemistry, and she was elected to Alpha Lambda Delta and Phi Kappa Phi honor societies. At Wayne State University she received the Tompkins Award in Creative Writing.

General Motors recognized her with its Kettering Award, the company's top honor for technical innovations, "for a computer-based method that assesses engine oil degradation as a function of oil temperature and displays the remaining life of the oil for the vehicle" (1988), and the McCuen Award, bestowed "for extraordinary technical accomplishment and highly significant achievement" (1993). In 1989 she received the Gold Award (top award of technical societies of southern Michigan) from the Engineering Society of Detroit. In 1993 she was elected a fellow (and director, 1985–91) of the Society of Tribologists and Lubrication Engineers, which in 1987 awarded her the Wilbur Deutsch Memorial Award and in 1994 the P.M. Ku Award for contributions to the society.

She received many awards for papers and oral presentations at meetings of the Society of Automotive Engineers (SAE), including the Arch T. Colwell Merit Award for best paper in 1992 and the Lloyd L. Withrow Distinguished Speaker Award in 1995. She was inducted into the Michigan Women's Hall of Fame in 1996, and in 1999 she was elected an SAE fellow and received a Life Achievement Award from the Society of Women Engineers. She was elected to the National Academy of Engineering in 2000 and, earlier that year, received the Women of Wayne Headliners Award from Wayne State University.

She was also a member of Sigma Xi, the Coordinating Research Council (CRC), American Chemical Society, and Tissue Culture Association. Early in her career she held memberships in the American Society for Nondestructive Testing, Society of Manufacturing Engineers, American Society for Testing and Materials, and American Association of University Professors. As head of the CRC Group on Lubricants of Methanol-Fueled Vehicles she chaired several international conferences.

Shirley had a lifelong love of sports. Her activities included women's water ballet at the University of Michigan, canoeing, sailing, skiing, champion swimmer and diver, senior national-level competitor in table tennis, and US Open competitor in senior women's volleyball. She also enjoyed music and played the clarinet and block flute (recorder). She was secretary of the Warren (MI) Human Rights Council during the civil rights movement of the 1960s.

She is survived by her husband Ronald Schwartz, sons Steven, Bradley (Coleen), and George; grandchildren Jessica, Kelly (Phil) Ploski, Mathew (Rebecca), Clara, Laura, and Jonathan; and great-granddaughters Maryanna Joy Ploski and Rosalie Evangeline Schwartz.

