



JOSEPH C. SALAMONE

1939–2019

Elected in 2011

“For advances in ophthalmological devices and wound healing therapies and for distinguished academic and professional service.”

BY LEONARD PINCHUK

JOSEPH CHARLES SALAMONE, academician, entrepreneur, industrialist, and internationally renowned leader in polymer chemistry, notably for the invention of the gas permeable contact lens and novel wound care products, passed away July 9, 2019. He was 79 years old.

Dr. Salamone was recognized as the world’s leading authority in ophthalmic biomaterials. His principal areas of research included the synthesis and properties of new monomers, polymers, and biomaterials, materials designed for applications in hydrated form, in the solid state, and as substrates for cell growth.

Joe Salamone lived a full life enriched by a spectrum of roles: father, grandfather, inventor, mentor, and ballroom dancing enthusiast, to name a few. He was a person of rare determination, who focused on improving life with compassion and innovation.

He was born to Angela and Joseph Salamone in Brooklyn, New York, on December 27, 1939. Raised in a newly immigrated Italian-American family from Sicily, he was the firstborn son in his generation and at least the tenth Joseph Salamone of his lineage.

He received a BS in chemistry from Hofstra University (1961) and PhD in chemistry (major–organic chemistry,

minor-polymer chemistry) from the Polytechnic Institute of Brooklyn (1967), with an NIH postdoctoral fellowship at the University of Liverpool (1966–67). Back stateside he was a research associate and Horace H. Rackham Postdoctoral Fellow at the University of Michigan, Ann Arbor (1967–70).

He began his teaching career at the University of Massachusetts, Lowell, in 1970, and rose from assistant professor to professor in 6 years, and to dean in 1978. During this time, he also cofounded his first company, Polymer Technology Corporation, centered around his invention of oxygen-permeable contact lenses.

He retired for the first and only time in his early 40s when he became professor emeritus in 1989, which lasted about 6 months. He then signed on to be the editor in chief of CRC Press's *Encyclopedia on Polymeric Materials* (1993–97).

He was cofounder and director (1985–2009) of Optimers, Inc., in Lowell, a company that developed soft contact lens materials. After his university retirement, he was also vice president in various research, technology, and development capacities at Bausch & Lomb (B&L; 1997–2006).

In addition to creating new biomaterials for ophthalmology and wound care, Joe worked to advance the field of polymer chemistry. He was a cofounder of the Pacific Polymer Federation, a professional society for polymer scientists in countries around the Pacific Ocean, a region where he appreciated excellent scientific research and very active research communities. He led the American Chemical Society (ACS) Polymer Division to more comprehensive programming and financial soundness.

Joe's excitement about the professional societies was evident. According to Cato T. Laurencin (also a member of NAE Section 2: Bioengineering), "Joe recruited members with zeal and was responsible for elevating many individuals in the American Chemical Society to fellow status. In the American Institute for Medical and Biological Engineering (AIMBE), Joe led the expansion of the Industry Council. He was a constant voice in AIMBE reminding everyone about the importance of translating findings from the bench to care of patients through

the embrace of industry. He taught by example how one individual could shape an entire field."

Joe also took great pride in recommending deserving engineers for election to the National Academy of Engineering and for the San Antonio BioMedSA prize and Fritz J. and Dolores H. Russ Prize (thank you, Joe).

His introduction of highly gas permeable silicones and fluorinated moieties into hard and soft contact lenses changed the way people thought and opened entirely new approaches in the field. He did this work back in the mid- to late 1970s for hard contact lenses and then later for soft contact lenses. Many products were commercialized in ophthalmology as rigid and soft hydrogel contact lenses, silicone hydrogel contact lenses, contact lens care solutions and cleaners, intraocular lens materials, and intraocular controlled drug delivery. To this day, these developments are state-of-the-art in many products; efforts by others have added only incremental improvements to the paradigm-shifting platform work of Joe Salamone.

According to Carl E. Sassano, former B&L president and COO 1999–2000), "Joe's Polymer Technology Corporation became not only the leader in gas permeable lenses and care products, but the most successful acquisition Bausch & Lomb made in health care. In Joe's time at Bausch & Lomb, his R&D group produced more new innovative products in the contact lens field than any other company in the 1980s and '90s. Joe's imagination and ability to see how to combine seemingly incompatible chemistry made him one of the most prolific and successful inventors I have known in my 38 years at B&L and over 45 years in health care."

Similarly, University of Akron professor Joseph P. Kennedy, who visited Joe and his associates often as a confidential consultant when he was vice president of B&L Research and Technology, remarks that "I experienced his working style at a very close range. His leadership...flowed naturally from his persona and always with a smile. His crew was always happy around and with him. He created the halcyon days of research at B&L."

Joe's entrepreneurial talents were also evident as a cofounder, with his wife, Ann Beal Salamone (also an NAE member), of Rochal Industries, Inc. (named after their children Robert, Chris, and Alicia), which began in Marblehead, MA, in 1986; they relocated the company in 2008 to San Antonio, Texas. Joe served as chief science officer, focused on the areas of wound and skin care, from inception to his death.

As a prolific inventor, chemist, polymer scientist, and engineer, Joe developed antimicrobial solutions and antimicrobial liquid adhesive bandages to prevent infections related to wound and burn care (for both human and veterinary use), new biomedical adhesives, antifriction coatings on skin, and cell-compatible substrates for wound healing.

His most prized professional recognition was election to the National Academy of Engineering. In 2013 he was elected to the National Academy of Inventors. He was also the recipient of additional honors and awards too numerous to list here, but he mentioned that he was very proud of receiving the Herman F. Mark Technology Award from the Polytechnic University (2005) and the ACS Award in Industrial Chemistry (2004).

Joe's enormous impact on the biomaterials field extended beyond his substantial contributions to the literature (200 publications, 2 books, and 3 encyclopedias) and the development and commercialization of important new technologies. His highly productive research generated over 100 issued US patents and a similar number of patents pending, most of which were translated into commercial successes for contact lenses (5 product lines), intraocular lenses (3 product lines), contact lens solutions (multiple product lines), antifog formulations (3 products), and wound care products (9 product lines), among others.

Joe Salamone's interdisciplinary careers in academia, entrepreneurship, and industry made him a favored mentor to many young engineers. Perhaps most importantly, he was a profound humanitarian whose products improved health care for millions of people in many countries. He believed in dedicating himself with full effort, taking care of those he loved, and leading vigorously by example.

He is survived by his loving family: Ann, Chris (Jade), Alicia (Brent), and two grandchildren. He was predeceased by son Bob.

He will be dearly missed by his family, the Rochal team, his colleagues, and the plethora of engineers and scientists who had the privilege and honor of working with him and claiming him as their friend and mentor.