



Adel F. Sawfin

# ADEL F. SAROFIM

1934–2011

Elected in 2003

*“For advancing our understanding of the mechanisms and modeling of processes that control radiation in and pollutant emissions from combustors.”*

BY GERALD B. STRINGFELLOW

**A**DEL FARES SAROFIM, a professor emeritus in the Departments of Chemical Engineering at the Massachusetts Institute of Technology and University of Utah, passed away on December 4, 2011, in Norfolk, Virginia. He was born on October 21, 1934, in Cairo to a family that was prominent in Egyptian, and especially Coptic, affairs. His maternal grandfather, Morcos Pasha Simaika, was the founder of the Coptic Museum in Cairo, and his father, Fares Sarofim, was the recipient of an OBE from the British Crown. Upon graduation from the English School in Heliopolis at age 13, three years too young to be eligible to enter Magdalene College at Oxford University, Adel attended the Tunbridge School in England. He received a BA in chemistry from Oxford in 1955 and then studied chemical engineering at MIT, where he received his MS in chemical engineering practice in 1957 and ScD in 1962. His doctoral thesis, conducted under the supervision of Professor Hoyt C. Hottel, was on the subject of radiative heat transfer in furnaces. Upon completion of his thesis, Dr. Sarofim continued to work closely with Professor Hottel. The success of this collaboration through the years that followed is evidenced by more than 1,200 citations to their 1967 book on radiative transfer.

Dr. Sarofim was appointed an instructor in the MIT Department of Chemical Engineering in 1958 and thereby discovered a talent for teaching and a love for the profession. He joined the regular faculty as an assistant professor in 1961 and rose to the rank of professor in 1972. From 1989 until 1996 he was the Lamot du Pont Professor of Chemical Engineering. He retired in 1996 to join the University of Utah as Presidential Professor, a ranking "reserved for selected individuals whose achievements exemplify the highest goals of scholarship as demonstrated by recognition accorded to them from peers with national and international stature, and whose record includes evidence of a high dedication to teaching."

In 1990, Dr. Sarofim cofounded Reaction Engineering International, based in Salt Lake City. He played an important role in REI business for over 20 years, serving on the board of directors for 10 years and as a general consultant for the company and its customers in areas related to industrial combustion processes and R&D for next-generation combustion systems.

Focusing on energy efficiency and pollution reduction, Dr. Sarofim spent more than 50 years working on combustion science, which led to advances in the reduction of pollutants released from fossil fuel combustion. His research covered radiative heat transfer, furnace design, circulation patterns in glass melts, the freeze process for desalination, nitric oxide formation in combustion systems, combustion-generated aerosols, soot and polycyclic aromatic hydrocarbon formation, and the characterization of carbon structure and reactivity.

A particular focus of Dr. Sarofim's work was energy and the environment and the interdisciplinary research needed to address these issues. At MIT he served on steering committees for three interdisciplinary research centers: the Hazardous Substances Group, the Energy Laboratory, and the Center for Environmental Health Sciences. He was also cofounder and director of MIT's EPA Center for Airborne Organics (1992–2002).

Dr. Sarofim was the recipient of numerous US and international awards, including the Kuwait Prize for Petro-

chemical Engineering (1983); the Sir Alfred Egerton Gold Medal from the Combustion Institute (1984); the Walter Ahlstrom Environmental Prize of the Finnish Academies of Technology (1993); Senior Thermal Engineering and the Townend-BCURA Awards of the Institute of Energy (1994); the University of Pittsburgh Award for Innovation in Coal Conversion (1995); the Department of Energy Homer H. Lowry Award in Fossil Energy (1996); the ASME Fuels and Combustion Technology Division Percy Nicholls Award (1996); the Lawrence K. Cecil Award of the American Institute of Chemical Engineers, Environmental Division (1998); the American Institute of Aeronautics and Astronautics Energy Systems Award (2000); and the ASME George Westinghouse Gold Medal (2004).

His many colleagues all over the world included those who visited his research groups at MIT and the University of Utah and those he visited abroad over the course of his career. He was a "collaboration builder," and through him his colleagues at the University of Utah developed, either directly or indirectly, friendships and collaborations with researchers throughout the world, including Italy, Hungary, Colombia, China, Germany, and the United Kingdom. Dr. Sarofim's mentorship, wit, wisdom, and friendship were truly his most important contributions to those who knew him.

According to colleagues, Dr. Sarofim always said the best indication of scholarship was the combination of students and publications. He supervised and mentored more than 80 PhD students, many of whom now hold prestigious academic, industrial, and governmental positions, and his more than 350 peer-reviewed papers and documents have had almost 5,000 citations. His 1996 US DOE Homer H. Lowry Award citation reflects well the sentiments of his colleagues, students, and friends: "Adel Sarofim is a compassionate human being who inspires students and colleagues, and who contributes significantly across the full spectrum from fundamental science through real-world design concepts."

In addition to his professional and academic achievements, Adel's personal qualities included a variety of admirable attributes: a strong sense of familial devotion and compassion

that justified a late-life relocation from Salt Lake City to Virginia where three of his closest kin lived; an enduring interest in genealogy that enabled him to fulfill a long-time promise of supporting and advising his cousin Dr. Samir Simaika in the editing and publication of their grandfather's memoirs; a dry and irrepressible sense of humor that could unexpectedly surface in the wake of medical crises (when recuperating from the removal of an intestinal polyp he received a copy of *The Gas We Pass*, which he enjoyed so much that he sent it to his sister liberally annotated with personal underlinings and comments in the margins); and never ever missing an opportunity to combine elements of work, travel, and adventure (such as donning an aviator's pressurized flight suit and helmet for a transfer by Navy fighter jet both to and from the flight deck of the nuclear-powered aircraft carrier USS Theodore Roosevelt [CVN-71] at sea off the Virginia Capes to enable his participation in a conference of the National Research Council on shipboard pollution control).

Perhaps as a result of his many travels, Adel took pleasure in sampling diverse cuisines; he particularly grew to love pasta during a 6-month sabbatical at the University of Naples. During breaks from research he would play squash with students or go hiking with his family. And everywhere he went he always had a book with him, whether a student's thesis to correct or a biography of Lyndon Johnson to enjoy. He was gentle, generous, and modest. Even his closest colleagues were not aware of the entire spectrum of his contributions. These are but a few of his qualities and attributes; the complete list is seemingly endless.

In addition to his wife Mary Ellen, he is survived by his sisters Lola Beck and Nabila Harris, his brother Nabil Sarofim, and Marcus C. Sarofim, his son to his former wife Leticia Sarofim. They, his colleagues, and his students are in his debt.

