NICHOLAS W. TSCHOEGL
1918–2011

Nicholas W. Tschoegl, professor of chemical engineering, emeritus, passed away on the morning of November 14 at his home in Pasadena. He was 93.

Tschoegl studied how the molecular structures of synthetic rubbers and so-called block copolymers affected how they flow under pressure, a field known as rheology. His book, *The Phenomenological Theory of Linear Viscoelastic Behavior*, remains the authoritative text on the subject.

But "it was Nick's curiosity that set him apart," says Bob Cohen (PhD '72), the St. Laurent Professor of Chemical Engineering at MIT and one of Tschoegl's first graduate students. "I was in his group in the late '60s; young people were looking for gurus, and Nick was ours. The discussions at our weekly group lunches at the Ath were shaped by Nick's passions—the lost city of Atlantis, the structural connections among the dozen languages he spoke fluently, and the demise of central-European nobility in pre–World War II Europe. He treated us like family, opened his home to us, and took us on amazing field trips to see the poppies bloom in the desert or to examine the reflecting pools at Hearst Castle."

Adds John Seinfeld, the Nohl Professor and professor of chemical engineering, "He could discuss virtually any area of history or language with authority. He was a true renaissance scholar."

Tschoegl was born in 1918 in Moravia, which was then a province of the Austro-Hungarian Empire and is now in the Czech Republic. When he was just three months old, his father, a lieutenant in the hussars, was killed in Italy in the waning days of World War I. Raised by his mother, he would spend his formative years in Hungary, Germany, and Czechoslovakia. By age nine, he had become fascinated with electricity, which sparked his interest in science.

At around this time he also developed the passion for languages that would follow him throughout his life. Already proficient in German, Hungarian, and Czech, he went on to study English, French, Italian, and Latin. In high school, he picked up some Turkish and learned the Arabic and Cyrillic scripts. He eventually studied other writing systems, including Egyptian hieroglyphics, Assyrian and Babylonian cuneiform, Chinese, and Japanese.

Upon finishing high school in 1936, Tschoegl was conscripted into the Hungarian Army for a year; when Hungary entered World War II as an Axis power he was recalled to service and eventually sent to the Russian Front as an artillery officer. He survived three major battles, including the siege of Stalingrad, only to be shot in his left shoulder back in Budapest as Soviet forces encircled the city. He was nursed back to health by his friend, Polish medical student Sophia Glazmak.

The two were married in 1946, and had their first son, Adrian, in 1947. The family fled from Communist rule in 1948, with Sophia and Adrian boarding a train to Italy while Tschoegl was smuggled across Lake Fertö, which straddles the Austrian border, in a small boat in the dead of night.

The family eventually settled in Sydney, Australia, where their second son, Christopher, was born. Tschoegl received his PhD in physical chemistry from the University of New South Wales in 1958 and joined the Bread Research Institute of Australia, where he did pioneering work on the rheology of wheat-flour dough. He accepted a position at the University of Wisconsin working on synthetic polymers in 1961, and then spent two years at the Stanford Research Institute before joining Caltech in 1965 as an associate professor of materials science. He became a professor of chemical engineering two years later, and professor emeritus in 1985.

Tschoegl is survived by his son Adrian; a daughter-in-law, Naomi; and two grandchildren, Elizabeth and Matthew. Sophia and Christopher predeceased him.—*MW* E&S

ARON KUPPERMANN
1926–2011

Aron Kuppermann, professor of chemical physics, emeritus, passed away October 15 at his home in Altadena, California. He was 85 years old.

A leader in the field of computational chemistry, Kuppermann was best known for his theoretical studies of the dynamics of chemical reactions. In the early 1970s, he performed the world's first complete three-dimensional quantum-mechanical calculation of a chemical reaction. This feat took more than 1,000 hours of time on an IBM 370 mainframe computer—at the Pasadena campus of the Worldwide Church of God.

As Kuppermann told *E&S* in a 1996 interview, Caltech charged for computer time, and the spanking-new 370—"essentially the world's most powerful" machine—went for $300 an hour. He didn't have that kind of money, but he discovered that the church used an identical machine to process donations, and that their 370 sat idle on weekends. He talked the church leaders into letting him use it, a feat he called a minor miracle, but privacy concerns barred him from physical access to the machine. Instead, he had to drop off his box of punch cards at the cashier's window on Friday afternoon, and on Monday morning the printout—checked to be sure it contained no donor information—was waiting for him. "If they read in my box of cards and one got mangled, that was it—a weekend lost," he recalled, adding however that without that 370 "we couldn't have done the work."

The object of all this labor was the simplest chemical reaction imaginable—an incoming hydrogen atom replacing one of the two atoms in a gaseous H_2 molecule. In later years, Kuppermann pioneered the use of supercomputers to predict the rates and probabilities of reactions involving as many as five atoms. In the process, he developed methods for representing the complex relationships between electrons and atomic nuclei, accounting for all of their possible relative positions and rotations by use of higher-dimensional spaces.

"Aron will be known for the challenging work he did on fundamental quantum-mechanical treatments of the dynamics of chemical reactions," says Nobel Laureate Rudy Marcus, the Noyes Professor of Chemistry and a longtime colleague of Kuppermann. "He always went on, in a pioneering way, to increasingly challenging problems. His use and extensions of hyperspherical coordinates and the equations that resulted from

Opposite: The Kuppermann family. Aron Kuppermann is pictured fourth from the left in the back row.

Below: Aron and Roza Kuppermann were married for 60 years.

them provide a framework that others can follow."

Kuppermann also applied chemical physics to radiation chemistry, and he helped develop electron-impact spectroscopy.

Born May 6, 1926, in São Paulo, Brazil, Kuppermann received his BS in chemical engineering in 1948 and another in civil engineering in 1952 from the University of São Paulo. He earned his PhD in physical chemistry at Notre Dame in 1955. He then worked his way up the academic ranks at the University of Illinois before joining the Caltech faculty as a full professor in 1963. He became emeritus in 2010.

"Aron was an important part of the Caltech family for almost 50 years," says Jackie Barton, chair of the Division of Chemistry and Chemical Engineering, as well as Caltech's Hanisch Memorial Professor and professor of chemistry. "He was concerned about his students and helped always to mentor his young colleagues. He will be missed by all of us." Kuppermann was given the 1999 Excellence in Mentoring Award by the Graduate Student Council (GSC), and a GSC Classroom Teaching Award in 2010. He also worked to improve the state of education and research abroad, especially in his native Brazil. He served on the Joint U.S.–Brazil Science Cooperation Program on Graduate Teaching and Research in Chemistry from 1969 to 1976, with the last three years as chair.

Kuppermann was a fellow of the American Physical Society and the American Institute of Chemists. He was also Councilor for Chemistry to the International Association for Radiation Research and to the Radiation Research Society, as well as a member of the Advisory Panel on Atomic and Molecular Properties for the National Standard Reference Data Program.

Kuppermann is survived by his wife, Roza, and four children—Baruch, Miriam, Nathan, and Sharon. —*KF/DS* E&S

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