



IN MEMORIAM

Eugene Edward Petersen
Professor of Chemical Engineering, Emeritus
Berkeley
1924 – 2005

Eugene Edward Petersen, professor emeritus of chemical engineering at the University of California, Berkeley, died October 27, 2005 after a short battle with cancer. He was 81.

Gene Petersen, a recognized pioneer in modern chemical reaction engineering, devoted his career to understanding the fundamental physics and chemistry that control the behavior of the key unit in chemical and refining processes, the chemical reactor, within which reactant molecules are converted into useful products. His contributions in theory and experiment helped to transform the field, previously based on empirical observations and experience, into one guided by rational design and fundamental principles. His rigorous analysis of reactions occurring within porous inorganic catalysts came at the dawn of the era of purposeful catalyst design and remains relevant and broadly used several decades after its initial conception and development.

Petersen was born on March 2, 1924, and raised in Tacoma, Washington. He spent one year as a pre-engineering student at the University of Puget Sound and then worked for a short time as a tool- and die-making apprentice, a passion and hobby that remained with him throughout his life and led to scholarly writings about the art and science of constructing complex gear assemblies. He joined the U.S. Army in 1943 and served in the European front during the critical final years of World War II. In 1946, he entered the University of Washington, where he received B.S. (1949) and M.S. (1950) degrees in chemical engineering. He continued with graduate studies at Pennsylvania State University and received a Ph.D. degree in fuel science in 1953. Gene joined Berkeley's Division of Chemical Engineering within the College of Chemistry (later to become the Department of Chemical Engineering) as an instructor in 1953. He rose through the academic ranks to become full professor in 1965. He chose emeritus status in 1991, but continued to contribute to departmental matters with his careful analysis and thoughtful advice until his death.

Petersen's research addressed the manner in which catalysts – porous solids that increase the rate of specific reactions without themselves being consumed – perform their function. His studies also probed the mechanism by which these catalysts occasionally fail at their tasks during use. These selectivity and deactivation issues were elegantly addressed by his development of the “single-pellet reactor”, which brought unprecedented detail and a definitive analysis to the assessment of the roles of chemistry, diffusion, and poisoning in catalysis. This instrument and Petersen's elegant theoretical analysis, which exploited in a timely manner the advent of computation in chemical engineering, allowed the first measurements of nonuniformities in concentration and temperature within porous particles and the definitive elucidation of the marked consequences of such gradients on the catalytic function of these materials.

The accomplishments and contributions of Petersen were recognized by the prestigious 1985 R. H. Wilhelm Award in Chemical Reaction Engineering from the American Institute of Chemical Engineers, awarded for his pioneering advances in the theory and experimental elucidation of catalytic mechanisms, of the intrinsic coupling between reactions and transport, and of catalyst deactivation phenomena. He presented many invited

lectures at academic institutions and industrial research laboratories, including the prestigious Reilly Lectures at the University of Notre Dame. He published nearly 100 scholarly articles and three textbooks widely recognized as leading intellectual contributions to chemical engineering.

Petersen was a clear and incisive teacher of science and engineering and a role model as a scholar and as a human being. His 1965 milestone textbook, *Chemical Reaction Analysis*, laid the foundations for modern chemical reaction engineering analysis and taught many generations of students its essential fundamentals, with the clarity and elegance ubiquitous in the teachings of Professor Petersen throughout his career. His students uniformly praised his knowledge of the subject, but also his consistent encouragement of class discussion and of creative thinking, as well as his willingness to address their questions within and outside the classroom. In his 38 years on the faculty, he mentored 28 M.S. and 27 Ph.D. students. Many of these students went on to lead the field in industry and academia and to pass on the example of rigor and scholarship and the passion for knowledge that characterized the life and career of Gene Petersen. These students he described as the footprints and the legacy of academic success.

Gene had many interests, including carpentry, horticulture, poetry, and piano. To these, he added a life of dedication to his biological and academic families and a passion for matters of teaching and learning. His personality is best described as wholesome simplicity and integrity, in thoughts and actions. In his speech and manner, there was never anything fancy or contrived. He was “down- to- earth”, honest, helpful, and resolved to do the “right thing” and to do things right. In some ways, he remained throughout his life the ideal Eagle Scout. Yet, he often carried a mischievous twinkle in his eye and a dry sense of humor that helped others take themselves less seriously. His youthful looks and his youthful thoughts remained with him throughout his life and made us think about what keeps us young in thoughts and heart.

Gene was a resident of Lafayette, California, where he lived in the beautiful mountaintop home that he designed and built next to the hills and hiking trails that he and his wife Kathryn loved so much. Near the time of the 50th anniversary of his wedding to Kathryn, Gene passed on his wisdom about success in marriage: “Always make your spouse think it is you who is giving in 90% of the time.” He is survived by Kathryn Dorothy Petersen, his wife of 57 years, by a son, Richard and a daughter, Renee Keller, and by several grandchildren, to whom he dedicated his life and his good example. We all miss his wit, his wisdom, and his scholarship.

Enrique Iglesia
John Prausnitz