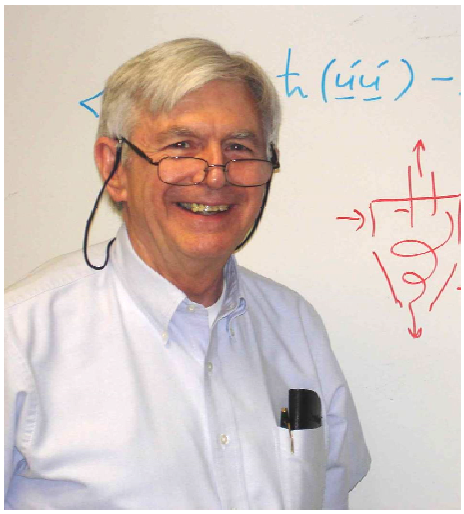
Biographical Profile of Charles A. Petty
Professor of Chemical Engineering, Michigan State University

Professor Petty was recently elected a Trustee of the CACHE Corporation, which is the leading organization in the United States that promotes the use of computational methods in the chemical engineering undergraduate curriculum. He presently serves on the CACHE CFD subcommittee chaired by Richard LaRoche of Ansys.



Professor Petty joined the Department of Chemical Engineering at Michigan State University in 1977. He studied chemical engineering at the University of Florida and received a Bachelor of Science degree in 1966 and a PhD degree in 1970 under the direction of Professor X. B. Reed, Jr.

As an undergraduate student at the University of Florida, he completed an industrial cooperative education program with Brunswick Pulp and Paper, was a part-time undergraduate research assistant with the USDA Entomology Laboratory in Gainesville, and developed an undergraduate research thesis in the area of crystallization under the direction of Professor Alan Randolph. While at the entomology laboratory, he participated in an innovative study related to the use of chemical sterilants to control the population of the aedes aegypti mosquito.

After completing his studies at the University of Florida in 1970, Professor Petty joined the Department of Chemical Engineering at the University of Delaware as an Assistant Professor. While at Delaware, he developed a research program in the area of transport phenomena with an emphasis on turbulent mass transfer and reaction engineering. With NSF support, Professor Petty participated in a fluidized bed coal combustion program at the Argonne National Laboratory (summer 1974 and summer 1976).

In the late 1970's and early 1980's, Professor Petty became intrigued with hydrocyclone separators, which were invented around 1891. With NSF support, he developed an industry/cooperative research program with the Dorr-Oliver Company of Stamford, Connecticut, and spent a sabbatical year leave (1984/85) at the Dorr-Oliver Technical Center and at Southampton University (UK). During this period, Professor Martin Thew and his students at Southampton were developing innovative applications of hydrocyclone technology to separate oil and water on offshore platforms. In 1989, Professor Petty organized a cooperative industry/university research program at MSU to advance the art of using hydrocyclones for liquid/liquid separations (see Hydrocyclone

Development Consortium, www.egr.msu.edu/HRL, U.S. Patent 4,855,066). The consortium was funded by Amoco, Arco, Chevron, Exxon, Krebs Engineers, Marathon, Monosep, Texaco, the United States Navy, and the Department of Energy.

In 1999, Professor Petty organized an NSF/CRCD (Combined Research and Curriculum Development) project in the area of computational multiphase transport phenomena for graduate and undergraduate students (www.//vu.msu.edu/preview/eng-mtp) in collaboration with the University of Akron, the University of Tulsa, AEA Technology, Bechtel, Chevron, Dow Chemical, DuPont, Eastman Chemical, ExxonMobil, Fluent, ICEM CFD, Krebs Engineers, Pharmacia, and Trane. In 2004, he and Professor Bénard (mechanical engineering) organized the Center for Multiphase Transport Phenomena (www.egr.msu.edu/mtp) at Michigan State University with research sites at The University of Akron, The University of Central Florida, and The University of Tulsa. Current industrial members include Ansys/Fluent, Bechtel, CD Adapco, Chevron, Petrobras, and Pfizer. The mission of the Center is to develop and deploy next generation computational MTP models for the rapid design and analysis of traditional and emerging multiphase technologies.

Professor Petty is a member of the American Institute of Chemical Engineers, the American Physical Society (Division of Fluid Dynamics), and the American Society of Engineering Education. He has advised eleven PhD students and twenty four Master of Science students. The results of his research related to turbulent mass transfer near interfaces, turbulence modeling, hydrocyclone separators, and the microstructure of complex fluids has been presented in over sixty peer reviewed papers and at more than 150 national and international conferences. Current research interests supported by the National Science Foundation and industry include the development of explicit algebraic Reynolds stress models for single-phase and for multiphase turbulent flows. In collaboration with Fluent, Professor Petty and his colleagues in chemical engineering at Michigan State University are presently introducing computational transport phenomena methods into the undergraduate chemical engineering curriculum at all levels, beginning with the freshman class.