

- CHARLES T. RATCLIFFE '67 -

CHARLES THOMAS RATCLIFFE was born in Malad, Idaho and, after graduating from Twin Falls High School, enrolled at the University of Idaho. With chemistry as his area of study, Ratcliffe earned a bachelor's degree in 1961, a master's in 1964 and a Ph.D. in 1967. Ratcliffe accepted a postdoctoral position at University of Glasgow, Scotland before joining Allied Chemical Corporation in 1968.

During his time at Allied Chemical Corporation (1968 to 1979) he led a group that developed a process to remove sulfur dioxide (SO_2) from flue gas. This new process used low-grade, unusable heating coal to convert the SO_2 to elemental sulfur, which could be recycled and reused in other processes. In addition to recycling the SO_2 to sulfur, the process also removed SO_2 as a significant contributor to acid rain. A pilot plant used the new process in Syracuse, New York.

From 1984 to 1998, Ratcliffe worked with UNOCAL Corporation in exploration and production. As a senior consultant, Ratcliffe was instrumental in developing and demonstrating the use of hollow fiber membranes to separate carbon dioxide (CO_2) from natural gas. This work successfully demonstrated the hollow fiber membrane system on a platform in the Thailand Gulf, the first offshore application of membranes for separation. Over the years, the membrane separation technology has expanded and progressed and is an option offered commercially to separate CO_2 from natural gas.

As the manager of inorganic and environmental technology at UNOCAL, Ratcliffe developed and installed a commercial-scale demonstration molten carbonate fuel cell plant at UNOCAL's research site in Brea, California. The molten salt fuel cell plant utilized alkali carbonates as the electrolytes.

The high operating temperature allowed the conversion of fuel to electricity to be twice as high as low temperature fuel cells.

Ratcliffe retired from UNOCAL in 1998 and immediately started work as a private consultant for companies including UNOCAL, BP Arco Corporation, Exxon Corporation, Santos Gas Corporation and Cerragalli Triton Oil Company.

Ratcliffe was honored for his work by being awarded the Creativity Achievement Award for Unocal Research Center in 1985. He also received the Distinguished Service Award in 1993 and the Richard A. Glenn Award in bituminous coal research from the American Chemical Society. Ratcliffe holds 16 patents and has authored or co-authored more than 25 articles.

In addition to his many career achievements, Ratcliffe has volunteered as an Eagle Scout post advisor and senior advisor for many years. He served as a ski patrol member at Bear Mountain Ski Hill in Southern California, and mentored and tutored budding scientists throughout his career.

Ratcliffe met his wife, Mary Casey, while attending the University of Idaho, where Mary earned a degree in home economics in 1964. The couple married that same year. They have a son, David, and daughter, Linda, and they have four grandsons, Theo, William, Gabriel and Christopher.