



### *In Memoriam*

## Donald E. Danly 1929-2002

Don Danly passed away on August 17, 2002 after a long illness. Dr. Danly was a Fellow of The Electrochemical Society and a Fellow of the American Institute of Chemical Engineers. Dr. Danly led the development, commercialization, and process improvements for the world's largest electro-organic process, dimerization of acrylonitrile to form adiponitrile an intermediate in the formation of Nylon 6,6.

Dr. Danly was born in Washington DC on June 14, 1929. He attended Woodrow Wilson High School there and then obtained a degree in chemical engineering (graduating with distinction and first in his class) from Cornell University in 1952. After serving two years in the U.S. Air Force, he earned a PhD in chemical engineering (graduating with honors) at the University of Florida in 1958.

Dr. Danly then joined Monsanto in Pensacola, Florida, and in the early 1960s became project leader of the team of engineers who scaled up the electrochemical dimerization of acrylonitrile from beaker scale to commercial production. The initial process employed plate and frame divided cells, and after a few years, when the capital costs became too great, Dr. Danly led the development and commercialization of a lower cost process employing undivided bipolar stack cells.

The discovery of the EHD (electrochemical hydrodimerization) reaction by Manuel M. Baizer and the development of the commercial process for adiponitrile by Danly and his team led to an explosion of studies of organic electrochemical reactions around the world. This development resulted in Danly and his team receiving the Kirkpatrick Award for Chemical Engineering Achievement in 1965. Danly and Baizer shared the Armstrong Memorial Award in 1979 and Danly received the Vittorio de Nora/Diamond Shamrock Award in Electrochemical Engineering and Technology, presented by The Electrochemical Society in 1984. Danly was named Fellow of The Electrochemical Society in 1996.

Production of adiponitrile by the EHD process continues at the initial production site in Decatur, Alabama, now operated by Solutia. Dr. Danly was responsible for the technology package employed in the 90,000 ton per year adiponitrile facility started up at Teeside (UK) in 1978 and now operated by BASF.

Dr. Danly was also involved in the development and commercialization of the Monsanto low pressure diamine process, a highly efficient and cost effective system for hydrogenation of adiponitrile to hexamethylene diamine. Danly served as

technology director at the Pensacola location from 1976 until his retirement in 1989. In that position, he was responsible for up to 200 researchers studying process chemistry for nylon intermediates. In 1985, he took responsibility for the whole of nylon R&D, with the addition of polymer chemistry and fiber production, bringing the number of researchers up to approximately 300.

After retiring from Monsanto in 1989, Danly served as a consultant primarily in the area of electrochemical engineering. Clients included ARCO Chemical, 3M, Monsanto, Watersciences Inc., Hydro-Quebec, Exxon, W. R. Grace, FMC, National Power of England, the Electrosynthesis Co., and others. Many scientists and engineers first met Danly when he presented short courses in electrochemical engineering at UCLA in the early 1980s and later at presentations during the annual electrochemical forums organized by the Electrosynthesis Co. in Florida.

In a letter supporting the nomination of Don Danly as a Fellow of ECS, Richard Alkire wrote, "The spectacular success of the EH process placed unusual and unique demands upon Danly, since the technology was based on electrochemistry with which many plant engineers are unfamiliar. To this challenge and educational opportunity, Dr. Danly responded with remarkable candor, and with significant impact on the engineering field. He has presented papers on electrochemical technology, contributed to short courses, written review chapters in monographs, and lectured with personal charm. To an extent that far exceeds the normal expectation, he has truly contributed a wealth of engineering insight and skill to the technical literature where others may benefit. His efforts have helped target the field as one deserving federal support of academic programs. That the Monsanto process continues to be economically viable for nearly three decades is an engineering feat of towering proportion. That in addition, Donald Danly serves as an ambassador of knowledge makes his contributions all the more effective and impressive."

Dr. Danly is survived by his wife Vera; three children, Bruce G. Danly, Alison C. Danly Lazear, and Matthew C. Danly; and six grandchildren. ■

*This notice was submitted by John Wagenknecht.*