# Citation

Professor Stanley I. Sandler has been selected as the 2012 recipient of the ASEE/CACHE Award for Excellence in Computing in Chemical Engineering Education in recognition for his early and continuous use of computers in the thermodynamics curriculum, including a quarter century of incorporating computer programs into all of his textbooks. During the AIChE Centennial Celebration, Professor Sandler was identified as one of “Thirty Authors of Groundbreaking Chemical Engineering Books” (see Chemical Engineering Progress, August 2008). As noted by CEP, the four editions of **Chemical and Engineering Thermodynamics** (Wiley, 1977) reflect the rich heritage and shared experiences of all chemical engineers.

# Rationale for Nomination and Accomplishments

During the AICHE Centennial Celebration in 2008, Professor Stanley I. Sandler was identified by the American Institute of Chemical Engineers as one of the top thirty (30) chemical engineering authors of the 20th Century (see *Thirty Authors of Groundbreaking Chemical Engineering Books*, Chemical Engineering Progress, August 2008). As noted in the CEP article, Stan's sequence of books on thermodynamics (**Chemical and Engineering Thermodynamics**; Wiley; 1977; 1989; 1998; and 2006) together with other notable *groundbreaking* textbooks reflect the rich heritage and shared experiences of all chemical engineers.

Over a period of thirty (30) years, Professor Sandler has revised his thermodynamic book (Wiley, 1977) three times with each edition taking advantage of the most recent computer software developments. The 2nd Edition (Wiley, 1989) was the first chemical engineering thermodynamics textbook to have a complementary disk of QUICKBASIC programs so students could easily do practical thermodynamic calculations with equation-of-state models, activity coefficient models, UNIFAC and other for physical property estimates. During the 1980's, Stan and his students developed a sequence of computer-aided thermodynamic lessons using the PLATO system (an acronym for *programmed logic of automated teaching operations*). Twelve of these lessons were published in the Control Data Corporation Authors Library in 1986 and were widely disseminated on NOVANET.

The 3rd and 4th Editions of **Chemical and Engineering Thermodynamics** continue to pioneer the use of advanced computational software as an enabling technology in teaching thermodynamic principles. The latest book (Wiley, 2006) has a Web Site that serves as a host for the relevant software and programs that support student exercises (see www.wiley.com/college/sandler). With Stan's contributions, the art of computer-assisted calculations and computer-aided process design moved from the 30-year "orange dawn" *era* of the cyberculture revolution in engineering education (i.e., after World War II through the 1970's) to an "enlightened" *era* from the 1980's through the 1990's.

Professor Sandler's book with H. Orbey entitled **Modelling Vapor-Liquid Equilibria: Cubic Equations of State and Their Mixing Rules (**Cambridge University Press, 1998) was targeted for industrial users and contains a large collection of FORTRAN programs in support of phase behavior calculations. Stan's most recent graduate level textbook (**An Introduction to Applied Statistical Thermodynamics,** Wiley, 2009) includes complementary MATLAB and FORTRAN programs, as well as GUI and Visual Basic software that provides instruction in Monte Carlo simulations, molecular dynamic simulations, and a variety of other statistical mechanics calculations. Clearly, Stan's impact on teaching classical chemical engineering thermodynamics to university students and to postgraduate professionals will continue to be groundbreaking in the 21st Century.

Professor Sandler is well known for his many research and education contributions in chemical engineering thermodynamics. He has received worldwide recognition as an invited lecturer in the Americas, Europe, Asia, and Africa. He has served as an honorary (or visiting) professor at many universities during his distinguished career, including the Imperial College in London; the National University of Singapore; the Technical University of Berlin; and, the Universities of Melbourne and Queensland in Australia. Recently, colleagues honored Professor Sandler's accomplishments by presenting him with the first ever Properties and Phase Equilibrium for Process and Product Design (PPEPPD) Eminence Award during the 2010 International PPEPPD meeting in Suzhou, China. Over the last decade, as a National Research Council Committee member and as a consultant, Stan has used his expertise in thermodynamics in areas related to the disarming nerve-agent containing weapons and the stabilization of nuclear waste from weapons production facilities.

Professor Sandler earned a Bachelor-of-Chemical Engineering from the City College of New York and a PhD degree in chemical engineering from the University of Minnesota. He has been a member of the chemical engineering faculty at the University of Delaware since 1967. In 2000, Professor Sandler was appointed to the Henry B. du Pont Chair in Chemical Engineering for his career accomplishments in chemical engineering. His interest in research and teaching includes applied thermodynamics and phase equilibrium with applications to chemical, biochemical, and environmental engineering; computational quantum chemistry; computer-assisted engineering education; separations and purification; computer-aided process design; and statistical mechanics. He and his students have published the results of their research in more than 375 peer reviewed papers (see attached curriculum vitae for titles) and have participated in numerous professional conferences. This work has been recognized by many professional societies. Stan's curriculum vitae (attached) provide additional information related to his specific contributions to chemical engineering research and education and, most significantly, his service to AIChE, ASEE, and other professional organizations. A selected list of milestone accomplishments, awards, and professional service positions over the past thirty years follows:

- Member of the Board of Trustees for the CACHE Corporation, 1982 to 1987
- Chairperson, Chemical Engineering, the University of Delaware, 1982-1986
- Professional Progress Award, AIChE,1984
- 3M Chemical Engineering Lectureship Award, ASEE, 1988
- Fellow, AIChE, elected 1993
- Warren K. Lewis Award, AIChE, 1996
- Member of the National Academy of Engineering, elected 1996
- E.V. Murphree Award, American Chemical Society, 1998
- Fellow, Institute of Chemical Engineers, Britain, elected 2004
- Editor of American Institute of Chemical Engineers Journal, 2000-2010
- PPEPPD Eminence Award (inaugural awardee), Suzhou China, 2010.