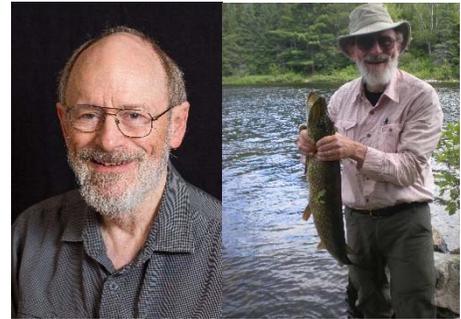


Education Plenary (Sunday, July 30)

Something of Value

Phillip C. Wankat
Clifton L. Lovell Distinguished Professor Emeritus
Purdue University, West Lafayette, IN



ABSTRACT

In the last 55 years as the world has become more interconnected and complex, universities have followed suit and also become more complex. Given the restrictions most universities feel because of the constraints of tenure, many universities have tried to manage the increasing complexity by increasing the requirements on junior faculty. Since it is your career, discussing academic careers can be deadly serious, but it helps to keep your sense of humor. To lighten the tone, a pre-lecture slide show of academic comics will be shown. During the lecture, the presenter will use incidents from his 55 years as a college student, professor, and administrator to illustrate some of the joys and pains of an academic career. The most significant part of the talk may be the opportunity to ask questions of a knowledgeable professor who is not connected to your institution.

BIOGRAPHY

Phillip C. Wankat is the Clifton L. Lovell Distinguished Professor Emeritus at Purdue University. Until May 2017, he held joint appointments in Chemical Engineering and in Engineering Education. He earned his BSChE from Purdue, his PhD in chemical engineering from Princeton University and a MSEd in Counseling from Purdue. His technical research was in separation processes, mainly in the areas of adsorption, chromatography and distillation, and he is continuing the distillation research. He has published two separation textbooks – *Separation Process Engineering*, 4th edition 2017 (Prentice-Hall) and *Rate-Controlled Separations* (Springer). He is also author of the monograph *Large Scale Adsorption and Chromatography*, CRC Press, 1986 (available free from Knovel <http://www.knovel.com/web/portal/browse/subject/-6/topic/102355>)

Phil has also been very active in developing new teaching processes and in teaching graduate students how to teach. He is the editor of *Chemical Engineering Education*. He is the co-author with Frank Oreovicz of the book *Teaching Engineering*, McGraw-Hill, 1993, available free at <https://engineering.purdue.edu/ChE/AboutUs/Publications/TeachingEng/index.html>. The 2nd edition of *Teaching Engineering*, Purdue University Press, January 2015, is available through Amazon. He is co-author with Cristina Farmus of *A Pictorial History of the School of Chemical Engineering at Purdue University, 1911-2011*, Purdue University, 2011 (available from Amazon) and author of *The Effective, Efficient Professor: Teaching, Scholarship and Service*, Allyn & Bacon, Boston, 2002 (out of print).

Phil is an avid fisher who chases smallmouth bass in Indiana. In the summer he likes to fish for bass and northern pike in northern Wisconsin, the upper peninsula of Michigan, and Canada. The highlight of summer 2014 was catching and releasing a 41 inch northern pike in Quetico Provincial Park in Canada. During retirement, in addition to more fishing, Phil plans to design and build small boats.

Summer School Plenary (Monday, July 31)

130 Years of Chemical Engineering Education, Mentoring and Research: What I Learned from my Teachers

Nicholas A. Peppas

Cockrell Family Regents Chair in Engineering #6
Professor, McKetta Department of Chemical Engineering,
Department of Biomedical Engineering,
Departments of Pediatrics and Surgery, Dell Medical School, and
Division of Pharmaceutics, College of Pharmacy
Director, Institute for Biomaterials, Drug Delivery and Regenerative Medicine
The University of Texas at Austin, Austin, TX



ABSTRACT

A historical survey of the early days of Chemical Engineering shows how major ChE courses and educational trends came in the ChE curriculum. I will cover the inorganic/organic technologies days (1905-1935), the kinetics and thermo days (1930-1955), the transport phenomena days (1950-1975), the need for specialized courses on environmental and energy problems, computers and modeling, computational methods, polymers, biotechnology/bioengineering, professional ethics. Such areas have evolved out of chemical engineering because of the need to address important societal problems. Emphasis in such areas has led to the solution of complex chemical engineering problems that required non-newtonian flows, non-ideal thermodynamics, multicomponent systems, macromolecular analysis and diagnostic/intelligent responsive systems. An unfortunate result of these changes was a shift of Chemical Engineering from fundamentals to applied sciences. I examine the underlying reasons for this shift, with emphasis on changes in societal needs in the 1970s to translational research that started in the late 1980s. I address new educational and research directions that will provide a corrective path towards convergence in chemical engineering. I will address the importance of our being (first and foremost) educators and mentors and I will show how two generations ago this was the standard in our academic discipline until the pressure for proposals, papers, patents, citations, etc, changed the focus of ChE education. Finally, I will address new trends in education, new "education portfolio" programs that have appeared in ChE departments and I will discuss future needs.

BIOGRAPHY

Nicholas A. Peppas is an educator and mentor of students who has taught chemical engineering at Purdue and the University of Texas since September 1976. In 41 years he has taught more than 3,000 students in 91 semester courses, covering 28 different subjects. He has been an ASEE member since 1976 and has been active in local, regional and national meetings. He has received the highest ASEE recognition, the Benjamin Carver Lamme Award, in 2013, the Dow Chemical Engineering Award in 2006, the ASEE General Electric Senior Research Award in 2000, the 1992 George Westinghouse ASEE Award which recognizes a leading educator/teacher of the USA, the 1988 Curtis McGraw Award of ASEE for best engineering research by an ASEE member under the age of 40, and the 1980 Western Electric Fund Teaching Award which recognizes exceptional early teaching. In 2008 he was elected ASEE Fellow. He has also received the highest engineering teaching recognitions at Purdue (three times) and at the University of Texas. Peppas is a Chaired Professor in the Departments of Chemical, Biomedical Engineering and Pharmacy, and the Medical School at the University of Texas at Austin. He is a member of the National Academy of Engineering, the National Academy of Medicine, the American Academy of Arts and Sciences, the National Academy of Inventors, the Academies in France, Spain, Greece and Texas. He has been recognized with awards from AIChE (Founders Award, William Walker Award, Institute Lecture, Jay Bailey Award, Bioengineering Award, Materials Award), and the Biomedical Engineering Society (Pritzker Lecture, Distinguished Scientist Award).

Industry Day Plenary (Tuesday, August 1)

Process Safety Across the ChE Curriculum: An Industry Perspective

Process safety is crucial within industry and impacts many areas of a company, from hiring and risk management, to improved economics. However, there is a clear gap in how industry views process safety and how academia views process safety. In this interactive plenary session, process safety from an industrial perspective is provided and gaps that inhibit process safety from being fully integrated across the chemical engineering curriculum are explored. Models and resources to address some of these gaps will be presented as well, facilitated by Dr. Troy Vogel.

Buddy Lang, Chevron

Mr. Lang is General Manager of Facilities Engineering for Chevron's Upstream and Midstream businesses. He assumed this position in January 2012 and is based in Houston, Texas. Mr. Lang began his Chevron career in 1991 as a design and construction engineer. Mr. Lang worked in the Consulting Engineering business for fourteen years prior to joining Chevron. His Chevron experience includes positions of responsibility in design, construction, and installation of both onshore and offshore facilities, as well as experience in both commercial evaluations and project management. Mr. Lang has held positions in Business Units, the Technology Company, Exploration, Projects Resource Company, and Upstream Capability.



During his fourteen years prior to Chevron, Mr. Lang's Consulting Engineering company was responsible for facilities designs and management of construction contracts for onshore and offshore oil and gas fields, chemical plants, ports and harbors, roads and bridges, municipal facilities including pumping stations and treatment plants. Mr. Lang's firm also provided services in the areas of forensic engineering, asset integrity management, feasibility studies and master planning. Throughout his career Mr. Lang has focused attention on appropriate risk management in design and operations of facilities. In 1977, Mr. Lang graduated with a Bachelor of Science degree in civil engineering from Tulane University in New Orleans, Louisiana and obtained a Master of Science degree in civil engineering from Tulane in 1981.

Tony Go, ExxonMobil

I graduated from the University of Texas in 1987 with a bachelor's degree in Chemical Engineering. I immediately went to work at ExxonMobil, where I worked in their Chemical division, and am now in my 30th year with the company. I spent the first half of my career in various plants for ExxonMobil, supporting both our olefins and aromatics plants in the US and around the world. I've supported our plants in North America, Europe, and Asia Pacific, including expat assignments in both Singapore and Thailand, where I participated in the startups of our grassroots aromatics facilities in those countries. The second half of my career has been in the technology organization, where I have supported, developed, and commercialized new technologies in both the aromatics and olefins plants around the world. I am now a chief engineer at ExxonMobil. In my years, I have also served as the ExxonMobil Recruiting Team Captain at the University of Texas, where I have been the liaison between ExxonMobil and UT, managing recruiting, philanthropic gifts, research grants, and joint safety programs between the University of Texas and ExxonMobil.

