

# 14 AIChE

Spring Meeting, New Orleans, LA

Process safety and the shale gas and shale oil revolution were among the foremost topics of discussion when AIChE took its 2014 Spring Meeting and 10th Global Congress on Process Safety to New Orleans, LA, from March 30 to April 3. Held at the Hilton New Orleans—Riverside, the conference offered more than 150 technical sessions across eight topical conferences and special program tracks, and attracted more than 2,600 participants from around the world. Major events at the Spring Meeting included the debut of a new — and timely — Shale Gas and Tight Oil Topical Conference. At the Process Development Div. Plenary Session, a roster of industry representatives explored such topics as shale gas, C1 chemistry, butadiene production, patent-related issues, and more. Recently inaugurated conferences devoted to Manufacturing in the 21st Century and Upstream Engineering and Flow Assurance returned to the Spring Meeting for their second installments. Receptions, luncheons, career workshops, and special sessions for young professionals and chemical engineering students filled out the program. Naturally, attendees also made time to enjoy the music, food, and singular *joie de vivre* of the host city.



▲ Meagan Lewis, the Spring Meeting Program Co-Chair, received AIChE's Herb Epstein Award in recognition of her programming successes and her work as a leader of AIChE's Young Professionals Committee.



▲ Gregory Yeo (left), Meeting Program Chair for AIChE's 2012 Spring Meeting, greets Tim Olsen, Meeting Program Chair for the 2014 Spring Meeting, at a gathering of Institute leaders on March 29.

Photo: Douglas Clark



▲ AIChE president Otis Shelton (left) presents AIChE's Government and Industry Leaders (AGILE) Award to William Banholzer, former Chief Technology Officer at The Dow Chemical Co. and a faculty member at the Univ. of Wisconsin-Madison's Wisconsin Energy Institute. On Monday, March 31, Banholzer set the stage for the Spring Meeting and Global Congress on Process Safety with his keynote address, entitled "Possible vs. Practical: Engineers Must Lead the Development of Practical Technologies." His talk drew a record attendance of more than 1,200 people.

## 10<sup>TH</sup> GLOBAL CONGRESS ON PROCESS SAFETY



More than 1,000 process safety professionals from 300 organizations and 44 countries marked the tenth anniversary of the Global Congress on Process Safety (GCPS). Organized by AIChE's Center for Chemical Process Safety (CCPS) and the Safety and Health Div., the GCPS incorporated the 48th Loss Prevention Symposium, the 16th Process Plant Safety Symposium, and the 29th CCPS International Conference, as well as a Process Safety Management Mentoring Forum for young professionals entering the field. Conference organizers surveyed the past decade of progress with a series of Process Safety Spotlight sessions, including a retrospective of "best papers" from previous GCPSs. The GCPS also co-hosted some of the Spring Meeting's major events, including the Opening Keynote Address.

▲ CCPS Director Scott Berger (left) and Global Congress Program Chair Jatin Shah prepare to welcome attendees to the GCPS Plenary Session on March 31.



▲ On Sunday, March 30, the GCPS kicked off with a celebratory tenth anniversary banquet, where guests reflected on the past decade of accomplishments.

▲ Dennis Hendershot (left) presents his "best paper" on inherently safer design at a Process Safety Spotlight session. Session co-chair Fred Henselwood (seated) introduced the talks.



Photo: John Vasko

▲ Daily luncheon speakers were among the highlights of the GCPS. Left photo: Monday luncheon speaker Bea Ponnudurai (left), Head of the Group HSE Div. at PETRONAS (South Africa), chats with a conference guest before presenting her talk, "Process Safety Implementation — Challenges and Success Stories." Center photo: At Tuesday's luncheon, Luke Kissam, Chief Executive Officer at Albemarle, talked about "Creating a Safety Culture." Right photo: Wednesday's GCPS luncheon featured Jordan Barab, Deputy Assistant Secretary of Labor at the U.S. Occupational Safety and Health Administration (OSHA), who discussed Executive Order 13650 and its objective to improve the safety of chemical facilities. More than 700 GCPS conference participants attended each luncheon.

Spring Meeting and Global Congress on Process Safety photos by George Long except where indicated.



▲ On March 31, Mike Millard, Senior VP and General Manager at UOP, a Honeywell Company, presented the Fuels and Petrochemicals Div.'s Keynote Address: "Refinery/Petrochemical Integration: Managing Molecules to Maximize Value."



▲ Communications expert TJ Larkin cautioned meeting attendees, "don't let communication mistakes cause accidents," at the Shale Gas and Tight Oil Topical Conference luncheon on April 1.



▲ The Emerging Technologies in Clean Energy Topical Conference featured a keynote speech on April 1 by Ramon Gonzalez, Program Director at ARPA-E, who discussed industrial biotechnology and the production of liquid fuels from bioconversion of methane and bioelectrosynthesis.



▲ Harri Kytomaa, Corporate VP at Exponent, discussed the past, present, and future of liquefied natural gas in his keynote speech at the Gas Utilization Topical Conference luncheon on April 2.

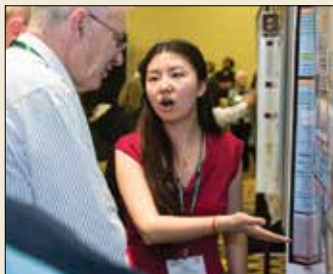
▶ The Shale Gas and Tight Oil Topical Conference launched with a discussion of safety considerations and technical challenges in the field. Panelists included (from left): Kai Midboe (an environmental lawyer at New Orleans-based McGlinchy Stafford), Brian Kelly (process safety consultant), Robert Loughney (Blue Marble Risk Solutions), and Lawrence Kremer (Baker Hughes).



◀ Zhe Han (right) of Texas A&M Univ. presents her research on ammonium nitrate decomposition at a poster session on March 31. The session was jointly sponsored by the GCPS and the Spring Meeting, and included more than 90 posters.

## AICHE Thanks the Meeting's Corporate Sponsors

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▶ AICHE director Dan Lambert (left) talks with Kate Ewing (center) and Elizabeth Guenther — leaders of the Young Professionals Committee — at a Board of Directors' reception.



◀ Syamal Poddar (left) and Kate Gawel were among the panelists from industry who shared workplace experiences with undergraduates at a student conference on March 30.



▲ Dozens of young chemical engineers gathered with Institute leaders at a networking event on Sunday, March 30.



▲ A capacity crowd enjoyed an expanded Spring Meeting Networking Luncheon on March 31.



# Institute News

## AICHe Introduces New Fellows

At the 2014 Spring Meeting and Global Congress on Process Safety, AICHe leaders and Fellows gathered to recognize some of the recently elected AICHe Fellows at a special breakfast on April 1. Fellow candidates are nominated by their peers, and must have significant chemical engineering practice (generally 25 years) and have been a member of AICHe for at least 10 years, with at least three years as a senior member. Details about AICHe's Fellow program are available at [www.aiche.org/community/fellows](http://www.aiche.org/community/fellows).

Here are some of the recently elected Fellows. More will be announced in future issues of *CEP*.



**Luke E. K. Achenie** is a professor of chemical engineering at Virginia Polytechnic Institute and State Univ. (Blacksburg, VA), where he holds a joint appointment as professor of health sciences. His research interests include modeling of thermochemical conversion of biomass to fuels; molecular modeling; multiscale modeling; bioinformatics and biological systems; and uncertainty analysis. He has collaborated on projects involving the modeling of oral drug delivery and of drug transport across the blood-brain barrier, and on machine-learning algorithms for early diagnosis of autism in children. He recently served as a program director at the National Science Foundation.



**Gregory R. Carmichael** is the Karl Kammermeyer Professor of Chemical and Biochemical Engineering at the Univ. of Iowa (Iowa City), and is known for his work on international air pollution problems. His recent work has focused on the role of black carbon in the atmosphere and its dual role as an air pollutant and climate-warming agent. He is a past chair of AICHe's Environmental Div. and is a member of the Public Affairs and Information Committee. He chairs the Scientific Advisory Group for the United Nations World Meteorological Organization's Global Atmospheric Watch Urban Meteorology and Environment project.



**Christodoulos A. Floudas** is the Stephen C. Macaleer '63 Professor in Engineering and Applied Science and a professor of chemical and biological engineering at Princeton Univ. His areas of research include chemical process synthesis and design, process control and operations, discrete-continuous nonlinear optimi-

zation, local and global optimization, computational chemistry, and molecular biology. He is the author of the textbooks *Nonlinear Mixed-Integer Optimization* and *Deterministic Global Optimization*; has published nearly 300 papers; and is a co-editor of the *Encyclopedia of Optimization*. He is a member of the National Academy of Engineering, and received AICHe's Professional Progress Award, among many honors.



**Bruce D. Hook** is a Fellow at Dow Chemical (Freeport, TX). He is an expert in process development and improvement as well as solids processing, with more than 25 years of research and design experience. His research interests include fluidization, fluid particle systems, and catalytic reactions in fluidized systems, as well as process control programming for experimental equipment. He holds 15 patents and has 32 patent applications. He is currently Dow's industrial liaison to AICHe's Particle Technology Forum, and has chaired sessions at nearly 20 AICHe Annual Meetings. He earned his PhD in chemical engineering at Rensselaer Polytechnic Institute.



**William E. King** is a professor of chemical and biomedical engineering at Bucknell Univ. (Lewisburg, PA), where he has been on the faculty for more than 30 years. His career includes process design and development work at three energy companies, as well as research work at the Fox Chase Cancer Center and the National Cancer Institute. He has made contributions in a variety of areas, including synthetic fuel development, chemical coal desulfurization, reaction engineering, and transport modeling of cancer treatment modalities. At Bucknell Univ., he helped to initiate and develop the biomedical engineering program, and served for 12 years as its department chair.



**Wallace Woon-Fong Leung** is Chair Professor of Innovative Products and Technologies at Hong Kong Polytechnic Univ. His research covers a spectrum of activities, including petroleum engineering, centrifugal separation and filtration, healthcare technologies, mass and heat transfer for process intensification, and nanofiber technologies. His contributions to centrifugal separation have resulted in 36 U.S. patents in biotechnology and fine-particle separation. He is also known for developing low-pressure-drop nanofiber filtration technologies. He wrote the books *Industrial Centrifugation Technologies* and *Centrifugal Separations in Biotechnology*, and holds five additional U.S. patents in healthcare and nanofiber technologies.



**Paul H. Steen** is the Maxwell M. Upson Professor of Chemical and Biomolecular Engineering at Cornell Univ. (Ithaca, NY). His expertise is in the dynamical stability of fluid systems, especially in the sudden shape change of liquid surfaces. He holds numerous patents and has published more than 70 papers. He has also served as an associate editor of the *Journal of Fluid Mechanics*. Prior to joining Cornell, he earned his PhD in fluid dynamics at Johns Hopkins Univ. and did postdoctoral work in chemical engineering at Stanford Univ. He has also served as Cornell's Director of Chemical Engineering Graduate Studies.



**Rosemarie D. Wesson** is Program Director for the Chemical and Biological Separations Program at the U.S. National Science Foundation (NSF) and an adjunct professor of chemical engineering at the Univ. of Maryland (College Park). She joined NSF's Engineering Directorate after working for Dow Chemical. During her tenure at NSF, she has held numerous director positions, including Acting Director of the Emerging Frontiers in Research and Innovation Program and Acting Senior Advisor for Emerging Technologies and Interdisciplinary Research. She serves on AIChE's Board of Directors and chairs AIChE's Washington Internships for Students of Engineering (WISE) Program.

## Crothers, Former WISE Intern, Awarded NSF Research Fellowship

**A**ndrew Crothers, a recent AIChE-sponsored participant in the Washington Internships for Students of Engineering (WISE) program, has been named a recipient of a National Science Foundation (NSF) Graduate Research Fellowship Program award. The NSF Fellowships ([www.nsfgrfp.org](http://www.nsfgrfp.org)) are presented to candidates in their early careers who have demonstrated potential for significant achievements in science and engineering.



Photo: Erica Wissolik

Crothers, who graduated from North Carolina State Univ. in Dec. 2013 with a double major in chemical engineering and economics, was a WISE intern in 2013. The WISE program ([www.wise-intern.org](http://www.wise-intern.org)) selects undergraduate engineering students to conduct research on public policy issues during the summer in Washington, DC. The internships allow students to learn about the interactions between the engineering community and the government and to see how engineers can contribute to decision-making on complex technological matters. As part of his internship, Crothers prepared and presented a research paper entitled "Navigating Natural Gas Exports," which dealt with the policies and implications of the recent natural gas boom on energy markets and U.S. energy producers.

Crothers says that the experience in Washington, DC, "gave me a first-hand understanding of the complexities of the political process, and the numerous avenues we as engineers can and must follow to promote technically viable and benign public policies."

Crothers is currently participating in a post-baccalaureate internship at Lawrence Berkeley National Laboratory, where he is studying how polymer membranes in fuel cells interact with water. In the fall, he will pursue a PhD in chemical engineering at the Univ. of California, Berkeley, where he intends to bring his engineering and economics backgrounds to bear to solve issues related to energy scarcity.

"I am excited with the technical depth and rigor of my engineering degree, and my economics coursework has given me tools to evaluate how society responds to innovations, and how those innovations impact economic equity and efficiency," says Crothers.

The National Science Foundation has presented its Graduate Research Fellowships since 1952, to ensure the vitality of the human resource base in U.S. science and engineering.

# AIChE Affirms Strong Support for Both Licensure and the Industrial Exemption

## Policy excludes companies, engineers from differing jurisdictional requirements

The American Institute of Chemical Engineers is reaffirming its support of an engineering licensing policy known as the industrial exemption, while continuing to strongly encourage individual engineers to pursue licensure. The industrial exemption policy excludes industrial employers from requirements to place only engineers who hold professional licensure in the states in which they are practicing (even temporarily) in positions of “responsible charge.”

Responsible charge is generally defined as an engineer’s having control and detailed professional knowledge of the work being conducted under his or her direct supervision. The engineer in responsible charge is personally qualified to make engineering decisions, or personally reviews and approves proposed decisions prior to their implementation.

A major element in the AIChE leaders’ support for the industrial exemption is the fact that so many companies operate in multiple states, while there is a lack of uniformity in licensing laws and regulations among the states. “Requiring multiple licenses in multiple jurisdictions can create an unnecessary burden on individual engineers and on companies, while really providing no additional benefit to the public,” said AIChE Executive Director June Wispelwey. As the U.S. industrial and manufacturing base seeks to reassert its competitiveness, “placing additional hurdles to job creation and job mobility seems ill-advised,” Wispelwey added. She explained that reciprocity — cross-jurisdictional concessions by engineering boards to recognize practitioners licensed in others locations — is not readily accessible to individual engineers because of procedural hurdles.

Wispelwey observed, however, that if more uniform standards and reciprocity were available, the Institute might reconsider the need for the industrial exemption.

AIChE’s complete position statement on the industrial exemption is available at [www.aiche.org/news](http://www.aiche.org/news).

In its statement, the Institute also emphasized that it continues to strongly encourage its members to pursue professional engineering (P.E.) licensure. Licensure certifies that an engineer in a given field is at least minimally competent and knowledgeable in his or her specialization, and is prepared to practice the trade safely, effectively, and ethically. All engineering licensing boards across the U.S. require that, in the absence of the industrial exemption, a licensed engineer be in responsible charge over the design of buildings, structures, products, machines, processes, and systems that affect the public health, safety, and welfare.

The industrial exemption, though, permits competent and skilled engineers to work in positions of responsible charge

even if they do not hold a P.E. license. The Institute concluded that properly insured firms have a vested interest in protecting the safety and welfare of their employees, their facilities, and the general public. Such companies must have in place the necessary policies, procedures, and safeguards to assure compliance with laws, public safety standards, and industry best practices. Many firms provide extensive in-house training to assure that their staffs fulfill such requirements.

Professional engineering societies, like AIChE, also have Codes of Ethics that place safety, environmental, ethical, and other requirements on their members. Additionally, there is a growing trend toward jurisdiction-independent, specialized credential programs that are offered by professional societies in areas such as sustainability and safety.

Joseph Cramer, a past director and former head of technical programming for AIChE, added: “While it might seem like a simple solution to just require all engineers to obtain and maintain a P.E. license in order to practice engineering, the current situation is very fractured, with more than 50 licensing boards across the U.S., each with a different set of licensing rules and regulations that establish who can practice engineering and where.”

“Chemical engineers tend to be very mobile — both geographically, and across industrial sectors,” Wispelwey observed. That technical diversity requires a commitment to lifelong learning and to maintaining expertise, she explained.

### Robert McHarg, AIChE Fellow

Robert E. McHarg, an AIChE Fellow and an active member of AIChE’s Equipment Testing Procedures Committee for half a century, died on Apr. 16, 2014, in Arlington Heights, IL. He was 91.

McHarg served in the U.S. Army during World War II, before earning his chemical engineering BS and MS degrees at Kansas State Univ. and the Univ. of Michigan, respectively. His engineering career included a long tenure at UOP, where he invented or co-invented seven patented processes. Upon his retirement from UOP’s process division in the mid-1980s, he began a consulting practice.

As an AIChE volunteer, he was most active as a member and leader of the Equipment Testing Procedures Committee, joining that group in 1966. In 2013, the committee honored McHarg for his lifetime of contributions to chemical engineering through his work on the committee.

McHarg was also a volunteer in the Boy Scouts of America for more than 60 years. He is survived by his wife of 65 years, Elizabeth, and a son.

## Howard Brenner, Fluid Dynamics Pioneer and AIChE Fellow

**H**oward Brenner, professor emeritus of chemical engineering at the Massachusetts Institute of Technology and a leading theoretician in the transport properties of flowing suspensions and multiphase systems, died on Feb. 17, 2014. He was 84.

During a career spanning more than 60 years, Brenner had a profound impact on the profession through his research on low-Reynolds-number fluid-particle hydrodynamics, microfluidics, complex fluids, interfacial transport processes, emulsion rheology, multiphase flow and transport processes in porous media, generalized Taylor dispersion phenomena, and macro transport processes. He co-authored (with John Happel) the 1965 textbook *Low Reynolds Hydrodynamics*, which remains one of the most widely cited books in the fluid dynamics field.

Brenner was introduced to chemical engineering as a student at New York City's Brooklyn Technical High School. After studying at Brooklyn's Pratt Institute, he earned his MS and ScD degrees in chemical engineering at New York Univ. (NYU). He went on to join the chemical engineering faculties at NYU (1955–1966); Carnegie Mellon Univ. (1966–1977); and the Univ. of Rochester, where he served as chair of the chemical engineering department (1977–1981). He moved to MIT in 1981, where he was the Willard Henry Dow Professor of Chemical Engineering until becoming professor emeritus in 2005.

Brenner published more than 200 technical papers and many book chapters, and presented hundreds of invited lec-

tures. In addition to *Low Reynolds Hydrodynamics*, he co-authored the books *Interfacial Transport Processes and Rheology* (1991, with David Edwards and Darsh Wasan), and *Macrotransport Processes* (1993, with David Edwards). He also supervised the research of generations of PhD students and postdoctoral fellows.



Brenner was elected to the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences, and the American Association for the Advancement of Science. A Fellow of AIChE, he received three of the Institute's highest honors representing three categories of achievement: the Alpha Chi Sigma Award (1976) for chemical engineering research; the William H. Walker Award (1985) for contributions to the chemical engineering literature; and the Warren K. Lewis Award (1999) for contributions to chemical engineering education.

In retirement from academia, Brenner remained an enthusiastic researcher. He was preparing final revisions to a paper that reflected the culmination of almost ten years' of research on some of the fundamental underpinnings of fluid dynamics, until only a few days before his passing.

He is survived by his wife, Lisa; three children from a previous marriage; and seven grandchildren.

### In Memoriam

**Kenneth Baker, 70**, Dallas, TX  
**Louis J. Basel, 86**, Stamford, CT  
**Tillus H. Beverly, 37**, Salem, MA  
**Robert G. Bishop, 78**, Lewes, DE  
**Vance O. Bonnichsen, 94**, Lakeland, FL  
**Ronald D. Boyd, 78**, Houston, TX  
**Donald W. Cissel, 88**, Idaho Falls, ID  
**Miles L. Eddards, 91**, Denham Springs, LA  
**William R. King, 90**, Tulsa, OK  
**Halold A. LeSieur, 88**, Arlington, VA  
**Henry J. Lightner, 88**, Pitman, NJ

**Henry J. Meier, 89**, St. Louis, MO  
**Gregorio Millan, 76**, Highland Park, IL  
**Donald A. Moore, 93**, Knoxville, TN  
**Thomas P. Oettinger, 65**, Baraboo, WI  
**Joseph J. Perona\*, 83**, Brevard, NC  
**Russell C. Phillips, 91**, Palo Alto, CA  
**William A. Ross, 82**, Houston, TX  
**Alexander Sesonke, 93**, Tumwater, WA  
**Phillip B. Schmidt, Jr., 86**, Louisville, KY  
**Garnett L. Wade, Jr., 88**, Richmond, VA  
**Edwin H. Young\*, 95**, Ann Arbor, MI

\*AIChE Fellow