
# Institute News

## President's Corner

## 2015 Highlights

In his 2014 Institute Lecture and May 2015 *CEP* article, "The Future of the Lecture," Ed Cussler discussed the grammar (unit operations and/or chemical engineering science) and the poetry (the periodic table) of chemical engineering. Over the course of my AIChE presidential year, I took inspiration from Ed's construct and started discussing the art of chemical engineering. The idea started in April 2015, when I spoke to the Mid-Atlantic Regional Student Conference at the Univ. of Maryland. I was invited to speak to the assembled students on Saturday night of the conference. At the time of my speech, the students had been in sessions over two days, and I was the final event before dinner. When I announced that I had one slide, a cheer broke out in the room.

My single slide showed Georges Seurat's 1884 masterwork of pointillism, *A Sunday Afternoon on the Island of La Grande Jatte.* There are no brushstrokes in a pointillist painting, only dots or points of paint. (The neo-impressionists understood pixels long before we did!) The painting in turn inspired the 1984 Stephen Sondheim/James Lapine musical *Sunday in the Park with George,* and my favorite song from the musical is *Putting it Together.* For me, the painting and the song embody what we do as chemical engineers. We all start with the same fundamental tools — Ed Cussler's grammar and poetry — and use them in different ways to create many different products, processes, and solutions to problems. The discipline of our training as chemical engineers dictates a similarity in approach across the many areas where we work. Because our work is grounded in chemical engineering fundamentals, we can continue to learn from our colleagues who work in areas far-removed from our own particular specialties.

Allow me to share a few highlights of the past year that exemplify the importance of our common chemical engineering "bones:"

• *The 2015 AIChE Gala,* designed around the 30th anniversary of the Center for Chemical Process Safety. More than 400 attendees gathered to honor Rex W. Tillerson, Chairman and CEO, ExxonMobil, Andrew N. Liveris, Chairman and CEO, The Dow Chemical Co., and Mark J. Costa, Chairman and CEO, Eastman Chemical Co., for their consistent emphasis on process safety in their respective companies. In receiving their awards, each honoree emphasized that regardless of the industry, process safety is absolute. Professor Kate Ziemer (Northeastern Univ.) spoke compellingly of our responsibility to train students in this critical area.

• *AIChE Academy.* The AIChE Academy, an expansion of AIChE's established, successful, continuing education program, was envisioned to fill the gaps in practical knowledge of early career engineers, as well as to provide additional information for those switching careers or industries. Our accomplishments this year were many — and included 36 live webinars, 75 in-company trainings, and a host of additional programs, as well as the introduction of a new learning management system. We developed a new website, with easy-to-use filters, that houses all educational content in one place, making it easy to access. A working group of industrial professionals helped identify and prioritize the most relevant subject areas for the Academy to develop. This team is an example of volunteer leaders contributing to our profession, and I want to thank them for their dedication and service. I look forward to the continuing success of the Academy.

• *The MAC@25 celebration* at the recent Annual Meeting in Salt Lake City. I had the privilege of presenting the plaques to the Founders of the Minority Affairs Committee (MAC), marking the 25th anniversary of this highly successful organization. As I read each introduction, I was struck by the breadth and diversity of experience of each awardee. The careers of the MAC Founders encompass the chemical process industries, medicine, energy, biotech, and academia, to name a few. Their chemical engineering "ID" provides a commonality of purpose and achievement.

• *The Honors Ceremony* at the Annual Meeting. It was my happy task to present the Founders' Award to Professor Carol Hall of North Carolina State Univ. and the Van Antwerpen Service Award to Professor Jennifer Sinclair Curtis, Dean of the Univ. of California, Davis, College of Engineering. Carol and Jennifer are highly successful, accomplished, dedicated professors of chemical engineering, both specializing in fields far removed from my day job in reaction engineering at Dow. We may work in different areas, but I can count Carol and Jennifer among my AIChE family, because we all identify as chemical engineers and have adopted the AIChE as our professional home.

I have always valued the AIChE for providing me with a community that spans organizational and international boundaries. The AIChE has introduced me to people I never would have met if I hadn't taken an active role in the Institute. It has been an honor to represent you and a rare privilege to contribute to the profession. Thank you for this gift!

My best wishes for a healthy and happy new year!

*— Cheryl Teich, AIChE 2015 President*


Copyright © 2015 American Institute of Chemical Engineers (AIChE)

# Dow Makes Leadership Gift to Launch Undergraduate Process Safety Education Initiative

## Center for Chemical Process Safety Program will Improve Training of ChE Students

The American Institute of Chemical Engineers (AIChE) and The Dow Chemical Co. are collaborating on a program to better prepare chemical engineering students for the workforce. The global Undergraduate Process Safety Learning Initiative will concentrate on upgrading curriculum materials, increasing faculty competence in process safety, and conducting process safety "boot camps" for undergraduates at universities. (See the related article on p. 54)

Dow Chemical, working through the AIChE Foundation, built a platform for the process safety initiative with a major financial donation. In announcing the gift, June C. Wispelwey, Executive Director of AIChE, thanked Dow for its generosity and foresight in boosting the initiative, which will be run by AIChE's Center for Chemical Process Safety (CCPS). "This is just the latest — and largest — example of Dow's commitment to advancing the safety of the chemical enterprise and the expertise of chemical engineers," Wispelwey said. She also thanked Dow for its long-standing support of AIChE.

Peter Holicki, Senior Vice President of Manufacturing and Engineering, and of Environment, Health, and Safety Operations, at Dow Chemical, said that the company sees a clear link between the new safety initiative and its own business and sustainability goals. "Safety is core to everything we do at Dow, and we consider it a priority and a responsibility to educate new generations of chemical engineers on the role of safety in their everyday work environment," said Holicki. "This new partnership with AIChE allows us to share our values about the vital importance of safe operation, and do so in a long-term, sustainable way."

In explaining the origins of the program, Wispelwey said that, despite the significant progress companies and engineers have made in process safety, corporate leaders and engineers say that they need young engineers who are better trained in process safety when they enter the workforce. Additionally, the Accreditation Board for Engineering and Technology (ABET) recently enacted standards that require process safety to be a part of the chemical engineering curriculum. Universities, however, have not yet found a way to develop a standardized curriculum to fulfill the new requirement. "That needed training is why CCPS and AIChE created this initiative and made it part of our Doing a World of Good fundraising campaign," Wispelwey concluded.

AIChE will announce more details about the Undergraduate Process Safety Learning Initiative in early 2016.

## 2016 AIChE Election Results

AIChE's Tellers Committee has examined the votes for candidates for President-Elect, Secretary, and Directors of the Institute, and has confirmed the results of the 2016 election. The newly elected AIChE officers were formally announced at the Institute's annual business meeting, held on Nov. 9, 2015, at AIChE's Annual Meeting in Salt Lake City, UT.

### President (by automatic succession)

**Gregory Stephanopoulos,**
*Massachusetts Institute of Technology*

### President-Elect

**T. Bond Calloway,** *Savannah River National Laboratory*

### Secretary (2016–2018)

**Freeman E. Self,** *Bechtel Oil, Gas and Chemical*

### Directors (2016–2018)

**Gregory T. Frank,** *Amgen*
**Meagan Lewis,** *UOP (A Honeywell Company)*
**Timothy O. Odi,** *Chevron Phillips Chemical Co.*
**Joseph B. Powell,** *Shell*


Stephanopoulos


Calloway


Self


Frank


Lewis


Odi


Powell

Copyright © 2015 American Institute of Chemical Engineers (AIChE)

# AIChE Gala Honors Corporate Leaders for Advancing Process Safety Excellence

The American Institute of Chemical Engineers (AIChE) honored Rex W. Tillerson, Chairman and CEO of Exxon Mobil Corp., Andrew N. Liveris, Chairman and CEO of The Dow Chemical Co., and Mark J. Costa, Chairman and CEO of Eastman Chemical Co., for excellence in advancing process safety at an awards gala held in New York City on Nov. 3, 2015.


AIChE's 2015 Gala honored engineering executives for promoting process safety in their organizations. From left: honoree Mark J. Costa (Eastman Chemical Co.), honoree Rex W. Tillerson (Exxon Mobil Corp.), AIChE Executive Director June C. Wispelwey, and James R. Fitterling (Dow Chemical Co.). Fitterling accepted the honor on behalf of Andrew N. Liveris (Dow Chemical Co.). Photo: Stavros Panapoulos, 5th Avenue Digital.

According to AIChE Executive Director June C. Wispelwey, the gala, built around the theme "Leading the Way to a Safer World," raised more than $600,000. "These funds will support the global expansion of process safety education in the undergraduate chemical engineering curriculum," she said. The event also celebrated the 30th anniversary of AIChE's Center for Chemical Process Safety (CCPS).

One of the gala chairs, S. Shariq Yosufzai, Vice President for Global Diversity, Ombuds, and University Affairs at Chevron, who is also vice chair of the AIChE Foundation, said that the undergraduate process safety education initiative is a core priority of AIChE's Doing a World of Good campaign. He explained that the effort has inspired companies and academic leaders to come together to improve and accelerate process safety education in universities around the world. "The initiative will benefit industry, students, universities, and, ultimately, society by focusing on creating curriculum content and delivery in many languages and media, on building faculty competence, and on conducting undergraduate process safety boot camps," he added. Yosufzai noted that AIChE is leveraging its network of 235 student chapters, and its 22,000 undergraduate student members at schools around the world, to implement the program.

In addition to Yosufzai, the event's dinner chairs were: Neil A. Chapman, President, ExxonMobil Chemical Co.; James (Jim) R. Fitterling, Vice Chairman and Chief Operating Officer, The Dow Chemical Co.; Mark K. Cox, Senior Vice President and Chief Manufacturing and Engineering Officer, Eastman Chemical Co.; Thomas M. Hayes, Corporate Vice President of Operations, Cargill; Andreas C. Kramvis, Vice Chairman, Honeywell; and John Y. Televantos, Partner, Arsenal Capital Partners.

In presenting the award to Tillerson and ExxonMobil, Kramvis saluted Tillerson's leadership in ExxonMobil's "strong, historic commitment to the safe and responsible practice of engineering and consistent focus on advancing process safety." He cited ExxonMobil's Operations Integrity Management System, along with its pledge to an incident-free workplace and a global safety and health goal of zero injuries, illnesses, and environmental impacts, as tangible demonstrations of the company's deep commitment to process safety. He also noted that Exxon Chemical Co. was one of the founding members of CCPS.

Televantos honored Liveris and Dow for the way in which process safety has been integrated into the company's sustainability goals, which is resulting in "further dramatic progress in process safety." He added, "Dow's continued identification, reduction, and management of process safety risks through all levels of the organization must be considered an industry best practice."

Televantos also thanked Dow for its long history of representation in AIChE's leadership and programs. Dow "was not only a founding member of CCPS 30 years ago, but AIChE benefited so much in its early years from Herbert Dow's service as an AIChE director from 1919 to 1921, followed by Willard H. Dow's stint as a director from 1932 to 1934," he noted. He added that Dow has shared its groundbreaking Fire and Explosion and Chemical Exposure indices through AIChE with chemical engineers everywhere, and continues to be part of AIChE's leadership through the Institute's 2015 president, Cheryl I. Teich, an employee of Dow.

While a prior engagement kept Liveris from attending the gala, he expressed Dow's continued commitment to AIChE's process safety efforts. "We could not be prouder to play a part in your critical, ongoing work. After all, chemical process safety is about far more than simply earning our license to operate. It enables our true purpose of solving humanity's most pressing problems."

In his presentation of the award to Costa and Eastman, Hayes spoke of Eastman's distinguished, global achievements in environmental, health, safety, and security perfor-

*Article continues on p. 57*



Copyright © 2015 American Institute of Chemical Engineers (AIChE)


# Meet Some of AIChE's New Fellows

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

**Muthanna H. Al-Dahhan** is Chairman of the Chemical and Biochemical Engineering Dept., and Professor of Nuclear Engineering at Missouri Univ. of Science and Technology (Rolla, MO). He was previously a professor at Washington Univ. in St. Louis, where he earned his doctorate in chemical engineering. His early career includes industrial engineering experience at companies in the U.S. and Iraq. He has directed industry-academic consortia on gas conversion to alternative clean fuels and chemicals, and his research activities include more than 150 journal publications and over 350 conference presentations.

**Abhaya Datye** is the Dept. Chair and Distinguished Regents Professor of Chemical and Biological Engineering at the Univ. of New Mexico (UNM), where from 1994 to 2014 he served as Director of the Center for Microengineered Materials. He is also the founding director of UNM's graduate interdisciplinary program in Nanoscience and Microsystems Engineering. His research interests include heterogeneous catalysis, materials characterization, and nanomaterials synthesis, and he has pioneered the development of electron microscopy tools for the study of catalysts. He earned his PhD in chemical engineering from the Univ. of Michigan.

**Shrikant Dhodapkar** is a Fellow in the Process Fundamentals Group of the Dow Chemical Co.'s Performance Plastics business. He has extensive experience in designing and troubleshooting solids processing plants. He has been active in AIChE's Particle Technology Forum and the Chemical Technology Operating Council, and served as technical program chair for the Fifth World Congress on Particle Technology. He has published 43 technical articles, four book chapters, and five patents, and serves on the editorial board of *Advanced Powder Technology*. He earned his PhD in chemical engineering from the Univ. of Pittsburgh, where he is an adjunct professor.

**Concetta La Marca** is Principal Consultant in Reaction Engineering at the Chemours Co. (Wilmington, DE). She worked in the same capacity at DuPont for 24 years. Her work focuses on the kinetics of chemical reactions, with applications in combustion systems, NOx reduction, hazard analysis, and fluorocarbons. She recently contributed to the development of next-generation, low-global-warming-potential (GWP) fluorochemical products. She is a leader in AIChE's Catalysis and Reaction Engineering Div. and serves as a consulting editor for *AIChE Journal*. She is the author of two dozen technical articles and is an adjunct faculty member at Rowan Univ.

**Alan P. Rossiter, P.E.,** is President of Rossiter & Associates (Bellaire, TX), which provides consulting services on energy efficiency for the oil refining and chemicals industries. He has more than 30 years of experience in process engineering and management, including eight years in plant technical support, design, and research with Imperial Chemical Industries (ICI, United Kingdom). He is a chartered engineer (U.K.) and a registered professional engineer in Texas. His latest book, *Energy Management and Efficiency for the Process Industries* (Wiley), was published in 2015. He earned his PhD in chemical engineering at the Univ. of Cambridge.

**Katsumi Tochigi** is a Professor Emeritus of Chemical Engineering at Nihon Univ. (Tokyo, Japan) with 50 years of experience in research, teaching, and consulting in chemical engineering thermodynamics. He has published more than 150 articles, 48 book chapters, and seven books. Within AIChE, he has chaired or co-chaired numerous Annual Meeting sessions on thermodynamics and sustainability, including several sessions co-sponsored with The Society of Chemical Engineers, Japan (SCEJ). He earned his doctorate in industrial chemistry from Nihon Univ., and later held a post-doctoral fellowship at the Univ. of Ottawa.

Copyright © 2015 American Institute of Chemical Engineers (AIChE)

# Divisions and Forums Present Awards

Each year, AIChE's technical divisions and forums present awards that recognize contributions across a spectrum of chemical engineering specializations (www.aiche.org/awards/division-and-forum). These honors are presented at events held during AIChE's Spring and Annual meetings.

Here are some of the awards presented during the 2015 Annual Meeting in Salt Lake City, UT (Nov. 8–13). More division and forum award recipients will be announced in a future issue of *CEP*.

## CATALYSIS AND REACTION ENGINEERING DIV.

**Catalysis and Reaction Engineering Div. Practice Award**
Daniel Hickman, The Dow Chemical Co.

## COMPUTATIONAL AND MOLECULAR SCIENCE AND ENGINEERING FORUM (CoMSEF)

**CoMSEF Impact Award**
Cameron Abrams, Drexel Univ.

**CoMSEF Young Investigator Award for Modeling and Simulation**
Joshua Anderson, Univ. of Michigan

## COMPUTING AND SYSTEMS TECHNOLOGY (CAST) DIV.

**Computing in Chemical Engineering Award**
*Sponsor: The Dow Chemical Co.*
Rafiqul Gani, Technical Univ. of Denmark

**Computing Practice Award**
*Sponsor: ExxonMobil Research and Engineering Co.*
Lawrence Megan, Praxair

**David Himmelblau Award for Innovations in Computer-Based Chemical Engineering Education**
*Sponsor: CACHE Corp.*
John Falconer, Univ. of Colorado, Boulder

**Outstanding Young Researcher Award**
*Sponsor: Air Products and Chemicals*
Carl Laird, Purdue Univ.

**W. David Smith, Jr. Graduate Student Paper Award**
*Sponsor: Process Systems Enterprise, Inc.*
Ali Mesbah, Univ. of California, Berkeley

## ENVIRONMENTAL DIV.

**Lawrence K. Cecil Award in Environmental Chemical Engineering**
Pratim Biswas, Washington Univ. in St. Louis

## FOOD, PHARMACEUTICAL, AND BIOENGINEERING DIV.

**Food, Pharmaceutical, and Bioengineering Div. Award**
Jonathan Dordick, Rensselaer Polytechnic Institute

**Distinguished Service Award**
Theresa Good, National Science Foundation

## MATERIALS ENGINEERING AND SCIENCES DIV. (MESD)

**Charles M. A. Stine Award**
*Sponsor: E. I. DuPont de Nemours and Co.*
Karen Gleason, Massachusetts Institute of Technology

**Owens Corning Early Career Award**
*Sponsor: Owens Corning*
Thomas Epps, Univ. of Delaware

## NANOSCALE SCIENCE AND ENGINEERING FORUM (NSEF)

**Nanoscale Science and Engineering Forum Award**
Alan Weimer, Univ. of Colorado, Boulder

**Young Investigator Award**
Jordan Green, Johns Hopkins Univ.

## NUCLEAR ENGINEERING DIV.

**Robert E. Wilson Award**
David W. DePaoli, Oak Ridge National Laboratory

## PARTICLE TECHNOLOGY FORUM (PTF)

**George Klinzing Best PhD Award**
*Sponsor: Univ. of Pittsburgh Alumni*
Meenesh Singh, Univ. of California, Berkeley

**Fluidized Processes Recognition Award**
*Sponsor: The Dow Chemical Co.*
Charles Hemler, UOP (A Honeywell Company)

**Particle Technology Forum Award**
*Sponsor: Elsevier's* Powder Technology
John Carson, Jenike & Johanson

**Lectureship Award in Fluidization**
*Sponsor: Particulate Solid Research, Inc. (PSRI)*
Rajesh Davé, New Jersey Institute of Technology

**Shell Global Solutions Thomas Baron Award in Fluid Particle Systems**
*Sponsor: Shell Global Solutions*
Hamid Arastoopour, Illinois Institute of Technology

**SABIC Young Professional Award**
*Sponsor: SABIC Technology Center*
Fanxing Li, North Carolina State Univ.



Copyright © 2015 American Institute of Chemical Engineers (AIChE)


Your AIChE Membership

## AIChE Academy

Membership in AIChE opens doors — not only to a global network of chemical engineers but to a world of ideas and information. AIChE membership allows chemical engineers to sharpen their skills, learn about new trends in the field, and access the latest research at little to no cost.

One of the most convenient and valuable benefits of membership is AIChE Academy — www.aiche.org/academy — which provides a host of training resources for chemical engineers, all under one umbrella. The AIChE Academy's website and offerings are searchable by topic, Continuing Education Units (CEUs) or Professional Development Hours (PDHs), delivery method, skill level, and geographic location.

Members receive six credits per year that can be applied toward AIChE Academy's online webinars and conference presentations, and retain permanent access to the online resources they have selected. After using the six free credits, members can purchase more webinars and conference presentations at a discount.

Members also receive discounts on expert-led in-person and virtual training courses on a variety of topics. And, AIChE Academy houses an archive of educational videos that members can watch at no cost.

The eLibrary (www.aiche.org/elibrary) is another excellent resource. AIChE is continually expanding its eLibrary, delivering new and essential research and information to professionals through its partnerships with Knovel and McGraw-Hill. Members have free access to leading technical handbooks, critical databases, and analytics tools through Knovel, as well as *Perry's Handbook* and other key titles through McGraw-Hill.

AIChE encourages members to take full advantage of the educational and professional resources offered as part of membership.

Be sure to use any remaining annual membership credits before the end of the 2015, as they do not carry over into 2016.

If you have questions about these benefits or any others offered by AIChE, contact James Abel in AIChE's Membership Dept. at 646-495-1384 or jamea@aiche.org.

*AIChE Gala Honors Corporate Leaders — continued from p. 54*

mance, along with the company's strong commitment to continuously improving its practices. "That commitment is demonstrated in many ways, including your recognition as Responsible Care Company of the Year in 2013, and Eastman's 'ALL IN FOR SAFETY' initiative," Hayes said. He added that Eastman, too, has a long history of representation in AIChE's and CCPS's leadership and programs, with Eastman's process safety experts continuing to lead many CCPS committees and projects, "sharing their insights and expertise with colleagues around the world."

In accepting the award, Costa said, "the commitment to design, operate, and maintain our facilities in a safe manner is … far more than a business objective — we consider it an obligation of our company and each of our employees. It is an expectation that is woven into our culture and is part of our DNA."

For more information on AIChE's 2015 Gala, visit www.aiche.org/gala.

## Miranda Gek Sim Yap, 1948–2015

Miranda Yap, a professor in the Chemical and Biomolecular Engineering Dept. at the National Univ. of Singapore, and the Executive Director of the Bioprocessing Technology Institute at the Agency for Science, Technology, and Research of Singapore (A*STAR), died on Oct. 14, 2015, in Singapore. She had been convalescing under the care of her husband, Yap Kian Tiong, since suffering an aneurism in 2011.

Yap served on the Advisory Board of AIChE's Society for Biological Engineering (SBE) since its founding in 2004. Along with Wei-Shou Hu, a professor at the Univ. of Minnesota, Yap was a lead researcher on the SBE's consortium to develop genomic information for the Chinese Hamster Ovary (CHO) cell line, which is now used in the production of many therapeutic protein drugs.

In addition to her teaching, research, and leadership roles, Yap was a founder of two biopharmaceuticals companies: The Centre for Natural Product Research (now called MerLion Pharmaceuticals Pte Ltd), and the Biopharmaceutical Manufacturing Technology Centre (now known as A-Bio Pharma Pte Ltd). Her leadership also helped attract multinational companies to establish biologics manufacturing facilities in Singapore.

In 2009, Yap received the President's Science and Technology Medal — Singapore's highest science and technology honor — for her distinguished and strategic contributions to Singapore's biomedical sciences landscape. She was also elected as a Foreign Associate of the U.S. National Academy of Engineering in recognition of her achievements in education, research, and management in the field of mammalian cell culture.

Copyright © 2015 American Institute of Chemical Engineers (AIChE)