Institute News

2014 Board of Directors' and Institute Awards

To be Presented at the Atlanta Annual Meeting's Honors Ceremony

AIChE will honor some of chemical engineering's most accomplished practitioners, researchers, and educators, with the presentation of the 2014 Institute and Board of Directors' Awards. The awards will be given at the annual Honors Ceremony, on Sunday, Nov. 16, at the AIChE Annual Meeting in Atlanta, GA.

AIChE members in all areas of practice and academics are encouraged to nominate qualified candidates for future awards. The Awards Committee is especially interested in receiving more nominations from, and on behalf of, members engaged in the industrial practice of chemical engineering. Visit the AIChE website for more information about the Institute and Board awards: www.aiche.org/community/awards. The deadline for 2015 nominations is Feb. 15, 2015.

Founders Award for Outstanding Contributions to the Field of Chemical Engineering

Sponsor: Evonik Corp.

Stuart L. Cooper, The Ohio State Univ.

"For innovative research, influential publications, strong administrative leadership, effective mentoring of students and faculty, and outstanding professional service."

F. J. and Dorothy Van Antwerpen Award for Service to the Institute

Sponsor: The Dow Chemical Co.

Maria K. Burka, National Science Foundation

"For three decades of exemplary service to AIChE, and for her major initiatives to promote diversity and international outreach activities that have significantly strengthened and enriched the Institute."

Allan P. Colburn Award for Excellence in Publications by a Young Member of the Institute

Sponsor: E. I. du Pont de Nemours & Co.

Liangfang Zhang, Univ. of California, San Diego

"For outstanding contributions to creating and advancing biomimetic nanomaterials for drug delivery to improve treatments of cancers and infectious diseases."

Alpha Chi Sigma Award for Chemical Engineering Research

Sponsor: Alpha Chi Sigma Educational Foundation

Paula T. Hammond, Massachusetts Institute of Technology

"For pioneering new approaches to biomaterials, including development of nanoscale assemblies that manipulate cellular behavior through controlled spatial and temporal release to achieve medical benefits."

Andreas Acrivos Award for Professional Progress in Chemical Engineering

Endowed by The AIChE Foundation

Zhenan Bao, Stanford Univ.

"For the design, processing, and applications of organic semiconductors for flexible and stretchable electronics."

The Award for Service to Society

Sponsor: Fluor

Adam Heller, The Univ. of Texas at Austin

"For life contributions of medical products that have helped hundreds of thousands of patients suffering from diabetes and other diseases."

The Energy and Sustainability Award

Sponsor: Air Products

Frank (Xin) Zhu, UOP LLC, A Honeywell Co.

"For the development and application of novel process design and operation optimization methodologies, and computational tools to achieve significant energy savings in the refining and petrochemicals industries."

The Engineering and Construction Award

Bechtel Pueblo Team, Pueblo, CO

"For the successful completion of design and construction of the Pueblo Chemical Agent Destruction Pilot Plant for an innovative alternative chemical warfare agent elimination system."

Industrial Progress Award

Laura E. Leonard, UOP LLC, A Honeywell Co.
"For a consistent track record of technical leadership and innovation, translating fundamental knowledge into commercially relevant engineering solutions."

Industrial Research and Development Award

Van N. Truskett, Canon Nanotechnologies, Inc.
"For development of scalable, sub-1pL drop-on-demand inkjets for the nanoimprint lithography process to use in high-volume manufacturing of complementary metal-oxide-semiconductor (CMOS) devices, hard disk drives, and tablets."

Industry Leadership Award

Mark W. Pilling, Sulzer Chemtech USA
"Mark Pilling is a recognized expert in distillation, who has served the profession by promoting the development of a fundamental understanding of mass transfer devices."

Institute Award for Excellence in Industrial Gases Technology

Sponsor: Praxair, Inc.

J. Douglas Way, Colorado School of Mines
"Doug Way is an international leader in the synthesis, characterization and application of inorganic membranes for use in hydrogen separation processes."

Lawrence B. Evans Award for Chemical Engineering Practice

Sponsor: CACHE Corp.

Carmo J. Pereira, E. I. du Pont de Nemours & Co.
"For pioneering applications of catalysis and reaction engineering in the petrochemicals and chemicals industries."

Process Operations Award

Stephen A. Kiorpes, Scientific Design Co.; Rust/Raytheon Engineering (retired)
"For personally directing the field commissioning of five unique first-of-a-kind chemical process plants, all without safety incidents; and for participating in the design and/or startup of a great many others."

R. H. Wilhelm Award in Chemical Reaction Engineering

Sponsor: ExxonMobil Research and Engineering

Manos Mavrikakis, Univ. of Wisconsin–Madison
"For pioneering new avenues of research in the field of chemical reaction engineering by elucidating how results from electronic structure calculations can be employed to understand the reactivity of metal surfaces, leading to new materials with improved performance for catalytic reaction systems."

Warren K. Lewis Award for Chemical Engineering Education

Sponsor: ExxonMobil Research and Engineering

L. Gary Leal, Univ. of California, Santa Barbara
"For outstanding scholarship and academic leadership."

William H. Walker Award for Contributions to Chemical Engineering Literature

Sponsor: John Wiley and Sons

Gregory Stephanopoulos, Massachusetts Institute of Technology
"For advancing the fundamental chemical engineering science supporting metabolic engineering as enabling technology for the production of pharmaceutical and chemical products from renewable resources."

AIChE Leaders Reflect on Chemical Engineers' Contributions to Chemical Weapons Demilitarization Projects

At AIChE's 2014 Annual Meeting in Atlanta in November, a team of engineers and other specialists working at Bechtel in Pueblo, CO, will receive the Institute's Engineering and Construction Award for designing and building the Pueblo Chemical Agent-Destruction Pilot Plant — a project to eliminate the inventory of munitions containing 2,600 tons of mustard chemical warfare agent stored at the U.S. Army's Pueblo Chemical Depot. The multifaceted project was designed to replace incineration as a way to safely destroy these chemical weapons, and will use water hydrolysis and biological treatment to do the work.

The Pueblo site, along with the Blue Grass (Kentucky) Army Depot, is one of the U.S. locations where the work of dismantling and neutralizing chemical weapons stockpiles will continue.

International efforts to eliminate the world's stockpiles of chemical weapons stretch back to at least the end of World War II, and gained momentum in the late 1960s, when the U.S. announced the end of its offensive biological weapons program. Since then, U.S. government policies and international agreements (perhaps most notably the Chemical Weapons Convention of 1997) have pushed for ever-safer and more-thorough approaches to the elimination of chemical weapons stockpiles. In the U.S., these efforts have been led by the Army's Chemical Materials Agency (CMA). A separate Dept. of Defense program now focuses on the remaining Pueblo and Blue Grass stockpile elimination efforts now under the direction of the Program Executive Office, Assembled Chemical Weapons Alternatives (ACWA).

The CMA and its collaborators have successfully destroyed the weapons stockpiles and closed operations at seven U.S. chemical agent disposal facilities: at Johnston Atoll in the Pacific Ocean (2000); Aberdeen, MD (2005); Newport, IN (2008); Pine Bluff, AR (2010); Anniston, AL (2011); Umatilla, OR (2011); and Deseret, UT (2012).

All of these demilitarization and stockpile elimination projects have received critical guidance from working groups organized through the National Research Council (NRC) — the operating arm of the U.S. National Academies of Engineering, Science and Medicine.

According to Peter Lederman, an environmental consultant and a past director of AIChE, the interdisciplinary project-review teams assembled by the NRC have been composed of chemical engineers, environmentalists, lawyers, toxicologists, and a broad spectrum of other experts. Chemical engineers have played a pivotal role in monitoring these projects.

Over the course of nearly 30 years, Lederman has chaired and served on many of these review committees for the Army's chemical stockpile disposal program. Some of the NRC review teams, he explains, focused on projects to destroy stockpile chemical material and weapons (such as mustard agent and organophosphate nerve agents); others dealt with the destruction of so-called non-stockpile material and weapons (including munitions that had been misfired, abandoned, or improperly disposed of); and other groups collaborated with foreign governments to assist in destroying chemical weapons overseas.

Regardless of the mission, says Lederman, the chemical engineers on these teams have focused primarily on processes — work for which chemical engineers are uniquely trained and qualified.

"The process of destroying a given

Recognition

These are some of the many chemical engineers and AIChE members who served on demilitarization project review committees.

Piero Armenante
Joan Berkowitz
D. B. Bhattacharyya
John Carberry
Edward Cussler
Elizabeth Drake
Robert Forney
Mauricio Futran
Willard Gekler
Christine Grant
Deborah Grubbe
Eric M. V. Hoek
Sheldon Isakoff
David Kosson
Frederick Krambeck
Peter Lederman
M. Douglas Levan
Joann Slama Lighty
John Longwell
James Mathis
Walter May
Jimmie Oxley
Tim Overton
Ronald Probstein
Robert Puyear
Danny Reible
Derrick Rollins
Chandra Roy
T. W. Fraser Russell
Stanley Sandler
Phillip Savage
Otis Shelton
Subhas Sikdar
Cedomir Sliepcevich
Kenneth Smith
Arnold Stancell
Michael Stenstrom
Levi Thompson
Walter Weber, Jr.
Krista Walton
Leo Weitzman

chemical weapons stockpile involves numerous highly integrated steps," says Lederman. "Chemical engineers' approach to the analysis of such complex processes was one of the critical attributes that we brought to these efforts — allowing the oversight committees to carry out not only the evaluation of possible alternatives to combustion for destruction of the chemical agents, but also to devise processes to do the work safely, in order to not deteriorate the environment."

Another chemical engineer on these teams is John Carberry, a retired director of environmental technology at DuPont, who chaired several review committees on non-stockpile materials. Carberry says that chemical engineers on his teams were particularly qualified to determine the most-effective and safest way to handle highly toxic materials; to identify the most appropriate processes for a given scale of work; and to recognize processes that would be inherently safest.

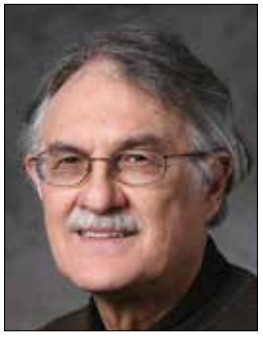
Lederman also points out that safety was a prime concern of his NRC committees, adding that this focus has paid off impressively in the noteworthy safety performance of the U.S. demilitarization and stockpile elimination operations. He notes that all seven CMA-led projects had excellent safety records.

Otis Shelton, AIChE's 2014 president, led Praxair's safety and environmental assessment program, and recently chaired one of the NRC process safety assessment committees for the Pueblo and Blue Grass chemical agent destruction plants. Shelton says that the chemical engineers on these committees "support the AIChE vision of serving the profession by applying chemical engineering expertise in meeting societal needs." He applauds the work of his engineering colleagues, noting that their contributions helped promote the success of the Chemical Weapons Convention and the Organisation for the Prohibition of Chemical Weapons (OPCW) — which was awarded the 2013 Nobel Peace Prize for its efforts.

Deborah Grubbe, a former AIChE director and the president and owner of Operations and Safety Solutions, LLC, also participated on several chemical stockpile review teams. "It was a privilege to offer perspectives and ideas to the U.S. Army and its contractors," says Grubbe.

In reflecting on her review committee experiences, she underscores that chemical engineers, in contributing to the safe and effective operation of the chemical demilitarization facilities, are demonstrating their stewardship — which can be seen as coming full circle. "Chemical engineers were a part of the development of chemical agents and their associated delivery mechanisms," says Grubbe, "and it only makes sense to have us involved in the demilitarization of same." She adds that, thanks to sound engineering decisions and effective execution, chemical engineers have helped to keep chemical weapons incidents to a very low level over their 70-plus-year life spans.

Belfort is Elected Chair of the Society for Biological Engineering



Georges Belfort, Institute Professor of Chemical and Biological Engineering at Rensselaer Polytechnic Institute (RPI), Troy, NY, has been selected to chair the Society for Biological Engineering (SBE), a technological community within AIChE. SBE promotes the integration of biological principles with engineering, and supports the work of scientists who engineer living cells to create new products or to do useful work, including important applications in healthcare and the production of chemicals and energy. Belfort succeeds Gregory Stephanopoulos, the W. H. Dow Professor of Chemical Engineering at the Massachusetts Institute of Technology, and will chair the SBE for a three-year term.

Belfort began his chemical engineering studies at the Univ. of Cape Town (South Africa), and later earned his MS and PhD at the Univ. of California, Irvine. He spent four years on the faculty of the School of Applied Science at Hebrew Univ. (Jerusalem, Israel) before joining RPI in 1978. He has documented his research — in areas including chemical molecular engineering, bioseparations, and synthetic membrane technology — in more than 200 journal articles and 20 books. In addition to his leadership of SBE, Belfort is a member of the National Academy of Engineering and an AIChE Fellow, and he serves on the scientific advisory boards at Intermolecular, Inc., and the Max Planck Institute. He is a co-founder of the North American Membrane Society.

Darlene Schuster, a director of AIChE's technological communities, says that, in addition to his wide-ranging technical contributions, Belfort brings his expertise in downstream bioprocessing to SBE. She adds, "AIChE is looking forward to the continued successful growth and expansion of SBE into new biological engineering domains under Georges' leadership."

More information about the Society for Biological Engineering is available at www.aiche.org/SBE, and in the special section of this issue, pp. 39–66.

Shakeel Kadri is New Executive Director of CCPS; Scott Berger, Director of AIChE's Industry Technology Alliances, Will Retire

AIChE's Center for Chemical Process Safety (CCPS) has announced that Shakeel Kadri, a chemical engineer and currently director of global process safety and risk management for Air Products and Chemicals, Inc. (Allentown, PA), will become CCPS Executive Director in 2015. Kadri will replace Scott Berger, who is retiring at the end of Jan. 2015.

In making the announcement, June Wispelwey, AIChE's executive director, said that Kadri's 36 years of experience at Air Products provides "the hands-on experience and expertise that have made CCPS's series of guidelines and conferences the world standard in process safety knowledge." Wispelwey also commended Berger's leadership in dramatically increasing CCPS's corporate membership and activities around the world. He has "laid the foundation for CCPS's work improving the safety performance of the chemical, petroleum, and pharmaceutical industries," she said.

Wispelwey noted that Kadri will be assuming his new role as CCPS celebrates its 30th anniversary and continues implementing its Vision 20/20 program that describes the future of perfect process safety performance.

Kadri expressed confidence that "CCPS's strengths in industry and technical know-how, along with an increased global presence, will assure success in our mission of advancing process safety culture, guidelines, competency, and management systems." He added, "We are also focused on assuring that the next generation of engineers has a thorough knowledge of process safety."

In his current role at Air Products, Kadri has been instrumental in raising process safety and risk awareness among the company's staff. He has developed a strong global process safety team, and has revitalized the process-safety-measurement performance and culture at Air Products.

Kadri

Berger

He has also been involved in CCPS activities, with a special focus on risk-based process safety and on developing a process safety culture within companies.

Kadri is a Fellow of both CCPS and AIChE, and has served on safety committees of the American Chemistry Council, the American Petroleum Institute, the Mary Kay O'Connor Process Safety Center, the Compressed Gas Association, the European Industrial Gases Association, and the American Fuel and Petrochemical Manufacturers Association. He has authored numerous publications, conference papers, and a patent.

Kadri earned his BS in chemical engineering at the Dharmsinh Desai Institute of Technology of Gujarat Univ. in India. This year he was honored by his alma mater as the inaugural Pioneer Role Model of the University. Kadri earned an MS in chemical engineering at the Illinois Institute of Technology, as well as an MBA at La Salle Univ.

Evonik is the New Sponsor of AIChE's Founders Award

Evonik Corp., an Essen, Germany-based provider of specialty chemicals for a spectrum of industries, has announced that it will sponsor AIChE's Founders Award for Outstanding Contributions to the Field of Chemical Engineering. The award, presented annually by AIChE's Board of Directors, recognizes the accomplishment of an eminent chemical engineer whose work has had a transformative impact on the chemical engineering profession.

The 2014 Founders Award will be presented to Stuart L. Cooper, Professor and Chair of the Dept. of Chemical and Biomolecular Engineering at the Ohio State Univ. (Columbus, OH). Cooper is being recognized for his innovative research, his influential technical publications, and his contributions to chemical engineering education. He will receive the Founders Award on Nov. 16, 2014, at an honors ceremony held in connection with AIChE's Annual Meeting (Nov. 16–21) in Atlanta, GA.

Evonik Corp. (www.evonik.com) is a world leader in specialty chemicals, with activities focused on health, nutrition, and resource efficiency. The company has a presence in more than 100 countries, and is driven by its innovation and its integrated technology platforms. In 2013, Evonik's more than 33,000 employees helped the company generate sales of around $15.9 billion and an operating profit of $2.5 billion.

For more information about AIChE's Founders Award, as well as the Institute's other major honors, visit www.aiche/org/community/awards.