



## NEW OPPORTUNITIES IN A MULTIFACETED PROFESSION

### AICHE Annual Meeting • Nov. 8–13 • Salt Lake City, UT

The rise of the entrepreneurial chemical engineer and the emergence of chemical engineers in the health care professions are just two of the new topics to be explored when AIChE holds its 2015 Annual Meeting in Salt Lake City, UT, Nov. 8–13. Taking place at the Salt Palace Convention Center, the Marriott Downtown at City Creek, and the Hilton Salt Lake City Center, the Annual Meeting will also cover the discipline's fundamentals in a technical program consisting of more than 700 sessions across nearly two dozen program tracks. Experts in virtually every facet of chemical engineering will discuss the latest research and technologies in the areas of bioengineering, energy, fuels and petrochemicals, pharmaceuticals, chemical engineering education, separations, materials science, particle technology, nanotechnology, environmental engineering, and much more.

As the technical contributions of the chemical engineering profession become more diverse, so does its community of stakeholders. To better serve the profession's multifaceted constituency, the meeting will host a summit devoted to the Institute's inclusiveness initiatives. Inclusion and diversity in the profession will also be at the center of two special events organized by the Institute's Minority Affairs Committee — which marks its 25th anniversary in Salt Lake City with special guest speakers, an awards program, and an evening celebration.

On the global front, AIChE's meeting programmers are collaborating with Japan's Society of Chemical Engineers, the Korean Institute of Chemical Engineers, and other groups. Programs include a session on international partnerships in innovation and product development and a forum on



biotechnology in Europe. Attendees can also get their fill of international perspectives at a session entitled "International House of ChEs."

Highlights of the technical program include the 2015 International Congress on Energy (ICE), which will feature sessions on alternative energy, hydrogen production and storage, biorefinery technologies for forest- and plant-based biomass, biofuels, fossil fuels, and carbon capture and storage.

Among the meeting's 11 topical conferences, a new one focuses on the entrepreneurial chemical engineer. This new conference, organized by AIChE's Management Div., Chemical Engineering and the Law Forum, and new Center for Innovation and Entrepreneurial Excellence, will offer guidance for engineering entrepreneurs, and will feature a novel session — told from the perspective of skiers and snowboarders — that illustrates how chemical engineering innovations and applications have revolutionized those sports.

Another new topical conference, Chemical Engineers in Medicine, explores the contributions that chemical engineers are making in health care — from the design of new diagnostic devices and drug delivery systems, to explorations of the principles underlying disease, to the commercialization of new medical products.

These new areas will be supplemented by established topical

conferences that present the latest intelligence in nanotechnology and nanomaterials (including environmental aspects and energy applications), advanced fossil energy utilization, innovations in green process engineering, systems and synthetic biology, sustainable food production, and sensors, as well as the annual meeting of the AES Electrophoresis Society.

Sharing the stage with the Annual Meeting is AIChE's Annual Student Conference, Nov. 6–9. More than 1,200 undergraduate chemical engineering students from schools worldwide will participate in career workshops, scholarly competitions, and networking activities. One notable event is a networking brunch featuring a keynote talk by chemical engineer Allan McDonald, former director of the Space Shuttle Solid Rocket Motor Project. McDonald will discuss lessons learned from the Space Shuttle Challenger. Other Student Conference highlights include the 17th Annual Chem-E-Car Competition (Sunday, Nov. 8) and an undergraduate poster session with more than 300 presentations (Monday, Nov. 9).

With its emphasis on both technical innovation and the professional growth of chemical engineers, AIChE's Annual Meeting is the foremost educational forum for chemical engineers working in research and development. Organizers are expecting more than 4,000 engineers, scientists, and business leaders to attend this year's meeting to acquire insight into developments in the field's growth areas. Poster presentations, plenary sessions, panels discussions, special forums, and lectures by some of the profession's most accomplished people round out the learning opportunities. A variety of receptions, social events, and networking opportunities



will allow attendees to make new professional connections and reunite with colleagues and friends.

For information about conference registration and the complete schedule of events, visit [www.aiche.org/annual](http://www.aiche.org/annual).

## Must-see presentations

Meeting attendees will hear some of the profession's thought leaders discuss new developments in their fields of specialization.

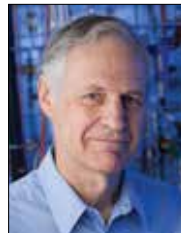
*The 67th Institute Lecture*, Wednesday, Nov. 11, 11:15 am – 12:15 pm. Liang-Shih Fan, Distinguished University Professor and the C. John Easton Professor in the Dept. of Chemical and Biomolecular Engineering at the Ohio State Univ., will present this year's Institute Lecture, entitled "Metal Oxide Reaction Engineering and Particle Technology Science: A Gateway to Novel Energy Conversion Systems." (See the related article on p. 53.)

*The D. I. C. Wang Award for Excellence in Biochemical Engineering Lecture*, Monday, Nov. 9, 6:00 pm – 7:00 pm. Presented by AIChE's Society for Biological Engineering (SBE), this award recognizes distinguished contributions to education and research in biochemical engineering. This year's recipient will be announced in the October issue of *CEP*.

*IACChE's James Y. Oldshue Lecture*, Tuesday, Nov. 10, 8:30 am – 11:00 am. Held in alternating years at the AIChE Annual Meeting and at the Inter-American Confederation of Chemical Engineering's (IACChE) Inter-American Congress, this lecture honors an important leader and supporter of both organizations. The 2015



Fan



Grace



Bao

Oldshue Lecture will be presented by John Grace, Professor and Dean Emeritus at the Univ. of British Columbia, whose talk is entitled "Validation of Models and Procedures in Chemical Engineering."

*Andreas Acrivos Award for Professional Progress in Chemical Engineering Lecture*, Tuesday, Nov. 10, 11:15 am – 12:15 pm. This presentation will be given by the Institute's 2014 Acrivos Professional Progress Award recipient, Zhenan Bao, Professor of Chemical Engineering at Stanford Univ. In her lecture, "Skin-Inspired Organic Electronic Materials and Devices," Bao will discuss her development of organic electronic materials that mimic human-skin functions, with applications in medical devices, energy storage, and other areas.

*James E. Bailey Award Lecture*, Tuesday, Nov. 10, 6:00 pm – 7:00 pm. The Society for Biological Engineering's Bailey Award recognizes outstanding contributions in the field of biological engineering. This year's award recipient will be announced in the October issue of *CEP*. This session will also feature presentation of the *Biotechnology Progress Award for Excellence in Biological Engineering Publication*.

## Special events

*Meet the Faculty Candidate Poster Session*, Sunday, Nov. 8, 2:00 pm – 4:00 pm. This annual event connects faculty, recruiters, and department chairs with graduate students and postdoctoral researchers who are seeking faculty positions. More than 250 candidates are expected to participate.

*Critical Public Policy Issues for Every ChemE*, Sunday, Nov. 8, 3:30 pm – 6:00 pm. Leaders of the Public Affairs and Information Committee and invited experts will discuss three critical public policy issues impacting the profession: the energy–water–food nexus, climate change and carbon management, and advanced manufacturing. (See sidebar, p. 51.)

*Graduate Student Education Panel*, Monday, Nov. 9, 11:15 am – 1:00 pm. Representatives from industry, academia, and government will discuss a range of topics, including research priorities, graduate curricula, PhD graduate placement, expectations of industrial employers, prospects for innovation and job creation, and suggestions for improving PhD chemical engineering education. Panelists will include Pramod Khargonekar, National Science Foundation; Joseph Helble, Dartmouth College; Phillip Westmoreland, North Carolina State Univ.; and Gayle Gibson, DuPont.

*MAC@25: Minority Affair Committee's 25th Anniversary Awards Session*, Monday, Nov. 9, 12:30 pm – 3:00 pm. In celebration of the Minority Affairs Committee's (MAC) 25th anniversary, the committee is honoring some of its founding members and most active leaders with the MAC Pioneers of Diversity Awards. Leaders past and present will discuss the history, current status, and future direction of MAC. Later, on Monday evening at 8:00 pm, the celebration will continue with a MAC Anniversary Reception, which will also recognize the 15th Anniversary of AIChE's Women's Initiatives Committee.



*World Café: Energy–Water–Food Nexus*, Monday, Nov. 9, 3:15 pm – 5:45 pm. Distinguished engineers from AIChE, its Center for Energy Initiatives, and international chemical engineering organizations — working under the auspices of the World Chemical Engineering Council — are co-organizing this session devoted to the Grand Challenge at the nexus of energy, water, and food production. The session will build awareness of this critical issue, and highlight the role that chemical engineers can play in systems integration and technology development tied to this interconnected and vital system.

*Understanding the Brain: A Chemical Engineering Perspective*, Tuesday, Nov. 10, 12:30 pm – 3:00 pm. This session will explore the roles that chemical engineers can play in researching the brain, including understanding its molecular, cellular, and neuronal network structure and function; the brain's interaction with proximal tissues; transport processes and the blood/brain barrier; repair and regeneration strategies; and modeling of brain processes. Panelists include Rajanikanth Vadigepalli, Thomas Jefferson Univ.; Shu Liu, Northwestern Univ.; Athanassios Sambanis, National Science Foundation; and Amina Qutub, Rice Univ.

*Summit on Engineering Diversity and Inclusion: Moving Forward*, Tuesday, Nov. 10, 3:15 pm – 5:45 pm. Organized by AIChE's Societal Impact Operating Council and the Women's Initiatives Committee, this special session brings together representatives from companies, universities, and other organizations to explore the Institute's diversity and inclusion initiatives. Attendees will share best practices for advancing the interests of underrepresented and underserved constituencies. The session builds on the Engineering Diversity Workshop held at the 2015 AIChE Spring Meeting in Austin, TX.

## CRITICAL POLICY ISSUES FOR EVERY CHEME, NOV. 8

Chemical engineers are finding roles — and a voice — in an ever-widening arena. To prepare engineers to engage with policymakers and the community at large, AIChE's Public Affairs and Information Committee (PAIC) is guiding the Institute, and its members, toward a deeper understanding of the grand-challenge issues that impact society.

In early 2015, members of the PAIC identified a range of public policy issues of importance to the profession. The most prominent — the energy–water–food nexus, climate change and carbon management, and advanced manufacturing — will be explored at the 2015 Annual Meeting, during a session entitled Critical Policy Issues for Every ChemE, on Sunday, Nov. 8, 3:30 pm – 6:00 pm.

Session co-chairs Mary Ellen Ternes (Crowe & Dunlevy), Dale Keairns (Booz Allen Hamilton), and Phillip Westmoreland (North Carolina State Univ.) are assembling a panel of subject matter experts to examine these critical issues:

*Energy–Water–Food Nexus* — Energy, water, and food are central to basic human needs and quality of life. An understanding of the complex interplays among these global resource systems is necessary for engineers seeking to inform public policy, identify advanced technologies to address nexus problems, and train the next-generation workforce. This session describes the nexus as an integrated system challenge and provides an overview of AIChE activities addressing the nexus — including the Annual Meeting's World Café: Energy–Water–Food Nexus session on Monday, Nov. 9.

*Climate change and carbon management* — The August 2015 announcement by the U.S. Environmental Protection Agency of the Clean Power Plan, as well as other regulations, have significant implications for chemical engineers, especially those working in industries that produce or are dependent on fossil fuels. This session will consider the role of chemical engineers in this changing landscape. Topics include: the U.S. Securities and Exchange Commission requirements to disclose material risks arising from climate change; tools for managing risk; public sentiment; expectations for the post-Kyoto-Treaty 2015 Climate Change Conference in Paris; and more.

*Advanced Manufacturing* — Manufacturing is a hot topic worldwide. Much of the focus, however, has been on manufacturing using machines and assembly lines, and overlooks the role of the process industries. A key area of involvement for chemical engineers is in Smart Manufacturing — a cyber-infrastructure for the breadth of manufacturing enterprises — encompassing sensors and controls, product supply chains, physical and cybersecurity, predictive maintenance, enterprise decision-making, and environmental and safety issues. This session will also explore process intensification, including new-process innovations.

## Honoring the profession's leaders

On Sunday evening, Nov. 8, prior to the Annual Meeting's Welcome Reception, AIChE will recognize some of chemical engineering's foremost practitioners, researchers, industry leaders, and educators at the Honors

Ceremony. Many of AIChE's technical divisions and forums will present their annual awards at special sessions and dinners throughout the week, and newly elected AIChE Fellows will be recognized at the Fellows Breakfast on Tuesday, Nov. 10.

CEP

Program and registration information is available at [www.aiche.org/annual](http://www.aiche.org/annual).  
Registration fees are discounted through Sept. 28.