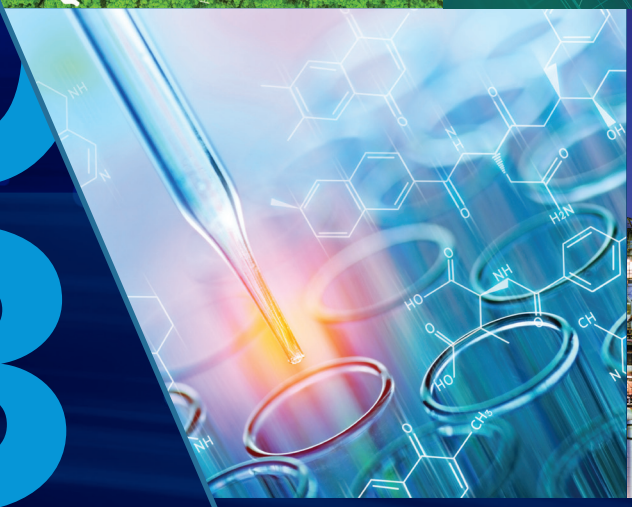
AIChE

The Global Home of Chemical Engineers

2023



AIChE® ANNUAL REPORT

Darlene Schuster
Chief Executive Officer and Executive Director, AIChE

Billy B. Bardin
2023 AIChE President

This report contains snapshots of AIChE in 2023 — a year in which the Institute continued to transform to keep pace with the transformation of the chemical engineering profession and the evolving needs of our workforce. Through our conferences, technical entities, educational programs, and communities, AIChE found new ways to engage with its stakeholders.

Bolstered by three supporting pillars of Institute progress — namely, our dedication to advancing the profession, supporting members' career objectives, and meeting the needs of society —AIChE's accomplishments in 2023 highlight how the Institute is forging partnerships, expanding educational opportunities, and opening doors to future stakeholders.

Partnerships

- AIChE will continue its collaboration with the U.S. Dept. of Energy (DOE) through our Rapid Advancement in Process Intensification Deployment (RAPID) Manufacturing Institute, which received a five-year renewal from DOE in 2023.
- AIChE's Center for Hydrogen Safety expanded its membership base, driven by increasing interest in the use of hydrogen. Also in this arena, a new alliance between AIChE and the UK-based Institution of Chemical Engineers (IChemE) is supporting industry's adoption of hydrogen and advancing technologies for the reduction of greenhouse gases.

Learning

- Our Institute for Learning and Innovation (ILI) collaborated with companies to support employees' career development as part of lifelong education. The ILI also piloted programs such as our Sustainability Corps, which allows students to solve real-world problems of interest to our corporate and academic partners.
- Among several examples, AIChE elevated the presence of its Community of Process Engineers, to foster career advancement and discovery for that sector of AIChE members.

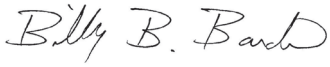
Engagement

- AIChE continued to follow its IDEAL path — marked by inclusion, diversity, equity, anti-racism, and learning — when making decisions on how we engage with our constituents and how we operate. With these principles as a guide, in 2023, AIChE developed new criteria for the selection of event locations, and we enhanced security and inclusion at our Annual Meeting.
- Responding to the diversification of the profession and the interdisciplinary nature of our collaborations, AIChE now offers an "explorer" membership tier for those new to AIChE. Explorer members can learn what AIChE offers by sampling select information, training content, and benefits.
- The AIChE Foundation increased its engagement with the engineers of tomorrow through its Future of STEM Scholars Initiative (FOSSI). AIChE, through the partnership of more than 60 corporate partners, is supporting four-year scholarships for more than 600 students attending Historically Black Colleges and Universities, where they are pursuing STEM degrees pertinent to our industries.

Those developments and much more are spotlighted in this report.

We take pride in the fact that chemical engineers are driving the world's future — helping communities everywhere to confront the evolving grand challenges of our times. Solutions to those challenges require that all of us seek opportunities to apply our skills and follow our inspiration. In a smaller but still essential way, AIChE, as the global home of chemical engineers, looks to all of its members to take active roles in the life of the Institute. We encourage you to look for ways to fortify yourself and our professional home by selecting AIChE activities that are meaningful to you, and by staying involved. We are eager to work with all of you in 2024 and beyond.

Darlene Schuster
Chief Executive Officer and Executive Director, AIChE



Billy B. Bardin
2023 AIChE President

Membership

Meet the AIChE Early Career Community

In 2023, AIChE worked with volunteer leaders to transition AIChE's Young Professionals Committee to an AIChE community: the Early Career Community (ECC). The ECC provides AIChE members with a space to assemble — empowering early-career members within chemical engineering and related fields. The ECC aims to be a first home for those who've recently earned their bachelor's degree, offering opportunities to engage and build camaraderie as they set off on their career path — wherever it starts. AIChE professionals interested in supporting the growth of those members are invited to join the community.

aiche.org/ecc

Technical Divisions and Forums

More than 6,500 AIChE member professionals are also members of at least one AIChE technical division or forum. AIChE's Community Counts program strives to help the leaders of these groups to engage with and retain members. In 2023, the divisions offered more than 10 live webinars as a member benefit. AIChE also relaunched the Institute's Safety and Health Division as the **Process Safety Division** — reflecting the prominent role that process safety plays in the endeavors of modern chemical engineers and AIChE members. Learn about divisions and forums at:

aiche.org/divisions-forums

AIChE Local Sections

More than 5,300 AIChE member professionals engaged with in-person local section meetings spanning North America and several international locations, with additional locations slated to be chartered in 2024. AIChE recognizes outstanding local section participants with two Shining Star Awards and six Program Planning and Project Connect Grants. Among other activities, AIChE's Midwest Regional Conference provided an opportunity for engineers and scientists in that region of the U.S. to learn about new technologies and network with others.

aiche.org/local-sections

AIChE's Virtual Local Section (VLS) presented a comprehensive schedule of monthly meetings, fostering continued online connections among members. Four students received awards during the VLS's annual Student Co-op and Internship Presentation Competition. Connect with the VLS online: **aiche.org/virtual**

IDEAL An AIChE Commitment

The IDEAL Path — characterized by inclusion, diversity, equity, anti-racism, and learning — serves as a core principle within AIChE. The Institute is committed to providing a space of belonging for chemical engineers of all backgrounds — technical and cultural. As the global home of chemical engineers, AIChE is dedicated to building a society that reflects the diversity of the chemical engineering profession and its worldwide constituencies. Read the IDEAL Statement at: **aiche.org/IDEAL**

DORIC Disabilities Outreach & Inclusion — An AIChE Community

AIChE K-12

LatinX in ChE — An Affinity Community within MAC

LGBTQ+ Allies — An AIChE Community

mac — AIChE Minority Affairs Community

WIC — Women in Chemical Engineering — An AIChE Community

New in 2023 AIChE's Minority Affairs Committee (MAC) became the **Minority Affairs Community**, and has further expanded its impact. Since its inception in 1990, MAC has worked to provide equitable opportunities to chemical engineers from underserved and underrepresented populations. Through its transition to an AIChE community, MAC has increased its reach and resources. MAC also accomplished the launch of a subcommittee in 2023, with the addition of the **LatinX in ChE Community**. This subcommittee has already experienced substantial engagement, earning the IDEAL Star Award.

aiche.org/mac

Student Membership

AIChE welcomed 10 new student chapters in 2023, including AIChE's 400th chapter. AIChE held regional student conferences and events in collaboration with host universities in nine North American regions, as well as in Brazil, China, Greece, India, Indonesia, and Latin America. Student members around the world vied for top regional honors to qualify for AIChE's Chem-E-Car, ChemE Jeopardy, and Undergraduate Student Technical Presentation competitions. Placing in these competitions earned students coveted spots in the Annual Student Conference competitions.

aiche.org/students

24,000+
STUDENT MEMBERS

ACROSS
100
COUNTRIES

MORE THAN
400
STUDENT CHAPTERS

ACROSS
55
COUNTRIES

Chemical Engineering Supporting Students

AIChE ChESS
Chemical Engineering Supporting Students

In 2023, AIChE introduced ChESS, an updated strategic program that provides chemical engineering student members with support from corporate partners. AIChE thanks its ChESS sponsors for their generous support in enriching the next generation of chemical engineers.

aiche.org/chess

QUEEN-LEVEL SPONSOR:
Celanese
The chemistry inside innovation™

ROOK-LEVEL SPONSOR:
Chevron

ChemE Cube™
Powered by RAPID® | ExxonMobil

Launched in 2021 by AIChE's RAPID Manufacturing Institute, ChemE Cube is an annual competition in which undergraduate teams design, build, and demonstrate a one-cubic-foot plant to meet technical requirements defined in the annual problem statement. Teams promote their technology through a one-minute ad, poster, and 20-minute "shark tank" pitch to a panel of mock investors. The competition introduces students to techniques associated with more-efficient and sustainable approaches to engineering.

In 2023, teams were challenged to build a direct air capture unit that reduces the concentration of carbon dioxide in the atmosphere. Ten teams squared off at AIChE's Annual Student Conference. Congratulations to the team from Univ. of South Carolina, which took first prize.

Photo by Kevin Trimmer

K-12 STEM Showcase and Outreach Competition

AIChE K-12 STEM Showcase

AIChE's fifth annual K–12 STEM (Science, Technology, Engineering, Math) Showcase and Outreach Competition was held on Nov. 5 at the 2023 AIChE Annual Meeting and Annual Student Conference in Orlando, FL. Local K-12 students and their families interact with exciting and original demonstrations of STEM concepts created by sixteen teams of AIChE students and member professionals — at no cost to the families thanks to the support of the AIChE Foundation. The demonstration modules were judged for practicality and creativity before being archived in the K-12 Community Module Database, which is available to all AIChE K-12 Community members.

The event was organized by AIChE's K–12 and Executive Student committees.

aiche.org/k12

Kate "Kate the Chemist" Biberdorf demonstrated science and engineering concepts to Orlando-area K-12 students. Photo by Kevin Trimmer

Technical Entities

AIChE's Technical Entities are distinct communities of chemical engineers and other professionals that address such societal grand challenges as health, energy, environment, sustainability, water, and safety. In 2023, more than 30 specialty conferences were hosted by these groups, exploring an array of topics across the globe.

aiche.org/community/itg

New in 2023

Here are a few conference and program highlights:

- **Fluidization XVII** (May 21–25, Edinburgh, Scotland) attracted more than 170 attendees for its first in-person event since 2019. Participants from more than 20 countries discussed fundamentals, modeling, and applications in fluidization. Attendees also had an opportunity to learn traditional Scottish dancing at the Conference Ceilidh.
- **The 15th Metabolic Engineering Conference** took place in Singapore, June 11–15. With close to 700 metabolic engineers getting together for the first in-person conference since 2018, attendees shared cutting edge research, mentored future professionals, and developed future collaborations.

15th Metabolic Engineering Conference

- **The 8th International Conference on Accelerating Biopharmaceutical Development** (Sept. 6–8, Cambridge, MA) brought together multidisciplinary thought leaders to discuss the theme, "Applying enduring lessons from the pandemic."
- **The 4th AfroBiotech Conference** (Oct. 22–24, Atlanta, GA) delivered on its promise to explore innovative applications of biotechnology by African American scientists. Research in cell systems engineering, nucleic acid and genome design, and computational biology was presented, along with funding presentations by NSF, NCI, and BioMADE.
- **The 2nd Cell Free Systems Conference** (Nov. 15–17, Austin, TX) made an impressive comeback four years after its first iteration, with 125 attendees. This year's program focused on cell-free systems and the ways they are being applied.
- **The 5th Battery and Energy Storage Conference** (Nov. 15–17, Lemont, IL) welcomed high-level presentations and a surge in attendance at a new location, moving from NYC to Argonne National Lab. The program featured a tour of ANL facilities, a Future of Energy reception and poster session, as well as keynote speakers from industry, academia, and government.
- **The 6th International Conference on Microbiome Engineering** (Dec. 8–10, Berkeley, CA) had the largest in-person crowd in its history, with over 150 delegates from more than ten countries. Keynote speakers kicked off conference days filled with presentations on new developments in the world of microbiome engineering.
- The Society for Biological Engineering (SBE) recognized **Mattheos Koffas** (RPI) with the inaugural **June Wispelwey Bio Leadership Fellowship** for his engineering of microbial platforms that can produce natural products typically derived from animal and plant sources. The prize is named for June C. Wispelwey, who in the early 2000s served as the first Executive Director of SBE, and then, from 2008–2022, as AIChE's Executive Director.

Koffas

- AIChE's Regenerative Engineering (RE) Society presented its inaugural **Cato T. Laurencin RE Society Founder's Award** to **Antonios Mikos** (Rice Univ.). That honor is named for Dr. Laurencin (Univ. of Connecticut), who established the RE Society.

Mikos

aiche.org/community/itg

Center for Energy Initiatives — An AIChE Technological Community

Center for Innovation & Entrepreneuring Excellence — An AIChE Technological Community

DIERS

imes — International Metabolic Engineering Society

institute for sustainability — An AIChE Technological Community

International Society for Water Solutions — An AIChE Technological Community

Regenerative Engineering Society Symposium

Society for Biological Engineering — An AIChE Technological Community

CENTER FOR Hydrogen SAFETY
Connecting a Global Community

The Center for Hydrogen Safety (CHS) is a global leader in hydrogen safety. It offers industry stakeholders guidance on handling and using hydrogen safely. CHS provides partner organizations from around the world with resources that cover both conventional uses of hydrogen and its increasingly popular use as a fuel source.

The community of CHS has expanded to include more than 110 members and 16 strategic partners. Through its educational resources, more than 13,000 professionals have been equipped with essential safety knowledge and best practices, and more than 100 safety credentials have been granted by CHS. The organization has developed and deployed more than 25 educational products to date. It held its inaugural in-person conference in Europe in 2023 and has made significant progress towards releasing the first-of-its-kind hydrogen blending best safety practice.

aiche.org/chs

Education

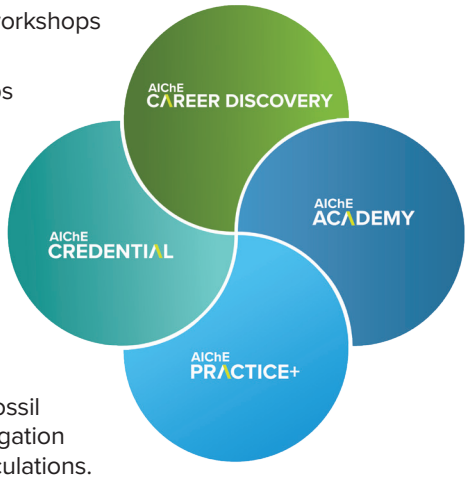
AIChE INSTITUTE FOR LEARNING & INNOVATION

AIChE's Institute for Learning and Innovation (ILI) creates a bridge between industry and academia, offering an all-inclusive approach to career development, training, and practical application for chemical engineers at all stages of their careers. The ILI delivers content and opportunities along four dimensions:

- **Career discovery and services** — including skills assessment to help learners identify goals and the skills and experiences needed to achieve them
- **Education and training** — developing technical skills with courses offered via AIChE Academy
- **Practice+** — aligning learners with opportunities to gain experience in applying their new skills, and offering a head-start on their next career step
- **Certificates and credentials** — validating engineers' proficiency in such disciplines as safety, process intensification, sustainability, and more.

Among its highlights in 2023, ILI:

- Piloted customized Career Discovery workshops for companies and universities
- Expanded the Sustainable Energy Corps program to 10 universities, including three outside the U.S. (enabled through funding by the United Engineering Foundation [UEF])
- Won Phase One of the U.S. Dept. of Energy (DOE)-sponsored Community Energy Innovation Prize, in partnership with the Sustainable Energy Corps team from Lamar Univ.
- Launched Energy 101 courses on non-fossil energy sources, existing emissions mitigation technologies, and greenhouse-gas calculations.



aiche.org/ili

AIChE ACADEMY

AIChE Academy delivers training to chemical engineers and their organizations worldwide. Members and non-members alike use the Academy's live and archived courses, webinars, conference presentations, and other eLearning resources to improve their professional skills, train teams, and brush up on trending topics. Many Academy products offer continuing education units (CEUs) and professional development hours (PDHs).

In 2023, Academy:

- Created seven new eLearning courses on hydrogen (in three languages), clean energy, and sustainability
- Published a new EDI module on confronting micro-aggressions in STEM and engineering professions
- Updated the popular "Incident Investigation and Root Cause Analysis" instructor-led course
- Launched an instructor-led course entitled "Process Safety Leadership for Frontline Supervisors."

aiche.org/academy

Publications

Journals

In 2023, AIChE's portfolio of six journals — *AIChE Journal, Bioengineering & Translational Medicine (BioTM), Biotechnology Progress (BTPR), Environmental Progress & Sustainable Energy (EP&SE), Journal of Advanced Manufacturing and Processing (JAMP),* and the *Process Safety Progress (PSP)* — experienced mixed results in key performance indicators, including articles published, open access content published, and the number of full-text downloads.

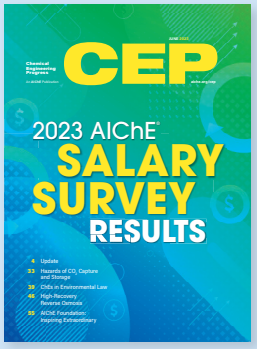
Journals in 2023	Total Articles Published / Hybrid Open Access	Yr-Over-Yr % Change: Published / Open Access	Downloads in 2023 / Yr-Over-Yr % Change	
AIChE Journal	322 / 49	–26.3% / -18.3%	968,790	6.7%
BioTM	153 / n/a	–18.6% / n/a	510,560	58.5%
BTPR	94 / 32	10.6% / 45.5%	510,890	1.7%
EP&SE	272 / 10	10.1% / 66.7%	206,600	2.0%
JAMP	17 / 6	–50.0% / -14.3%	53,260	27.0%
PSP	125 / 9	40.4% / 28.6%	108,730	11.2%

New in 2023:

- *AIChE Journal's* Editor-in-Chief, David Sholl (Oak Ridge National Lab), made progress toward his goal to improve time to production of manuscripts, with the time from submission to first decision decreasing from about 29 days (2022) to 25 days (2023), and time from submission to online publication from 155 days in 2022 to 132 days in 2023.
- Elizabeth Nance (Univ. of Washington) was elected as the new Editor-in-Chief of *BioTM.*
- *BTPR* selected Michelle O'Malley (Vice Chair of the new Bioengineering Dept. at the Univ. of California, Santa Barbara) to receive its 2023 *Biotechnology Progress* Award for Excellence in Biological Engineering Publication.
- *EP&SE* published a review article on the "Role of Environmental, Social, and Governance (ESG) in Achieving the UN Sustainable Development Goals: A Special Focus on India," which discussed the integration of ESG into business strategies and environmental reporting.
- *JAMP* was accepted into Scopus, an abstract and citation database of peer-reviewed literature.

aiche.org/journals

CEP Highlights



Chemical Engineering Progress (CEP) — the Institute's flagship publication —published the biennial AIChE Salary Survey in June 2023. In 2023, the survey garnered more than 1,000 responses from full-time salaried engineers.

The survey found that the overall median salary of respondents was $150,000, an 8.3% increase from the median salary reported in 2021 (not accounting for inflation). The median starting salary for new chemical engineering graduates increased 6.4% to $74,500. On average, it took new graduates a little more than five months to find a job. *CEP* used the survey to investigate the effects of the "Great Resignation," and found that almost one fifth of respondents had left a job in 2020–2022.

CEP also published four special sections in 2023. Each special section pulls together three to five articles that fit within the broad theme of the issue, and offers readers a look at novel technologies and companies innovating in those areas. In 2023, the four special sections included:

- Process Intensification (Mar.)
- The Energy Transition (July)
- Food Engineering (Sept.)
- The Future of Bioengineering (Nov.)

In October 2023, *CEP* once again published a special issue on Professional Development, building on the success of its October 2022 magazine. This special issue contained features on interviewing, recruitment, and career building. In addition, the issue contained a look at the AIChE 35 Under 35 award winners.

The monthly printed magazine continues to be a major AIChE member benefit. In 2023, *CEP* reached more engineers than ever online and via the *CEP* app. Total website page views reached nearly 2 million in 2023, and total app platform views reached more than 135,000.

Check the *CEP* website for the 2024 Editorial Calendar.

aiche.org/cep

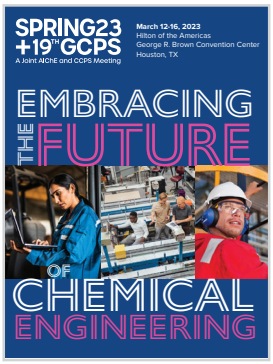
Events

In 2023, AIChE's major conferences attracted chemical engineers and allied professionals working in industry, labs, and academia around the world. Technical content was rounded out by community-building events and activities.

2023 AIChE Spring Meeting & 19th Global Congress on Process Safety

More than 2,100 professionals attended the 2023 AIChE Spring Meeting and 19th Global Congress on Process Safety (GCPS), which took place Mar. 12–16 in Houston, TX. AIChE's key technical conference for practicing chemical engineers and process safety practitioners, the Spring Meeting showcased technology in core and emerging areas, including ethylene production, distillation, hydrogen safety, Industry 4.0, clean energy, gas utilization, refinery processing, and more.

aiche.org/spring



New in 2023


Graff

The Spring Meeting debuted a topical conference devoted to the energy transition. This conference captured the state-of-the-art in technology, transport, and feedstock options for the world's future energy mix. At the meeting, AIChE's Fuels and Petrochemicals Division acknowledged the need to have dedicated sessions that allowed members to evaluate the complexities of a transition to less-carbon-intensive energy sources while also emphasizing the need for better design, modeling, and analysis measures.

Mike Graff (American Air Liquide) kicked off the conference with his AIChE Government and Industry Leaders (AGILE) Keynote Address, entitled "Innovating Technology, Investing in People, and Inventing the Future." Addition keynotes covered topics including the sustainable use of materials, emergency response planning, and how organizations can achieve their environmental, societal, and governance (ESG) objectives.

Organized by AIChE's Center for Chemical Process Safety (CCPS), the Global Congress on Process Safety addresses the needs of process safety practitioners. Programming was offered through the CCPS International Conference, the Loss Prevention Symposium, the Process Plant Safety Symposium, and the Process Safety Management Mentoring Symposium. The GCPS also provided "Perspectives on Process Safety from Around the Globe" and sessions examining real-world process safety incidents.

Chris Tagoe (LyondellBasell) delivered the GCPS plenary keynote address, discussing how the chemicals and fuels industries must tap into "the power of many" in order to shape an effective process safety culture.


Tagoe

2023 AIChE Annual Student Conference

Participation at the AIChE Annual Student Conference (Nov. 3–6) exceeded 1,800. Highlights included a welcome keynote by **Lori Ryerkerk** (Celanese), as well as career sessions, competitions, and networking events. The AIChE Undergraduate Student Poster Competition featured more than 430 abstracts and welcomed more than 100 volunteer judges who helped to evaluate presentations across eight categories.

aiche.org/asc23


Ryerkerk


Undergrads met with representatives from more than 100 graduate programs and hiring companies at the recruitment fair.

2023 Annual Chem-E-Car Competition®

Forty-eight teams participated in the milestone 25th Annual Chem-E-Car Competition — held in-person and virtually in two separate competitions. Auburn Univ. led the pack in Orlando, FL, with its car "The Stop-Cock and Roll," which stopped just 6.2 cm from the 25 m target distance. Nanjing Univ. Of Science and Technology defended its virtual competition title, winning first place with it car "Fight to the End," reaching 28.6 cm from the 25.13 m target distance. The competition is sponsored by Chevron, and the $2,000 first prize is funded by the H. Scott Fogler Endowment, named after the competition's founder.

2023 AIChE Annual Meeting

2023 AIChE ANNUAL MEETING

AIChE's premier educational forum for chemical engineers interested in innovation, collaboration, and professional growth, the 2023 AIChE Annual Meeting was held in Orlando, FL, Nov. 5–10, with more than 5,400 attendees (its highest attendance since 2019) from 53 countries.

The meeting's theme — "Leading the Way to a Sustainable Future" — tackled the concept of sustainability in all of its forms, from supply chains to workforce development. The Meeting Program Chair, Yu Shi (The Coca-Cola Co.) and Co-Chair, Martha Grover (Georgia Tech) designed two featured panel discussions with this in mind. The first of these sessions, "Sustainability and the Circular Economy," featured a lively discussion from panelists Michael Goltzman (The Coca-Cola Co.); Sarah Kaylor (The Recycling Partnership); Ramani Narayan (Michigan State Univ.); and Meltem Urgun-Demirtas (Argonne National Lab).

The second featured panel discussion, "IDEAL Featured Session: A Conversation on Equity, Diversity, and Inclusion," brought together diverse perspectives across the profession. Panelists included Charlie Dickson (ExxonMobil); Lola Eniola-Adefeso (Univ. of Michigan); Luke Landherr (Northeastern Univ.); Chris Pope (Independent Consultant); Carlos Rinaldi-Ramos (Univ. of Florida); and Jean Tom (Bristol Myers Squibb).

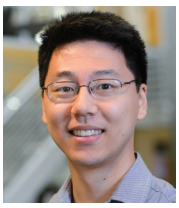
aiche.org/annual

New in 2023

- A record number of candidates presented at the Meet the Faculty and Post-Doc Candidates Poster Session, with over 320 posters. The Meet the Industry Candidates Poster Session tripled in size from 2022, with over 150 posters — thanks to support from several of AIChE's divisions and forums.
- Among the meeting's milestones, the 75th annual John M. Prausnitz AIChE Institute Lecture was delivered by **Mark R. Prausnitz** (Georgia Tech). Also, the inaugural Cato T. Laurencin Regenerative Engineering Founder's Award Lecture (see page 5) was presented by **Antonio Mikos** (Rice Univ.).
- Additional featured lectures were presented by some of the profession's thought leaders, including **Albert J. Keung** (NC State Univ.), Langer Prize Lecture; **Rachel Segalman** (UC Santa Barbara), Acrivos Professional Progress Award Lecture; **Huimin Zhao** (Univ. Illinois at Urbana-Champaign), Daniel I. C. Wang Lecture; **Gregory Stephanopoulos** (MIT), James Bailey Award Lecture; and **Kathleen J. Stebe** (U Penn), Schowalter Lecture.


Prausnitz


Mikos


Keung


Segalman


Zhao


Stephanopoulos


Stebe

Industry Technology Groups

RAPID® Manufacturing Institute

In 2016, the U.S. Dept. of Energy (DOE) established AIChE's Rapid Advancement in Process Intensification Deployment (RAPID) Institute. One of the 17 Manufacturing USA institutes, RAPID's public-private collaborations focus on breakthrough process-related technologies aimed at decarbonizing and boosting the energy- and capital-efficiency of the process industries. Process intensification (PI) is any technology development that leads to smaller, cleaner, or more energy efficient processes.

RAPID's Education and Workforce Development initiative aims to leverage existing training resources to enable the workforce to research, develop, and operate processes that incorporate new PI and modular chemical process intensification (MCPI) technologies.

aiche.org/rapid

75 MEMBER ORGANIZATIONS

2023 IMPACT

- **43** RESEARCH PROJECTS TO DATE
- **4** TECHNOLOGIES SCALED FROM R&D TO COMMERCIALIZATION
- **$186MM** IN PUBLIC-PRIVATE INVESTMENT

POTENTIAL IMPACT

- **100+** LEARNERS TRAINED IN LIVE COURSES/PROGRAMS
- **15,000+** RAPID EDUCATION PRODUCTS CONSUMED
- TECHNOLOGIES TARGETING: **20%** REDUCTION OF ENERGY INTENSITY AND MODULE COSTS; **50%** REDUCTION OF GHG EMISSIONS

New in 2023

- The DOE announced RAPID's renewal as a Manufacturing USA institute for the next five years, with $40MM in Federal funding to continue work focusing on industrial efficiency and decarbonization of the chemicals and fuels industries.
- RAPID completed four one-week iterations of a new K-12 summer camp — "NumberUp Innovation" — in partnership with Miami Univ., and benefitting more than 50 students.
- RAPID received a $7MM award to scale up electromagnetic reactors for the production of light olefins from waste plastic in a collaborative industry/academia/national lab project funded by DOE.
- RAPID hosted the 3rd Annual ChemE Cube Competition™ at the 2023 AIChE Annual Student Conference (See page 4)

DIPPR Design Institute for Physical Properties

An AIChE Technology Alliance

The Design Institute for Physical Properties (DIPPR) has maintained the DIPPR 801 database as a go-to resource for the design and operation of safe, reliable and sustainable processes since 1979. With a focus on industrially relevant chemicals, the database provides end-users with access to accurate and complete thermodynamic and transport properties, as well as validated environmental and process safety and risk assessment properties. Each year, DIPPR funds research to improve the ability to evaluate and predict properties of pure chemicals such as liquid viscosity, heat capacity, and auto-ignition temperature. End-users may embed the 801 Database in third-party software and in-house applications, and may add their own proprietary data.

aiche.org/dippr

- **53** CORPORATE MEMBERS
- **71** GLOBAL LICENSEES
- **2,527** COMPOUNDS IN MEMBER DATABASE

An AIChE Technology Alliance

CCPS

Center for Chemical Process Safety

The Center for Chemical Process Safety (CCPS®) is a not-for-profit, corporate membership organization within AIChE that identifies and addresses process safety needs for facilities that handle, store, use, process, or transport hazardous materials. CCPS member companies, working in project subcommittees, define and develop useful, time-tested guidelines that have practical applications in industry. CCPS educates employees of member companies through its events, courses, books, tools, online resources, and publications.

aiche.org/ccps

CCPS conference highlights in 2023:

CCPS held in-person meetings in 13 countries —

- 4 Student Process Safety Boot Camps
- 3 Faculty Workshops, including one in Lemförde, Germany
- Many more regional meetings, conferences, roundtables, panel discussions, and webinars.

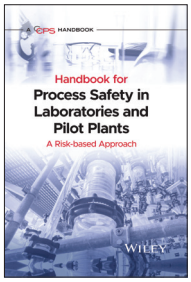
Process Safety Beacon

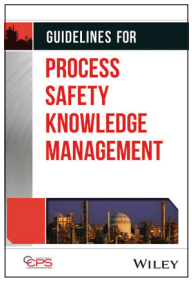
Now in its third decade, the monthly **CCPS Process Safety Beacon** continued to publish valuable process safety information for plant operators. The Beacon is available in 41 languages, with an estimated distribution of 1,000,000 readers. In 2023, CCPS published two additional **"Book of Beacons"** to expand the details of each of the published issues of Beacon. The Book of Beacons is available to CCPS members only.

aiche.org/beacon

CCPS Highlights

- CCPS membership grew in 2023 with a record 29 new member companies joining
- 2 books published
  - *Handbook for Process Safety in Laboratories and Pilot Plants: A Risk-Based Approach*
  - *Guidelines for Process Safety Knowledge Management*





- Several new project monographs, including:
  - *–How Business Financial Decisions Impact Process Safety Performance*
  - *–Key Principles of Process Safety for Incident Investigation*
  - *–Golden Rules of Process Safety for Hydrogen Sulfide*
- CCPS exceeded its goal for new participants enrolled in the CCPS Process Safety Fundamentals Certificate Program (CCPSf) for students and early-career professionals.
- The CCPS Credentialing program now recognizes 400 people worldwide as CCPSC® Certified.
- Added new incidents to the Process Safety Incident Database (PSID).
- Enhanced responsible collaborations with the Chemical Safety Board American, Chemistry Council, European Process Safety Center, the Mary Kay O'Connor Process Safety Center, and others.
- CCPS conducted its 2-Day Risk Analysis Screening Tool (RAST) / Chemical Hazard Engineering Fundamentals (CHEF) Training workshop and issued newly upgraded RAST and CHEF software.
- Created a new course on Incident Investigation and Root Cause Analysis.
- Provided process safety education for students and professors in collaboration with companies and the AIChE Foundation via the Undergraduate Process Safety Learning Initiative (UPSLI). These efforts included CCPS Faculty Process Safety Workshops (sponsored by BASF, Chevron, and Dow) and four Student Boot Camps (sponsored by AdvanSix, Celanese, Chemours, and Chevron).

aiche.org/upsli.

AIChE Foundation

For more than a century, chemical engineers have improved the well-being of society. From developing smaller, faster computer chips to creating innovative solutions for recycling, treatment of diseases, water purification, and energy generation, these achievements have enriched all of our lives.

At the AIChE Foundation, we recognize the essential role that philanthropy plays in accelerating these advancements, and your contribution to the Doing a World of Good campaign supports our efforts today and for years to come.

Since the campaign's inception in 2015, we have raised $54MM in support of **five transformative priorities.** Your gift impacted programs like those below. Thank you.

doingaworldofgood.org

Changing Perceptions

In order to continue innovating, and to solve society's most pressing challenges, we need to attract a new generation of chemical engineers to the profession. AIChE launched a national campaign aimed at introducing middle schoolers, their parents, teachers, and the public to the wonders and possibilities of a career in chemical engineering. **Bee a ChemE** demonstrates to kids that a career as a chemical engineer is as diverse and varied as they are, as well as offering a fun and rewarding opportunity to impact their community and the world.

Bee a ChemE

Hundreds of students in underserved communities were inspired by hands-on engineering activities conducted in their classrooms by ChE students. **AIChE's K-12 STEM Ambassador** program recently rolled out at five new schools, amplifying the excitement and engagement. *Image courtesy of Ohio State Univ. Student Chapter*

Attracting and Retaining the Best & the Brightest

The Future of STEM Scholars Initiative (FOSSI) provides students pursuing preferred STEM degrees at Historically Black Colleges and Universities (HBCUs) with four-year scholarships, leadership training, mentoring, and internship opportunities with program sponsors. In 2023, FOSSI supported 420 scholars, thanks to the investment and involvement of more than 70 sponsor organizations. FOSSI has a retention rate of 95% — outpacing typical undergraduate engineering programs.

futureofSTEMscholars.org/FOSSI

FOSSI
The Future of STEM Scholars Initiative

Research and Innovation

The Langer Prize for Innovation and Entrepreneurial Excellence provides unrestricted grants up to $100K, enabling early career researchers and engineering entrepreneurs to pursue innovations that will address societal challenges that impact our health, safety, and well-being.

Launched in 2007, the **AIChE Legacy Society** offers AIChE members an opportunity to leave a legacy, playing a role in the future of the profession.

"AIChE has an important role in representing the profession and helping the new chemical engineers starting their careers. That's why my wife, Rose, and I chose to include AIChE in our estate plan."
— John Tao, President of O-Innovation Advisors, LLC

Safety and Ethical Practice

Since AIChE launched its **Undergraduate Process Safety Learning Initiative** (UPSLI), more than 82,000 undergraduates have completed Safety & Engineering Education (SAChE) certifications via interactive learning modules — allowing students to gain proficiency in process safety knowledge and techniques. This familiarity with safety concepts is desired by employers among their new hires.

Education, Training and Career Development

AIChE reinforced its commitment to the **IDEAL Path** (see page 3) by offering opportunities for personal development through trainings. The **Rising Star for Women**, **Rising Star for All**, and the **Leadership Equity in Engineering** (LEE) programs helped more than 250 workshop participants to acquire tools to build workplace confidence and presence, along with the courage to self-advocate, while fostering connections to support continued career growth. If you are interested in bringing these programs to your company, contact **membership@aiche.org**.

"To solve our world's biggest challenges, we need talent from all backgrounds to pursue chemical engineering. I'm passionate about our next generation and pleased to inspire future innovators."
— Lance Collins, AIChE Foundation Trustee and Dean of Engineering, Virginia Tech Innovation Campus

2023 AIChE® Gala

At the 2023 AIChE Gala (Dec. 7, New York, NY), nearly 400 guests celebrated the contributions of the companies **AdvanSix Inc.** and **Air Products**, and recognized the biologically-inspired innovations of **Samir Mitragotri** (Harvard Univ.), who received the Doing a World of Good Medal.

The event raised more than $600K to underwrite programs designed to inspire imaginations and attract and retain students from underrepresented groups for the STEM professions — in order to foster a more equitable and inclusive workforce.

aiche.org/gala

Among the honorees at AIChE's 2023 "Empowering Possibilities" Gala were (from left): Samir Mitragotri, the Hiller Professor of Bioengineering and the Hansjorg Wyss Professor of Biologically Inspired Engineering at Harvard Univ.; and Erin Kane, President and CEO at AdvanSix. Photo credit: Natural Expressions NY Photography.

Several FOSSI scholars attended the AIChE Gala and helped to ring the Closing Bell at the New York Stock Exchange. They were joined by leaders of AIChE and representatives from several FOSSI sponsor companies. *Image courtesy of NYSE Group.*

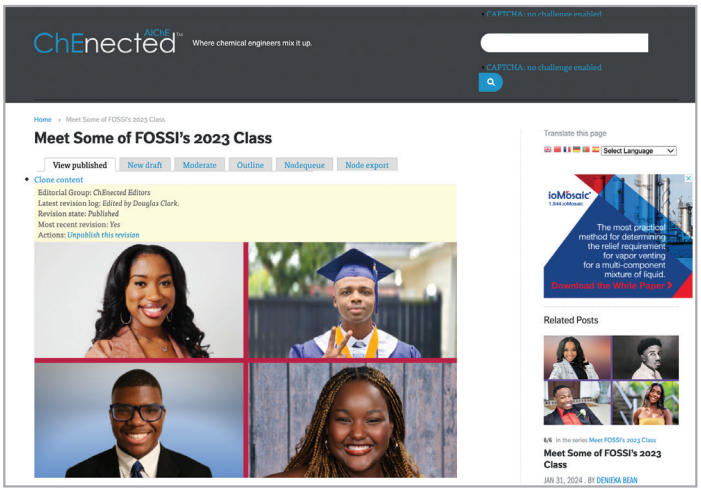
AIChE's Reach

ChEnected

Where chemical engineers mix it up.

AIChE makes an impact on media throughout the world via its communication channels and social media. A popular component of this outreach is AIChE's ChEnected blog. Originally launched by AIChE early-career professionals, ChEnected provides insights into AIChE, the profession, and the people in the diverse chemical engineering community. Ongoing series have been devoted to new professionals, LGBTQ+ members, process engineers, FOSSI scholars, major-award recipients, AIChE Fellows, and AIChE activity groups, as well as special series marking Black History Month and Women's History Month.

aiche.org/chenected



ChEnected's Top Posts in 2023
(by page views):

1. The 2023 AIChE Salary Survey Results Are In (4,284 views)
2. Letter about 2023 Annual Meeting and Annual Student Conference (3,218)
3. How to Address a Layoff on your Résumé and Cover Letter (3,119)
4. How to Introduce Yourself in an Interview (2,444)
5. June 2023 CEP Preview — Salary Survey issue (1,518)
6. Meet Process Engineer Atul Choudhari (1,387)
7. Auburn Univ. Wins H. Scott Fogler 1st Place Award in 2023 Chem-E-Car Competition (903)
8. Chem-E-Car in the Spotlight – 2023 Competitors, Part 1 (903)
9. Direct Air Capture's Role in the Energy Transition (787)
10. Chem-E-Car in the Spotlight – 2023 Competitors, Part 2 (765)

AIChE Engage

The Engage forum connects AIChE members with their chemical engineering communities. It serves as the Institute's directory, discussion platform, and volunteer hub. Discussion Central offers ongoing technical and professional development discussions, and includes several private or subject-specific communities.

aiche.org/engage

Find AIChE daily on LinkedIn, X, Facebook, Instagram, and YouTube.

In 2023, AIChE's overall audience for these social media accounts increased by 10.7% over 2022.

LINKEDIN
92.4K
FOLLOWERS

In 2023, LinkedIn saw the largest growth of any of AIChE's social media platforms — adding nearly 17,000 followers over 2022.

FACEBOOK
26K
PAGE LIKES

INSTAGRAM @CHENECTED
5.1K
FOLLOWERS

TWITTER @CHENECTED
21.4K
FOLLOWERS

YOUTUBE
17.7K
SUBSCRIBERS

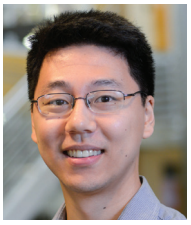
Awards and Honors

AIChE and its entities celebrate chemical engineering accomplishments through award programs. The most prestigious honors are the Board of Directors' and Institute awards — presented in 2023 at the AIChE Annual Meeting in Orlando, Florida. The Institute Award recipients are listed at **aiche.org/awards/institute**.


Warren D. Seider


Phillip R. Westmoreland

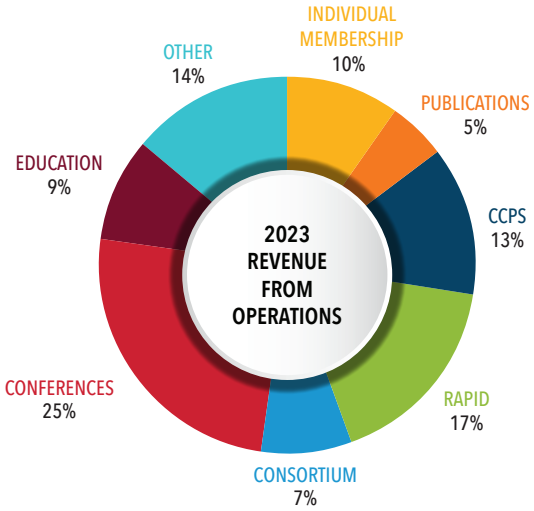
The Board of Directors' 2023 Founders Award was presented to **Warren D. Seider** (University of Pennsylvania) for his pioneering contributions in chemical engineering research and education — encompassing process modeling, simulation, synthesis, optimization and control, as well as landmark textbooks. The Board's Van Antwerpen Award for Service to the Institute was presented to **Phillip R. Westmoreland** (North Carolina State University) — AIChE's President in 2013 — for shaping AIChE and the profession through his use of computational quantum chemistry in chemical engineering and his dedication to AIChE programming.

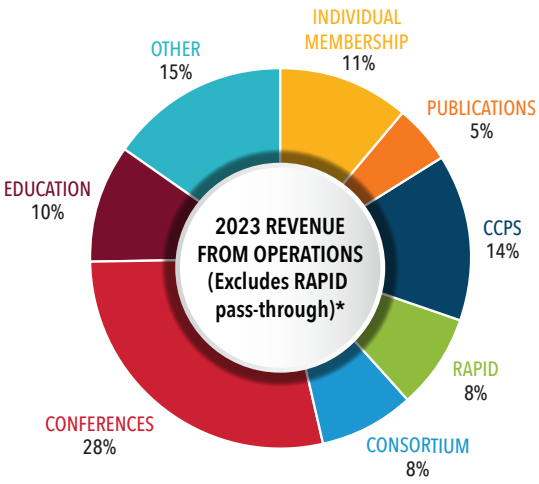

Albert J. Keung

Among other major awards, the Langer Prize for Innovation and Entrepreneurial Excellence provides an unrestricted grant of up to $100,000 to enable early-career researchers and engineering entrepreneurs to pursue game-changing innovations. The fellowship is named for biomedical pioneer Robert Langer (MIT). The 2023 recipient was **Albert J. Keung** (North Carolina State University), who is pursuing the use of modified DNA as a substrate for data storage.

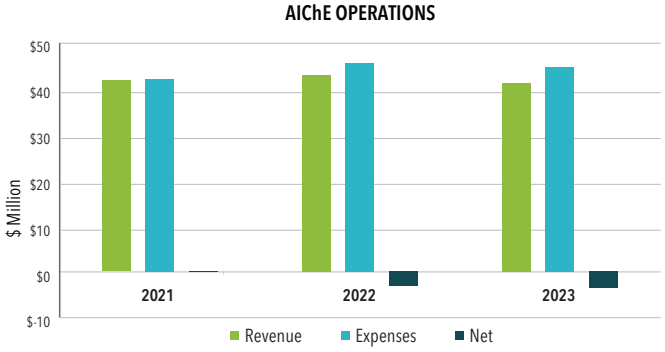
Learn about all of AIChE's award programs and the 2023 honorees at **aiche.org/awards.**

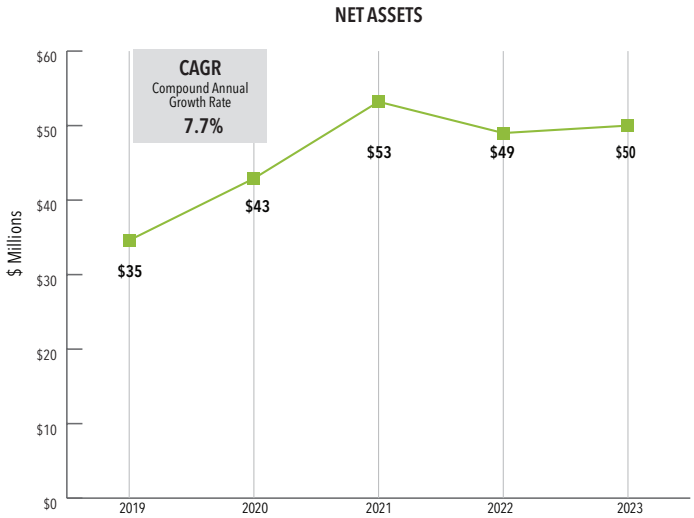
Financial





*Graphs reflect RAPID Project Revenue with (left) and without (right) sub-awards from RAPID to fund technical projects.





OFFICES

New York Global Headquarters

120 Wall Street, 23rd Fl.
New York, NY 10005-4020
Phone: +1 (800) 242-4363

Customer Service Center

100 Mill Plain Rd, 3rd Fl.
Danbury, CT 06811
Phone: +1 (800) 242-4363
Phone: +1 (203) 702-7660
customerservice@aiche.org

Houston Training Center & CCPS Latin America Office

10777 Westheimer, Ste 1075
Houston, TX 77042-3455
ccps_latinamerica@aiche.org

Asia Pacific Office

41 S, Vatika, Supreme Business Park
Hiranandani Gardens, Powai
Mumbai 400076 India
Phone: +91 22-42019129/30
umesd@aiche.org

CCPS Europe Office

Luxemburgerstraße 10
64521 Groß Gerau
Germany
Dr. Willi Meier
Phone: +49 171 64 63 049
willm@aiche.org

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