Looking Around, LOOKING AHEAD with Bassam Shakhashiri

29th ACS Biennial Conference on Chemical Education, UW-Madison

Sunday, July 26, 2026 at the Wisconsin Historical Society

Session I 10:30am-12:00pm • Session II 3:30-5:15pm

Reception to Follow, Beginning at 5:15

Symposium Abstract:

We mark the 50th anniversary of the BCCE held at UW–Madison with joy and fulfillment. Speakers in this symposium will reflect on progress made in chemistry education and, more importantly, will look ahead to consider what must be done now and in the next decade to strengthen classroom practice, deepen public engagement, and better connect chemistry with society.

Education is the most critical ingredient for enabling wise decision-making in a democracy: among scientists, policymakers, and a science-literate public who understand both the benefits and potential hazards of scientific and technological advances. Meeting this responsibility requires learning environments that draw on ideas from science, the arts, and the humanities, and that prepare students to use their knowledge ethically and responsibly. As stewards of powerful technologies (including AI) we must guide their development and application for the benefit of our planet and its inhabitants.

The joy of learning must be nurtured to lead to deeper understanding and appreciation of the beauty of our complex chemical world. Our intellect and energy must be guided purposefully to learn, to teach effectively, and to serve society. Proficiency alone does not ensure responsibility or stewardship; people must be virtuous as well as skilled. This symposium will explore how chemistry educators can enact comprehensive and systemic changes in attitudes and behaviors that support sustainable futures, responsible citizenship, and the flourishing of both people and the planet.

Session I (S312a)

10:30am **Introductory Remarks**
Bassam Shakhashiri, Professor Emeritus of Chemistry and William T. Evjue Distinguished Chair for the Wisconsin Idea, UW-Madison

10:35am **Prioritizing Care: Can Universities Actually Put the Students First?**
Holden Thorp, Editor-in-Chief, *Science*, American Association for the Advancement of Science

Every university website has flowery language about how the students come first. And in most cases, there are dedicated teachers and student services staff who give tirelessly to the undergraduate experience. But the actions of the university often show a different set of priorities. These usually relate to points that can be put on a scoreboard: grant dollars, high-profile publications, prizes, and athletic wins. For the public to regain trust in higher education, the institutions will have to demonstrate that the actual top priority is the students and not just the faculty and coaches that drive the scoreboard. Until that happens, the political problems and decline of trust will continue. Can that happen ever?

10:55am **"I Shall Never Be Content:" Forward with The Wisconsin Idea**
Eric Wilcots, Dean, College of Letters & Science,
and Interim Chancellor, UW-Madison

In 1905 University of Wisconsin President Charles Van Hise articulated the Wisconsin Idea with these words: "I shall never be content until the beneficent influence of the University reaches every family of the state." Today, we take an expansive view that brings the university's influence to the nation and the world. What does that mean for us as leaders, scientists, and educators moving forward? I will lay out a perspective on the challenges and opportunities for science - research, education, and communication - at a moment when disinformation and mistrust is high, and when science is more critical in a democratic society than ever. As a starting point, we must adopt a more collaborative vision of the Wisconsin Idea, one that engages our stakeholders in the work that we do. The tools at our disposal include outreach, advocacy, media, and community engagement. We must also recommit to ourselves to our mission to see our students as citizens and future influencers and leaders. That, ultimately, is the beneficent influence of the University.

11:15am **Investing in the Next Generation to Advance Science**
Kevin Conroy, Former Chairman and CEO, Exact Science Corporation

In this session, I will explain why a strong pipeline of young scientists and engineers is vital to our health, our economy, and our future. Drawing on my experience as Chairman and CEO of cancer diagnostics company Exact Sciences, I will explore how a well-educated workforce fuels innovation, builds trust in science, and turns discovery into real impact for

patients. I will discuss the shared responsibility of industry, academia, and educators to create clear pathways from the classroom to meaningful careers, guided by integrity, accountability, and quality. By investing in people, we can prepare the next generation to prevent cancer, detect it earlier, and guide personalized treatment. Strengthening this talent pipeline is both a business imperative and a moral responsibility if we are serious about reducing cancer mortality and improving lives.

11:35am **Diversity, Understanding, Storytelling**

Roald Hoffmann, Professor Emeritus of Chemistry and Chemical Biology, Cornell University

In honor of Bassam, and looking ahead, I will sketch three scenarios of danger and opportunity for chemistry and for chemical education.

Diversity: I will show how natural it is through examples of atoms, isomers, and the biosynthesis of the male and female sex hormones. Evolution plays wonderful games with it. I will mention how some things change in human social structures. And where we have come to in the world of the people who teach us wondrous molecular games. There is a value both to diversity and to its opposite, conditions in time and space of conservative lack of change. Both static and dynamic equilibrium.

Understanding: Artificial Intelligence provides solutions (the best molecule to impair a bacterial enzyme), and no understanding, nothing teachable. Take a look at what the best AI practitioners teach in their courses, to test this. How to repair this situation? How to teach students strategies for gaining understanding (for themselves, for chemistry) from productive dialogues with AI? Or will we just give in, and partition into Departments of Reliable Numerical Predictors and Depts. of Seekers for Understanding?

Narrative: The prime journals for communicating science have moved away from telling stories. Too bad; just when computers made layout, once a torment, trivial, the publishers of our leading journals threw out the unique, evolved achievement of chemistry – the combination of text and images (often of molecules) to tell a convincing story. Fortunately, we remain privy to stories well- or ill-told – in hiring interviews, where young colleagues rehearse for us the power of mythical structures in storytelling. In teaching chemistry, we tell too few stories.

Can I bring together these three threads? For Bassam, and the immigrants who served this country well (that's us!), I will try.

LUNCH BREAK (12:00-3:30pm)

Session II (S312b)

3:30pm **Introductory Remarks**
Bassam Shakhashiri, Professor Emeritus of Chemistry and William T. Evjue Distinguished Chair for the Wisconsin Idea, UW-Madison

3:35pm **Artificial Intelligence, Open Access, and the Future of Education: A Computer Science Perspective**
Remzi Arpaci-Dusseau, Professor and Founding Dean, College of Computing and Artificial Intelligence, UW-Madison

In this talk, I will discuss both the threats and opportunities of AI in education. I will outline the work we are doing in the newest college on UW-Madison's campus, the College of Computing and Artificial Intelligence, but also speak more broadly on a general approach to enable our students to thrive in the era of powerful AI tools. In addition, I will discuss the importance of quality, free and open materials. This part of the talk will be based on the success of our approach to writing "Operating Systems: Three Easy Pieces", a freely available and popular book used in hundreds of universities around the world.

3:55pm **Elevating Interdisciplinary Science and Member Engagement**
Christina Bodurow, Indiana Biosciences Research Institute, ACS President-Elect

The 2026–2028 Bodurow Presidential Strategies focus on elevating three core priorities designed to increase the visibility, relevance, and impact of the ACS Spring and Fall Meetings, particularly for industry members. Central to this agenda is an interdisciplinary approach that highlights global scientific challenges through symposia on medicine development, sustainability, energy, space, and emerging research ecosystems such as independent innovation hubs. The plan further emphasizes strengthening ACS engagement with industry and exploring collaborations with related scientific and professional societies. An additional strategic theme, Chemistry and the Arts, will showcase the creative talents of ACS members in both visual arts and music, demonstrating the diverse ways chemistry intersects with artistic expression. Together, these initiatives aim to

broaden participation, enhance meeting value, and reinforce the ACS's leadership as the premier global scientific society.

4:15pm **Educating for Responsible Chemistry: From What Chemistry Can Do to What Chemists Should Do**
Peter Mahaffy, Professor of Chemistry, The King's University

As the profession focused on transformation of matter and energy, chemistry plays a central and connecting role in addressing emerging polycrises faced by Earth and Societal Systems. Outside our classrooms students live in a world characterized by conflict, environmental degradation, and misinformation. And far too often, the chemistry taught in classrooms and laboratories remains compartmentalized and largely reductionistic – disconnected from those pressing global challenges.

In this talk we will introduce the work of several project teams from the International Union of Pure & Applied Chemistry, who are pointing the way forward for the profession with visionary initiatives focused on systems thinking and sustainability in education and industry, to better position chemistry education, research and practice to address pressing global challenges.

Looking ahead, one of those global initiatives under IUPAC's umbrella is Guiding Principles for Responsible Chemistry,[1] a bold, forward-looking framework to ensure that chemistry is taught, practiced, and recognized globally as a responsible and trustworthy endeavour. The Guiding Principles were created over a two-year period by a task force of the IUPAC Committee on Ethics, Diversity, Equity, and Inclusion, and were launched in July 2025 at the World Chemistry Congress in Malaysia. The eight IUPAC Guiding Principles are positioned as an important compass to build on, complement, and significantly advance established frameworks (e.g., green chemistry, professional ethics, chemical security) and are intended to support rigorous, transparent practice amid data- and AI-driven discovery. As a global chemistry community, might we make use of these initiatives to catalyze a paradigm shift from focusing on what chemistry can do, to what chemists should do to practice chemistry responsibly for society?[2]

1. IUPAC Guiding Principles of Responsible Chemistry, https://iupac.org/responsible-chemistry/
2. Mahaffy, P. G.; Garcia-Martinez, J. From what Chemistry can do to what Chemists should do, J. Chem. Educ. 2025, 102, 11, 4661–4665. https://doi.org/10.1021/acs.jchemed.5c01467

4:35pm **Why Are You Here?**

Jerry Bell, Honorary Fellow, Wisconsin Initiative for Science Literacy and Professor Emeritus of Chemistry, Simmons University

“Here” is this room for this symposium. Since the symposium is part of a conference on chemical education, it seems relatively likely that you are, or have been, a teacher. As we reflect on where we are and look forward, I propose that we spend a few moments discussing why you do or did choose to teach. What brings you to this work each day? What excites you about it? Why this instead of something else? What role do your audiences play in your motivation? What do you expect of them? Questions like these do not focus on what teachers do or might be encouraged to do (covered extensively in conferences like this), but on the existential question, “Why do they teach in the first place? (rarely included in these programs). Let’s see what we can discover that can inform more of this introspection for future teachers.

4:55pm **Are Publishing Patterns in Chemistry Education Tea Leaves for Future Innovation?**

Thomas Holme, Professor of Chemistry, Iowa State University
Editor-in-Chief, *Journal of Chemical Education*

In over 100 years of publication, The Journal of Chemical Education has experienced a range of trends, an observation that continues today. Trends may arise from factors associated with recent past or current time. They may also suggest trajectories that will be important in understanding future developments in the teaching and learning of chemistry. Looking back over the recent past of several publication trends for the Journal will provide information of the arc of innovation in chemistry teaching. Thus by "looking around" in the recent past for trends in the Journal we can estimate what we might see "looking forward".

5:15pm **Reception: A Toast in Honor of Bassam Shakhashiri**

Wisconsin Historical Society