Bassam Z. Shakhashiri

A Leader in Science Education and Literacy

A Hybrid Symposium at the ACS Fall National Meeting
San Francisco, CA
August 13 & 14, 2023

Bassam Shakhashiri: A Leader in Science Education and Literacy
A hybrid symposium at the ACS Fall National Meeting

August 13 & 14, 2023
Room 301, South Building
Moscone Center
San Francisco, CA

Conceived and organized by Elizabeth Ann Nalley, Lawrence Berliner, and the ACS Senior Chemists Committee

Bassam Shakhashiri is a kinetic and tireless science educator who for more than 50 years charmed and amazed audiences with the wonders of science, retired recently. He was professor of chemistry at the University of Wisconsin-Madison, is the holder of the William T. Evjue Distinguished Chair. An advocate for science education, he authored multiple books of chemical demonstrations. He was the 2012 president of the American Chemical Society and received numerous awards and honors over his career. His steadfast advocacy for science literacy was a clarion call to scientists and politicians alike. Best known for his colorful (and sometimes loud) public demonstrations of chemical phenomena, Shakhashiri played to packed houses from Washington, including the halls of Congress, to Silicon Valley. His goal was always the same: to convey to audiences the value of science to society and broad science literacy for understanding everything from human health to climate change. "Science literacy is the appreciation of science without a deep understanding of chemistry, physics, biology or any other science. It's an attitude."

schedule

Sunday, August 13

2:00pm	Harry Gray
2:30pm	Adriane Ludwick
3:00pm	Roald Hoffmann
3:30pm	*intermission*
3:40pm	Elizabeth Ann Nalley
4:10pm	Bruce Lewenstein
4:40pm	Cecilia Vollbrecht
5:10pm	*end*

Monday, August 14

8:00am	Richard Zare
8:30am	Mary Carroll
9:00am	Geraldine Richmond
9:30am	*intermission*
9:40am	Deb Piper
10:10am	Rodney Schreiner
10:40am	Aaron and Ben Charney
11:10am	*midday break*
2:00pm	Brian Coppola
2:30pm	Elizabeth Ann Nalley, Zafra M. Lerman, and Morton Z. Hoffman
3:00pm	Donna Nelson
3:30pm	*intermission*
3:40pm	Elizabeth Reynolds
4:10pm	Jerry Bell
4:40pm	Bassam Shakhashiri
5:10pm	*end*


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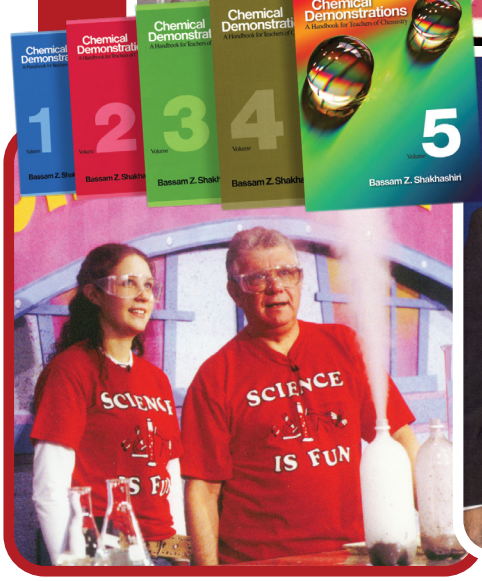
Chemical Demonstrations
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5
Bassam Z. Shakhashiri
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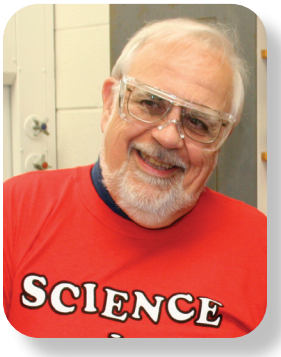
Bassam Shakhashiri

Director, Wisconsin Initiative for Science Literacy
Emeritus Professor of Chemistry, University of Wisconsin-Madison

Connecting science with society:
Looking back, looking around, and looking ahead

With gratitude, I shall glance in the rearview mirror. Advisedly, I shall roam around a bit. With realistic optimism, I shall dare to look ahead.

presenters



Jerry Bell

Faculty Associate Emeritus, Wisconsin Initiative for Science Literacy
Department of Chemistry, University of Wisconsin-Madison

Quests with Bassam: Quixotic, thoughtful, fulfilling

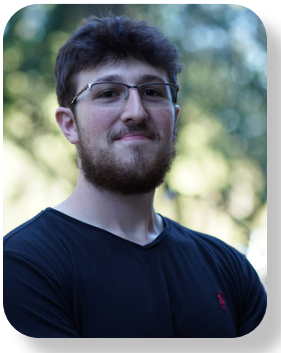
For five decades, as colleague, collaborator, and importantly, friend, I have shared many quests with Bassam. Here, I will touch on three of these that have been most personally meaningful for me. First is the participant-paced-programmed Fourth Biennial Conference on Chemical Education we organized in 1976. Next is the National Science Foundation period when Bassam was offered and accepted the Assistant Directorship of the Education Directorate and recruited me to direct the Teacher Education Division. Finally, during Bassam's American Chemical Society presidency and following years, the critical need for action to meet the challenge of climate disruption defines the quest.

Mary Carroll

2023 ACS President-Elect
Professor of Chemistry, Union College

Science made fun for all (not dreary): The life's work of Shakhashiri

Reflections on the remarkable career and long-ranging influence of Professor Bassam Shakhashiri. From first knowing of him as the author of Chemical Demonstrations: A Handbook for Teachers of Chemistry, which has been employed extensively at my institution, to interacting with him in ACS governance activities, I have had the opportunity to learn from and with him. In championing the pure joy of performing science, as well as the critical importance of coupling scientific advancements with a scientifically literate populace to address global challenges, he has embodied the ACS Mission: Advancing the broader chemistry enterprise and its practitioners for the benefit of Earth and all its people.

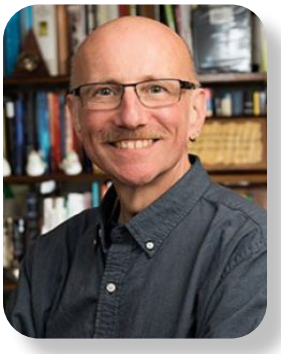


Aaron and Ben Charnay

Graduate Students in Chemistry, Stanford University

What makes a chemist: The role of science communication in the making of scientists

Anyone who has ever taught science at any level has felt the draw to inspire the next generation of thinkers and makers. We want to be responsible for increasing the amount of good done in the world not only in our own work, but in the work of others. How do we make that happen? You should ask our mom, she raised the first set of identical twins to be jointly enrolled in the Stanford Chemistry department graduate program. You could ask our high school chemistry teacher who supported us through four years of science fair projects and taught us chemistry for the first time. He was also the sponsor of our school's chemistry club, for which we served as presidents. He gave us free reign to perform any demo out of the books he had on his shelf. You could ask Bassam Shakhashiri, who had written those books and who we had the pleasure of meeting on a trip to the Boston Science Museum. Making a scientist, or better yet making a scientifically literate society means fostering genuine curiosity and interest in others. Bassam is the master of this craft, with his program "Science is Fun" having inspired countless numbers. When we met Bassam that day in Boston he told us, "Do good in the world", and we have pursued chemistry to that end. Aaron is an Ultrafast spectroscopist and Ben is an electrochemist, both seeking to learn and do good through their science.

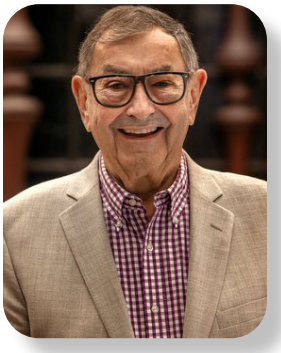


Brian Coppola

Associate Chair, Educational Development and Practice
Professor of Chemistry, University of Michigan

Bassam Shakhashiri: Educator

In 1981, there were some memorable events. President Reagan appointed Sandra Day O'Connor, NASA launched the first Space Shuttle, "Raiders of the Lost Arc" premiered, as did MS DOS and the DeLorean. For me, I met and had my first conversation with Bassam Shakhashiri, which turns out to have been more memorable (and meaningful) than anything else.

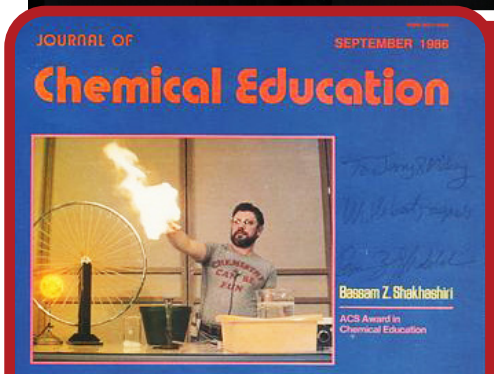


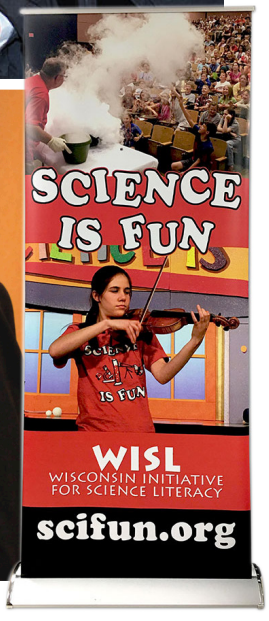
Harry Gray

ACS Priestley Medalist, National Medal of Science
Beckman Institute, California Institute of Technology

Chemistry for young and old alike

Bassam Shakhashiri has been a loyal supporter, occasional critic, and dear friend for over 50 years. Since he is King Chem Demo, I will tell stories about chemistry demonstrations I have performed with colleagues at Columbia, Caltech, and Berkeley. That said, I still wonder why he invited me to meet (teach? amuse?) his class during a seminar visit to Madison.





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Climate Science Initiative

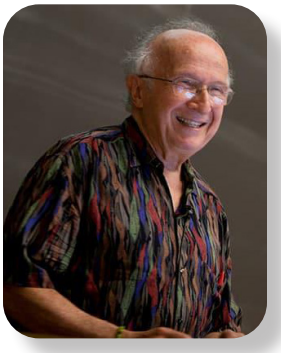
When conversation turns to global climate change, are you comfortable with the basic science? As part of the ACS Climate Science Initiative, the ACS Climate Science Toolkit gathers the fundamentals of the science in one website, with resources to help you better communicate with others about this vital topic. Learn more, explore:

www.acs.org/climatescience

The toolkit provides background for explaining the answer to a question like this:

Which gas is responsible for the largest fraction of the atmospheric greenhouse warming effect?

A. methane
B. ozone
C. water vapor
D. carbon dioxide

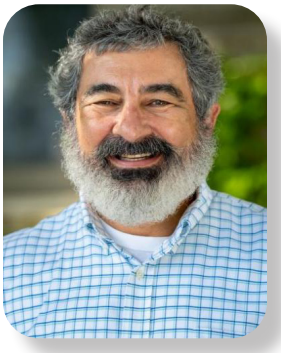


Roald Hoffmann

Chemistry Nobel Laureate
Chemistry and Chemical Biology, Cornell University

One Culture: Art and Science

One of the many themes that link Bassam Shakhashiri and me is our commitment to seeing chemistry in culture, and culture in chemistry. I want to explore here the multifaceted relationship between art and science. At its core is a shared curiosity and a desire to understand and interpret the world around us, within us. Artists and scientists create (and discover), and in the process of making the new, value craftsmanship and an economy of statement. Doubt and trust, fantasy and imagination, a movement to the unknown figure in creative work for both. And perhaps both should worry more about ethics. There be differences—in their means for creation, in the currencies in which achievements are valued (art more directly engages the emotions), in how they view ambiguity and value the infinitely paraphrasable universal vs the singular particular. Art and science may differ in the way they regard myth, and feel about solutions vs resolutions. Despite their differences, the two fields are essential to human progress and understanding, to physical and mental wellbeing for us and our environment. They share much common ground—both art and science are needed in the world we want to live in.



Bruce Lewenstein

Founding Member, Public Communication of Science & Technology Network
Professor of Science Communication, Cornell University

Bassam Shakhashiri's story of immigration and science

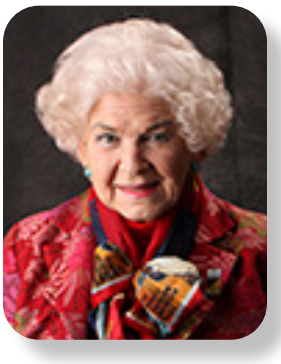
To some, Bassam Shakhashiri appears to be another in the long line of "mad scientists," reveling in the display of multi-colored exploding beakers and standing cylinders. But others have recognized the method behind his activities: the systematic attention to chemical education, the careful exploration of different approaches to the field, the strategic thinking and tactical care that let him rebuild the US National Science Foundation's science education program after it was zero-ed out by the administration of US President Ronald Reagan. Driving these activities was an integral component of the classic American immigrant story: A commitment to the new country and its ideals that had allowed his hard work and intellectual vision the space to thrive. Drawing on both published and unpublished documents and on an ongoing oral history project, this talk will argue that Bassam Shakhashiri's achievements in science education and public communication emerge as much from his commitment to country as from his commitment to science.

Adriane Ludwick

Former President, Alabama Academy of Science
Emeritus Professor of Chemistry, Tuskegee University

Bassam Shakhashiri and the Alabama Academy of Science

While I was President of the Alabama Academy of Science, Bassam Shakhashiri accepted an invitation to deliver an address to the Junior and Senior Academies. He also agreed to give a chemical demonstration to the Alabama Junior Academy of Science. Both were memorable events. This presentation will describe the invitation, the planning for the demonstration, the banquet presentation, and the demonstration. Bassam Shakhashiri's willingness to participate in these events was an impactful experience for all present at that time.



Elizabeth Ann Nalley

Former ACS President
Professor of Chemistry, Cameron University

BASSAM: The ultimate science educator

Bassam is an expert in calling attention to the fact that chemistry is both the central science and the familiar science. He long ago realized that the familiarity of chemistry has yet to be fully exploited in reaching all segments of society, especially the non-specialist. Bassam has perfected the art of using chemical demonstrations to attract both the non-chemist and the chemist to the wonders and beauty of chemistry. This presentation will review the many contributions Bassam has made to chemistry and how I have benefited by my association with him.

Elizabeth Ann Nalley
Zafra M. Lerman
Morton Z. Hoffman

Malta Conferences Foundation

Bassam Shakhashiri: Global educator and promotor of international peace through the Malta conferences

Bassam Shakhashiri has given more than 1,300 invited lectures and presentations in North and South America, Europe, Asia, Australia, and the Middle East, and has been featured in newspapers, magazines, and on national and local radio and television. When, in 2002, Zafra Lerman proposed to the ACS that a conference should be organized that would use science diplomacy to bring together scientists from countries in the Middle East, the governments of many of which were hostile to one another, in order to work toward building a bridge to peace, Bassam, a great advocate for international activities, immediately offered to help. He served on the Organizing Committee of that first conference, which was held in the Republic of Malta in 2003, that was the start of the biennial Malta Conferences, where the participants would have the opportunity to spend five days in the presence of Nobel Laureates, interact with each other, and establish friendships and collaborations. This presentation will explore the results of the ten conferences (Malta I through X) to date, which Bassam helped to create and nurture, and the success of this dream beyond all initial expectations.

Donna Nelson

Former ACS President
Professor of Chemistry, The University of Oklahoma

Significant current challenges in chemistry

Dr. Nelson will discuss some significant challenges facing chemistry and detail two important ones. One of these is in Chemical Education, one of Dr. Shakhashiri's areas of specialty.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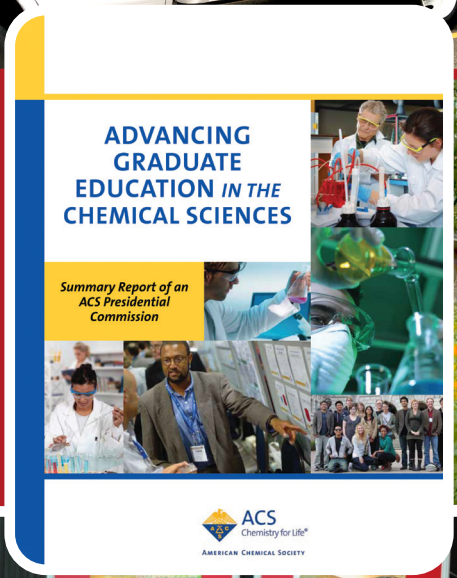
ADVANCING GRADUATE EDUCATION IN THE CHEMICAL SCIENCES
Summary Report of an ACS Presidential Commission
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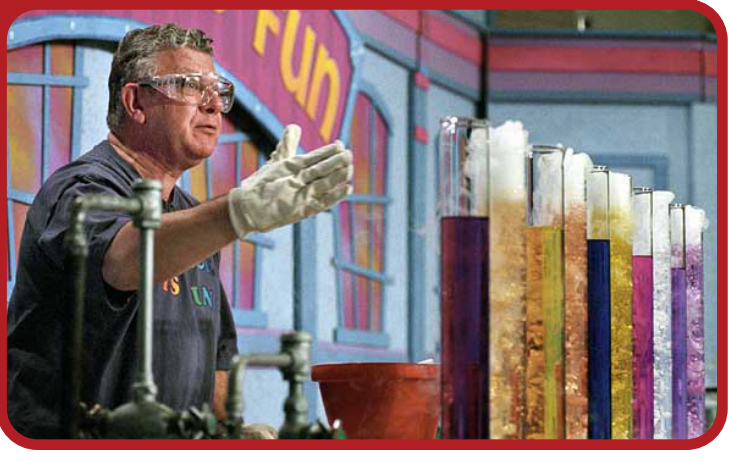
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Deb Piper

Senior Producer/Director, PBS Wisconsin

Engaging young minds and sparking curiosity

Engaging young minds and sparking curiosity...key goals for Bassam Z. Shakhashiri when he conducts his public chemistry demonstrations. PBS Wisconsin partnered with the professor from 1973 to 2019 to record and broadcast "Once Upon a Christmas Cheery in the Lab of Shakhashiri." This annual holiday lecture, filled with colorful reactions and explosions, shared the wonders of science and actively engaged kids of all ages. It became a generational experience, as Prof. Shakhashiri's former students brought their own children and grandchildren to the shows. Cultivating and showcasing the relationship between science and the arts was an important element of each show, and featured musicians, vocalists, and the UW Varsity Band. We'll explore the use of media and technology to broaden science literacy with the general public.

Elizabeth Reynolds

Editor, Wisconsin Initiative for Science Literacy
Department of Chemistry, University of Wisconsin-Madison

Growing up Shakhashiri: What I've learned (and am still learning) from my dad

Bassam Z. Shakhashiri is a celebrated author, respected professor, and leader in national science education policy. But I will reflect on the life lessons I have learned in my years with my father. From the early home science experiments—dry ice, soap bubbles and even, once, an exploding light bulb—through the first time I attended a full lecture in his Chemistry 103 class, and beyond, growing up Shakhashiri was never dull and always educational.

Geraldine Richmond

ACS Priestley Medal, National Medal of Science
Under Secretary for Science and Innovation, US Department of Energy

Working towards a more diverse and inclusive graduate student experience in science and Engineering

Graduate students are central to our nation's research and innovation enterprise. With the challenges that we face in global competitiveness and global warming, their successful apprenticeship in graduate school as well as their success upon entry and continuation in the workplace is critical. In this presentation I will discuss recent studies on the chemistry graduate experience as well as what we are doing at the Department of Energy to assist in the recruitment and retention of a diverse and inclusive graduate experience.

Rodney Schreiner

Associate Director Emeritus, Wisconsin Initiative for Science Literacy
Department of Chemistry, University of Wisconsin-Madison

Bassam and the fully human

The program description correctly asserts that Bassam's goal has been to convey to audiences the value of science to society. It describes some of his means to this

goal, such as his colorful public demonstrations of chemical phenomena. Having worked with Bassam for over 50 years, I know that Bassam's goals are even broader. He views the appreciation of science as a necessary yet not sufficient part of a richly human life. He sees science as one mode of expression of human creativity, a creativity that is shared by many other modes, such as music, the arts, and the humanities. I shall endeavor to describe some of the many ways he creatively weaves these other modes into his work as a science communicator and advocate for the fully human life.

Cecilia Vollbrecht

Assistant Professor of Chemistry, Kalamazoo College
Intern (2017-2023), Wisconsin Initiative for Science Literacy

Here to have another conversation; Recognizing Bassam Shakhashiri

Bassam Shakhashiri has been an innovator in science literacy for several decades. In the chemistry department and across campus at the University of Wisconsin-Madison, he has been a leader, developing the WISL award for communicating Ph.D research to the public, climate change activities for the classroom, and the communication skills of many students and colleagues around him. I have had the great pleasure of working with him for the past six years, and he has yet to show any signs of slowing down. From traveling across Wisconsin to dealing with the halt of in-person activities, Bassam has shared many lessons with me and worked hard (and succeeded!) at increasing science literacy of all those around him.

Richard Zare

ACS Priestley Medal, National Medal of Science
Former Chair, National Science Board
Professor of Chemistry, Stanford University

Prof. Bassam Shakhashiri: Master of the chemical demonstration

It gives me great pleasure to speak about a long-time friend of mine who has done so much to promote the appreciation of chemistry to the American public and to the entire world. He served as President of the American Chemical Society in 2012, but I knew him before that when he brought back from the dead the education division of the National Science Foundation from being essentially annihilated in the early 1980's to having a budget today of about 935 million dollars. From 1984 to 1990 he served as Assistant Director of the National Science Foundation (NSF) for Science and Engineering Education, which is now called Education and Human Resources. He is known for his slogan "Science is Fun," but to me his most vivid contribution has been to popularize chemical demonstrations about which he wrote many books that have guided others in how to communicate chemistry to students of this topic. In that spirit, I have brought my own demonstration to show you. I am hoping to convince you that water in contact with silicate particles transforms itself from being a benign, nearly universal solvent known for its inertness to a highly reactive medium that promotes redox chemistry, such as the generation of reactive oxygen species (ROS) at the interface. If time permits, I will also tell you a little bit about how important these species are in allowing new chemical transformations to occur.

Prof. Shakhashiri would like to thank Former ACS President Ann Nalley, Lawrence Berliner, and the ACS Senior Chemists Committee for conceiving and organizing this symposium; and WISL Senior Outreach Specialist Cayce Osborne, with special thanks for her expertise and artistry.

To learn more about his work, visit:

www.scifun.org