



# CHEMISTRY: A KEY TO HUMAN PROGRESS

BASSAM Z. SHAKHASHIRI, ACS PRESIDENT

**IT IS A PRIVILEGE** and a great honor to serve as your president in 2012. I shall be an open and unifying leader. I am proud to be a 50-year member, and I am grateful for all that the American Chemical Society continues to offer to its members, to the chemical enterprise, and to society. Our success depends on the creativity and dedication of members who are proud to belong to the world's largest scientific organization and who are eager to enhance its offerings and accomplishments. ACS offers you professional opportunities, support, and assistance, and you, in turn, can participate in serving ACS and its mission:

*“To advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people.”*

I call on you to join me so that we together do our best for ACS, for science, and for society.

## **GRAND CHALLENGES TO SOCIETY AND TO SCIENTISTS**

Today our biggest challenge is to help sustain Earth and its people in the face of population growth, finite resources, malnutrition, spreading disease, deadly violence, war, climate change, and the denial of basic human rights, especially the right to benefit from scientific and technological progress. Science and society have what is essentially a social contract that enables great intellectual achievements but comes with mutual expectations of benefiting the human condition and protecting our planet.

Solutions to the world's problems demand thinking “outside the box” and encouraging radical innovation, both coupled with transformative changes in education. We must aim to effect comprehensive, fundamental, and systemic change in our own attitudes and in our behavior as scientists and as responsible citizens. Purposeful communication of the critical role of science and technology in society can help alter attitudes of the general public and can also foster collaboration among people across geographic boundaries to work together to solve global grand challenges. We must contribute to the creation of a fair and just economic system, acknowledging that the world does not have infinite resources. In everything we do we must be

humane and humanitarian in keeping with our stewardship of Earth and its people.

Education is the most critical ingredient for enabling effective collaboration among scientists, enlightened policymakers, and a science-literate public who understand the benefits of scientific and technological progress. But we need better education in all areas, not just in science. Creativity is fostered by an interaction of ideas from all areas of human knowledge. In a democracy, well-educated people can make wise decisions regarding science and technology for the benefit of all.

Proficiency or technical skill alone does not ensure responsibility and stewardship. The recent actions of some intelligent and highly skilled professionals in our financial institutions suggest serious character flaws and shocking disregard for society. In a free and civil society, people must be virtuous as well as skilled. The grim financial market condition is not only an economic failure, it is a failure of our culture. We have failed in educating ourselves not only in learning the difference between right and wrong, but in behaving accordingly. We must ensure that the next generation of chemical scientists is both highly skilled technically and properly educated to carry on their scientific and educational work for the common good of society.

Two of the strongest forces in society today are religion and science. Some view them as being at odds with one another with irreconcilable differences, while others see them as dealing with different domains of life. We should explore and promote civil and respectful discourse on important issues such as climate change, evolution, stem cell research, the relationships between science and religion, and the ethical responsibilities of scientists in the practice of science and for its consequences on society. This dialogue is critical, and we must always act with integrity and be respectful of each other as human beings, regardless of differences of opinion and belief.

The level of civility in society will be elevated and enriched if our interactions are based on mutual respect, trust, and confidence in the values of our societal institutions.

#### ACS PRESIDENTIAL THEME AND INITIATIVES FOR 2012 ... AND BEYOND

My ACS presidential theme for 2012 is "Advancing Chemistry and Communicating Chemistry." As a learned society, ACS and its members have significant responsibilities to bring our scientific and educational acumen to address human needs. We advance chemistry through research, education, and innovation. Basic research in science has greatly increased our understanding of nature, triggered creative waves of invention and innovation, and prompted technological breakthroughs that were inconceivable just a few short decades ago. We have full freedom to pursue open inquiry

committed to advancing our information services and to developing new ones to broaden their utility in addressing society's greatest human challenges.

Communicating the values and role of the chemical sciences to nonspecialists is another of our important responsibilities. One purpose of communicating chemistry is to showcase chemistry at its best in addressing significant human and societal issues. We must engage the general public and show that the chemical sciences are a major part of the engines that drive our economy and contribute to prosperity, fairness, and justice.

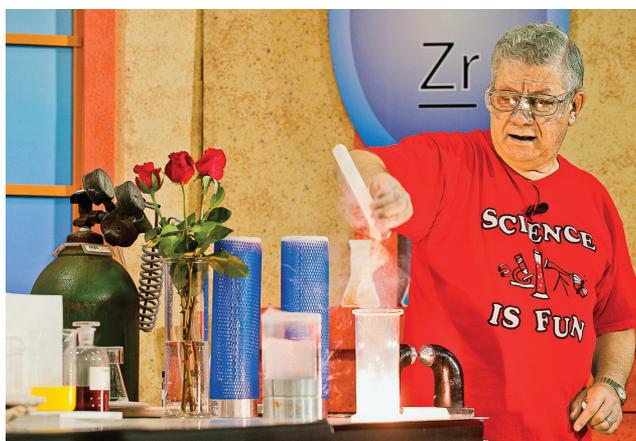
#### MORRILL LAND GRANT SESQUICENTENNIAL CELEBRATION

This year is the sesquicentennial of the Morrill Land Grant Act. This act gave federal lands to states as a means to raise money

to establish colleges that focus on teaching agriculture, science, and engineering in addition to liberal arts. ACS will celebrate this sesquicentennial in 2012 with a *retrospective* and a *prospective* look at chemistry. For the retrospective, I invite you to join the celebration by publicizing the accomplishments of chemical scientists from your institutions, whether land grant or not, making them available widely through the Web, as I have for my institution, the University of Wisconsin, Madison ([scifun.org/MorrillLandGrantAct.html](http://scifun.org/MorrillLandGrantAct.html)). We

should embrace and celebrate our rich contributions as chemists, as a discipline, and as a professional society to the larger society in which we live.

On the prospective side, this year's ACS national meetings in San Diego and Philadelphia will feature special symposia including high-level federal officials and noted scientists and educators who will help us focus our efforts in addressing humanity's needs in a world of finite resources. The important prospective goal is articulating the critical role of ACS as a scientific and educational society engaged in shaping the future of society as a whole. This ses-



#### COMMUNICATING CHEMISTRY

Shakhashiri performing in the 40th "Once Upon a Christmas Cheery, In the Lab of Shakhashiri."

in addressing important scientific questions, and we are entrusted to make wise decisions about the consequences of our findings.

Communicating chemistry to fellow scientists and to the world is one of ACS's

core functions. The quality and prestige of our publications, including 41 journals and C&EN, are second to none. The effectiveness of our electronic research tools and databases—including the services of Chemical Abstracts Service such as SciFinder—establishes the standard for all others. I am

**We all do what we do because it interests us, it satisfies our curiosity, we enjoy it. However, we have a responsibility to humanity as a whole.**

quicentennial offers us an opportunity to showcase what chemistry, chemists, and ACS have done and are doing, and to use it as a platform to launch further initiatives.

### ACS PRESIDENTIAL COMMISSION ON GRADUATE EDUCATION

I have appointed a commission chaired by electrochemist Larry R. Faulkner, former president of the University of Texas, and comprised of some of the most prominent figures in the chemical sciences, both academic and industrial, to examine the purposes of graduate education and research in the chemical sciences and the needs and aspirations of graduate students ([cenm.ag/task](http://cenm.ag/task)). The main charge of the commission is to address two specific questions:

- What are the purposes of graduate education in the chemical sciences?
- What steps should be taken to ensure that important societal issues as well as the needs and aspirations of students are addressed in graduate schools?

To find answers to these and other questions, the commission and its working groups will solicit input through listening sessions at ACS national and regional meetings and will obtain targeted feedback from graduate students, postdoctoral scholars, early-career faculty, underrepresented groups, business groups, institutions of higher education, professional and educational organizations, and international leaders in science and education. Contact the commission directly at [graduatecommission@acs.org](mailto:graduatecommission@acs.org).

The commission will develop actionable recommendations that can be adopted or adapted by a variety of graduate educational institutions, federal and state funding agencies, and business and industry. The recommendations are to propose radical changes that will help find ways to best use our country's vast educational, industrial, and government resources to successfully prepare students for their professional careers to face changing human needs over the next 50 years.

### ACS PRESIDENTIAL WORKING GROUP ON CLIMATE SCIENCE

Everyone and everything on Earth is affected by the climate. ACS has a clear position statement on global climate change ([www.acs.org/policy](http://www.acs.org/policy)). I have appointed a working group on climate science, chaired by science

educator Jerry A. Bell ([cenm.ag/task](http://cenm.ag/task)). I have given this working group two tasks. One is to develop a tool kit that deals with the science of climate change that can be used by every ACS member. The initial purpose of this Climate Science Tool Kit is self-education. It will be designed to equip ACS members with the information and other resources necessary to develop a robust intellectual structure that can be the basis for their discussions with others. What is a greenhouse



**FAMILY MATTERS**  
Shakhashiri with his wife, June (center); their daughter, Elizabeth; and their dogs, Barney (held by June) and Duke (held by Elizabeth).

gas? How does the heating mechanism work? How does the vibrational energy from molecules change into translational kinetic energy? These are just a few examples of the questions whose answers must be understood before we try to share

the science of our climate with the public.

The second task for the working group is to articulate strategies for members to use the tool kit in disseminating climate science information to schoolteachers, college and university faculty, industrial scientists and business leaders, civic and religious groups, professional science and educational organizations, and elected public officials at all levels and in all branches of government. These strategies should be aimed to enrich and expand on the ACS position statement on climate change and related ACS programs and activities. Contact the working group directly at [climatescience@acs.org](mailto:climatescience@acs.org).

### HIGH SCHOOL CHEMISTRY TEACHER FELLOWSHIP PROGRAM

I plan to explore an ACS fellowship program whose goal would be to substantially increase the number of highly qualified

high school chemistry teachers. The program would be designed to give undergraduate students fellowships in their junior and senior years of college. They would be enrolled at universities where the curriculum and pedagogical training in preparation for chemistry teaching will be offered by the chemistry department working collaboratively with education faculty.

A major theme of this program is connectivity. Upon graduation, the fellows would be placed in public schools in the immediate vicinity of the institution from which they graduated. The graduating institution would be responsible for their continuing education and professional development for a period of three years. Fellows remain connected to their graduating institution, to other professionals in chemistry and education, and to each other as their “class” of fellows at each institution interacts with and learns from each other. Likewise, the institution is connected to the needs of the local community by partnering with a school district. This connectedness will help ensure success—for the program, for the institution, for the fellows, and for their future high school students.

### ACS MEMBERS AS SCIENTIST-CITIZENS

We all do what we do because it interests us, it satisfies our curiosity, we enjoy it. However, we have a responsibility to humanity as a whole.

*I expect to pass through the world but once. Any good, therefore, that I can do, or any kindness that I can show to any fellow creature, let me do it now. Let me not defer or neglect it, for I shall not pass this way again.*  
—Attributed to Étienne de Grellet du Mabillier (Stephen Grellet) (1773–1855)

I believe it is not enough for us to be just scientists; we have a responsibility to be citizens, as well. As scientist-citizens we have an obligation to use our skills for the benefit of all. That requires each of us to have and adhere to high values and virtues as scientists and citizens to advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people. ■