



Q&A Bassam Shkhashiri

The science showman

Chemist and educator Bassam Shkhashiri is known for his dramatic live demonstrations of chemistry in action. As he takes the helm as president of the American Chemical Society (ACS) this week, he talks about the state of science education and how to engage people in chemistry through the wonders of the lab.

What's your take on sensationalized media reports on science in the United States?

Science has a social contract: society expects great intellectual achievements to benefit the human condition and protect the environment. My focus is not on countering sensational media reports, but on addressing grand challenges to society. Along with population growth, finite resources and climate change, those challenges include the denial of human rights — especially the right to benefit from scientific and technological progress.

What are your goals as 2012 president of the ACS?

I am deeply committed to the mission of the ACS, which is “to advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people”. As a learned society, the ACS must show the public that the chemical sciences are major drivers of our economy and contribute hugely to prosperity, fairness and justice. I have appointed a working group on climate science to develop a web-based toolkit as a resource for ACS members. Through this they will be

able to gain expertise in climate issues, and formulate strategies for disseminating their knowledge to all levels and areas of society — from academics to industrial scientists, civic and religious groups and government. Another of my initiatives is a new commission that will examine US graduate education and research in chemistry. It will aim to recommend radical changes in how we use our country's vast educational, industrial and government resources to prepare students for careers that can adapt to changing human needs over the next 50 years.

How did you start out as a scientist?

When I was growing up in Lebanon, my mother knitted me a yellow sweater, and I asked her what made it yellow. Much later, as a chemistry major at Boston University in Massachusetts, I found answers to my questions. In graduate school at the University of Maryland in College Park, I was still fascinated by colour changes and studied electron-transfer reactions involving colourful metal-ion complexes in aqueous solutions. My studies of how light and matter interact helped me to get satisfying answers for

my youthful curiosities, which led to more questions. As a university professor, I was struck by the profound impression made on my students by the deep red glow produced by the decay of singlet molecular oxygen or by the blue colour of paramagnetic liquid oxygen.

B. RICHTER

What is your approach to science education?

Science education should aim to share the beauty, challenges and rewards of open enquiry and help people to avoid sham, quackery and unproven conjecture. Interacting with students deepens my own understanding of science and of the process of learning science. When I joined the University of Wisconsin–Madison as a faculty member in 1970, my mission was to improve undergraduate chemistry education for all students, not just for science majors. In 1984, I became the assistant director for science and engineering education at the US National Science Foundation, after those programmes were almost phased out early in the administration of President Ronald Reagan. I rebuilt the programmes and created new ones. When I returned to the University of Wisconsin–Madison in 1990, I worked on science-literacy initiatives that focused on classroom instruction and the public appreciation of science.

How do you engage the public with science?

Scientists do what we do because it interests us, it satisfies our curiosity and we enjoy it. I want to share this enjoyment with everyone. So I aim to engage people in meaningful and thoughtful explorations of science, to share core values, to develop a deeper public understanding of science and to influence attitudes. The real gauge is people's behaviour in society. We need more science fans supporting and talking about science. It's about developing an attitude. On my website, Science is Fun [www.scifun.org], you can download instructions for home experiments that use ordinary chemicals. My 'Science is Fun' badge prompts smiles and questions. If anyone asks what it is about, I tell them that science contributes to the quality of life in modern society, and that it is intellectually stimulating and emotionally rewarding. They always want to know how to get a badge — and effectively spread the word.

How do you make science fun?

I'm a strong advocate of demonstrations — exploding balloons, glowing liquids, spectacular chemical transformations. Connectivity is key. My ultimate purpose is to trigger cerebral and emotional reactions to heighten an audience's joy of learning. I want them to be sceptical about what they see and hear. That's how science works. ■

INTERVIEW BY JASCHA HOFFMAN