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## Conference Reflection #2 – Why Chemistry Is Awesome

On the morning of Saturday, March 15th, I attended the keynote address given by Dr. Bassam Shakhashiri, titled “Education: Opportunities and our responsibilities in and out of the classroom.” His presentation was both realistic and uplifting; he spoke of the problems facing humanity, including climate change and the unequal distribution of the fruits of scientific progress to improve lives around the world, but focused on the role of chemists in solving these problems. In light of these problems, he asked the audience to consider: Why do we do science? Why do we teach chemistry? What is the purpose? In the context of chemical demonstrations, he asked the last question again, answering that the purpose should be to show how chemistry works in the real world, but more importantly to light the spark of understanding and interest in science for all observing the demonstration.

Building on this, Dr. Shakhashiri carried out several chemical demonstrations, one of which stands out in particular. He had set up six cylinders on a table with a white backdrop. Two cylinders contained purple liquid, two contained aquamarine liquid, and two contained magenta liquid, all arranged such that cylinders of the same color stood next to each other. He then added one chunk of dry ice (solid  $\text{CO}_2$ ) to one cylinder from each color pair and we observed as the liquid in each cylinder reacted rather enthusiastically with the dry ice. The untouched cylinders made it easy to see the reactions taking place in the reaction cylinders because the liquid in the reaction cylinders changed color as time went on. Two of the cylinders all but stopped changing color fairly quickly, but the formerly magenta cylinder slowly went through several different colors as time went on, indicating different rates of reaction as well as different compounds

across cylinders. I wondered what the orders of the reactions' rate laws might be and what might be contained in the solution of each cylinder. It was a beautiful macro-scale display of kinetics.

Even more than the chemistry, though, what I enjoyed most about Dr. Shakhashiri's talk was its reassurance that there is still room for humanists in science. When people talk to students about science, so much emphasis is placed solely on job prospects in the fields of science, with hardly any mention of what the science itself means—and forget about the philosophical aspects of science, those aren't even hinted at. While I agree that having a steady job would be nice (although I am convinced that going into science for the money is like buying an SUV for the gas mileage), that is not why I am a science major. I'm a science major because the beauty of nature and the sacredness of life grow more and more apparent the more I understand the fundamental principles that make existence possible and how easily it could all be very different. The inhumanity of war, social injustice, and environmental destruction becomes painfully obvious for the same reason. Using science for practical applications is all well and good, but practical applications of science gave nuclear weapons and biological warfare to the world. Science is nothing without humanism and compassion to guide it. We need to stop and ask ourselves why we do science and whether we are using it as a force for good in this world, as Dr. Shakhashiri challenged us all to do in his presentation. The only way I know to make a better world is by pursuing a career in science so I can teach future generations why we exist, and why our shared existence with each other and our world is a miracle to be cherished. That is why I do science.