

Interactions and chemical demonstrations for K-12 school:

Dr. Linda Shimizu initiated and developed a K-12 outreach program, the first of its kind at the USC in 2000 with initial funds from SC EPSCOR¹. The program has been subsequently supported by Dr. Shimizu and by her NSF grant. Graduate students, post-docs, and faculty help the Chemistry Outreach Program kindle the scientific interests of the next generation. Trained by Dr. Shimizu, the program pairs volunteers up with teachers in SC Midland's Elementary, Middle and High Schools. Volunteers contact teachers, discuss how experiments relate to science standards, and exchange ideas on how to enhance the concepts that teachers are covering in their classes. We then visit K-12 schools to present ~50 minute shows that consist of chemistry demonstrations designed to showcase the scientific method. The experiments and the discussions are tuned towards the curriculum standards of 2nd (states of matter, magnets), 5th (mixtures and solutions), 7th (introductory chemistry), and high school chemistry. We have established a collection of experiments that other USC faculty borrow to use in their undergraduate lectures and are always looking for new experiments. Nearly half of these schools are high minority enrollment schools and students are surprise to meet "a real scientist". Dr. Shimizu accompanies the groups to approximately 1/3 of the schools. Response from students and teachers has been extremely positive. We will continue to develop methods to evaluate and fine-tune our presentation to meet the diverse needs of our community.

Experiments:	Concepts
Polyneprene vs polynorbornene balls	Observations and physical properties
Iodine clock reactions	Chemical reactions/rates/equilibria
Tollins test	Chemical reactions/solutions/electroplating
Extract indicator from red cabbage	Natural products
Test products with pH Indicator	Classification and pH
Comparing ice, dry ice and liquid N2	States of matter, temp., thermometers
Synthesis of nylon	Solutions and polymers
Polyvinylalcohol & cross linker	Physical properties of polymers
Extraction of DNA from banana	Genetic information, polymers
Sodium polyacrylate	Hydroscopic/ volume not conserved
Fluorescence of fluorescene, detergents, and tonic water	Organic molecules and fluorescence
Light sticks	Chemiluminescence

Summary of Schools visited 2006-2014

Day long visits to area schools						
year	Elementary	Middle School	High School	Total days	Total # of shows	Total # of students
2014	5	2	6	13	45	1430
2013	7	1	1	9	31	900
2012	3	4	2	10	35	900
2011	5	3	1	9	30	1130
2010	5	5	0	10	34	1060
2009	3	6	1	10	37	1460
2008	7	1	0	8	25	1025
2007	4	3	0	7	25	612
2006	4	6	0	10	35	1569

¹ EPSCOR is an Experimental Program to Stimulate Competitive Research.

University of South Carolina - Chemistry Outreach Program

The University of South Carolina wants to share the excitement of chemistry with students in your school. The Chemistry Outreach Program is filled with chemical demonstrations selected for their visual appeal and their relevance to everyday experiences. Our show consists of ~50 minutes of chemical experiments relating to diverse areas of chemistry including temperature, light, polymers and the isolation of natural products. Our experiments work best in a classroom setting where students have more chance for interaction with our chemists and ample opportunities to ask questions. If your school is selected for this years outreach program USC graduate students will contact you to set a date for the presentations in the spring. We will come prepared to do between 2 to 4 shows at your school. There is no cost for this program and no special facilities are required. Our goal is to stimulate student interest in chemistry and encourage more students to pursue careers in science. The USC graduate students can share first hand information about what the career track in chemistry entails and what type of job opportunities are open to them.

The presentations will take place in the spring semester. If you are interested in this opportunity please complete the form below or email the following information to:

Dr. Linda Shimizu
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University of South Carolina
631 Sumter Street
Columbia, SC 29208
SHIMIZLS@MAILBOX.SC.EDU

If you have additional questions about our chemistry program, please contact Linda Shimizu (803-777-2066).

University of South Carolina - Chemistry Outreach Program

Teachers Name:

Email Address (optional):

School Name:

Daytime Phone:

School Address:

School City:

Zip Code: