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NEWS

Flash! Boom! Bang! Ask almost any student in high school chemistry what they would like to see more often in class, and you will probably hear, “explosions.” For some reason, many of you like to see things blow up!

One common demonstration you might have seen in a chemistry show is the **explosion of balloons** filled with various gases. The results can be fairly low key—as in the case of a balloon filled with helium, an inert gas—or loud and dramatic, as in the case of balloons filled with more reactive gases such as hydrogen, oxygen, or a combination of both.

Another demonstration is to **submerge different objects**, such as inflated balloons, racquetballs, flowers, and more, in liquid nitrogen (see photo). We inhale nitrogen in gaseous form every time we take a breath. However, you wouldn't want to come in direct contact with nitrogen in its liquid

form—it is so cold that

at atmospheric pressure, it boils at $-196\text{ }^{\circ}\text{C}$. The demonstrator submerges an inflated balloon in liquid nitrogen, so the temperature of the gas molecules in the balloon is decreased. The molecules move more slowly and push on the sides of the balloon less, resulting in lower pressure, and the balloon shrinks. Once the balloon is pulled out of the liquid nitrogen and the temperature of the gas molecules increases, the balloon returns to its original size.



SANDRA SMITH, PALMER HIGH SCHOOL, COLORADO SPRINGS, CO

Two ACS ChemClub members show how a balloon that was immersed in liquid nitrogen shrinks in size (left) compared to a similar balloon that was not immersed in liquid nitrogen (right).

One more demonstration **uses dry ice**, a solid form of carbon dioxide that is slightly warmer—at atmospheric pressure, it turns from a solid to a gas at $-78.5\text{ }^{\circ}\text{C}$. A demonstrator can create soap bubbles filled with clouds of water vapor and carbon dioxide gas generated from dry ice (see photo). The bubbles can even be held by someone wearing soft knit gloves.

A favorite activity of many American Chemical Society (ACS) ChemClubs is to travel to their local elementary and middle schools and perform chemistry demonstration shows for younger students. These demonstrations get students excited about chemistry and allow them to learn about the science behind the demonstrations.

There are tons of great demonstrations that can be included in chemistry shows. With proper preparation and safety precautions, you could demonstrate chemistry to other students just like ACS ChemClub members do and help spread the word that chemistry is cool! For more information about ACS ChemClubs, please visit: www.acs.org/chemclub.

—Erica K. Jacobsen



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Setting flame to a balloon filled with hydrogen results in a loud explosion.



SANDRA SMITH, PALMER HIGH SCHOOL, COLORADO SPRINGS, CO

Two ACS ChemClub members show how to make “boo bubbles”—bubbles filled with clouds of water vapor and carbon dioxide.