

Cryogenic Temperatures

By: Brady Ubel

The word cryogenic comes from the Greek word kryos meaning very cold. Liquid nitrogen and dry ice are examples of cryogenic temperatures.

Liquid nitrogen is a liquid, of course, and is around -325°F. Can you believe that our air is made up of 75-78% nitrogen? Most young scientists think that our air is mostly oxygen but is actually only about 21% oxygen. When N² (liquid nitrogen) is at room temperature, it is boiling. Since it's boiling it starts to evaporate. It evaporates very quickly and before you know it, it's gone. A ping-pong ball was set in a puddle of N². As the N² evaporated, it turned into a gas. The gas went into the ball, and had no place to come out except through the hole again. As the gas came out it made the ball spin. Liquid Nitrogen is very interesting.



Dry ice is another substance that is interesting. It does something called sublimation. It turns from a solid to a gas when it gets warm instead of turning from a solid to a liquid like regular ice. Dry ice is actually CO₂ in solid form. It is very cold, also. As you hold it, you can see a stream of gas drift off of it. It is fun to do experiments with and is amazing to study and see what it's like.

We did many experiments during the seminar. One experiment we did was letting a rose sit in N₂ for about a minute. We pulled it out, hit it against the table, and it shattered clear across the room. Another one we did was pour N₂ in a tube-like structure and put a cork in both ends. The gas coming off of the liquid nitrogen built up and made the cork pop off and fly very far. The pressure built up and eventually it had to blow. The experiments teach you a lot about different substances.

The seminar taught me many, many things. I learned things about N₂ and CO₂. I had a lot of fun.