



Chemistry: States of Matter

Grade Level: 2nd through 5th grades

Where Taught: Lab, central classroom or media center, where we can set up and see all students

Students: Up to 30 students, plus one observer

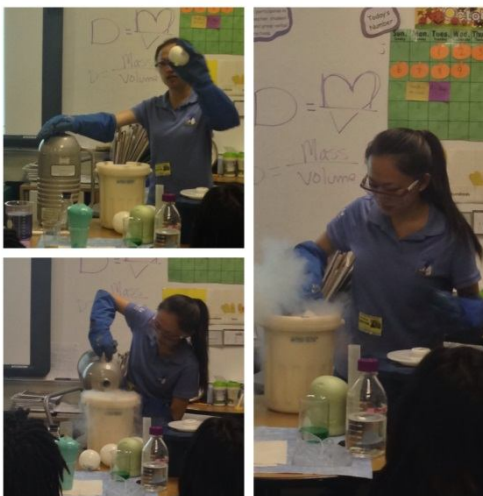
Time needed for presentation: 45 –60 minutes, plus 10 minutes between sessions to cleanup and prepare for the next session.

Georgia Performance Standards: 2nd grade S2P1 a, b; 3rd grade S3P1 a, b, c; 5th grade S5P2 a, b, c; 8th grade S8P1 a, b, c, d, e, f,

The States of Matter module focuses on the properties of the three states of matter – gas, liquid, and solid. A series of demonstrations are performed in order to reinforce and illustrate these concepts. The level of the discussion is tailored to the age and background of each class.

In one demonstration dry ice is used to illustrate the change between a solid and a gas without passing through the liquid state; a process known as **sublimation**. In another demonstration a **non-Newtonian substance** known as an **obleck** is used as an example of a substance which has both the properties of a solid and a liquid.

Students are allowed to play with the obleck to observe both properties. Various liquids layered in clear beakers are used to illustrate the property of **density**. A demonstration of the change in properties of substances at extremely low temperatures using **liquid Nitrogen** is always a hit, and is usually done at the conclusion of the module. No one but the Bio-Bus staff may handle the liquid Nitrogen.



- We begin with a PowerPoint Presentation on the properties of gases, liquids, and solids. We bring a projector, but we need a screen, or white wall.
- When time allows, students get to help with the demonstrations.
- We need ten minutes between sessions to clean up and prepare for the next group.