**States of Matter PhET**

**States of Matter**

**Predictions**

1. Draw 10 particles of a solid, liquid, and a gas substance. Your drawing should take into consideration the proper spacing between the particles in each.

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| Solid | Liquid | Gas |

1. In which state of matter do the particles have the greatest amount of energy?
2. In which state(s) of matter do the particles have a fixed volume?
3. Which state of matter is in an organized geometric pattern?
4. Is there a state of matter that exists where the particles are not moving at all? Explain.

**Experiment:**

With your Chromebook go to [www.phet.colorado.edu](http://www.phet.colorado.edu), click on the chemistry tab, and open the states of matter sim.

1. Select Neon, and select solid for the state of matter. In the box below, draw what the particles in a solid sample of neon would look like.

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1. Select Argon, and select liquid for the state of matter. Once again, draw what the particles of liquid argon are doing.

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1. Select Oxygen, and select gas for the state of matter. Again, draw what the particles of gaseous oxygen are doing.

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**Phase Changes**

1. Go back to solid neon and slowly increase the temperature. Describe what happens to the particles of a solid as the temperature of the sample slowly increases.
2. Go back to liquid argon and slowly increase the temperature. Describe what happens to the particles of a liquid as the temperature is slowly increased.
3. Go back to gaseous oxygen and slowly decrease the temperature. Describe what happens to the particles of a gas as we slowly decrease the temperature.
4. Explain how the addition of heat changes the speed of the particles in a sample of matter.
5. Explain how removing heat changes the speed of particles in a sample of matter.
6. Does any substance exist that has particles with no motion? Explain your position.

**Extensions:**

1. Explain how a solid can change to a gas without passing through the liquid phase.
2. Why do we say that heated gases are expanding?
3. Why do we say that cooling gases condense?