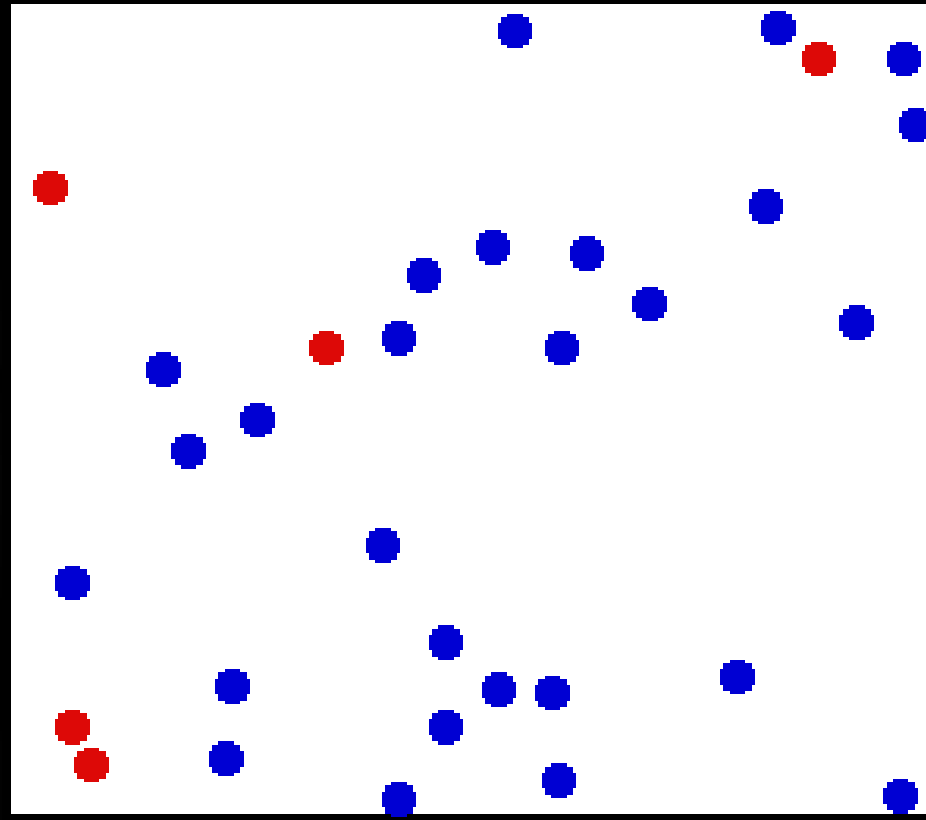




Class Notes: Kinetic Theory and States of Matter

<http://www.kentchemistry.com/links/Matter/phases.htm>

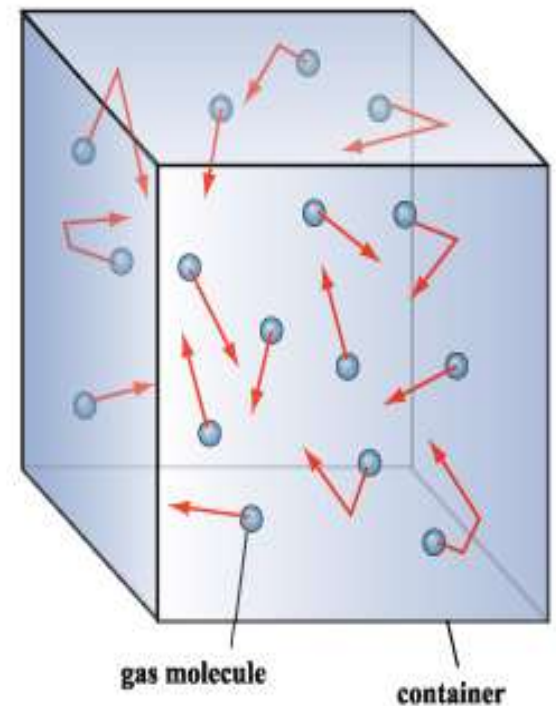
Kinetic energy: the energy an object has because of its motion



Kinetic Theory: particles of matter are in constant motion

3 components of the Kinetic Theory of gases

1. Particles in a gas are small, hard spheres with insignificant volume
2. Motion of particles in gas is rapid, constant, and random
3. All collisions in gas are elastic
-Kinetic energy is transferred without loss from one particle to another



***Behavior of gas depends on its volume,
pressure, and temperature**

When a substance is heated it absorbs energy

This speeds up particles = increase kinetic energy
(this causes an increase in temperature)

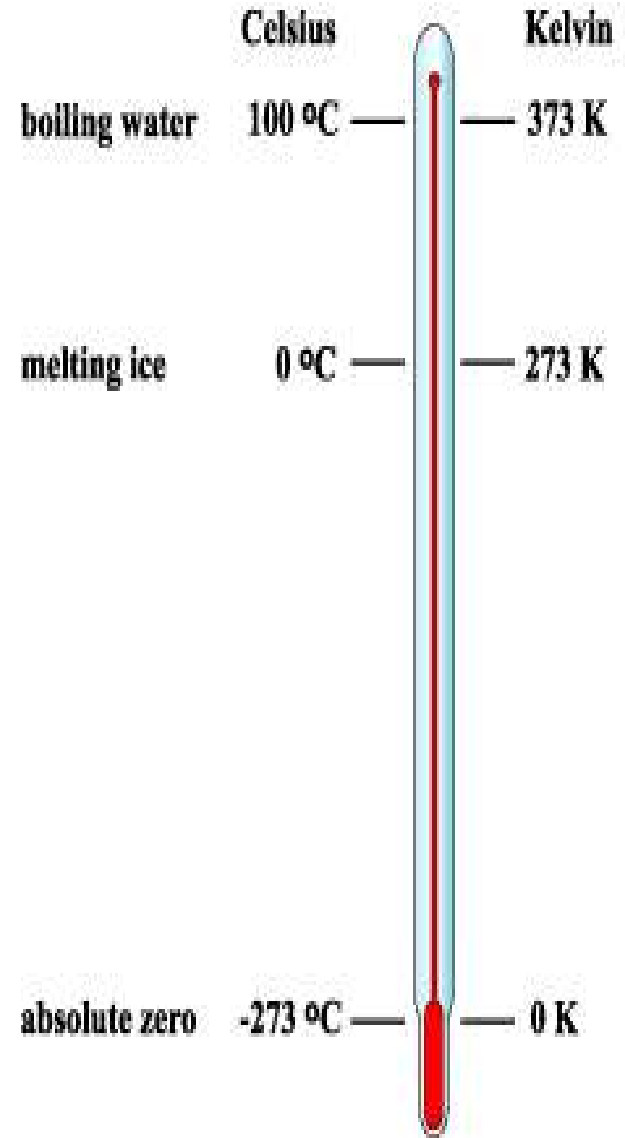
<http://chemsite.lsrhs.net/AtomsInMotion/KMT.html>

*The Kelvin scale is a direct measure of Kinetic energy

-Absolute zero (0K, -273°C)

-When movement stops, theoretically

$$K = ^\circ C + 273$$



Gas pressure = force of gas particles
colliding with container walls

Scales to measure pressure

$$1 \text{ atm} = 760 \text{ mmHg} = 101.3 \text{ kPa} = 760 \text{ Torr}$$

Facts about liquids

- Particles are in motion but they are held together by weak attractive forces, therefore they slide and flow
- Most particles do not have enough kinetic energy to escape the attractive forces

- Liquids are more dense than gases because the forces of attraction between the particles pull them close together
- increasing pressure has little effect on volume

Characteristics of Solids:

- Motion in a solid is about a fixed point, not random and chaotic
- Particles are solidly packed and organized
- Solids are dense, incompressible and do not flow