

Thermochemistry

Thermochemistry is the study of _____ during changes to a system.

What do we know about energy?

Types of Energy

Heat



- _____ of thermal energy possessed by a substance
- Can be _____
 - Has the ability to do _____
- _____



Temperature

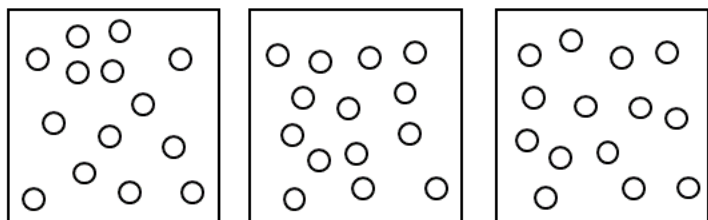


- How _____ the atoms are moving
- Measure of "hotness"
 - Average _____ energy



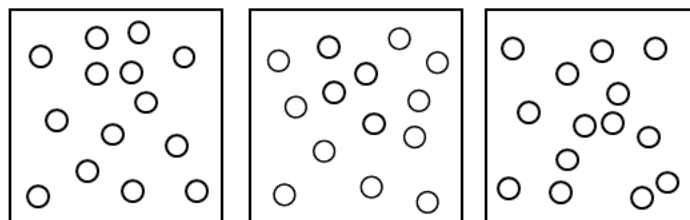
Molecular Motion & Heat Flow

HOT Water + Dye



The hot water particles are moving very fast. They _____ often with the dye, which makes it _____ than the cold water.

COLD Water + Dye

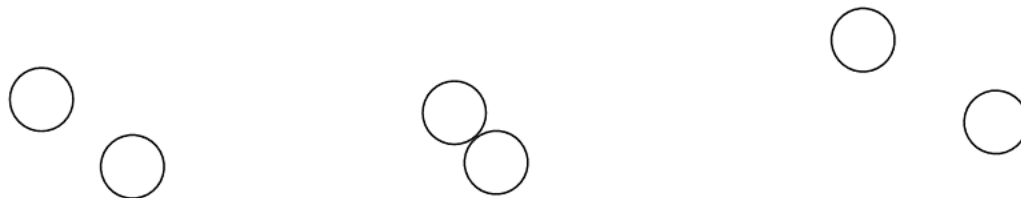


The cold water particles are slow. They _____ often with the dye, which makes it _____ than the hot water.

How is heat transferred?

Particle collisions transfer energy from the _____ (hotter) particles to the _____ (cooler) particles.

Heat flows from areas of _____ thermal concentration (_____) to areas of _____ thermal concentration (_____).



The Law of Conservation of Energy

$$E_{\text{system}} = - E_{\text{surroundings}}$$

Energy cannot be _____ or _____.

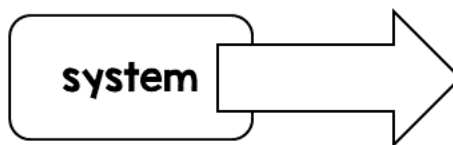
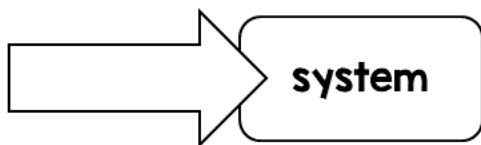
This means that when the energy of the system _____, the energy of the surroundings _____, and vice versa.

Endothermic

- Heat _____ the system
 - E_{system} _____
 - $E_{\text{surroundings}}$ _____
- Feels _____

Exothermic

- Heat _____ the system
 - E_{system} _____
 - $E_{\text{surroundings}}$ _____ S
- Feels _____



Cold and hot are _____ terms.

So then... how does a thermometer work?



1. Fast moving particles _____ with the thermometer and _____ energy (heat)
2. Particles in the thermometer move _____
3. As the temperature increases, the _____ of the particles increases