

LET US REVIEW...

States of Matter

What is Energy?

Change of Matter

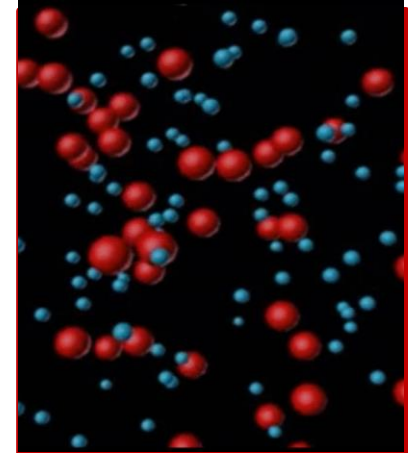
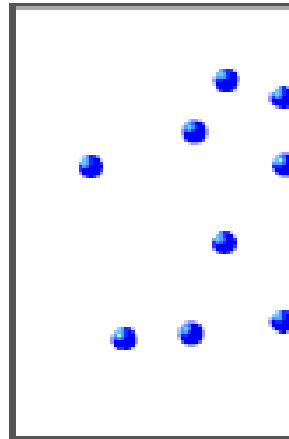
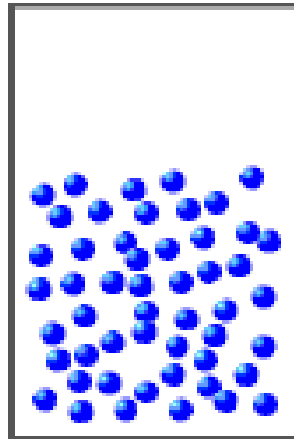
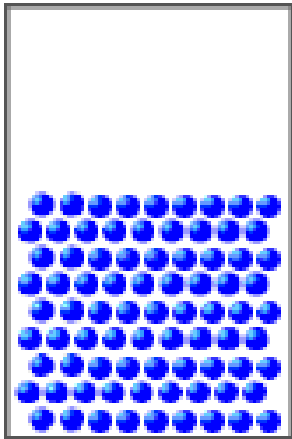
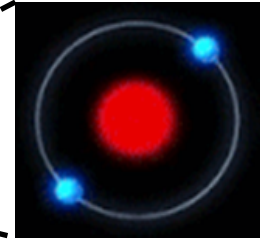
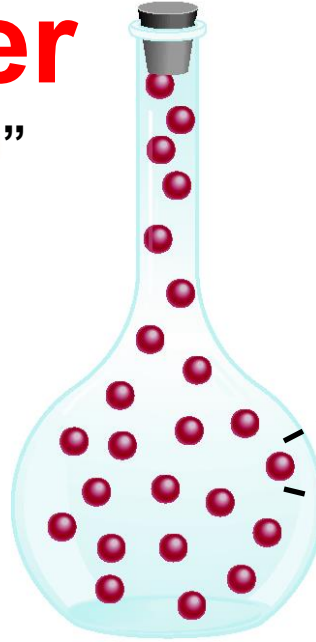
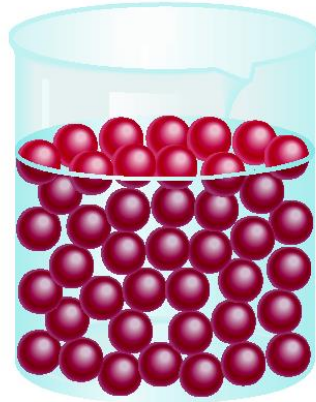
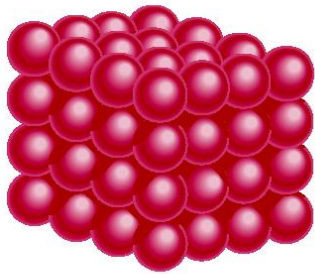
Classification of Substances

Nuclear Reactions

States of Matter

“Matter is made up of **atoms**”

REVIEW



Solid

Liquid

Gas

Plasma



What is Temperature?



- **Particles of matter are in constant motion** (*vibrating in place in solids, sliding past each other in liquids, flying around freely in gases*), **but they don't all move at the same speed and in the same direction all the time.**
- **Temperature is a measure of the *average* energy associated with *random motion* of the particles of a substance.**
- The *higher* the temperature of an object, the *faster* on average its particles move.



What is Energy?

REVIEW

Energy is defined as the ability to do work, that is, *produce certain changes* within a system.

Types (forms) of energy:

- Mechanical
- Chemical
- Electromagnetic
- Heat (Thermal)
- Nuclear



- We cannot directly observe energy 😊
- We can observe how *energy makes matter change* in numerous ways (for example, change of physical properties, change of state, change of position etc.)
- We can observe how energy changes its *form*.

Change of Matter

REVIEW

A *physical change* **does NOT** alter the composition or identity of a substance.

- Change of size
- Change of form
- Change of state
- Mixing
- Motion
- Etc.

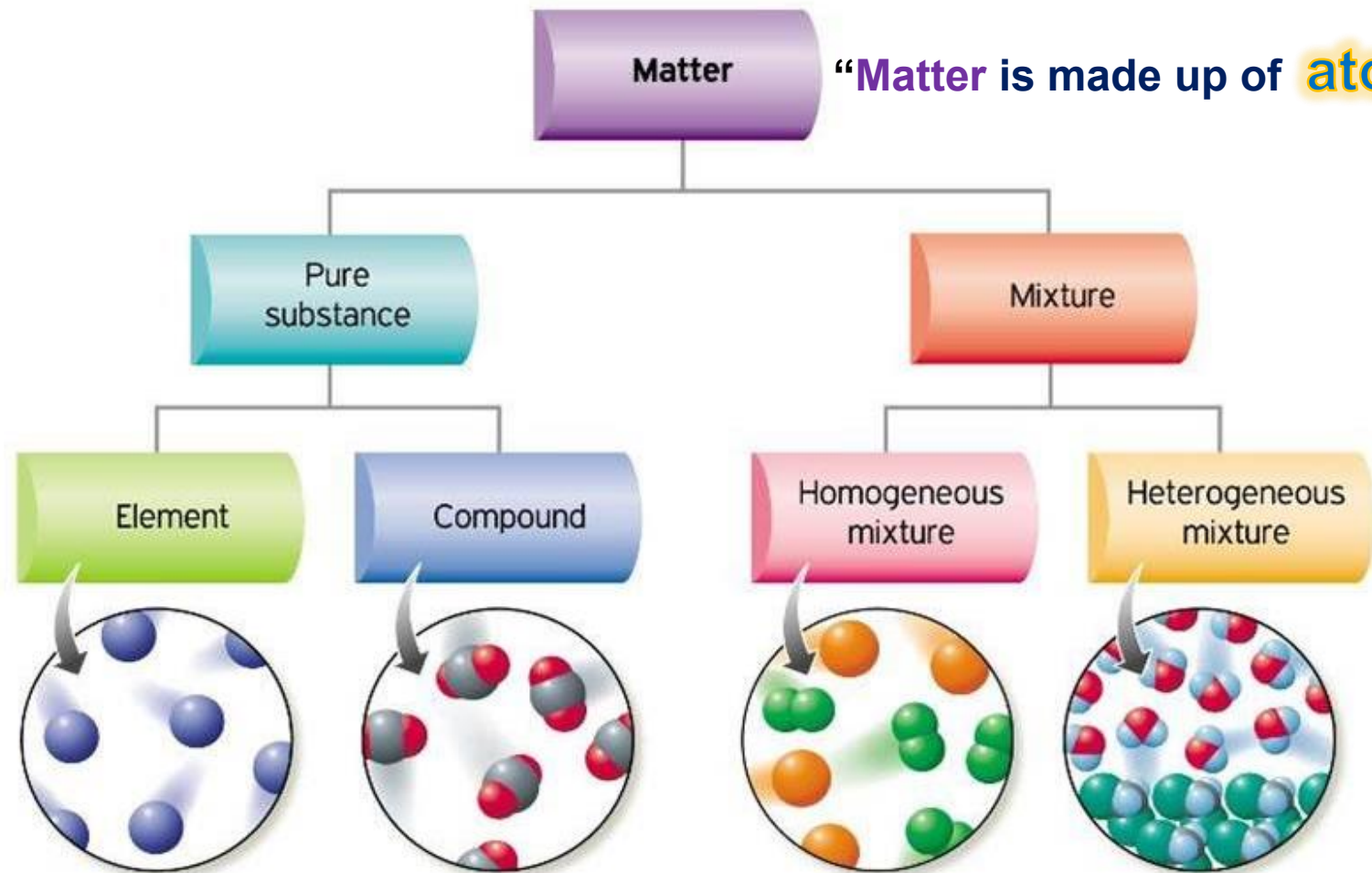
VS

A *chemical change* **does** alter the composition or identity of the substance(s) involved.

- AKA **Chemical reaction**
- Hard to reverse
- Basis for life!

Classification of Substances

REVIEW



“Single kind”

Nuclear Reactions

involve change of the atomic nucleus

1. **Radioactive decay** – an unstable nucleus spontaneously emits a small particle of **ionizing radiation** to become a **different isotope** of the same element or a **different element** (the latter process is called *transmutation*).
2. **Nuclear Fusion** – the **joining** of two atomic nuclei to form a larger one.
3. **Nuclear Fission** – the **splitting** of an atomic nucleus into two smaller ones.