

## **Lesson Overview**

### **Physical, Chemical, and Nuclear Changes**

**Objective: The student will be able to differentiate the physical, chemical, and nuclear changes of substances.**

#### **Connections:**

**@ Lab Safety: A dangerous reaction is occurring in your lab. What means can I use to neutralize (or stop) this reaction? Will it be by physical, chemical, or nuclear means?**

## Physical, Chemical, and Nuclear Changes

**There are three different types of changes we will discuss in Chemistry. They are as follows:**

1. Physical -- changes affecting the **form** of a chemical substance, but do not change the chemical composition of that substance.
2. Chemical -- when a substance combines with another to form a new substance or decomposes into multiple different substances.
3. Nuclear -- involves changes in nuclear structure.

## Physical Changes

Main idea: if at the end of the process the material is still the same material -- that is to say, it has only changed its form -- the substance has gone through a **physical change**.

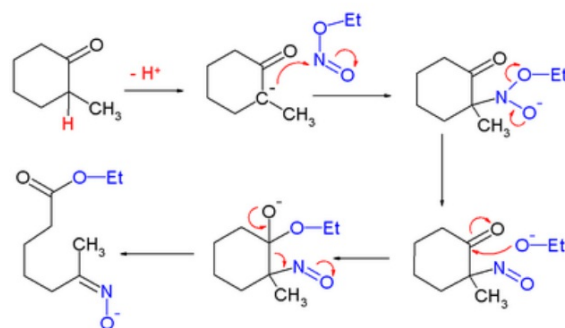
### Traditional Examples (and key words)

1. vaporization
2. melting
3. sublimation
  
4. dissolution  
(NaCl in water)



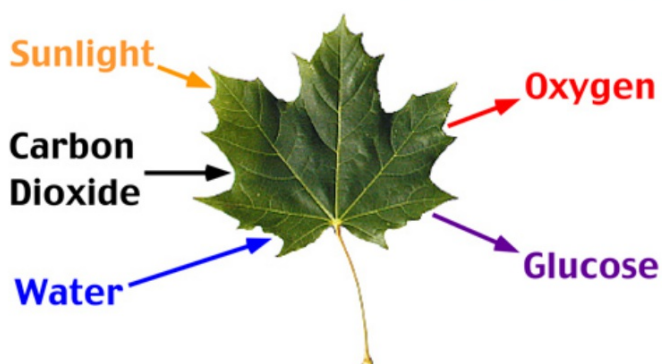
## Chemical Changes

Main idea: if substances react together and different substances are produced, yet the same elements are still present, the system has gone through a **chemical change**.



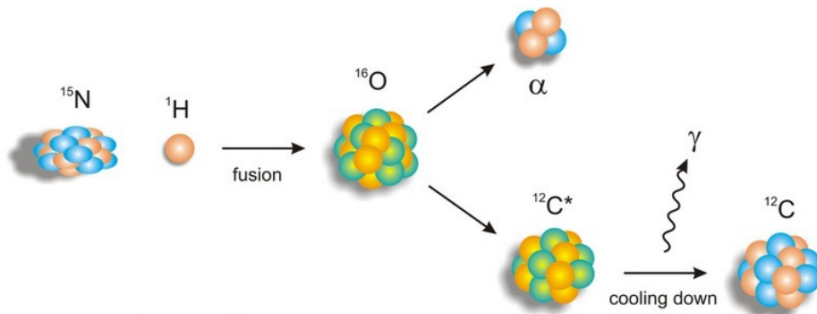
### Examples and key words

1. synthesis
2. decomposition
3. polymerization
4. vulcanization



## Nuclear Changes

**Main Idea: change is located in the nucleus of the atom (dealing with protons and neutrons)**



Key Words:

fission

fusion

radioactive decay

transmutation

