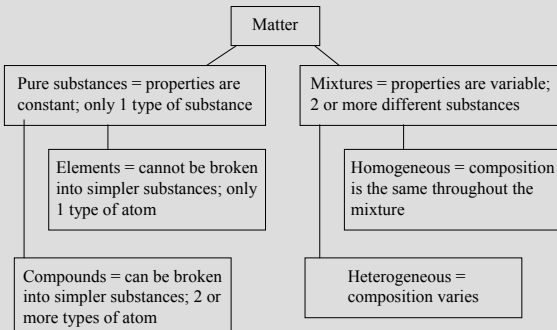




Chemistry 1
....are you ready????!!!!!!

Chemistry I
CHAPTER 1
(This is the ~~easy~~ stuff!)

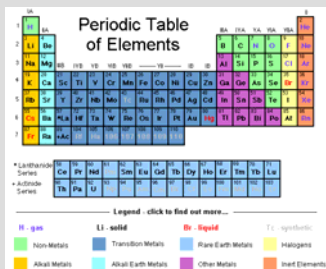
Chemistry = Properties and Changes of Matter



Elements

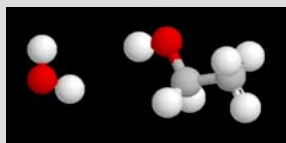
- Element = a substance that cannot be broken down into simpler substances by chemical means.

- Name an element!

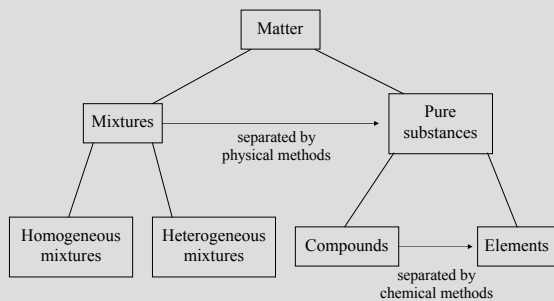


Compounds

- Compounds = a pure substance with atoms of two or more elements chemically united in fixed proportions.



Types of Matter



Separation of Mixtures

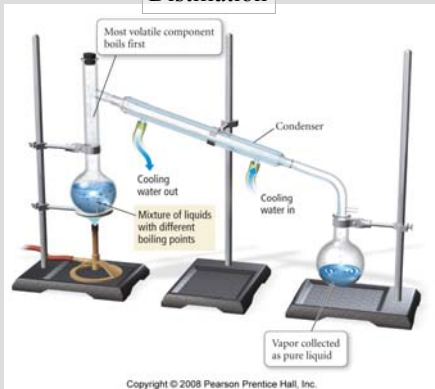
- separate mixtures based on different physical properties of the components
 - Physical change

Different Physical Property	Technique
Boiling Point	<u>Distillation</u>
State of Matter (solid/liquid/gas)	<u>Filtration</u>
Adherence to a Surface	<u>Chromatography</u>
Volatility	Evaporation
Density	Centrifugation & Decanting

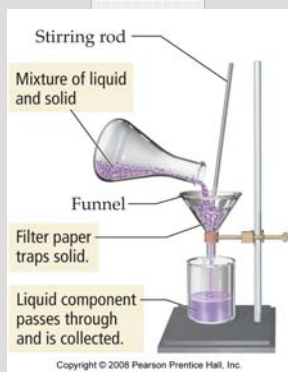
...even magnetic properties may be used! Let me demonstrate!



Distillation

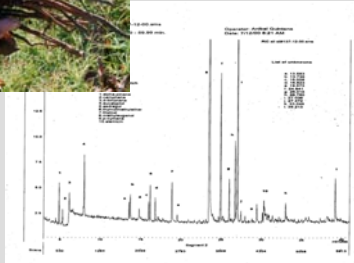


Filtration



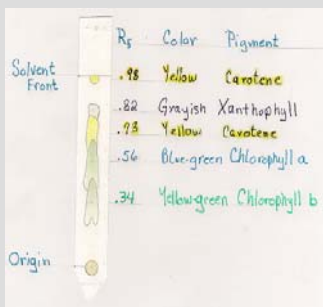
Gas Chromatography: An example of separating mixtures into compounds



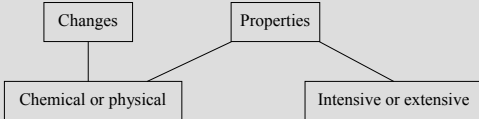


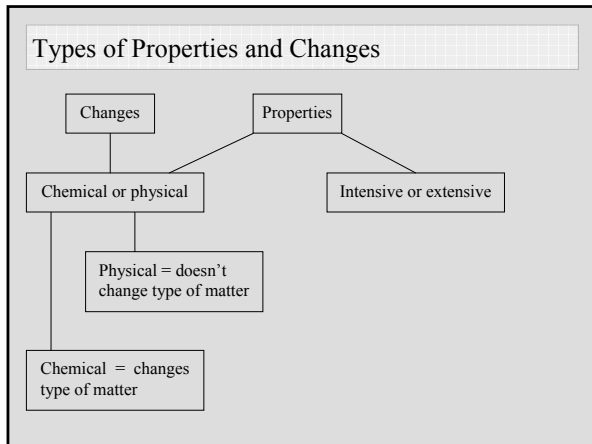
<http://medplant.nmsu.edu/goals.html>

An Even Simpler Approach: Paper Chromatography



Types of Properties and Changes





Changes in Matter

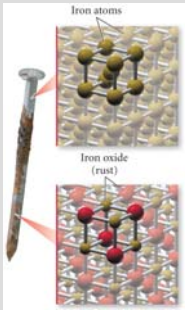
- changes that alter the state or appearance of the matter without altering the composition are called **physical changes**
- changes that alter the composition of the matter are called **chemical changes**
 - during the chemical change, the atoms that are present rearrange into new molecules, but all of the original atoms are still present

Physical Changes in Matter

Water molecules change from liquid to gaseous state: physical change

The boiling of water is a physical change. The water molecules are separated from each other, but their structure and composition do not change.

Chemical Changes in Matter



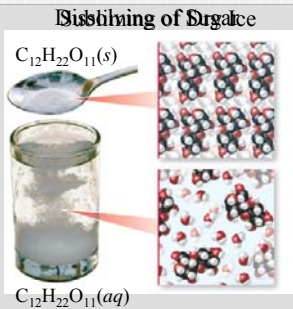
The rusting of iron is a chemical change. The iron atoms in the nail combine with oxygen atoms from O_2 in the air to make a new substance, rust, with a different composition.

Properties of Matter

- **physical properties** are the characteristics of matter that can be changed without changing its composition
 - characteristics that are directly observable
- **chemical properties** are the characteristics that determine how the composition of matter changes as a result of contact with other matter or the influence of energy
 - characteristics that describe the behavior of matter

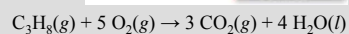
Common Physical Changes

- processes that cause changes in the matter that do not change its composition
- state changes
 - boiling / condensing
 - melting / freezing
 - subliming
- dissolving

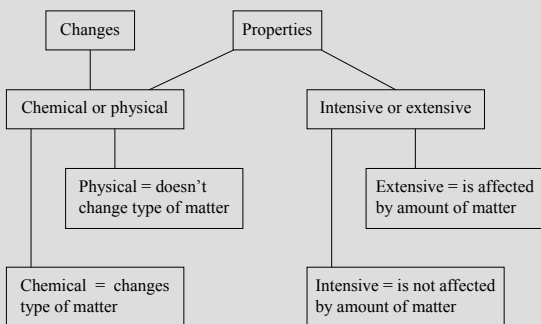


Common Chemical Changes

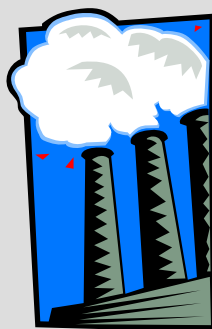
- processes that cause changes in the matter that change its composition
- rusting
- processes that release lots of energy
- burning



Types of Properties and Changes



1. Smoke is an example of a(n):
- homogeneous mixture
 - compound
 - gaseous solution
 - heterogeneous mixture
 - element



The correct answer was "heterogeneous mixture".

Smoke is a suspension of tiny particles in air, and so is a heterogeneous mixture. It is not a solution (homogeneous mixture) because the properties of the tiny particles are different from the properties of air.
