

## Matter

Free write: Write down everything you know about matter. Not graded.

## Conservation of Mass

- Conservation of mass -- Mass of the system stays the same despite chemical or physical changes.
- What is a system???
- For conservation of mass to be true, nothing can leave or enter the system. Examples --

## What's the Matter???

- What is matter?
  - Matter is anything with mass and volume
- What is volume?
  - Volume is the space something takes up
- What is Mass? (hint: not the same as weight)
  - Mass is a measure of how hard it is to change its state of motion.


## Matter Cont.

- Pure substance: made of only one type of atom or molecule
- Mixture: made of more than one type of atom or molecule
- Atom: the smallest amount of matter that still has the properties of a certain element
- Molecule: 2 or more atoms chemically bonded together

## Matter Cont.

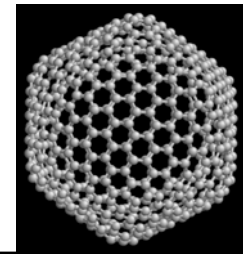
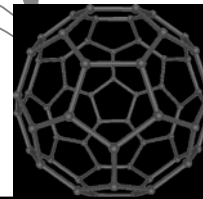
- Element: Contains only one type of atom
- The 8 most common elements in Earth's crust (by mass):
  - 46.6% Oxygen (O)
  - 27.7% Silica (Si)
  - 8.1% Aluminum (Al)
  - 5.0% Iron (Fe)
  - 3.6% Calcium (Ca)
  - 2.8% Sodium (Na)
  - 2.6% Potassium (K)
  - 2.1% Magnesium (Mg)

## What our world is made of!

- Some elements are "happiest" as molecules.  $O_2$  is the oxygen we breathe.
- An allotrope is a different form of the same element. Oxygen is found as  $O_2$  or  $O_3$ .  $O_3$  is ozone = poisonous to breathe.
- The buckys (NOT !!!)

● C<sub>60</sub>

and C<sub>540</sub> (wikipedia)



## Matter Cont.

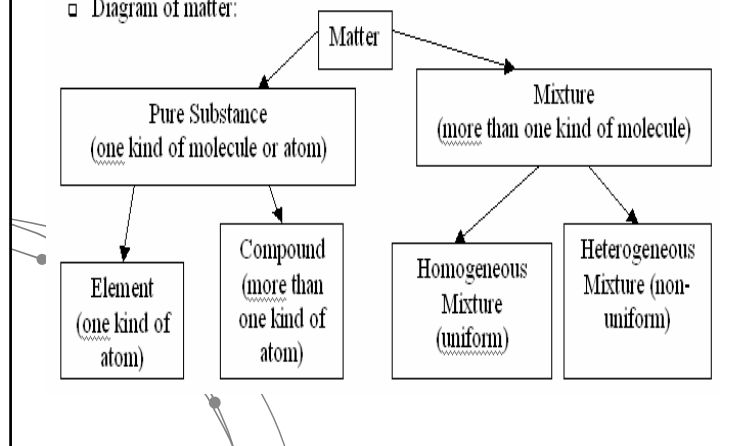
- Element: Contains only one type of atom
- Compound: Contains only one type of molecule
- Mixtures: 2 or more compounds or elements mixed together -- can be homogeneous or heterogeneous (discuss)
  - Examples of mixtures???

## Matter Cont.

- Examples of mixtures of solid + liquid:
  - Suspension
  - Colloid
  - Solution

## Matter Cont.

□ Diagram of matter:



## Physical Properties

- Color
- Texture
- Shape
- Mass
- Phase (solid, liquid, gas)

## Chemical Properties

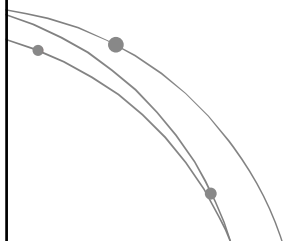
- Behavior when in contact with other substances.
  - Reactivity with other chemicals
- The biggest clue that there has been a chemical change is that *new substances have been formed*

## Separation Techniques

- Separating mixtures: filter (catch parts on paper), evaporate, decant (pour slowly), centrifuge (spin), chromatography (for components of a solution), distillation, density differences (sep. funnel).

## Breaking Down Compounds

- Must use heat/electricity, or chemical means



## Homework

- Chapter 2.1-2.3: 1-3
- Chapter 2.4-2.6: 1-4
- Will be checked on a homework quiz

