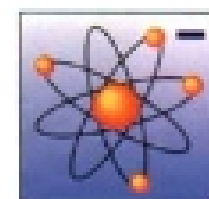
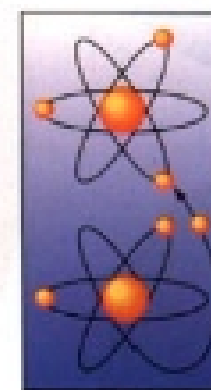
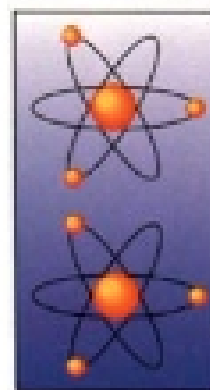
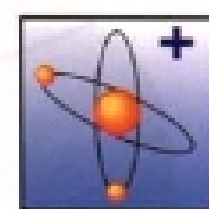


Lecture Outline

Neutral atoms



Negative ion



Positive ion

Chapter 2: Atoms, Molecules & Ions

MATERIAL TO LEARN ON YOUR OWN

- I do not have time to cover Sections 2.1-2.2 & 2.5 in lecture.
 - A Pre-recorded lecture is located on UB Learns, located:
 - Gulde Folder-PreRecorded Folder-Chapter02_Atom History
 - Gulde Folder-PreRecorded Folder-Chapter02_Periodic Table
 - You MUST watch the periodic table prior to next lecture!!
- Turn to Page 10 "Today's Atom" of lecture Notes

Atomic Theory of Matter

- Greek philosophers posed the questions:
 - "Can matter be divided into smaller and smaller pieces?"
 - "Is there a point at which there is no more division?"
- **Democritus** (460-370 B.C.): argued matter consisted of indivisible (_____) particles called _____
 - **Plato & Aristotle** said there _____ be indivisible particles & the "Atomic" view _____
- **John Dalton** (1803-1807): Brought back the _____ concept
 - 4 postulates which lead to 3 Atomic Theory Laws



Dalton's 4 Postulates

1. Each element is composed of extremely small particles called _____



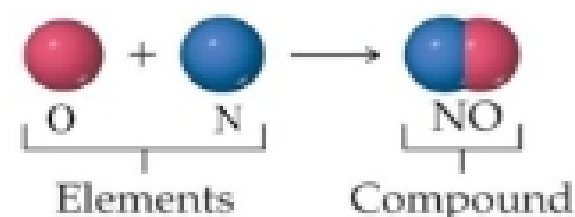
2. All atoms of 1 element are _____, but _____ from the atoms of all other elements



3. Atoms of 1 element _____ into atoms of a different element by chemical reactions (rxns); atoms are **neither** _____ **nor** _____ in chemical rxns



4. **Compounds** are formed when atoms of _____ element combine in a specific _____



John Dalton's 3 Atomic Theory Laws

1. Law of definite (constant) composition – the “relative number” (_____) & kind (_____) of atoms are **constant** (*derived from postulate 4*)

➤ Regardless of source, a compound is always the _____

- Carbon dioxide (**CO₂**) from NY or NJ is the **same**

- Both contain same type of atoms: _____ & _____

- Both contain same ratio of atoms

(_____)

➤ Mass percent - mass _____ contributes in relation to the total compound mass

$$\text{mass percent} = \frac{\text{mass of element}}{\text{mass of compound}} \times 100$$

- **Ex:** A 20.0g sample of CO₂ containing 5.44g of carbon was collected in NY, what is the mass percent of carbon? A different 34.7g sample was collected in NJ, and is believed to be CO₂. It was found to have 9.44g carbon, is the second sample CO₂?