

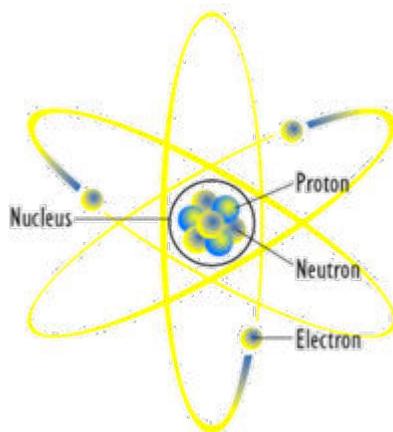
The Math & Science
Behind & Beyond
Chemistry
By Andrew Nassif



Chemistry requires lots of conceptual thinking as well as analytical actions. Chemistry is a science of measurement. Like physics, it also requires much mathematical sequences in it. Chemistry is the bridge of science, because it is a sub-subject of every major field of science including physics and geology. Boyle describes chemistry as the subject of major bodies. Chang describes chemistry as the study of matter and the changes it undergoes. Chang's definition, is the most commonly used today. Chemistry was thought to be created by the greeks (atomism), however, it was created hundreds of years before as a way ancient Egyptians used herbs to create a remedy, or used the science of proper mechanics to build the pyramids using a special chemical combination as the glue that held bricks together. Cleopatra herself was an alchemist.

Modern chemistry is also closely related to particle physics as the study elementary particles and molecular structures. Atoms are known as the basic units in chemistry as they have a dense core with an atomic nucleus and a dense cloud.

This is how Rutherford's difference between his theory that his theory introduces the Neutrons, Electrons, and



model came to be. The and the theory of Atomism is elementary particles such as the Protons as well.

NEXT WE LOOK AT COLLIGATIVE PROPERTIES AS A FORM OF MEASUREMENT:

The 8 Major Methods to Finding Colligative Properties Are:

1. Mass Percentage
 - a. The number of properties found in the mass itself
 - b. The percentage of mass with properties in the element itself
2. Volume Percentage
 - a. The percentage of volume that has properties
3. The Mass of the Solute Inside a Definite Mass of a Solvent
 - a. The mass of a solute inside the known mass of a solvent itself
4. The Mass of a Solute per the Definite Mass in a Solution
 - a. Mass of solute per definite known masses
5. Molarity
 - a. A measurement of molar concentration
 - i. Amount of constituent divided by the volume of the mixture

ii. The SI unit is mol/m³

6. Normality

a. The normal known concentration

i. Molar Concentration divided by equivalence factor

1. Uses common number of reactive species in a solution

7. Molality

a. Amount of substance as defined in the solute

8. Mole Fraction

a. Amount of constituent of a chemical/by total # of constituents in a mixture

Included in Colligative Properties are:

1. Relative Lowering of Vapor Pressure

a. Vapor pressure is called the pressure exerted by vapor in a thermodynamic equilibrium

2. Elevation of Boiling Point

a. The action that the boiling point of a liquid gets higher when another compound is added

3. Depression of Freezing Point

a. Process that happens when a solute added to a solvent and decreases the freezing point

4. Osmotic Pressure

a. Is the pressure that needs to be applied to a solution to prevent inward flow of water toward a semipermeable membrane

SOURCES:

^Chang, Raymond. *Chemistry* 6th ed. Boston: James M. Smith, 1998. [ISBN 0-07-115221-0](#).

^Atkins, P.W. et al. *Molecular Quantum Mechanics* (Oxford University Press)