Chemistry Notes Chapter 4 Section 1 and 2

I. The atom is the smallest particle of matter.

   i. Made of protons, neutrons, and electrons

II. Subatomic particles

   i. Proton

      1. Positively charged
      2. Located inside the nucleus

   ii. Neutron

      1. Neutral in charge
      2. Located inside the nucleus

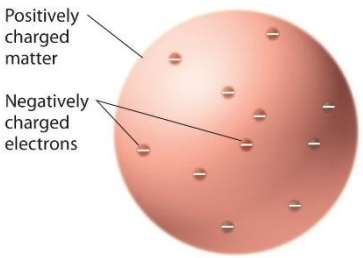
   iii. Electron

      1. Negatively charged
      2. Located outside the nucleus in the electron cloud
      3. Much smaller than a proton or neutron

III. Early Ideas about Matter

   i. Democritus, an ancient Greek philosopher was the first person to propose the idea of matter being made of small particles he called atoms.

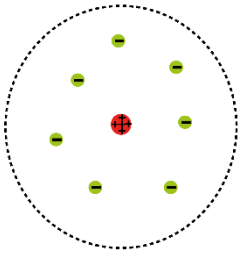
   ii. John Dalton, performed several experiments that helped prove the existence of atoms and developed his atomic theory based on his findings.



   iii. JJ. Thomson, expanded on Dalton's work, discovered the **electron** and created his own model.

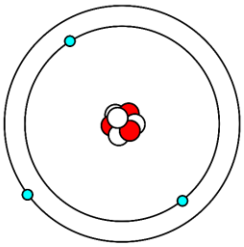
      1. Chocolate chip cookie model or Plum Pudding Model.

iv. Rutherford, expanded upon Thomson's model.



1. Discovered atoms had a positively charged center, he called the **nucleus**.
2. The rest of the atom was mostly empty space with negative charges scattered throughout.

v. Bohr developed a model of the atom in which the electrons orbited the nucleus like the planets around the sun.



1. His model only worked for 1 element

vi. Today we have the electron cloud model.
1. Each element has a well-defined nucleus containing a specific number protons and neutrons
2. Electrons are around the nucleus in energy levels, each level nesting around the next, like shells.
3. We use the term cloud because the exact location of an electrons within the different levels is uncertain.