

# Chapter 2: Atoms, Elements, Isotopes, and Ions

*A Review of Chemistry*

# Atoms

- Atoms are composed of **Protons**, **Neutrons** and **Electrons**
  - A **proton** has an electric charge of +1 and a rest mass of  $1.67 \times 10^{-24}$  gm.
  - A **neutron** has a charge of 0 and a rest mass of  $1.67 \times 10^{-24}$  gm. (about the same as a proton).
  - An **electron** has a charge of -1 and a rest mass of  $9.11 \times 10^{-28}$  gm. (much, much less than a proton).
- The electron mass is negligible relative to protons and neutrons.

# Atoms and Elements

- The chemical properties of an element depend on the number of protons (i.e. the net electric charge) of the nucleus.
- The number of protons in the nucleus is known as the *atomic number* of the element.
- Atomic numbers for natural element range from 1 (hydrogen) to 92 for uranium.