Chapter 3

3-1
Atoms: smallest particle of an element that retains the chemical identity of that element
postulates of Dalton’s atomic theory:
atoms of one element are all same
Different element= different atom
Each element composed of atoms
Atoms are neither created/destroyed in any chemical reaction
Given compound always has same relative numbers and kinds of atoms

3-2
How is atomic structure related to electricity
Atoms contain particles that have electrical charge
what did studies of cathode rays and radioactivity show of nucleus
rutherford’s alpha-scattering experiment, nucleus

- static electricity: comes from electrical charges that are not in motion
- Franklin lightning kite-flying experiment: object could have one of two kinds of electric charge: + or -
- Electrical current: moving stream of electrical charges
- Cathode= negatively charged electrode
- Anode= positively charged electrode
- Radiation called cathode ray, tube itself called cathode ray tube/CRT
- Complex version of a cathode ray tube= TV
- Cathode ray= stream of particles, particles carried a negative charge
- Thomsen: atoms were not indivisible balls but instead had a substructure, negative particles= electrons
- Millikan: charge and mass of electron
- Rutherford’s experiment: how alpha particles interact with thin metal foils
- Thomson’s “plum pudding” model: negative charges are distributed evenly throughout an atom’s positively charged interior
- Rutherford’s model: all of an atom’s positive charge as well as most of its mass is concentrated in core at atom’s center, nucleus

3-3
3 subatomic particles: protons, neutrons, electrons
nucleus= P & N, space around nucleus= E
electrons do not orbit nucleus in a well-defined path
=> impossible to know exactly where an electron is at any given time
E’s positions= clouds
Atomic #= # of P= atom’s identity
Ion= when an atom loses/gains one or more electrons and acquires a net electrical charge
Isotopes= same # of protons/atomic # but different # of neutrons/mass
Symbol: mass number, element symbol, atomic number (mass at top)