

Ch 25 The Atom

Alpha, Beta, Gamma

Rutherford's Experiment

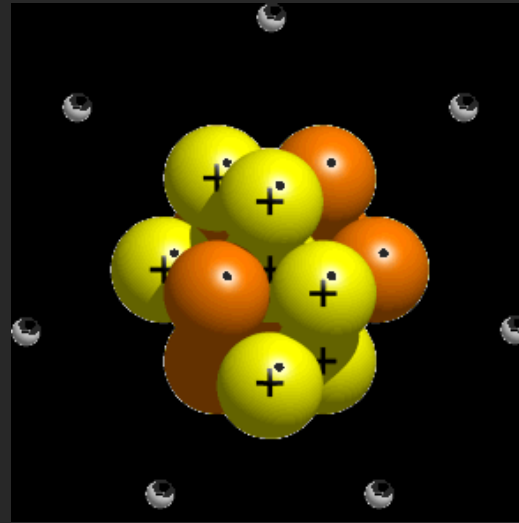
Emission Spectra

Bohr's Model

Ultraviolet catastrophe

Energy Levels

Lasers

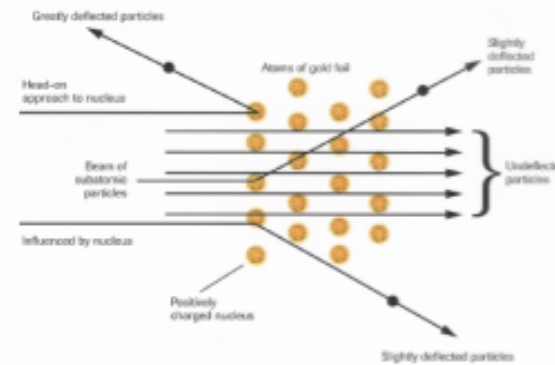
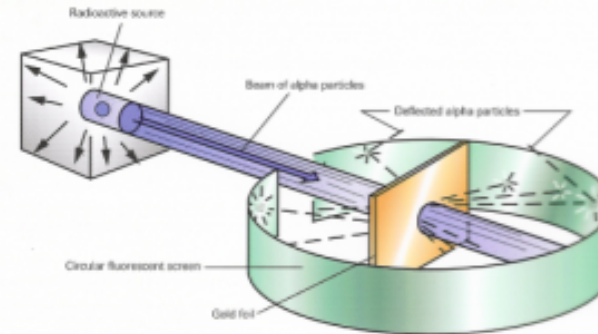


Ch 25 - The Atom

Rutherford's Experiment led to the "Planetary Model" where the negative electrons orbited the positively charged nucleus as planets orbit the sun.

51 Gold Foil Experiment

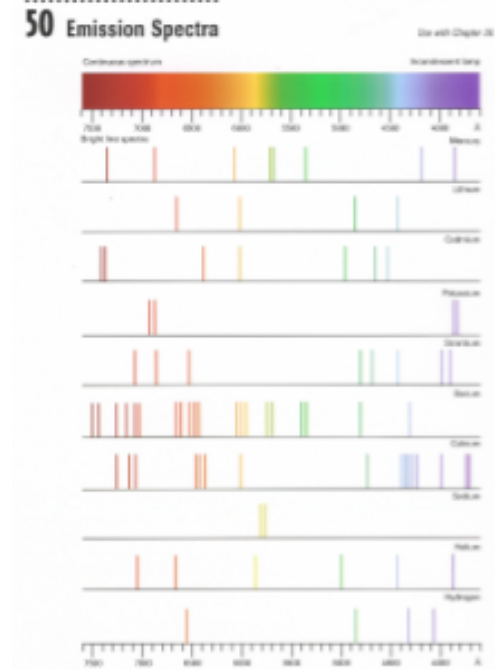
Use with Chapter 28.



The planetary model had serious flaws.

1. The orbiting electron should give off energy by radiation and spiral inward. Atoms would not be stable.

2. The orbiting electrons should give off a continuous spectrum. They do not. They give off line spectra, as indicated at the right.



Bohr's model:

1. Only certain orbits are possible.
Electrons in orbits are stable.
2. Electrons radiate only when they are changing orbit, in which case the energy is given off in quanta calculated by $E = hf$
3. Spectral lines represent energy differences between orbits.