

Section 1: The Development of the New Atomic Model

The Rutherford model of the atom did not explain the location of electrons within the space surrounding the nucleus

Properties of Light

It was discovered that light has particle, as well as wave, like properties

The wave Description of Light

Electromagnetic Radiation: A form of energy that exhibits wavelike behavior as it travels through space

- Types of Electromagnetic Radiation:
 - o X-Rays
 - o Ultraviolet Light
 - o Infrared Light
 - o Microwaves
 - o Radio Waves

Electromagnetic Spectrum: This forms when all the forms of electromagnetic radiation fit together

All electromagnetic radiation moves at a constant speed of 3.0×10^8 meters/second—This is also light's approximate speed through air

The significant feature of wave motion is its repetitive nature

- Wavelength: Expressed as λ , is the distance between corresponding points on adjacent waves and is measured in: meter, nanometer, centimeter
 - o $1\text{nm} = 1 \times 10^{-9}\text{m}$

- Frequency: Expressed as ν , is the number of waves that pass a given point in a specific time and is measured in Hertz, Hz

Wavelength and Frequency are mathematically related:

- $C = \lambda\nu$
 - o C being the speed of light, λ the wavelength, and ν the frequency

The photoelectric Effect

Photoelectric Effect: The emission of electrons from a metal when a light shines on the metal

The Mystery: Why does light striking metal use a minimum frequency?