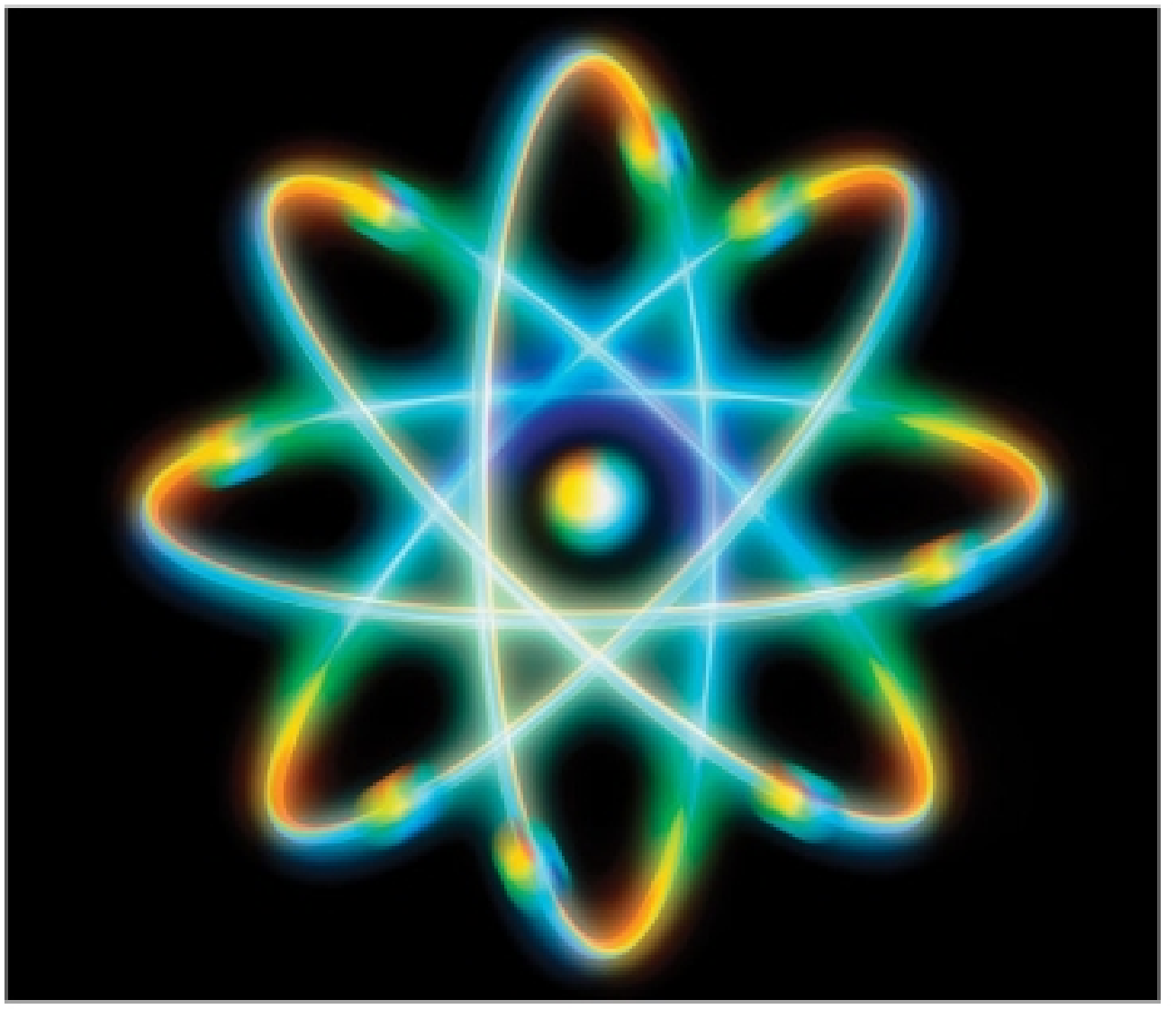
CHEM 101

Electronic Structure of Atoms



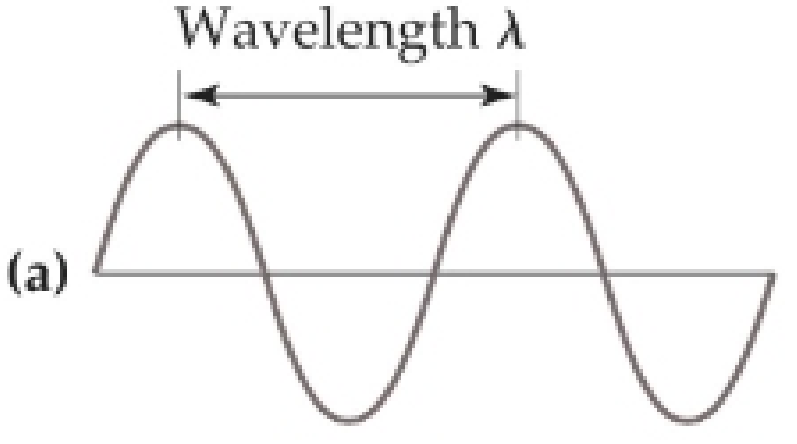
Notes by: Jahvea Marston

University at Buffalo

Chapter 6

Waves

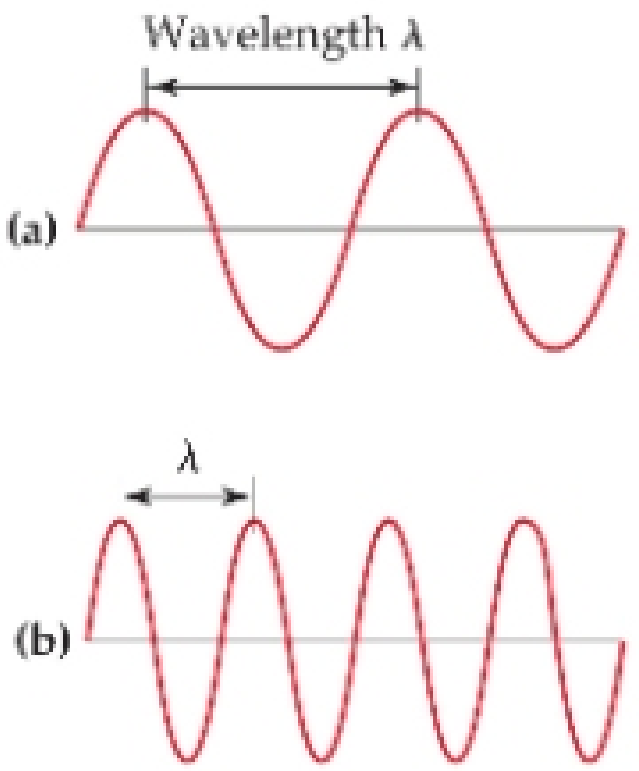
Wavelength(λ): the distance between corresponding points (wave peaks or crests) on adjacent waves.



frequency (v): number of waves posing a given point per unit time.

For waves traveling at the same velocity, the longer the wave length, the smaller the frequency

Ex: If the time associated with these lines are one second , the frequencies would be $2s^{-1}$ (a) and $4s^{-1}$(b) respectively.



Longλ = Low v

(c)

-λ = m

-v = s^{-1} or Hz

$c = \lambda v$

$v = \frac{c}{\lambda}$

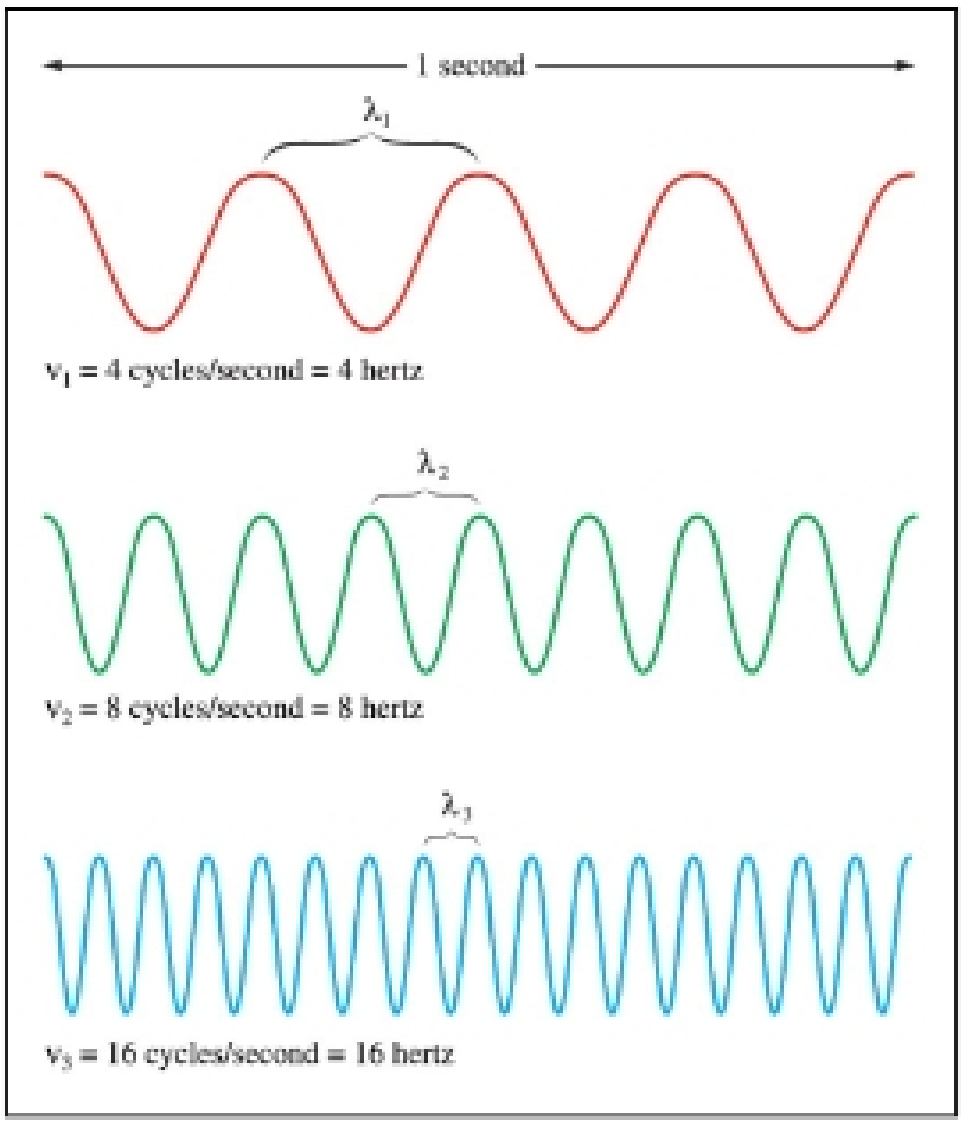
Speed of Waves

Speed of wave = distance traveled per unit of time

- spd. of light (in vacuum) is: $3.00 \cdot 10^8$ m/s

Chapter 6

Nature of Waves



Electromagnetic Radiation (Energy)

Electromagnetic Radiation: the emission and transmission of energy in the form of electromagnetic waves.

–Electromagnetic Spectrum lists different types of radiation energies and each color has a different energy.

Wave-like Nature of Light

Since all electromagnetic radiation moves at the sod. of light, c (m/s)

$$\nu\lambda = c$$

ν = s^{-1} or Hz

λ = m

c = m s^{-1} or m/s

The Nature of Energy

The more nature of light doesn't explain how an object can glow when its temperature increases.