

Chap 6 - Electronic Structure of Atoms

e^- in an atom = # ρ
Neutry

Where \rightarrow outside nucleus, in e^- clouds
 energy levels.

Calc amt energy at each level
 E in J

Oct 24-8:34 AM

- e^- move closer to nucleus on own

- IF Add E , can get an e^- to move further away from nucleus.

Stay away until E runs out
 Then fall back to ground state
 giving off energy as light of a certain color

Oct 24-8:41 AM

Measure Color \approx amt of E. released

~~lambda~~ Wavelength, (meters)

excited \downarrow ground

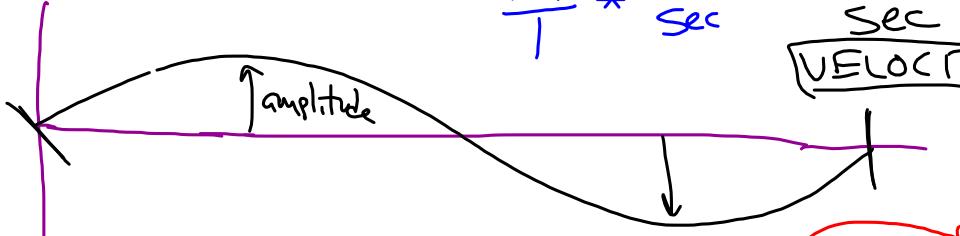
$\text{nm} = \text{nano meters}$
 $1 \times 10^{-9} \text{ m}$

frequency (Hz = Hertz)

$\frac{\# \text{ / time}}{\text{sec}} = \text{Sec}^{-1} = \text{s}^{-1}$

Oct 24-8:45 AM

Wave



Amplitude

$\lambda * f = C$ constant speed of light.

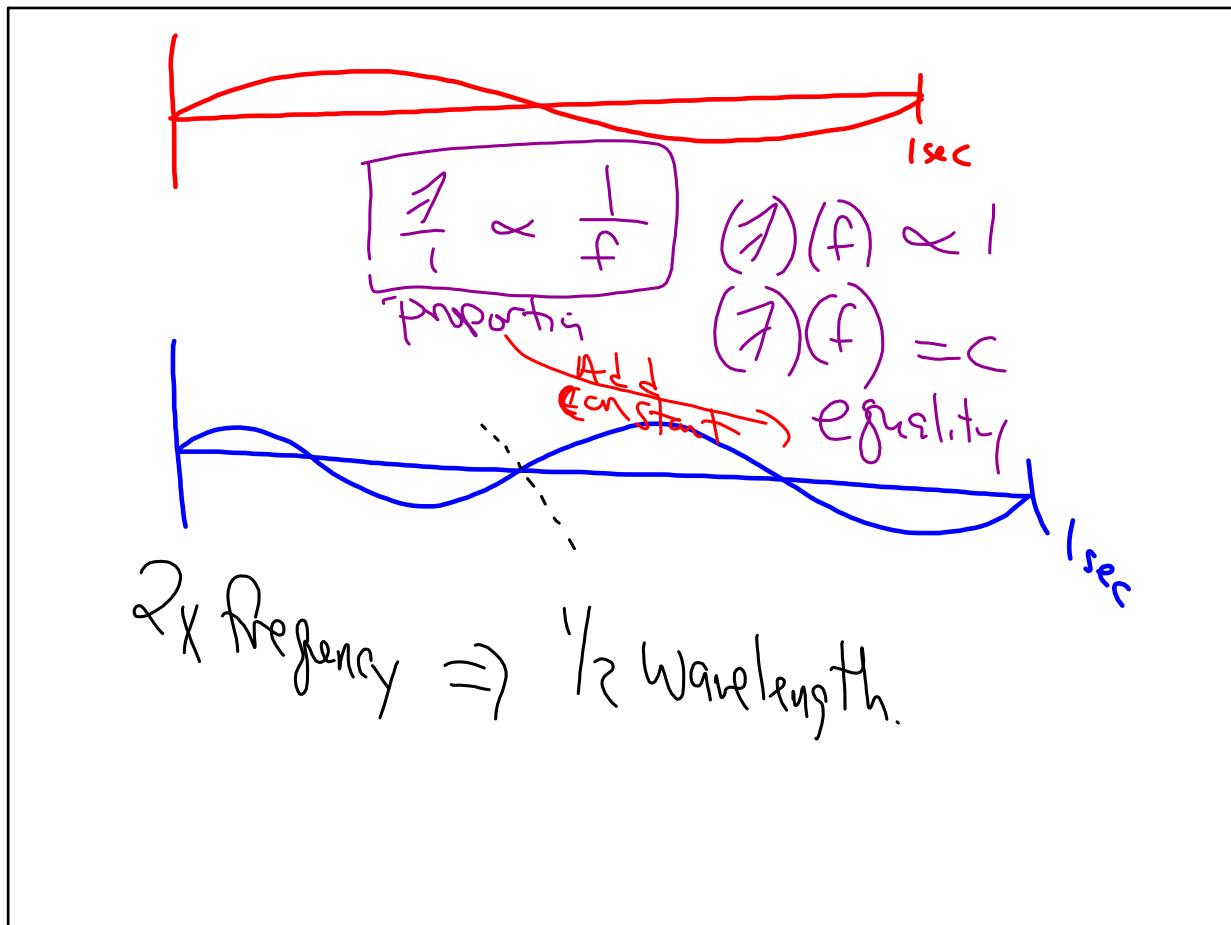
$\frac{\text{m}}{\text{sec}} * \frac{1}{\text{sec}} = \frac{\text{m}}{\text{sec}}$ VELOCITY

Wavelength. (m)

$\text{freq} = \# \text{ waves/sec}$

$3 \times 10^8 \text{ m/sec}$

Oct 24-8:50 AM



Oct 24-8:52 AM

$$f \uparrow, \quad \lambda \downarrow, \quad E \uparrow$$

μ

$$E \propto f$$

$$E = h f$$

Planck's constant

$$\frac{\text{sec}}{1} * J = h \frac{1}{\text{sec}} * \frac{\text{sec}}{1}$$

$$h = J * \text{sec}$$

$$6.63 * 10^{-34} \frac{\text{J} \cdot \text{sec}}{\text{J} \cdot \text{sec}}$$

Oct 24-9:00 AM

$$f = \frac{c}{\lambda} \quad C = f \lambda \quad , \quad E = hf, \quad E = mc^2$$

$$\frac{v}{\lambda} \quad E = hf$$

$$hf = mc^2$$

$$hf = mv^2$$

An (speed)
not just S.O.L.

$$\frac{hv}{\lambda} = \frac{mv^2}{l}$$

$$\frac{h\nu}{mv} = \frac{l}{\lambda}$$

~~De Broglie
Wave length~~
 = $\frac{h}{mv}$
 Momentum

Oct 24-9:08 AM

$$6 / 15 + 17$$

Oct 24-9:16 AM