

# Chapter 7: Atomic Structure

- relationship between  $\Delta E$ ,  $\lambda$ ,  $\nu$

$$c = \lambda \nu$$

$$\Delta E = h \nu$$

$c$  = speed of light  $3.00 \times 10^8$  m/s

$\lambda$  = wavelength (m)

$\nu$  = frequency ( $s^{-1}$ )

$h$  = Planck's constant

- Bohr model

- Heisenberg Uncertainty Principle

$$6.63 \times 10^{-34} \text{ J}\cdot\text{s}$$

- Four quantum numbers:  $n$ ,  $l$ ,  $m_l$ ,  $m_s$

$n$  principle quantum number

$$n = 1, 2, 3, 4 \dots \infty$$

$l$  angular momentum (subsidiary, azimuthal)

$$l = 0, 1, 2, 3 \dots n-1$$

s      p      d      f

$m_l$  magnetic quantum no.

$$m_l = -l \dots 0 \dots +l$$

$m_s$  spin quantum no. =  $\pm \frac{1}{2}$

- shapes of orbitals - s, p, d  
be prepared to draw them