Announcements – Lecture VI – Tuesday, May 28th

1ST LAB : Today, 1:30-4:30, ISB 155(A-C)

2ND LAB : THURSDAY, MAY 30th, 1:30-4:30

EXAM 1 : FRIDAY, MAY 31ST, IN class

Quiz 4 Last Name: _____

C: 12.01 H: 1.01 O: 16.00

A compound is found to contain 39.99 % carbon, 6.727 % hydrogen, and 53.28 % oxygen by weight. Determine the empirical formula of this compound?

C	H	O
39.99 g	6.727 g	53.28 g
3.329 mol *	6.660 mol	3.330 mol
$\frac{3.329}{3.329}$	$\frac{6.660}{3.329}$	$\frac{3.330}{3.329}$
1	2.001	1.000
1	2	1

CH_2O

The molecular mass for this compound is 180.18 g/mol.. Determine the molecular formula of this compound?

CH_2O : $12.01 + 2(1.01) + 16.00$

$= 30.03\ g.mol$

$$\frac{180.18\ g.mol^{-1}}{30.03\ g.mol^{-1}} = 6$$

$C_6H_{12}O_6$

3.3 Stoichiometry and Chemical Reactions

b) Balancing Chemical Equations

3.3b Balancing – Example_1

Balance the following chemical equation:

$$\underline{2}\ Fe_2O_3(s) + \underline{3}\ C(s) = \underline{\cancel{2}\ 4}\ Fe(s) + \underline{3}\ CO_2(g)$$

Reactants					✓
Fe	2	2	4	4	4
O	3	3	6	6	6
C	1	1	1	1	3

Products					✓
Fe	1	2	2	4	4
O	2	2	6	6	6
C	1	1	3	3	3

$2\ Fe_2O_3(s) + 3C(s) = 4\ Fe(s) + 3\ CO_2(g)$

3.3 Stoichiometry and Chemical Reactions

b) Balancing Chemical Equations

3.3b Balancing – Example_2

Balance the following chemical equation:

$$\_\_C_2H_6(g) + \underline{7/2}\ O_2(g) \quad = \quad \underline{2}\ CO_2(g) + \underline{3}\ H_2O(l)$$

Reactants				✓	
C		2	2	2	
H	6	6	6	6	
O	2	2	2	7	

Products				✓	
C	1	2	2	2	
H	2	2	6	6	
O	3	5	7	7	

$C_2H_6(g) + 7/2\ O_2(g) = 2\ CO_2(g) + 3\ H_2O(l)$ ☹

"Convert to the smallest whole integer values"

$2\ C_2H_6(g) + 7\ O_2(g) = 4\ CO_2(g) + 6\ H_2O(l)$ ☺

3.3 Stoichiometry and Chemical Reactions

b) Balancing Chemical Equations

3.3b Balancing – Example_3

Balance the following chemical equation:

$$\_\_AgNO_3(aq) + \_\_K_2CrO_4(aq) = \_\_Ag_2CrO_4(s) + \_\_KNO_3(aq)$$

What is taking you so long?

3.3 Stoichiometry and Chemical Reactions

b) Balancing Chemical Equations

3.3b Balancing – Example_3

Balance the following chemical equation:

$$\underline{2}\ AgNO_3(aq) + \underline{\ \ }\ K_2CrO_4(aq) = \underline{\ \ }\ Ag_2CrO_4(s) + \underline{2}\ KNO_3(aq)$$

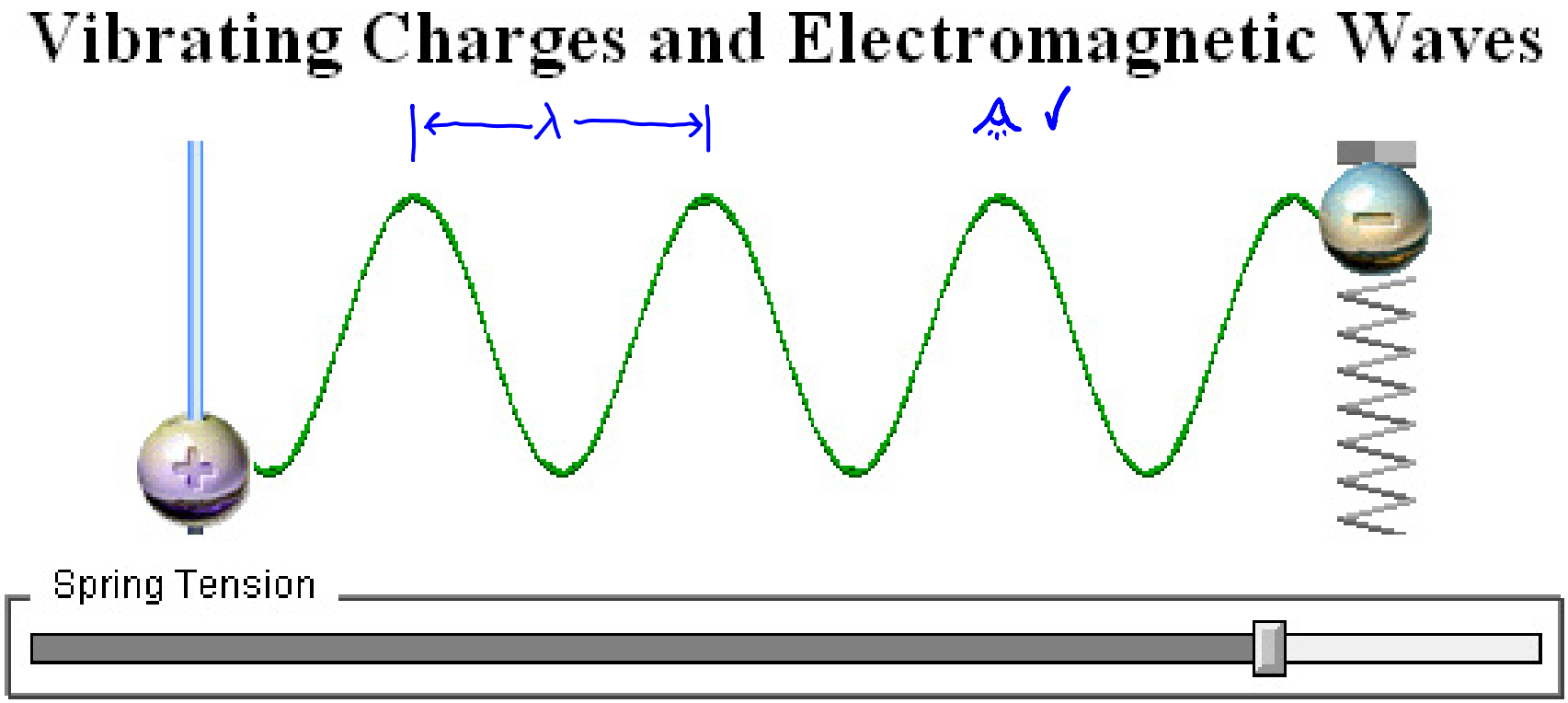
Reactants			✓		
Ag	1	2	2		
NO_3	1	2	2		
K	2	2	2		
CrO_4	1	1	1		

Products			✓		
Ag	2	2	2		
NO_3	1	1	2		
K	1	1	2		
CrO_4	1	1	1		

$$2\ AgNO_3(aq) + K_2CrO_4(aq) = Ag_2CrO_4(s) + 2\ KNO_3(aq)$$

6.1 Electromagnetic Radiation

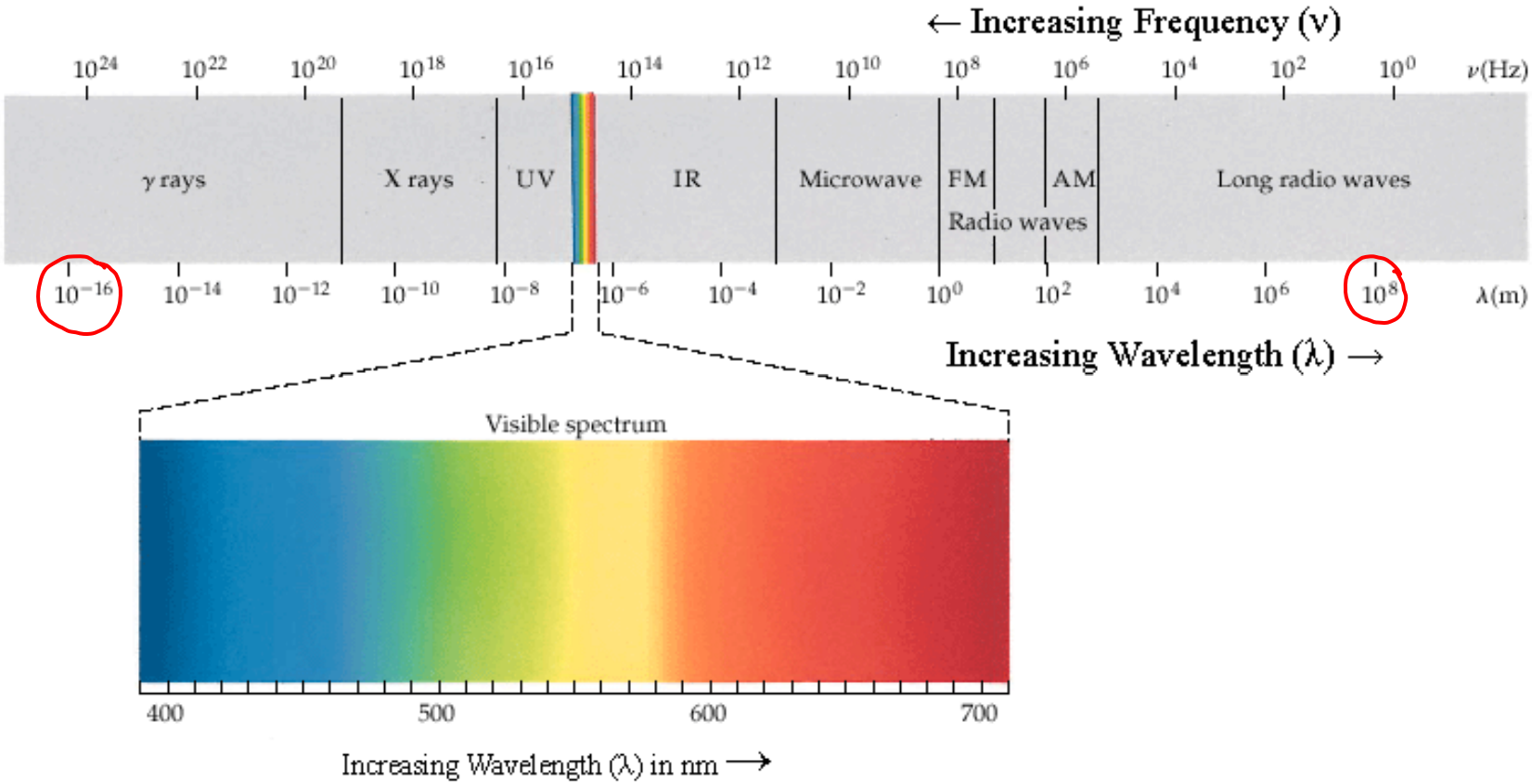
a) Wavelength and Frequency



	Symbol	Unit
Wavelength	λ	m
Frequency	✓	s^{-1} or Hz (Hertz)

6.1 Electromagnetic Radiation

b) The Electromagnetic Spectrum



Let us focus on the visible region particularly the extremes ... Blue is Red