Announcements – Lecture V– Tuesday, Sep 16th

Unassigned iClickers
803B16AD
80489B53
80888880
80B5CDF8
80BB003B
835837EC
83983328
8813168D
8FA3B894
91C29DCE
95498F53
9631983F

No iClicker Registered		
SID	Last	First
26207279	Apiri	James
28819600	Beynor	Jacklyn
28847017	Fitzgerald	Karly
28878277	Ford	Helena
28803233	Hebert	Alexis
24766907	Johnsen	Carl
26004944	Laffey	Conor
28164064	Milone	Maximilian
26036657	O'Dea	Derek
28816374	Riccie	Carlie
28810094	Siegel	Jaime
29286876	Weil	Alexandra

Announcements – Lecture V– Tuesday, Sep 16th

1. **First Lab – Saturday, September 20th … 1-4pm … ISB 155/160 (A-E)**

   a) Read the Lab Policy prior to the this lab.

   b) Print lab prior to coming to lab -- use the 'Print Friendly Version' located on the top left hand side of the page – this is the version that contains the 'Data Sheet' that you will hand in upon completing the lab.

   c) Review the sample quiz on class web site – a short 6 question quiz will be administered at the start of the lab – questions taken from the sample questions.

3.6 How Do We Predict Formulas and Name Ionic Compounds.

B *Transition Metals*

What is the correct name for the ionic compound $Cu(NO_3)_2$

NO_3^- = Nitrate

$Cu(NO_3)_2$: $? + 2(-1)$, $? = +2$

Copper (II) nitrate

What is the correct name for the ionic compound $CuSO_4$

a) Copper(I) sulfate
b) Copper(I) sulfite
c) Copper(II) sulfate
d) Copper(II) sulfite

SO_4^{2-} = Sulfate

$CuSO_4$: $? + (-2) = 0$, $? = +2$

Copper (II) sulfate

3.6 How Do We Predict Formulas and Name Ionic Compounds.

C *Polyatomics*

Give the correct chemical formula for the ionic compound, sodium phosphate.

Sodium : Group 1A .... Na^+
Phosphate : ... PO_4^{3-}
} Na_3PO_4

Give the correct chemical formula for the ionic compound, aluminum carbonate.

Aluminum : Group 3A ... Al^{3+}
Carbonate : .. CO_3^{2-}
} $Al_2(CO_3)_3$

Note the use of ( ) when dealing with polyatomic ions
$Al_2(CO_3)_3$ and not $Al_2C_3O_9$

4.3 What Is a Mole and How Do We Use It to Calculate Mass Relationships?

What is the mass in grams of 1 mole of Li.

^{6}Li:	6.015 amu	7.42%
^{7}Li:	7.016 amu	92.58%

$N = 6.0221 \times 10^{23}\ mol^{-1}$ $\qquad$ $1\ amu = 1.6606 \times 10^{-24} g$

1 atom: $0.0742\,(6.015) + 0.9258\,(7.016) = 6.9417\ amu$

$$6.9417\ amu \left| \frac{1.6606 \times 10^{-24} g}{1\ amu} \right. = 1.1527 \times 10^{-23} g$$

- !

1 atom of Li : $1.1527 \times 10^{-23} g$

1 mol of Li : $1.1527 \times 10^{-23} g\,(6.0221 \times 10^{23}\ mol^{-1})$

$= 6.9417\ g.mol^{-1}$

4.3 What Is a Mole and How Do We Use It to Calculate Mass Relationships.

Molar Mass ... (Formula Weight)

Al	Si	P	S
13	14	15	16
26.98	28.09	30.97	32.07

Al : 26.98 g.mol^{-1}

↳ P : 30.97 g.mol^{-1}

C_4H_{10} : 4(C) + 10(H)

4(12.01) + 10(1.01) = 58.14 g.mol^{-1}

Molar Mass

Reminder : 58.14 g.mol^{-1} = $\frac{58.14\ g}{1\ mol}$

4.3 What Is a Mole and How Do We Use It to Calculate Mass Relationships.

Example 1

a) How many ATOMS of fluorine are present in 3.30 moles of BF_3?

b) How many MOLES of fluorine are present in 3.09×10^{22} molecules of BF_3

$N = 6.023 \times 10^{23}$

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a) $3.30 \text{ mol } BF_3 \left| \frac{3 \text{ F}}{1 \text{ } BF_3} \right. = 9.90 \text{ mol F}$

$9.90 \text{ mol F} \left| \frac{6.023 \times 10^{23} \text{ atoms}}{1 \text{ mol}} \right. = 5.96 \times 10^{24} \text{ atoms F}$

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b) $3.09 \times 10^{22} \text{ molecules } BF_3 \left| \frac{1 \text{ mol}}{6.023 \times 10^{23} \text{ molecules}} \right. = 0.0513 \text{ mol } BF_3$

$0.0513 \text{ mol } BF_3 \left| \frac{3 \text{ F}}{1 \text{ } BF_3} \right. = 0.154 \text{ mol F}$

5.3 What Is a Mole and How Do We Use It to Calculate Mass Relationships.

Example 2

How many **MOLES** of water are present in 5.41 grams of this compound ?

O: 16.0 H: 1.01

a) 0.1 b) 0.2 c) 0.3 d) 0.4 e) Help

5.41 g water → ? mol water

H_2O : 2(H) + O

$2(1.01) + 16.0 = 18.02\ g.mol^{-1}$ .... $\frac{18.02\ g}{1\ mol}$

$$5.41\ g\ water \left| \frac{1\ mol}{18.02\ g} \right. = 0.3\ mol\ water$$

5.3 What Is a Mole and How Do We Use It to Calculate Mass Relationships.

Example 3

How many Grams of ethanol (CH_3CH_2OH) are present in 0.61 moles of this compound ?

C: 12.01 H: 1.01 O: 16.0

a) 46 b) 96 c) 28 d) Help

CH_3CH_2OH: 2(C) + 6(H) + O

$2(12.01) + 6(1.01) + 16.0 = 46.08\ g.mol^{-1}$

$\left(\frac{46.08\ g}{1\ mol}\right)$

$$0.61\ mol\ CH_3CH_2OH \left| \frac{46.08\ g}{1\ mol} \right. = 28.1\ g\ CH_3CH_2OH$$