# **Solution Chemistry Notes Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## ***Definitions:***

## Solution:

## 

## Solvent:

## 

## Solute:

## Saturated:

## 

## Unsaturated:

## Solubility:

# Bonding Reminder – Two Extremes

|  |  |
| --- | --- |
| **Covalent - “Sharing”** | **Ionic – “Not-Sharing”** |
|  |  |

## ***Van der Waals Forces:***

## THREE main types:

## ***DIPOLE-DIPOLE FORCES***

Dipole: Description: dipole.gif ***δ+* Cl—F *δ-***

* \*a permanent dipole results from atoms with different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Dipole-Dipole Forces:**

Description: dipole.gifDescription: dipole.gif

## Description: polar water molecule.gif

# MOLECULAR POLARITY

## **Polar: Difference in Charge Distribution**

## Description: boron trifluoride 2.png

## **Nonpolar: Either no difference, or difference cancels our**

### **One of the following does *NOT* hold**

## Ex: Which of the following are expected to be polar and which are expected to be nonpolar??

## 

## ***LONDON FORCES***

## **London Forces:**

## **Only for Non-Polar molecules!** \*if a permanent dipole is ABSENT….LONDON FORCES!

## IONIC BOND DIPOLE – DIPOLE ==LONDON FORCE

## Description: inter vs intramolecular bonding.gif

## 

## Intramolecular Intermolecular

## 

## \*the attraction between polar molecules is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than the attraction between ions

## \*polar molecules have a higher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ then nonpolar

## ***HYDROGEN BONDING***

## 

## **Hydrogen Bond:**

## Really the same thing as dipole-dipole interactions… just given a special name

## 

## \*intermolecular bond – inter = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* \*intramolecular bond – intra *=* ***\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_***

## \*strongest van der Waals bonds – but still weaker than \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## 

|  |  |
| --- | --- |
| **BOND TYPE** | **WHAT TO LOOK FOR...** |
| ***INTRA***MOLECULAR BONDS:  Bonds ***within*** a molecule | |
| IONIC BOND |  |
| COVALENT BOND |  |
| ***INTER***MOLECULAR BONDS:  Bonds ***between*** molecules/ions | |
| HYDROGEN BOND |  |
| DIPOLE-DIPOLE FORCE |  |
| LONDON FORCE |  |

# POLAR AND NONPOLAR SOLVENTS

## Dissolving Process – 3 ATTRACTIONS:

## attraction of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to surrounding \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## attraction of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to particles of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## attraction of one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## \*\*WATER is one of the most polar solvents known and tends to dissolve both polar and ionic solutes.

## Remember “***Like dissolves Like”***

# THE NATURE OF SOLUTIONS OF IONS

## The formation of a solution depends on the ability of the solute to dissolve in the solvent.

## SOLVATION:

## 

## IONIC SOLID:

## 

## MOLECULAR SOLID:

## DISSOCIATION:

## 

## ex:

## http://www.northland.cc.mn.us/biology/biology1111/animations/dissolve.html

## IONIZATION:

## ex: CH3COOH + H2O ------> CH3COO- + H3O +

# Writing Dissociation Equations

## Writing dissociation equations is similar to balancing equations…

## The difference is it’s always one molecule breaking into the ions that make it up

## Use these rules to help you balance Dissociation Equations

### The state is VERY important (aq)

### Same rules for balancing Elements as before

### PLUS we must now balance the charge (same amount of charge on the Left Side as Right Side

### The [ions] released is proportional to the ratio of elements in the original molecule

# THE CONDUCTIVITY OF AQUEOUS SOLUTIONS

## A conducting solution contains ions; \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## A compound made up of a METAL and NONMETAL is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## A substance made up of a NONMETAL and a NONMETAL is **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

## \*\*TO CONDUCT or NOT CONDUCT??? that is the question.....

## **CONDUCT** **DOESN’T CONDUCT**

## - ionic - solid

## - acidic - covalent

## - basic - starts with C

## - CH3COOH (exception)

## 