Unit 5.3: Chemical Bonding – Types of Bonds

**There are three main types of Chemical bonding.**

**\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| --- |
| **Ionic Bonding** occurs when there is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of electrons. |
| **Covalent Bonding** occurs when atoms \_\_\_\_\_\_\_\_\_\_\_ electrons. |
| **Metallic Bonding** consist of the attraction of free \_\_\_\_\_\_\_\_\_\_ valance electrons for positively charged \_\_\_\_\_\_\_\_\_\_ ions. |

Electro \_\_\_\_\_\_\_\_\_\_\_\_ are used to determine what type of \_\_\_\_\_\_\_\_ is formed when atoms come together in a chemical reaction.

**To find the type of \_\_\_\_\_\_\_\_\_\_, find the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in the electro negativities.**

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| --- |
| If the difference is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than 1.67 an \_\_\_\_\_\_\_\_ bond is formed. |
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**Rules for Ionc Bonding**

All atoms want to obtain eight electrons in the valence energy level. To do so they will give, take, or share electrons.



 **NaCl Sodium Chloride:** Sodium: (\_\_\_\_\_) Chlorine: (\_\_\_\_\_)

 **Na:** 1s22s22p6\_\_\_\_\_  **Cl:** 1s22s22p63s23p5

 Sodium transfers the 3s1 to Chlorine to complete the 3p5 energy level.

 The electronegativity \_\_\_\_\_\_\_\_\_\_\_ is 1.72

 An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond is formed.

 **Covalent Bonding:**

* The element with the fewest atoms goes in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* The other atoms go around the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atom.
* Show the transfer of the electrons with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for

 the atom that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the electrons and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the atoms that gain the electrons.

**AsI3 Arsenic Triiodide** Arsenic (\_\_\_\_\_\_\_\_) Iodine (\_\_\_\_\_\_\_)

**As:** 1s22s22p63s23p64s23d104p3 **I**: 1s22s22p63s23p64s23d104p65s24d105p64d105p5

The electro negativity difference is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bond is formed. The atoms share the electrons.

**Rules for Showing Covalent Bonds**

* The element with the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atoms goes in the center.
* The other elements go around the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ atom.
* A bonding pair can only form where there is an \_\_\_\_\_\_\_\_\_\_ electron.
* Shared pairs or bonding pairs are shown with a \_\_\_\_\_\_\_\_. One dash equals \_\_\_\_\_\_\_\_\_\_ electrons.