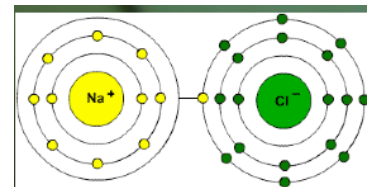


Chp 14: Lect 2: Chemical Bonding: Part 1: Ionic Bonds & Ions

Ions ions ions

We've also talked about ions....What is an ion? An ion is a _____ or an atom that has either _____ or _____ an _____. We also talked about how Sodium willingly gives away its lone valence electron. Chlorine very greedily takes that electron, in order to full its outer shell. Like we said, sodium & chloride are a match made in heaven. As sodium gives away its electron, it becomes a _____ ion

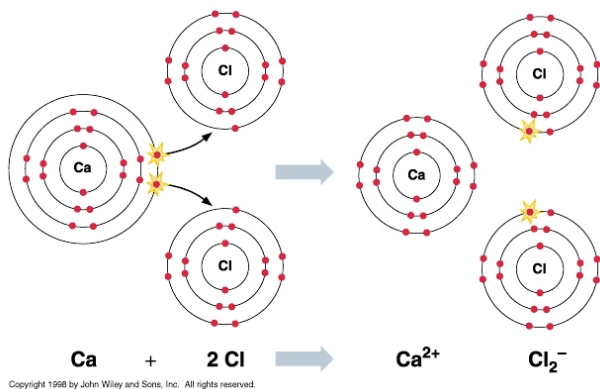


This is called a _____. When chlorine receives the electron, it becomes a _____ ion. This is called an _____. After the electron moves, the positive sodium ion is then immediately attracted to the negative chloride ion. Why are they attracted to each other? _____

Video1: Chemical Bonding & Atomic Structure

Ionic Bonds

This bond is called an ionic bond, because the electrons are _____ from one atom to another, creating an _____ between _____. In other words, 1 element's atom is going to _____ electrons, and the other is going to _____. These bonds are not limited to a single pair of atoms. In NaCl, each Na⁺ is attracted to all of the neighboring chloride ions. Likewise, each Cl⁻ is attracted to all the neighboring sodium atoms. These ions form in a repeated, 3-dimensional pattern called a _____. This means the positive and negative atoms are arranged in alternating patterns. This is why salt is formed in cubes.



Ionic Bond Examples

The prime example of an ionic bond is NaCl, but there are many more examples of ionic bonds. Look how it takes 1 calcium atom to bond with 2 chlorine atoms. Also, notice how calcium is now Ca²⁺. Why? Well, because calcium _____ electrons, leaving it with an overall charge of 2+. Conversely, each chlorine _____ electron, leaving each with an overall charge of 1-. This new compound would be written as _____

Video #2: Ionic Bonding

Ions Example #2

Here's another example. I've got two ions: H¹⁺ and (SO₄)²⁻. This time, the _____ (high #) represents the charge number. Remember that the subscript (low #) refers to the number of atoms. How many hydrogens does it take to pair with the sulfate ion (SO₄)? Well, 2!. I need 2 positive charges to match the 2- charge. The final compound would be _____

Video #3: Ionic Bonding with Sodium & Chlorine

Covalent	Ionic
_____ Electrons	_____ Electrons
Creates _____	Creates _____
Bond consists of 2 electrons	Bonds form with all oppositely charged neighbors

You Try It!

Cation	Anion	Compound
Li ¹⁺	S ²⁻	
Mg ²⁺	Cl ¹⁻	
Al ³⁺	(PO ₄) ³⁻	

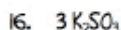
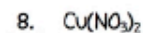
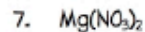
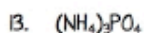
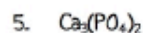
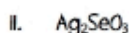
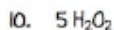
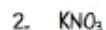
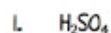
Video #4: Ionic Bonding Review

Metallic bond

Quickly... a metallic bond is the force of attraction between a positively charged _____ and the _____ in a metal. Metals atoms are so tightly packed, their electron shells overlap This lets electrons move freely from one atom to another. THIS lets metal conduct electricity & change shape easily (ductility, malleability).

COUNTING ATOMS

Write the name & amount of each element in compounds below, then circle the total number of atoms.



Video Notes:

1. Chem Bonding & Atomic Structure:

2. Ionic Bonding:

3. Ionic Bonding with Sodium & Chlorine

4. Ionic Bonding REVIEW

BrainPop Questions:

1. What is an ion?

- A. an atom with an extra neutron B. An atoms or molecule with an electrical charge C. The outermost shell of an atom

2. What is the nucleus of an atom made up of? A. Neutrons & protons B. Protons & electrons C. Electrons & neutrons?

3. What are the negatively-charged particles orbiting an atom called? A. Electrons B. Protons C. Neutrons

4. When do ions form? A. When an atom loses a proton B. When 2 atoms bond together C. When an atom loses or gains an electron

5. Electrons orbit the nucleus in layers called: A. Valence clouds B. Shells C. Potentials

6. Electrons in the outermost shell are called: A. valence electrons B. Ionization electrons C. Orbital electrons

7. What is the tendency to lose electrons called A. Negative valence B Ionization C. Positive valence

8. Atoms on the right side of the periodic table ten to: A. Gain electrons easily B. Lose electrons easily C. Lose protons easily

9. How do ions stick together? A. With covalent bonds B. With negative bonds C. With ionic bonds

10. What happens to the ionic bond when sodium chloride is dissolved in water?

- a. The bond strengthens B. The bond breaks C. The bond is unaffected