

① Chemistry Of Life

What You'll Learn:

List the differences among atoms, elements, molecules, and compounds.

Explain the relationship between chemistry and life science.

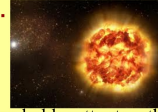
Discuss how organic compounds are different from inorganic compounds.

The Nature of Matter

***Matter is anything that has mass and takes up space.**



***Energy is anything that brings about change.**



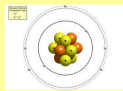
- Energy can hold matter together or break it apart.

Atoms

***Nucleus is in the center and contains protons (positive) and neutrons (no charge).**

***Electrons (negative) move randomly around the nucleus.**

***Electrons are the part that are involved in chemical reactions.**



Elements

***Elements are made of ONLY ONE kind of atom.**

- Scientists have given each element its own one- or two-letter symbol.

- An element can't be broken down into a simpler form by chemical reactions.

A periodic table of elements is shown. A red arrow points to the element Barium (Ba) in the s-block, specifically in the 6th period and 2nd group. The table includes elements from Hydrogen (H) to Oganesson (Og).

Compounds and Molecules

***Molecules are any two or more atoms combined.**

***Compounds are two or more elements in exact proportions.**

***Compounds produce different characteristics than individual atoms.**

Molecular Compounds

***This is when atoms share an electron.**



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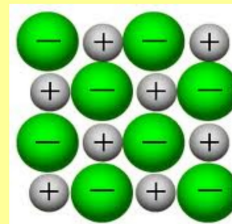
***An atom becomes an ion when it loses or gains an electron.**

- When an atom loses an electron, it has more protons than electrons, so it becomes positively charged.

- When an atom gains an electron, it has more electrons than protons, so it becomes negatively charged.

Ionic Compounds

- Ions of opposite charges attract one another to form electrically neutral compounds.



Mixture

***Combination in which substances retain their own properties.**

- In a solution, two or more substances are mixed evenly.

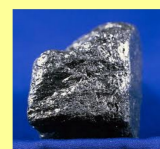
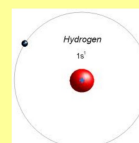
- Unlike solutions, the substances in a suspension eventually sink to the bottom.

- A suspension is formed when a liquid or a gas has another substance evenly spread throughout it.



Organic Compounds

***Have hydrogen and carbon, and come from living things.**



***Four groups that make up all living things are:**

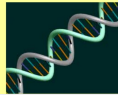
1. Carbohydrates supply energy.

2. Lipids store and release large amounts of energy.



3. Proteins are the building blocks of structures in organisms.

4. Nucleic Acids store important genetic information.



Inorganic Compounds

***Do not contain carbon and are nonliving.**



Importance of Water

1. Transport materials throughout the body.

2. Needed for reproduction.

3. All chemical reactions take place in water.

4. Insulation

