

O/L Science

Fundamentals
of Chemistry



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What is Chemistry?

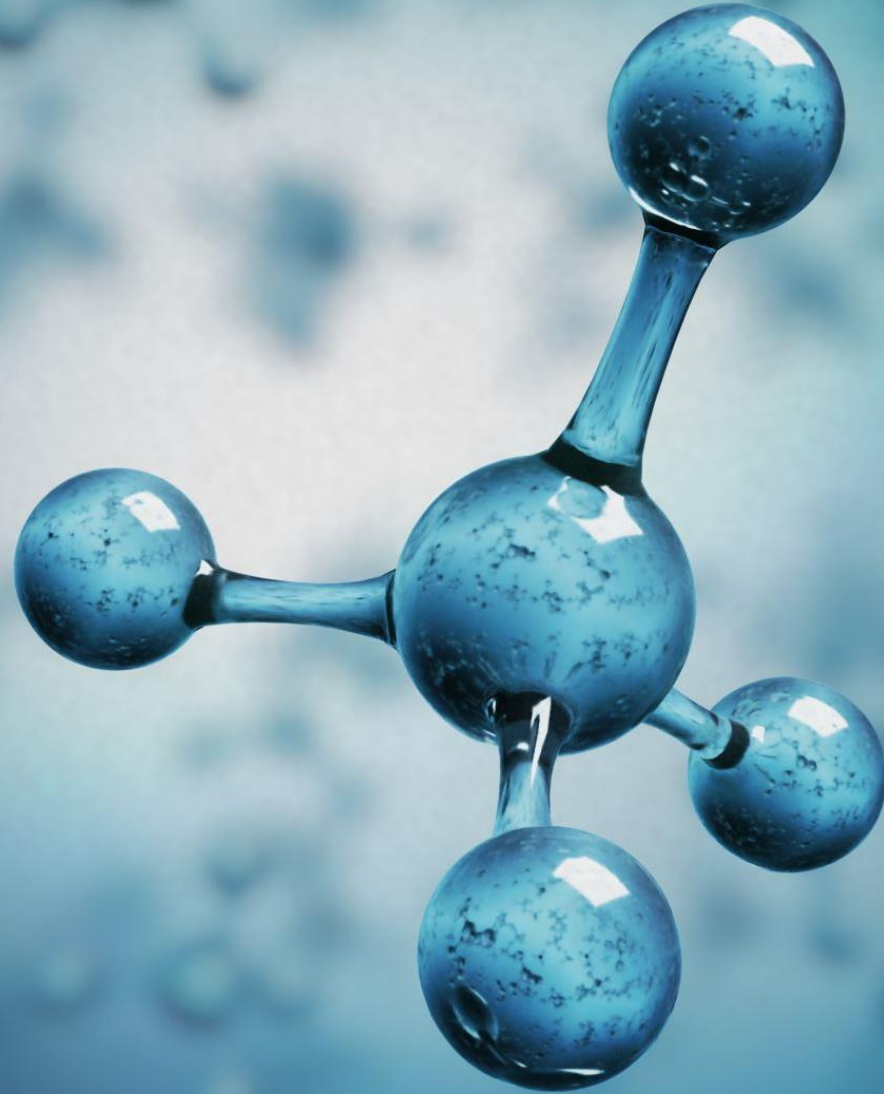
- Chemistry is the branch of science that studies the

Properties

Composition

Structure

Changes of matter



Basic Concepts in Chemistry

- **Matter**

Matter is anything that has mass and occupies space.

It can exist in different states:

Solid

Liquid

Gas.





Elements

Elements are the simplest substances that cannot be broken down into simpler substances by chemical means.

Each element is represented by a chemical symbol

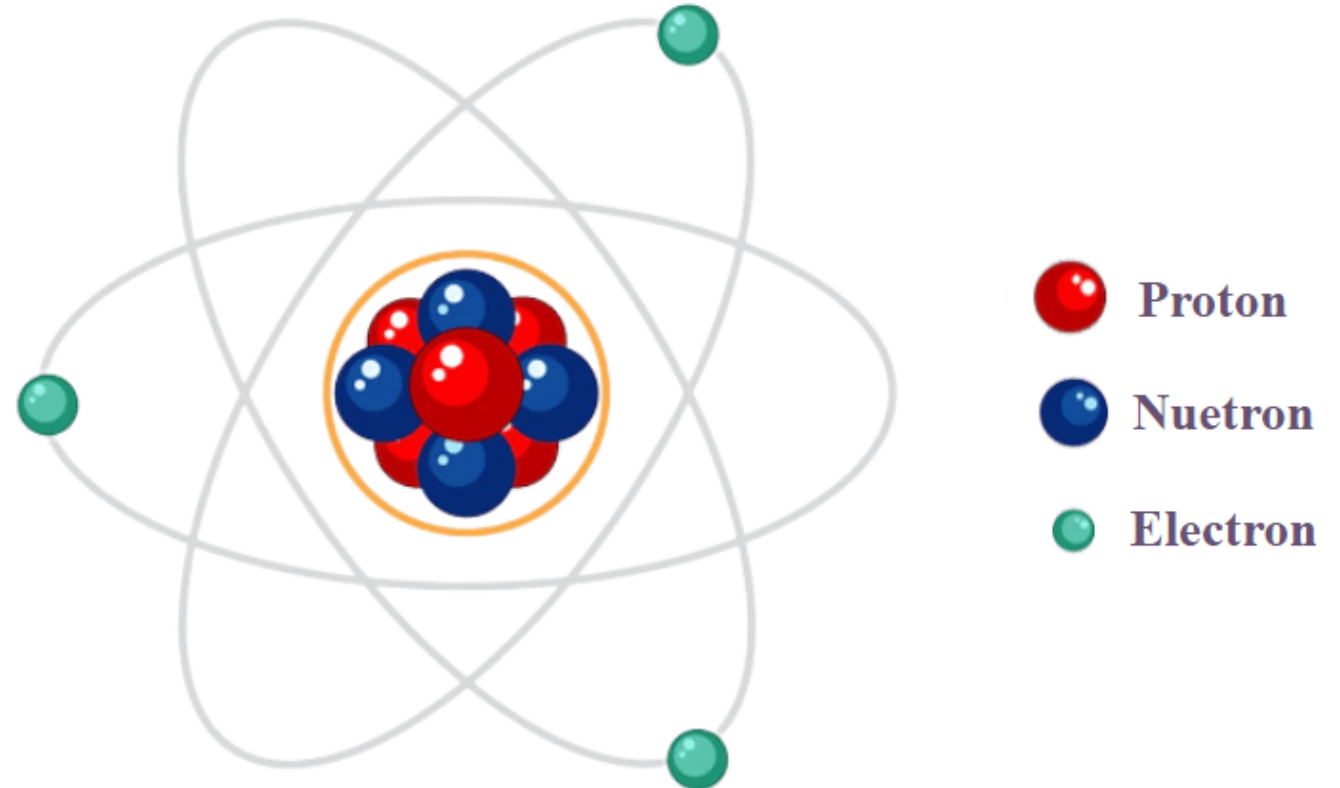


Atoms

Atoms are the *basic building blocks of matter*.

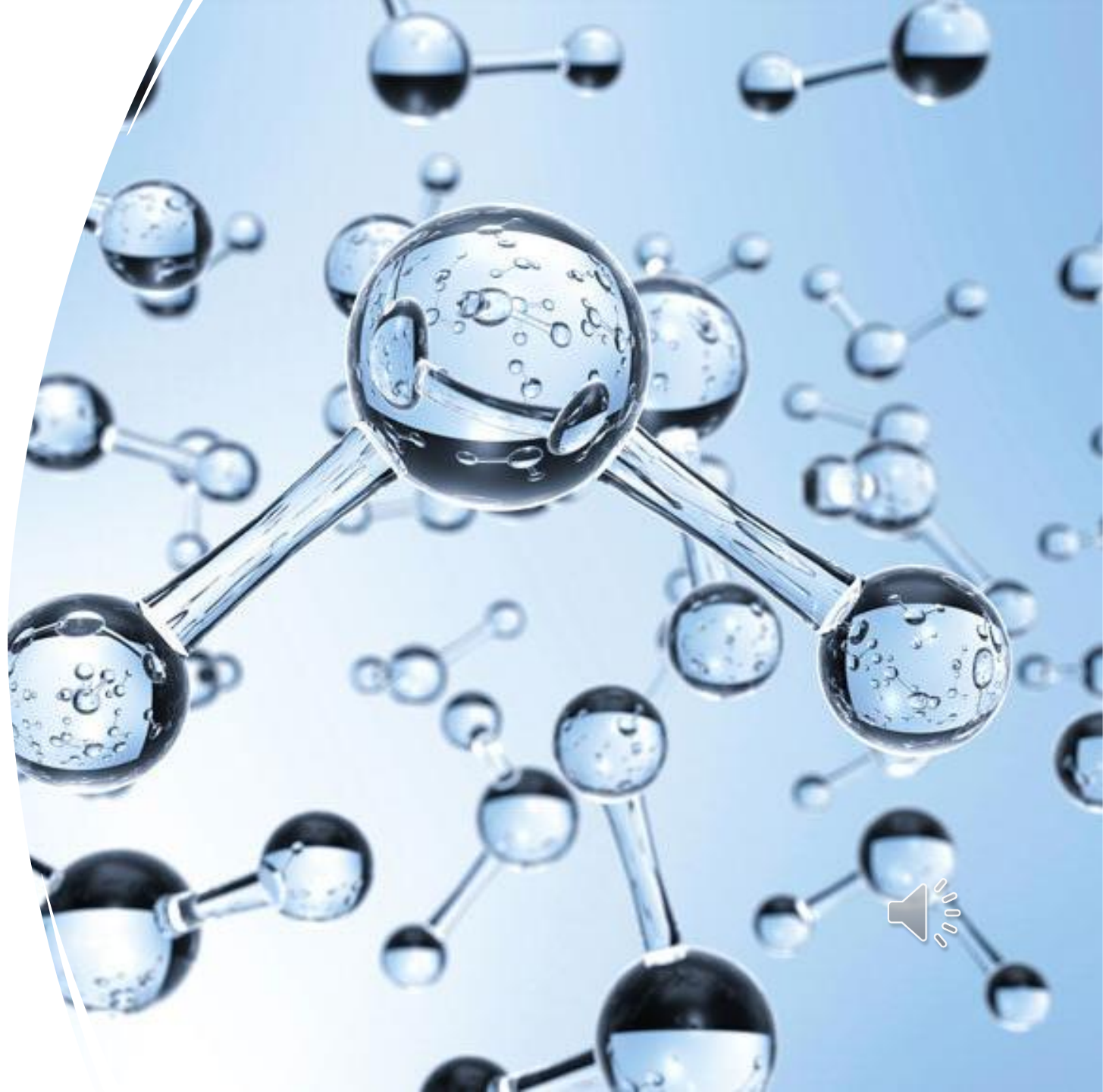
They consist of a nucleus (protons and neutrons) surrounded by electrons.

Structure of Atom



Molecules

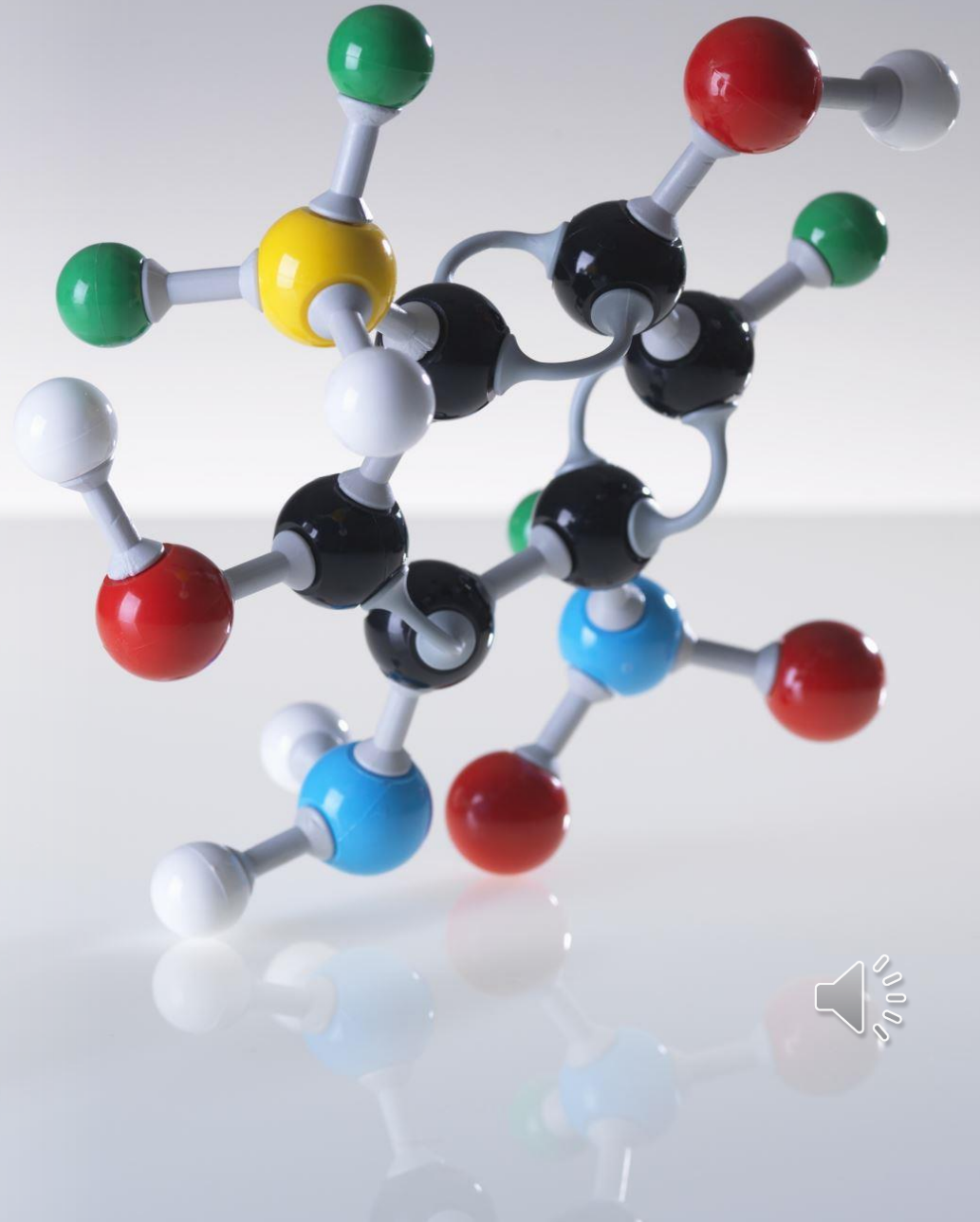
- Molecules are formed when two or more atoms chemically combine.
- For example, a molecule of water (H_2O) consists of two hydrogen atoms and one oxygen atom.



Compounds

Compounds are substances made up of different elements chemically bonded in fixed ratios.

Water (H_2O) and carbon dioxide (CO_2) are examples of compounds.

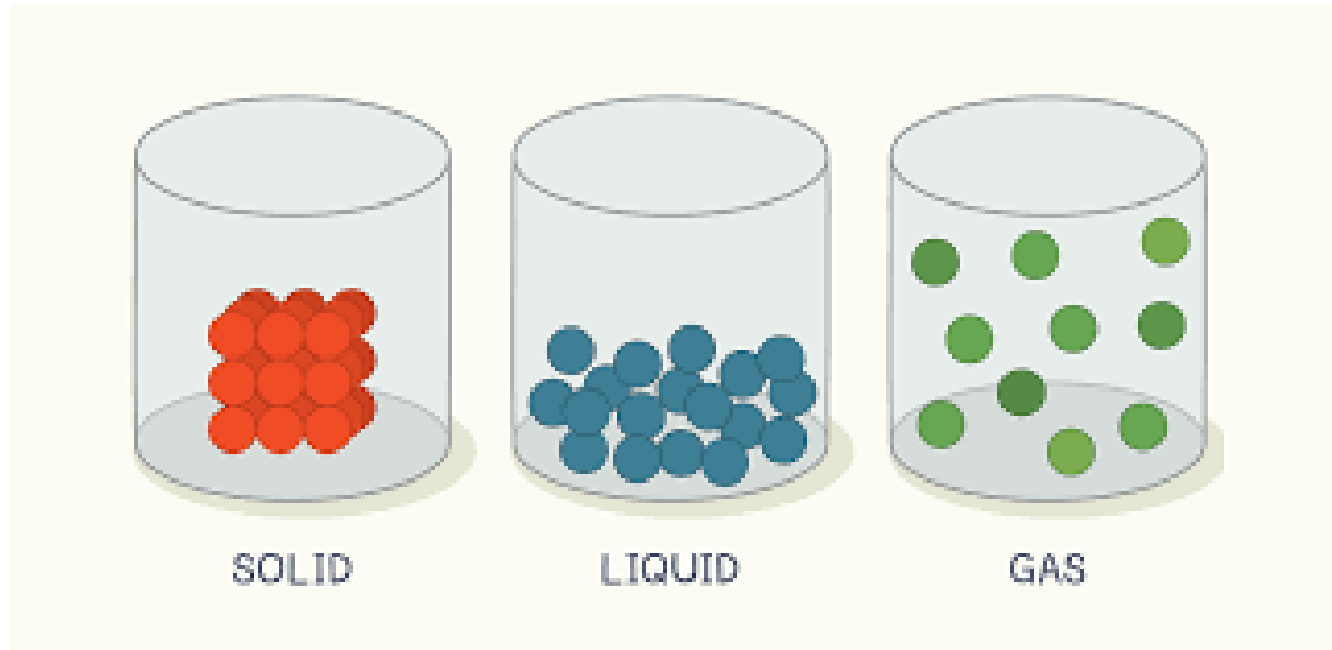


Chemical Reactions

- Chemical reactions involve the transformation of substances into new substances with different properties.
- Reactants are the substances entering the reaction, and products are the substances formed in the reaction



States of Matter



Matter can exist in different states:

- **Solid:** Definite shape and volume.
- **Liquid:** Definite volume but takes the shape of its container.
- **Gas:** No definite shape or volume, takes the shape and volume of its container.

Periodic Table

The periodic table is a tabular arrangement of elements based on their atomic number.

It organizes elements into periods and groups based on their properties.



Covered Points:

- Definition of Chemistry
- Fundamental Concepts in Chemistry:
 - Matter
 - Elements
 - Atoms
 - Molecules
 - Compounds
 - Chemical Reactions
 - States of Matter
 - Periodic Table



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