Organic vs. Inorganic

PS. 3.2 Infer the practical applications of organic and inorganic substances on the basis of their chemical and physical properties.

Organic compounds

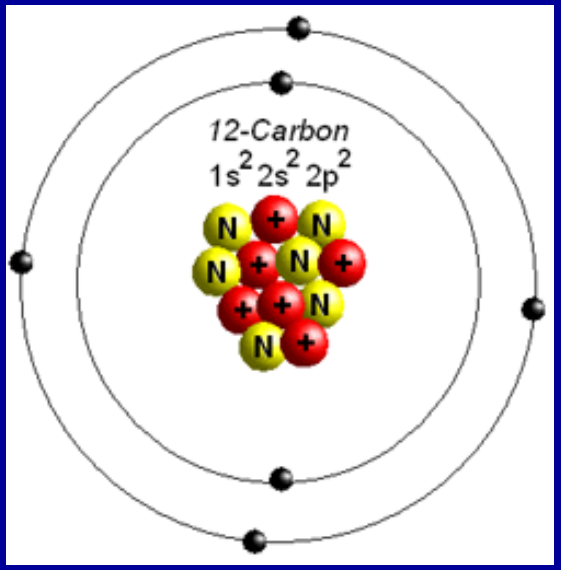
- Compounds mostly found in living things and containing the element carbon.

www.global-b2b-network.com/b2b/98/596/activat...

www.canadian-diamonds-wholesale.com/

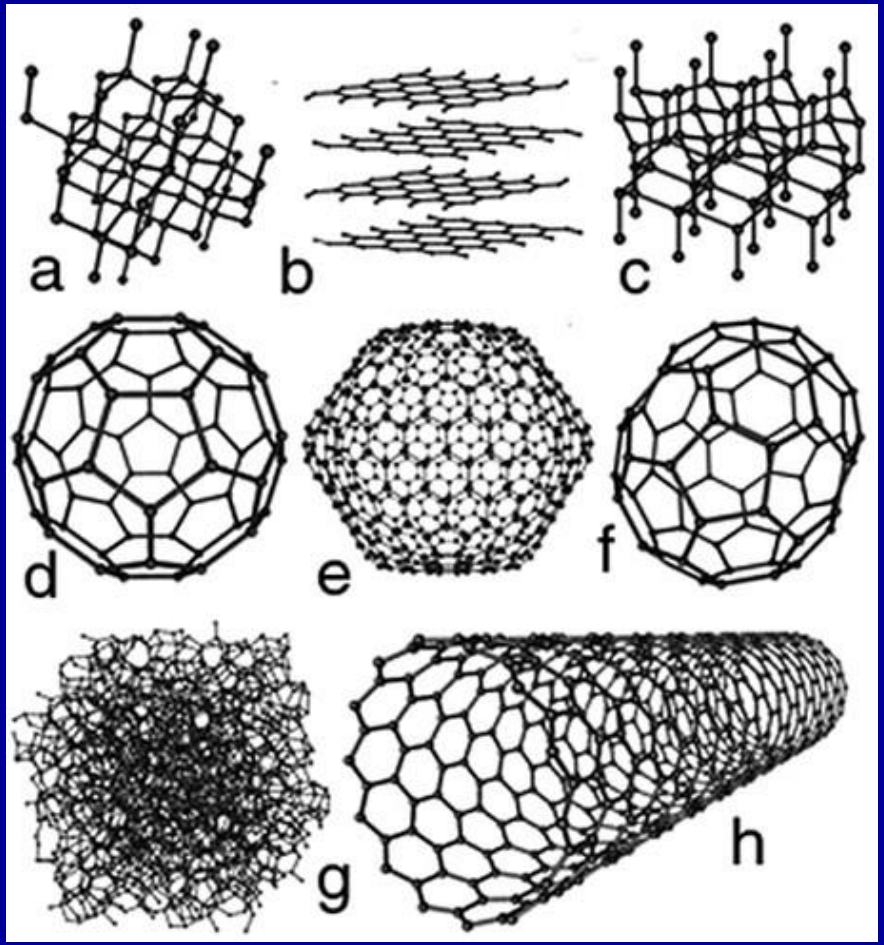
Carbon can form many organic compounds because:

- It has 4 electrons in its outer energy level, so it can form four covalent bonds with atoms of carbon or other elements.



Carbon can form many organic compounds because:

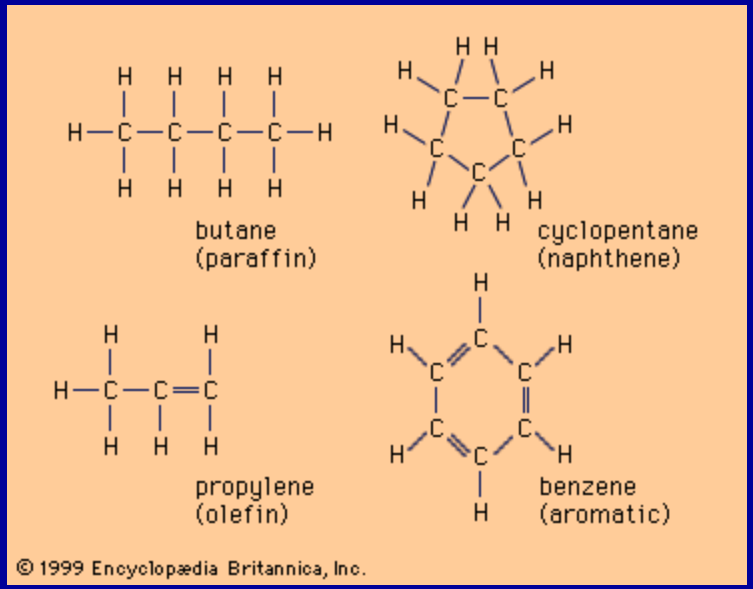
- It can link together with other carbon atoms in many different arrangements, like <u>chains, branched chains, or rings.</u>



www4.nau.edu

Carbon can form many organic compounds because:

- It can from single, double, or triple bonds.
- It can bond with atoms of other elements such as hydrogen and oxygen.



www.britannica.com/EBchecked/topic-art/278523...

Hydrocarbon

- Compound made up of only carbon and hydrogen atoms.
- Produce more than 90% of the energy humans use.
- Examples:
  - Methane (CH_4) used for natural gas
  - Propane (C_3CH_8) used in outdoor grills and heaters in hot air balloons

Polymers

- Hydrocarbons form long chain molecules called polymers. Used to make plastics and synthetic fibers.

science.howstuffworks.com/question581.htm

http://pslc.ws/macrog/kidsmac/nylon.htm

Biological Compounds

- Biological polymers: huge, chain-like molecules that are found in living organisms.

1. Proteins
2. Nucleic Acids
3. Carbohydrates
4. Lipids

Proteins

- Large organic polymers formed from organic monomers called amino acids.

- Contains –NH2 and -COOH groups

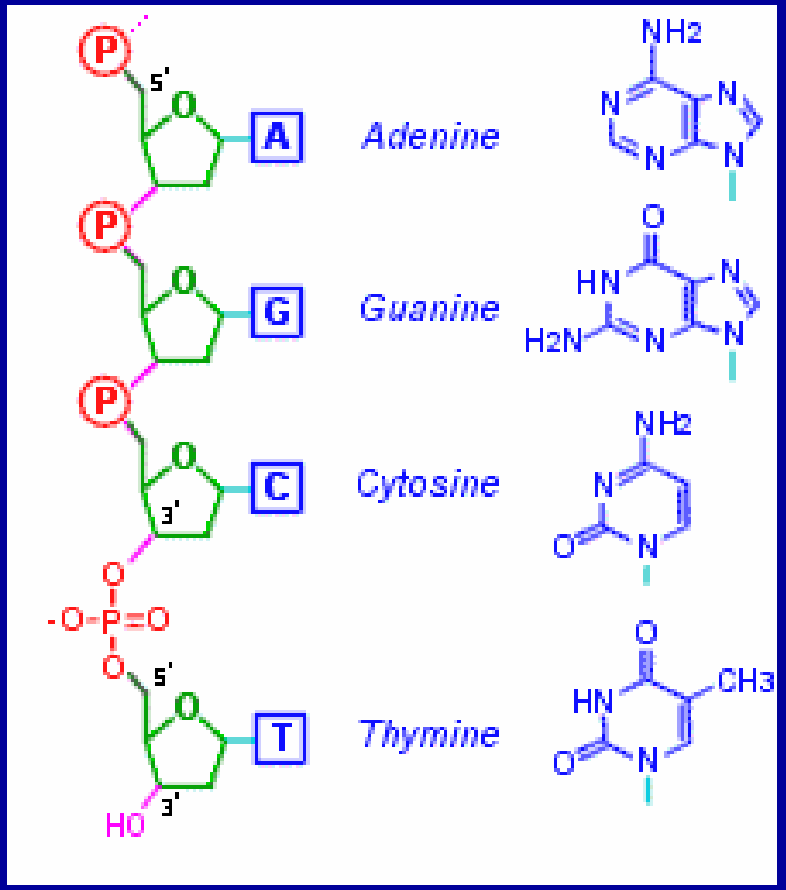
www.nytimes.com/.../adam/19823Proteins.html

Proteins

- Proteins make up your muscles, tendons, hair, and fingernails.
- Your body breaks down the proteins into their amino acid monomers. Your body then uses these amino acid monomers to make new proteins.

Nucleic acids

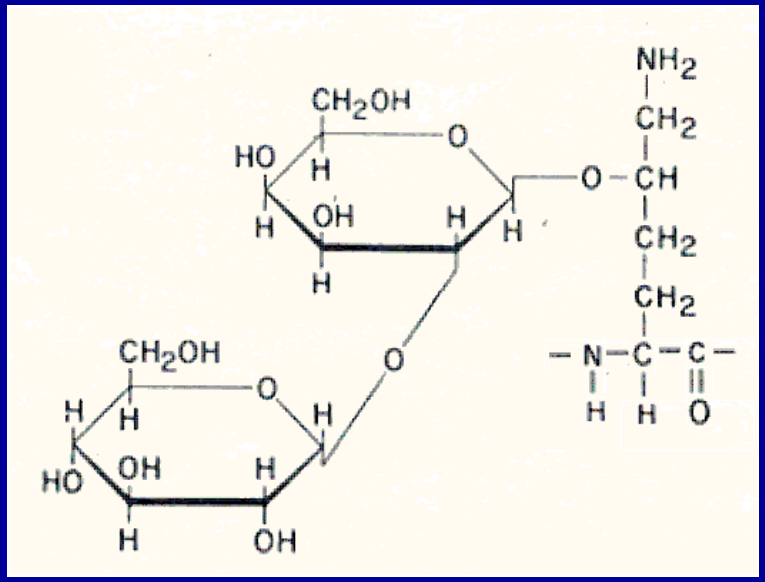
- organic polymers formed from monomers called nucleotides.
- Control the activities and reproduction of cells.
- Included RNA and DNA



www.concord.org/.../dna/dna_helix_code2.html

Carbohydrates

- compounds that contain carbon, hydrogen, and oxygen
- Ratio of carbon to hydrogen is 2:1



herkules.oulu.fi/isbn9514267990/html/x566.html

Carbohydrates

- Sugars provide quick energy soon after eating.
- Starches are polymers made of monomers of the sugar glucose

www.birnstihl.com/gallery.php?page=product

Lipids

- Includes fats and oils
- Contains same elements as carbohydrates, but in different proportions.
- Provides long term energy storage

Inorganic Substances

- Do not contain carbon.
- Is not organic
- Does not involve living materials.

Inorganic Substances and Potential Uses

- Copper is ductile and conducts electricity, so it is used for wiring.
- Aluminum has a low density compared to substance with similar strength so it is used in making airplanes.
- Water is a good solvent, so it is used to wash clothes.

Atoms Vs. Molecules

- Atom: smallest particle of matter that retains the properties of an elemental substance.
- Elements are composed of only one type of atom.
- All elements are listed on the Periodic Table.

Atoms Vs. Molecules

- Molecule: smallest particle of a molecular substance that can exist and still have the composition and chemical properties of the substance.

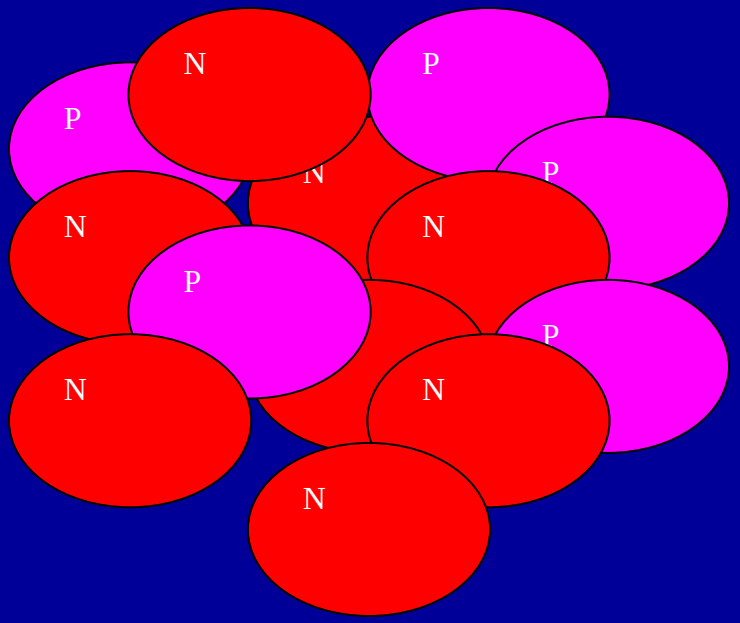
Atoms Vs. Molecules

- Molecular substances are composed of two or more atoms covalently bonded together.
- Chemical and physical properties of a molecular substance are different from the chemical and physical properties of the component elements.

Na Sodium

_____Atom

_____Molecule

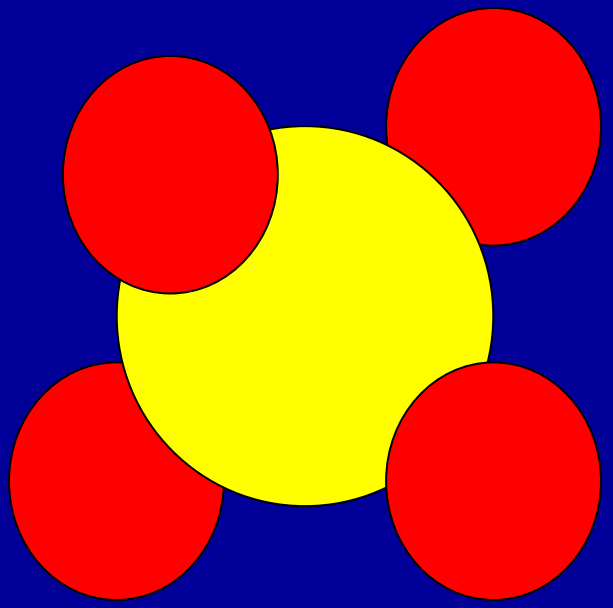


SO_4 Sulfate

_____Atom

_____Molecule

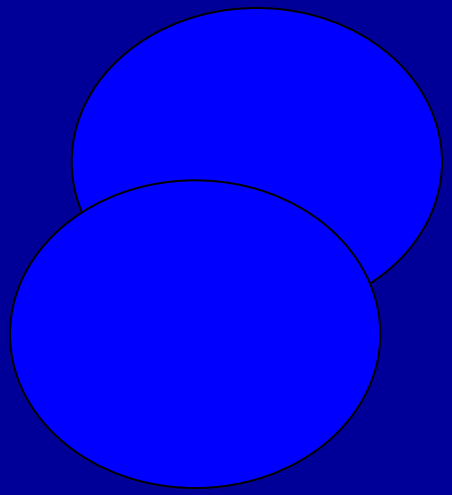
- Oxygen
- Sulfur



H_2 Hydrogen

_____Atom

_____Molecule

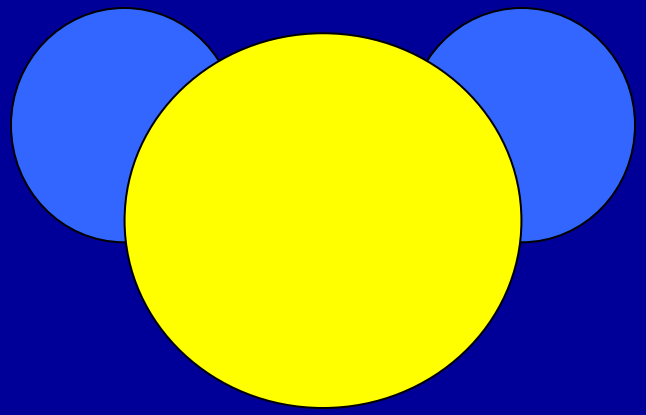


Hydrogen

H_2O Water

_____Atom

_____Molecule



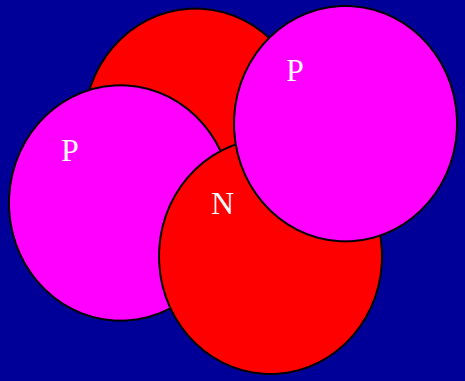
Hydrogen

Oxygen

He Helium

_____Atom

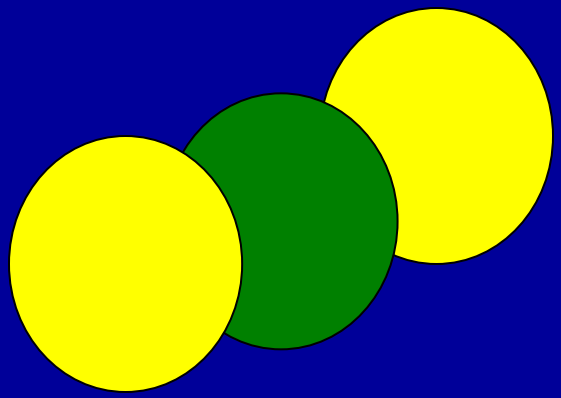
_____Molecule



CO_2 Carbon Dioxide

_____Atom

_____Molecule



Oxygen

Carbon