

## main points

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- Organic chemistry is the chemistry of carbon-containing compounds. Over 90% of all known compounds are organic.
- Living organisms are principally made of organic compounds. However, millions of nonnatural organic compounds have been synthesized in the last 100 years.
- The three-dimensional structure of a molecule determines its chemical behavior.
- Carbon always has four bonds, either to other carbon atoms or to other nonmetal atoms.
- The great variety of carbon-containing compounds arises from carbon's ability to form molecules containing long chains of carbon atoms.
- Functional groups are specific collections of atoms that give special properties and reactivities to molecules.
- Steroids, fuels, chemical warfare agents, and vitamins all behave as they do because of the composition and structure of their molecules.
- Polymers are an industrially and biologically important class of substances made by the reaction of appropriate small "monomers" bonded together.
- The "fullerene" compounds are a new form of chemically pure carbon whose properties and uses are still being explored.
- Stereoisomers include optical and geometric isomers and are important in many applications, including the preparation and activity of pharmaceuticals.