

Answer on Question #43505 - Chemistry - Inorganic Chemistry

Question:

State postulates of Dalton's atomic theory and compare it with the modern explanation.

Answer:

Dalton's atomic theory is based on five principal postulates. They are stated in table below. In the right column beside each statement modern explanation is given for comparison.

S.No	Dalton's Atomic Theory	Modern Explanation
1	All matter is made up of extremely small particles called atoms.	Though, mostly it is true, matter may exist not only in the form of atoms and molecules but also as other particles.
2	Atoms are indivisible and indestructible.	Atoms indeed may not be destructed in chemical reactions, but they are not indivisible and indestructible at all. They may be destructed in nuclear reactions by colliding with high energy particles.
3	Atom is the smallest particle of matter.	Atoms consist of still smaller particles called protons, neutrons and electrons. And even protons and neutrons are not indivisible. They consist of quarks.
4	Atoms of a given element are identical in size, mass, and other properties; atoms of different elements differ in size, mass, and other properties.	Atoms of an element may not be identical. Atom of the same elements may exist as several isotopes of different mass and, consequently, of different properties.
5	Atoms of one element can combine with atoms of another element to form "compounds" - new complex particles. In a given compound however the different types of atoms are always present in the same relative numbers.	Mostly, it is true statement. However, there exist non-stoichiometric compounds, also known as berthollides, e.g. many metal oxides and sulfides.