MAIN STRUCTURAL CHEMICAL LEVELS AND ITS SECTIONS

Abstract: This article discusses the main structural levels of chemistry and its sections

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Chemistry is traditionally divided into five sections: inorganic chemistry, organic chemistry, physical chemistry, analytical chemistry and chemistry of high-molecular compounds. However, there are no clear lines between these sections.

In chemistry, two main structural cores can be identified that are associated with the main stages of the development of this science and, in addition, give an idea of the interrelationships of chemistry with other natural sciences.

The first of these rods is the appearance of substances with specified (necessary) properties, which is at the same time the main task of chemistry. This task unites almost all chemical knowledge, which is represented in the form of theories, laws, methods, technological instructions, etc. It is closer to the sources of chemistry and to concrete production (metallurgy, dressing of leather, etc.), which formed the very science itself.
The second structural core of chemistry is the theoretical task of investigating the genesis (origin) of the properties of matter. Its solution allows for different levels of generalization of ideas about chemicals. Currently, there are four most common approaches:

1) investigation of the elemental and molecular composition of matter;
2) study of the structure of molecules of substances;
3) study of thermodynamic and kinetic conditions ensuring the flow of chemical processes;
4) study of the nature of the reagents (catalysts), the processes of self-organization and the evolution of chemical compounds.

Let us consider in more detail the listed approaches.

Investigation of the elemental and molecular composition (properties) of substances. The doctrine of the composition of substances is the first level of chemical buildings. Until the 20 - 30-ies. XIX century. all chemistry did not go beyond this approach. But gradually the framework composition (properties) became tight chemistry, and in the second half of the XIX century. the dominant role in chemistry gradually acquired the concept of "structure", oriented, which is reflected directly in the concept itself, not the structure of the reagent molecule.

A chemical compound is an atomic-molecular system with the following features: 1) the content of a larger number of atoms of a limited number of "varieties"; 2) each type of atoms corresponds to a certain coordination of the constants that determine the individuality of the chemical compound, the distribution of atoms according to the varieties (composition); 3) the ability to exist in the form of one or more chemicals.

Structural chemistry. The structure is the stable ordering of a qualitatively unchanged system (molecule). All structures that are studied in chemistry are covered by this definition: quantum mechanical, based on the concepts of valence and chemical affinity, etc. The peak of structural chemistry was the period after 1880, when organic synthesis was discovered and when its turbulent, triumphal)
development. Chemists believed that out of a few elementary elements they can add all the others. But within this level, it became necessary to investigate the basic parameters of chemical processes.

The doctrine of chemical processes. The deepest interpenetration of physics, chemistry and biology takes place in the doctrine of chemical processes. This doctrine is based on thermodynamics and kinetics (physical chemistry) and belongs to both physics and chemistry. The chemical process is the basic phenomenon that distinguishes chemistry from physics, making the first a more complex science. The flow of processes is determined by so-called structural-kinetic factors: the structure of the initial reagents, their concentration, the presence of catalysts and other additives, methods for mixing the reactants with materials and the construction of the vessels (reactors) in which the reaction takes place, etc. Among these structural-kinetic factors, the most important is catalysis. The latter is a mediation of the third bodies in the process of reaction and was discovered by K. Kirchhoff in 1812.

The essence of catalysis is reduced to the following: 1) the active molecule of the reagent is achieved due to their incomplete interaction with the catalyst substance and consists in relaxing the chemical bonds of the reagent; 2) in the general case, any catalytic reaction can be represented as passing through an intermediate complex in which a redistribution of relaxed (incomplete) chemical bonds occurs.

All the effects discussed above are due to the weakening of the initial relationships. In addition, other effects are possible, which are a consequence of the incomplete interaction of the molecules of the reagent with the catalyst.

Evolutionary chemistry. Evolutionary chemistry was born in the 1950s-1960s. Evolutionary problems should be understood as problems of spontaneous synthesis of new chemical compounds (without human participation). These compounds are more complex and more highly organized products compared with the starting materials.
The basis of evolutionary chemistry is the processes of biocatalysis, fermentology; it is oriented mainly to the study of the molecular level of the living.

**Literature:**

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