



Course: Chemistry and physics of polymers

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LANGUAGES OF EDUCATION: Russian, English

THE SUBJECT of the educational course: basics of polymer chemistry, including synthesis of macromolecular compounds, modification of their composition and properties. Physical properties of the polymers, the relationship between structure and properties of polymer plastic.



THE GOAL of the course includes the formation of the following **abilities** of students:

- ❖ ability to assimilate theoretical principles of polymer chemistry, to operate with the formalization of chemical processes;
- ❖ possession of basic knowledge on the classification and properties of polymeric materials and chemical mechanisms of their preparation, reactivity, the kinetics of the polymerization reaction and condensation, the relationship between structure and properties of macromolecular compounds;
- ❖ ability to find, classify, analyze, and present the scientific and technical information in the field of macromolecular chemistry.
- ❖ knowledge of methods of description, monitoring, and primary object identification technology of polymeric and composite materials and related products

THE MAIN TASK OF THE EDUCATIONAL COURSE

Under the demands of an educational-professional program, after the finishing of this course must demonstrate such learning outcomes:

Knowledge:

- ✓ the theoretical basis of polymers and condensation polymerization reactions;
- ✓ basic kinetic characteristics of polymerization reactions;
- ✓ theoretical principles of a relationship forming between the structure and properties of polymeric materials;
- ✓ the relationship between the supramolecular structure of the polymers and the physical-mechanical and thermal properties of materials on their basis.

Skills:

- ✓ to predict the properties of polymeric materials based on chemical composition and information on the structure;
- ✓ provide impact method and processing conditions on the properties of macromolecular materials products;
- ✓ make decisions on the choice of the technological processing method to produce materials with desired properties.

Experience:

- ✓ application of the general principles of chemistry and physics of polymers for the design of macromolecular materials with desired properties.

COURSE DURATION: 24 academic hours of lectures; 18 academic hours of seminars

REQUIREMENTS TO STUDENTS: knowledge in the field of organic chemistry, physical chemistry, general and inorganic chemistry.

