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Course: Instrumental methods of chemical analysis of polymer and composite materials

LANGUAGES OF EDUCATION: Russian, English

THE SUBJECT of the educational course: learning the basic principles of instrumental chemical analysis of polymer compositions and their components, including methods of spectral and chromatographic analysis, equipment, and features of the interpretation of research results.

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

- ❖ study of instrumental methods of polymer composites and elastomers identification.
- ❖ ability to apply basic analytical methods and assessment, including spectral, optical, and magnetic
- ❖ ability to plan, conduct, and interpret research data, which allows proceeding directly to the design of compositions with desired properties.

THE MAIN TASK OF THE EDUCATIONAL COURSE

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

Knowledge:

- ✓ scientific fundamentals of instrumental methods of analysis;
- ✓ design features of devices for instrumental studies of polymer compositions;
- ✓ basic principles of interpretation of obtained data;
- ✓ the methodology of studies planning applied to instrumental research.

Skills:

- ✓ Interpretation of instrumental analysis results;
- ✓ Samples preparation;
- ✓ Planning for the complex research to establish the composition.

Experience:

- ✓ Application of the general theoretical basics of materials science and physical principles of the interaction of matter with the field for analysis, research, and design of the polymer compositions.

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

REQUIREMENTS TO STUDENTS: knowledge in polymer chemistry, physics (optics section), organic chemistry, physical chemistry, general and inorganic chemistry.