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PROSPECTS FOR THE DEVELOPMENT OF CELLULOSE ACETATE-BASED MEMBRANES FOR THE SEPARATION OF OIL-WATER EMULSIONS

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Introduction. With the growth of industrial development, the discharge of oily wastewater increases, causing great harm to the natural environment and humans [1]. The use of membrane technology for the treatment of oily wastewater is becoming a promising method due to its high efficiency, relatively low operating costs and chemical resistance compared to traditional separation processes.

The main part. The ongoing research has the following objectives:

1. Selection of the optimal ecological and biodegradable polymeric material that can be used to create membranes. It was decided to produce a membrane from cellulose acetate by electrospinning. Cellulose acetate is a cheap, readily available material that is much easier to dissolve in organic solvents than its unmodified counterpart [2].
2. Before carrying out the electrospinning process, it is necessary to select a solvent, as well as to study the rheology of solutions based on cellulose acetate. The literature [3] describes various systems of cellulose acetate - solvent, suitable for obtaining nanofibers. At present, the rheology of solutions has been studied, where dimethylformamide is used as a solvent, as well as the acetic acid-water system in various ratios.
3. It is necessary to choose the optimal parameters for the operation of the electrospinning installation. To do this, a series of experiments is carried out, during which the nature of the surface formed on the cathode is estimated.

Conclusions. A rheological study of solutions based on cellulose acetate in various solvents was carried out, as well as a series of experiments on a nano setup. The nanofiber obtained in the course of the work will be evaluated by DSC, TGA, IR.

List of sources used:

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