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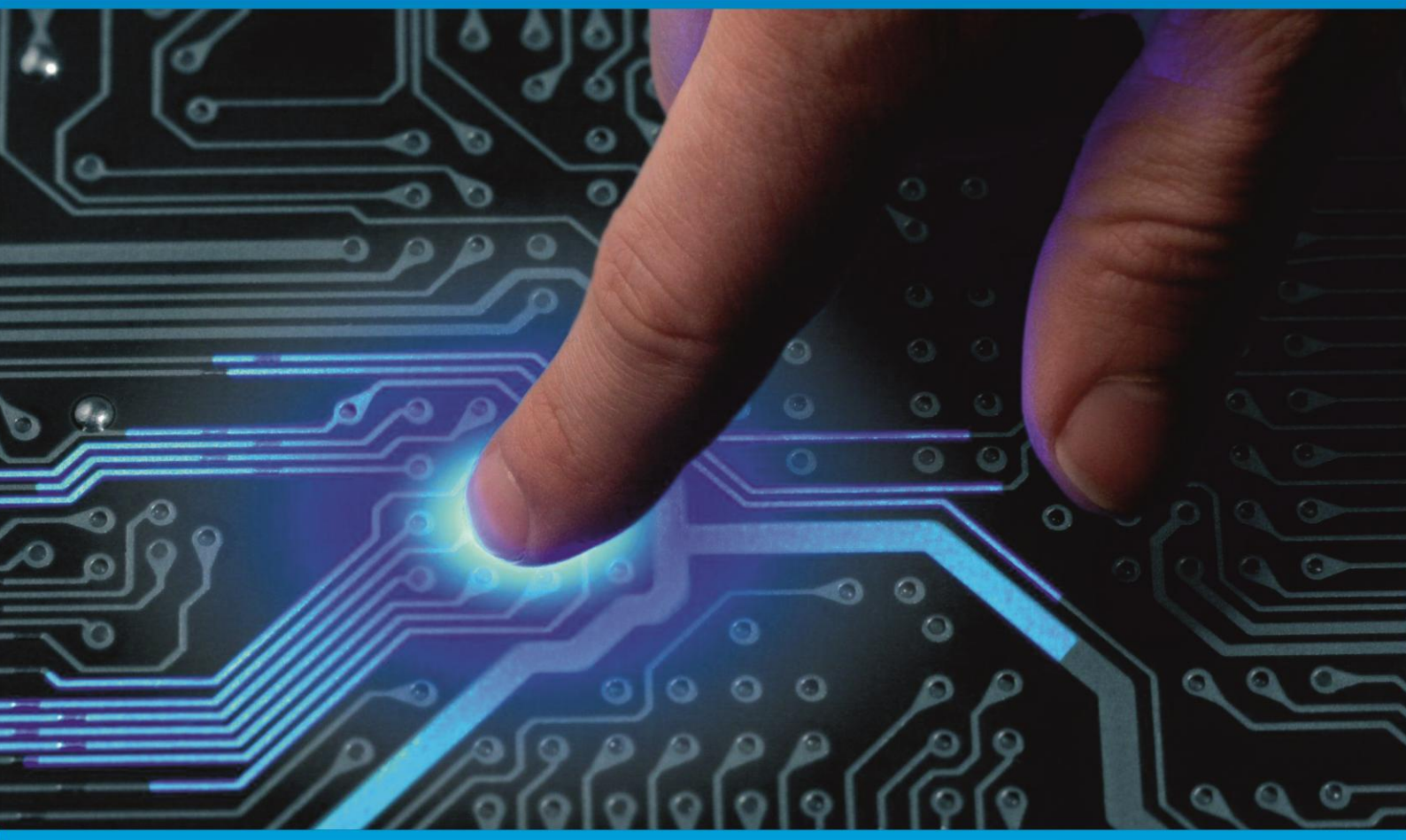

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Development of Technological Parameters of The Process of Obtaining Cellulose from the Sunflower Plant of the Central Asian Region

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Аннотация-В последнее время развивается технология производства целлюлозы из однолетних растений и волоконных отходов хлопковой и текстильной промышленности в странах с меньшими древесными ресурсами и богатых растительными биомассами, таких как Китай, Индия, Нидерландия, Испания, Франция, США (южные штаты) и Латинская Америкя. Однако в некоторых случаях эти технологии представляют собой технологию удаления древесной целлюлозы со всеми имеющимися в ней недостатками.

ANNOTATION -Recently, the technology for the production of cellulose from annual plants and fiber waste from the cotton and textile industries has been developing in countries with less wood resources and rich in plant biomasses, such as China, India, the Netherlands, Spain, France, the USA (southern states) and Latin America. However, in some cases, these technologies represent a technology for removing wood pulp with all its disadvantages.

Ключевыеслава – целлюлоза, эфирыцеллюлозы, степеньполимеризация, степеньзамещения, зольность, температура, влажность, мерсеризация, природный полимерный материал, недревесных видов растений, таких как лен, стебли хлопка (хлопковая древесина), волоконных отходов хлопковой и текстильной промышленности.

KEYGLORY -carboxymethyl cellulose, cellulose, cellulose ethers, degree of
polymerization, degree of substitution, ash content, temperature, humidity, mercerization, natural polymer material, non-woody plant species such as flax, cotton stalks (cottonwood), fiber waste from the cotton and textile industries has been developing in countries with less wood resources and rich in plant biomasses

Recently, the technology of producing cellulose from annual plants and fiber waste from the cotton and textile industries has been developing in countries with less wood resources and rich plant biomass, such as China, India, the Netherlands, Spain, France, the United States (southern states) and Latin America. However, in some cases, these technologies are a wood pulp removal technology with all its disadvantages.

Russian scientists JSC NeftepromkhimG.Kazan Oleg Nugmanov and Nikolai Lebedev have developed a completely new technology that is completely different from the original technology for producing semi-cellulose (reduced technological cycle) and cellulose (full technological cycle) from annual plants from the latest technologies.

The technology is based on a multifunctional continuously operating reactor, which is able to simultaneously "boil" straw, delignify, and grind cellulose fibers.

This cellulose pulp is produced at a catalyst, atmospheric pressure and at a temperature of 100 ° C. It is designed for a centrifuge, which is used to spin and wash water, which is an environmentally friendly hydrogen peroxide for bleaching, and dry the fibrous mass using microwave equipment.Vegetable cellulose is obtained without a catalyst, at 100°C and atmospheric pressure. A continuous centrifuge is provided for pressing and washing water, environmentally friendly hydrogen peroxide is used for bleaching, and the drying of the fibrous mass is carried out using microwave equipment.

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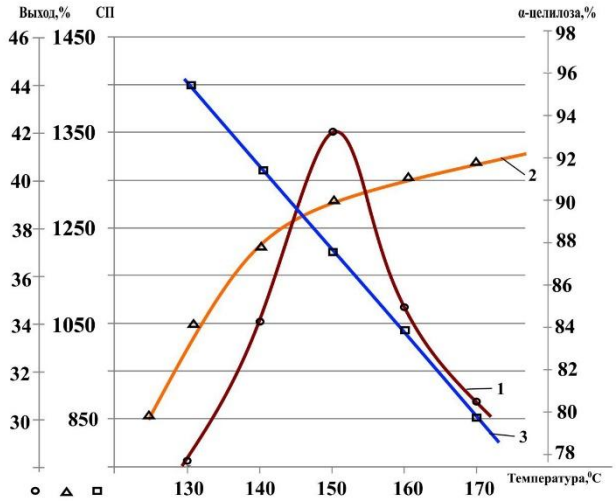
Unlike technologies developed by Russian scientists for the first time in our technology are not only annuals, but also an alkaline residue, used five – or sevenfold in the process of producing cellulose from waste cotton fiber and textile industry, which is pressed in a centrifuge, in a word, it stands out as a non-waste technology.

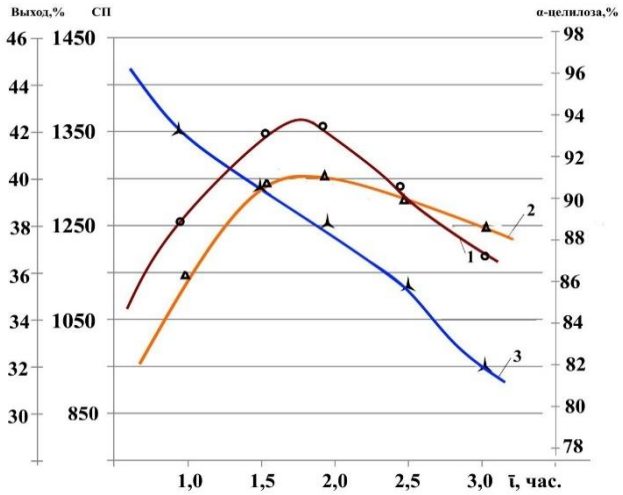
Cultural history and distribution. Sunflower comes from the New World, but already during the XVIII century. It was turned into a cultural oilseed plant in Russia [114; p. 336-337.]. From the middle of the XVIII century. Sunflower cultivation in Russia, in the Voronezh and Saratov regions and in the Kuban region spread so much that by the beginning of the Second World War, it occupied an area of more than 3 million hectares. Significant development of sunflower culture during the XIX century and the last decades can be noted in South-Eastern Europe, primarily in Bulgaria, Romania and Hungary.Currently, the largest area of sunflower sowing in Southern Europe is in Romania. It should be noted that the increased cultivation of sunflower in South-Eastern and Eastern Europe has had an impact on its distribution in South America, especially in Argentina, where it is sown on an area of over 1 million hectares.

In other countries of South America, the acreage of this crop is also constantly increasing. Simultaneously with the experiments in Germany, experiments on the cultivation of sunflower were carried out even in the climate of Southern England, in Sweden and in other European countries. Therefore, although until recently the crops of sunflower as an oilseed plant in Central and Western Europe are not taken into account by statistics, the development of its culture, taking into account the experience of Canada, cannot be considered complete, especially since along with vegetable oil, sunflower gives various useful by-products.Of particular importance is the use of its stems in the pulp industry, as they contain 40-48% a-cellulose. Current trends in the production of cellulose, the main raw material of various composition of composite polymer materials based on natural polymer, as well as the directions of formation of the necessary raw materials for its synthesis, prospective activities of enterprises producing cellulose and its products in the republic, as well as the formation of their activities based on new technologies, if necessary, reconstruction and modernization of existing technologies, their needs for raw materials, and to what extent the method of transition from the old system to the new one has been formed.



P21. P2. 1. Influence of alkaline cooking temperature on the quality indicators of cellulose obtained from sunflower.

°-1-cellulose yield, Δ - 2-α-cellulose,
- 3-degree of polymerization



2.2. Influence of the time of alkaline cooking on the quality indicators of cellulose obtained from sunflower.

°-1-cellulose yield, Δ - 2-α-cellulose,
- 3-degree of polymerization

The influence of various parameters in the process of synthesis of cellulose suitable for chemical processing on the basis of local raw materials, i.e. sunflower, is studied. In Fig.2.1 the influence of the alkaline cooking temperature on the quality indicators of cellulose obtained from sunflower is given. Accordingly, with an increase in the temperature of alkaline cooking, the yield of α-cellulose is due to a positive increase, since an increase in temperature and the

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activation of destructive factors can significantly reduce the content of cellulose and the degree of polymerization.When studying the temperature parameters of alkaline cooking in the process, the optimal mode of 1500C was chosen. The yield of cellulose is 42%, and α-cellulose is 94%, the degree of polymerization is 1300.

During the synthesis of cellulose from sunflower, the parameters of the alkaline cooking time were also studied and analyzed. Accordingly, with an increase in the cooking time, both positive and negative effects on certain quality indicators of the resulting pulp were observed.That is, as the optimal parameter of the boiling time of the alkali, it is taken 2 hours. The yield of cellulose is 42%, and α-cellulose is 94%, the degree of polymerization is 1300.

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