DEVELOPMENT OF TECHNOLOGY FOR THE PRODUCTION OF NEW TYPES OF CARBON ADSORBENTS BASED ON DOMESTIC RAW MATERIALS FOR WASTEWATER TREATMENT

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Annotasiya. Sorbsionni aniqlash uchun sinovlar o'tkazildi adsorbent xususiyati tomonidan taklif qilingan uglerod chiqindilaridan olingan adsorbent uchun ishlatiladi Sedum neftdagi oqava suvlar va suv omborlari ma'lumotlari aniqlandi piroliz jarayonida hosil bo'lgan uglerod adsorbenti organik sintez uchun oqava suvlarni tozalash vositasi sifatida yoki piroliz jarayoni uchun yoqilg'i sifatida ishlatilishi mumkin adsorbent uchun tomonidan ishlab chiqish termal faollashtirish qayta ishlangan. Bu tavsiya etiladi adsorbent xizmat qilish sorbsiya sifatini yaxshilash uchun mulk piroliz jarayonida.

Kalit so'zlar: adsorbent, piroliz, oqava suv, uglevodorod qoldiqlari, zeolitlar, loylar; sun'iy noorganik moddalar; uglerod materiallari: faollashtirilgan uglerod

Аннотация. Проведены испытания с целью определения сорбционной свойство адсорбентов которые полученный на основе углеродных отходов, предлагаемые адсорбент использоваться для очитки сточных и пластовых вод в нефтяных Определено, что данные адсорбент углерода, образующийся в процессе пиролиза, может быть использован в качестве отчистки сточных вод для органического синтеза или в качестве топлива для процесса пиролиза, рекомендованные адсорбент для разработки путем термический активации обработан. Этот рекомендуемые адсорбент служить чтобы улучшить качество сорбционных свойство в процессе пиролиза.

Ключевые слова: Адсорбент, пиролиз, сточные воды, углеводородные остатки, цеолиты, глины; искусственные неорганические вещества; углеродистые материалы: активированный уголь

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Abstract. Tests were carried out to determine the sorption properties of adsorbents that are obtained from carbon waste, the proposed adsorbent is used for cleaning wastewater and reservoir waters in petroleum, It was determined that these carbon adsorbent formed during pyrolysis can be used as wastewater treatment for organic synthesis or as fuel for the pyrolysis process, the recommended adsorbent for developments by thermal activation are processed. This recommended adsorbent serve to improve the quality of sorption properties during the pyrolysis process.

Keywords: Adsorbent, pyrolysis, wastewater, hydrocarbon residues, zeolites, clays; artificial inorganic substances; carbonaceous materials: activated carbon

Introduction.

Scientific and practical research is underway worldwide to create a sought-after technology for purifying reservoir waters from oil and gas fields. In this regard, it is necessary to justify a number of scientific solutions, including: improvement of the technology of purification of reservoir waters of oil and gas fields from hydrocarbon debris; production of new types of adsorbents or their modification; application of modular installations in the purification of reservoir waters of oil and gas fields or industrial wastewater from hydrocarbon residues and mechanical impurities; Special attention is paid to creating optimal conditions for the purification of productive reservoir waters of oil and gas fields from residual hydrocarbons using various adsorbents. It should be noted that the development of technology for the production of new types of carbon adsorbents based on domestic raw materials and research work on the development of a combined modular device for purifying water from productive layers of gas fields from mechanical particles and hydrocarbon residues have not been carried out to date. The use of imported products in the preparation of productive reservoir waters in oil production leads to an increase in the cost of the process. The use of imported products in the preparation of productive reservoir waters in oil production leads to an increase in the cost of the process. Regenerative methods not only purify wastewater, extracting additional useful substances from it and allowing them to be reused in production. Destructive methods are used if it is not possible to extract additional substances or if such work is not considered economically beneficial. Currently, various natural materials can be used as adsorbents: zeolites, clays; artificial inorganic substances; carbonaceous materials: activated carbon, fibrous carbon materials, as well as molecular sorbents based on synthetic polymers. In industry, solids consisting of micropores with high porosity are used as adsorbents. In industry, adsorbents are used in granular or powdered form. During wastewater treatment by the adsorption method, adsorbents can be regenerated and in this case they can be used repeatedly. Knowing the basic

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properties of adsorbents when they are used is important for its effectiveness, as is the cost of purifying water or gases. Therefore, we analyzed the main properties of adsorbents. The high content of organic compounds in tree trunks (99%) and less ash, higher consistency, as well as having hydrophobic properties, have hydrophobic properties, shows them as an ideal material for producing adsorbents with very high adsorption activity. For this reason, thermal waste is extracted from local stumps, and the production of adsorbents from steam-gas activated carbon will allow our country to save currency and help solve environmental problems by using these adsorbents in various industries. Based on the above considerations, the plant waste found on the territory of our republic — mulberry, saxaul and yulgun - was chosen as the object of research. On the basis of this carbon-containing secondary raw material, carbon adsorbents were obtained using the method of physical activation.

Research methods. The purpose of this study is to use local plant waste, produce high-quality activated carbon adsorbents, and analyze their sorption properties. The selected plant waste (mulberry, saxaul and sedge) are environmentally friendly and renewable resources, thanks to the process of their physical activation, it is possible to ensure high adsorption activity of adsorbents.

During pyrolysis, dried samples in the amount of 100 g were taken from the selected study objects and heat treatment was carried out in a pyrolysis unit prepared in laboratory conditions (Fig.1).

Gases produced during pyrolysis are saturated and unsaturated hydrocarbons (e.g. CH_4, C_2H_6, C_2H_4, C_2H_2, etc.) will be available. These gases can be used for many other organic syntheses or as fuel for the pyrolysis process. After crushing, charcoal turns into granular coal, which is formed by crushing adsorbents into fractions up to a certain size through sieves. Powdered coal formed after crushing, when coal is divided into fractions, bringing adsorbents to a certain size through sieves, can be used to produce coal adsorbents in the form of granules or environmentally friendly coal briquettes.

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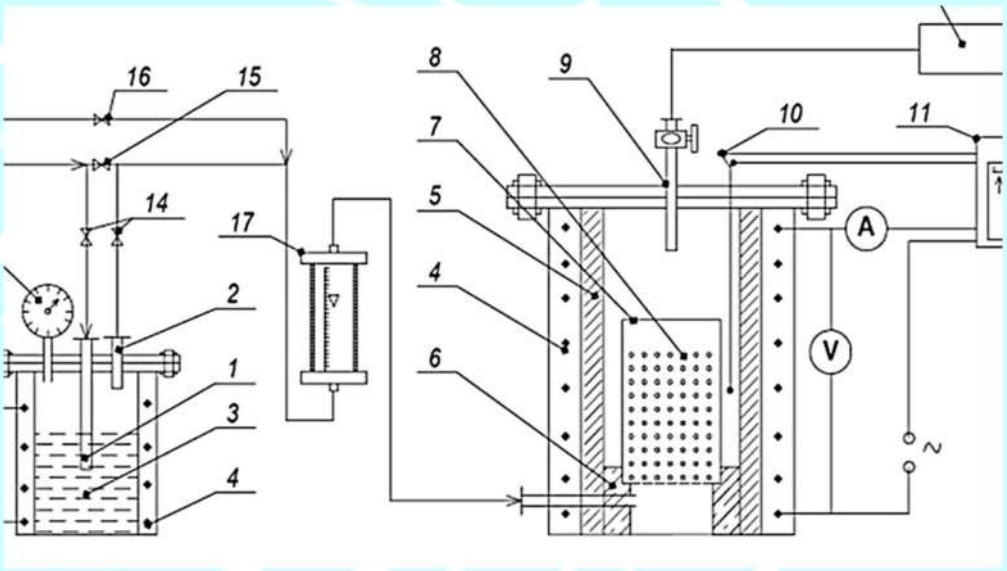


Figure 1 laboratory device for pyrolysis of vegetable raw materials:

1) argon tube; 2) argon tube for transferring a mixture of argon and water vapor; 2) argon tube for transferring a mixture of argon and water vapor; 3) steam generator; 4) electric heater; 5) reactor; 6) reinforcement ring; 7) reaction cup with a perforated bottom; 8) raw materials; 9) gas outlet pipe; 10) thermocouple; 11) KS–2 unit; 12) pressure gauge;odometer.

Due to the low content of inorganic substances in charcoal, coal adsorbents based on them have a relatively low ash content. The ash content of the samples increased with increasing activation temperature. As the pyrolysis temperature increases, a decrease in the amount of organic substances in the samples leads to the formation of inorganic compounds and the quantitative ratio between organic compounds changes. Therefore, there is an increase in the amount of ash.

The results of the study. One of the main advantages of steam activation is to increase the purity of the resulting carbon material. Organic substances are ignited by steam activation, while inorganic compounds ignite, forming ash in the coal material and reducing the amount of other pollutants. This process improves the quality of the carbon material and improves its adsorption properties. This is especially true for high purity coal material, and the specifics are important for in-demand industries.

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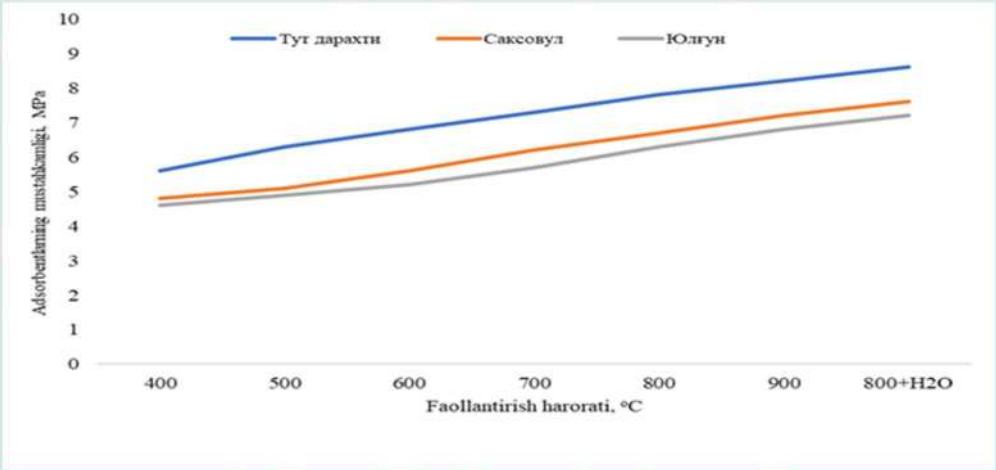


Figure-2. Dependence of the consistency of carbon adsorbents on the activation temperature

After absorption of the adsorbate particles by the adsorbent, the adsorbent and the surface of the adsorbent decrease the surface tension of the adsorbent as a result of the arrangement of the adsorbate molecules. This condition, in turn, also reduces the strength of the adsorbent.

In conclusion, it can be said that a decrease in strength, physical and affects its chemical stability, as well as the possibility of its long-term use. Therefore, in order to maintain the strength of adsorbents, it is important to increase the efficiency of adsorption processes. In technological processes, strength plays an important role in the extraction of adsorbents from systems after their use. It can be added that the adsorbent we offer, unlike other sorbents, cleans reservoir waters well.

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