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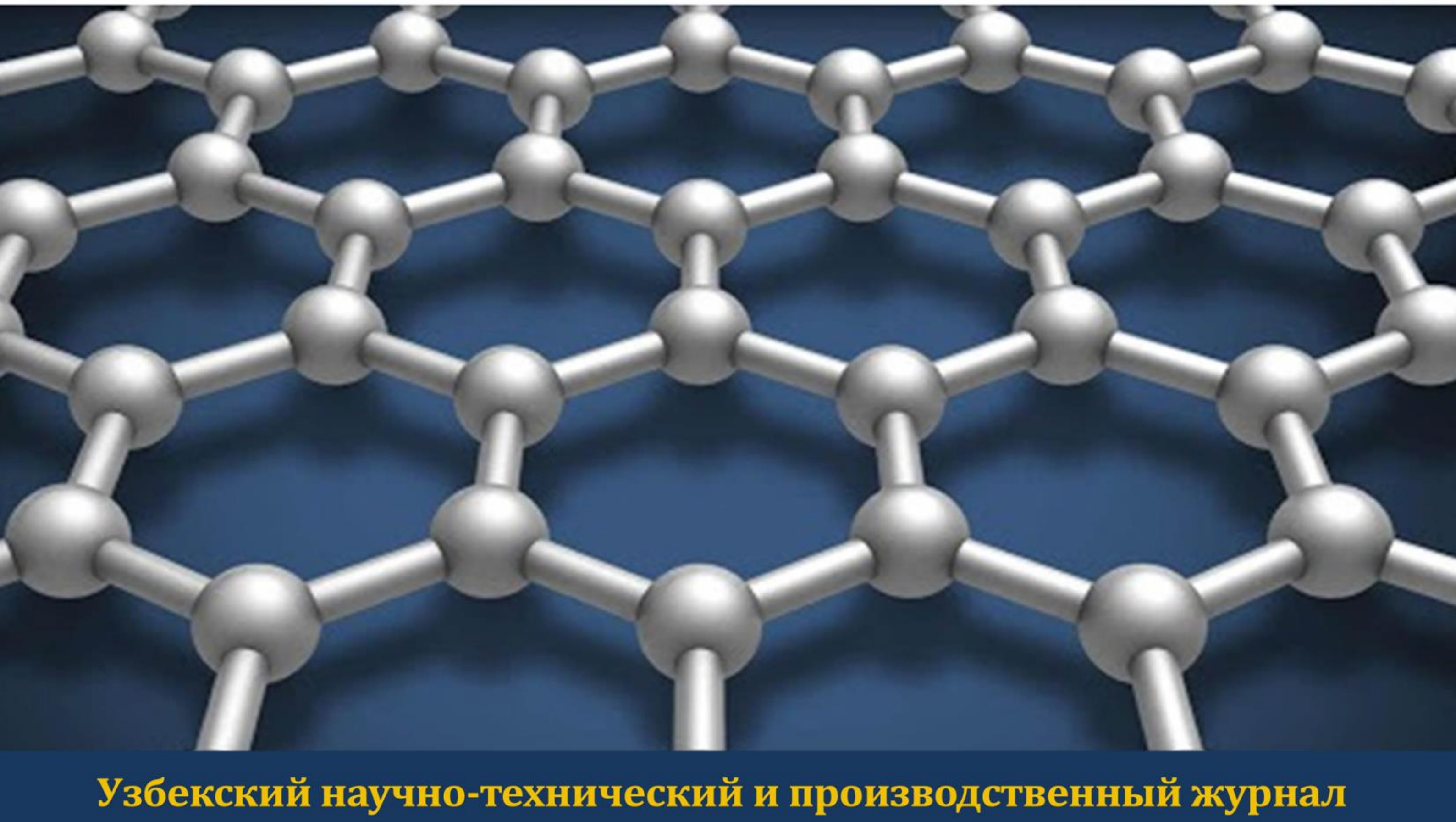

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CLAY ADSORBENTS Cr^{6+} ADSORPTION IONIZATION

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Annotation: in this research work, the adsorption isotherms of Cr^{6+} ions in wastewater using modified new adsorbents were studied on the basis of the Freindlix isotherm model. Adsorption of Cr^{6+} ions to adsorbents was 0.154 mg/g, in Angren kaolin, respectively.

Key words: Diphenylcarboside, ethyl alcohol, phosphatic acid, sulfuric acid, adsorption isotherm dsorption, modification, bentonite, chromium ion, Freundlix isotherm model.

Introduction: Currently, chemical industry enterprises include petroleum products, chlorine, organic acid, oils, alcohol and other substances. In addition, they do not contain contaminants that can lead to environmental pollution, as well as to a decrease in the concentration of pollutants. In addition, souvlakins are organic materials, including metal-ionlardane, raw materials of local quality, kaolinlardane is used in scientific research of theoretical and practical importance. Currently, paper, porcelain, earthenware, chemicals, rubber, industrial rubber, building materials and insulators are mainly used.

Kaolin has been used as a solution in drilling operations in the oil and gas industry, as an adsorbent and raw material in wastewater treatment from heavy metal deposits, porcelain production and a number of other industries[1-2] Since the bentonite series of gilmoyas have ion exchange properties, the possibilities of creating new sorbents for import substitution by modifying them, changing their physical and chemical properties have been studied[3-4]

Contamination of wastewater by heavy metal deposits is considered one of the serious environmental problems and they are not biodegradable and can have negative consequences due to the accumulation of biolagic in living cells. Since gilmoyas have a large surface area and a high degree of ion exchange capacity, there is an opportunity to make chemically and mechanically stable, as well as inexpensive adsorbents from them. The thin dispersal Gills, a group of kaolins, are composed of at least 70% smectite minerals (i.e., beidellite, nontronite, hectorite, and saponite). The minerals of this group are stable to high temperature heat and have the ability to exchange ions, as well as catalytic and adsorption activity. Kaolins contain calcite, ceolites, Quartz, cristobolite, hydroslyuda, kaolinite, dalashpati, paligorskite, etc. Causes kaolins to deteriorate the properties of additional minerals in the crystal lattice that are expected to exist[5-6] In these cases, kaolin is activated by means of various substances as predetermined[7-8]

The chemical composition of Angren kaolin, which has not been sufficiently studied in the literature, was studied using modern tool equipment in conditions where the ambient temperature is -300 0s, humidity is equal to 40% [9-10]

In this, measuring instruments AS220/C Radwag M-3 analytical scales, inductively coupled plasma optical-emission “ICPE9820 Shimadzu” спектрометри, NTC-2 Russian electronic hygrometer, SNOL67/350 low temperature laboratory oven, spectrophotometer Shimadzu UV, auxiliary equipment: SNOL consists of equipment such as a muffle and an electric oven. The minerological composition of the resulting sample is given in the table below:

Table 1.

Main composition	SiO_2	Al_2O_3	H_2O	Fe_2O_3	Na_2O	CaO	MgO	K_2O	TiO_2	P_2O_5	MnO	Cr_2O_3
%	51,18	15,75	14,8	8,70	2,91	1,58	2,16	1,17	1,12	0,17	0,07	0,035

The chemical-mineralogical composition of Angren kaolin consists of aluminium silicates, and a relatively high content of SiO2 and Fe2O3 has been found. This slightly limits the use of Angren kaolin as a raw material in the field of porcelain production, since its whiteness decreases during gilmoyane heating. It has thus been theorized that when comparing the adsorbent properties of peasant corn bentonite and Angren kaolin, it is possible to obtain adsorbents with a higher sorbent property using Angren kaolin.

It should be noted that until now, scientific research has not been carried out sufficiently to obtain a new type of high-sorption capacity clay adsorbents from kaolin and bentonites, which are considered local raw materials, and to research their adsorption properties.

Methods. Based on a comparison of the optical densities of the ethanol and the substances to be examined, the concentration of the substance to be determined can be found. To do this, the optical densities of the Etalon and the investigated solutions are measured under optimal conditions, at the same wavelength. The wavelength of chromium is 540 Nm, so we will have to choose the wavelength of the spectrophotometer ourselves. To obtain accurate results, it is recommended to prepare the concentration of ethanol close to that of the substance to be examined. The concentration of a substance (SX) can also be determined on the basis of the molar absorption coefficient of light. To do this, the optical density of the substance to be determined at a certain wavelength (λ) is measured. Knowing the molar absorption coefficient of a substance, it is not difficult to find its concentration, that is, the coefficient of molar absorption of light is determined on the basis of measuring the optical density of the ethalonic solution of the substance to be determined. If it is not possible to obtain a clean sample of the substance to be detected, SX can be obtained from the table. It should be noted that it is much more complicated to measure the exact value of the molar quenching coefficient. It depends on factors such as the type of instrument, the width of the beam drop hole, the scattered beam, the return, scattering and absorption of light from the cuvette glass. Therefore, during the determination, measurements should be carried out using one instrument, and the degree of concentration of the substance should be found on the basis of drawings.

The results obtained and their analysis. The required amount of reagent is determined to completely bind the ion being detected to the colored compound. To do this, the amount of the metal ion is the same, the amount of reagent is different, and several different samples of solutions are prepared in increasing quantities every time. By measuring the optical densities of the solutions, a diagram of the dependence of the optical density on the concentration is drawn.

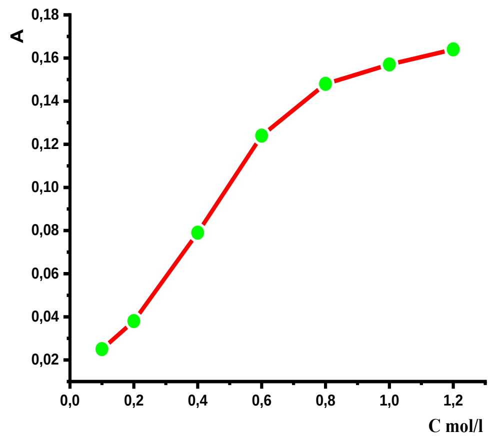

Figure 1. Dependence of the optical density of kaolin on concentration

Based on the results of the experiment, the graph of the concentration dependence values of the optical density of the kaolin of the "Angren" cone is shown in Figure 1 below.

In this case, the optical density of the solution is in the range of 0.1-1.0 with the amount of solutions obtained at values ranging from 0.02 mg/l to 0.8 mg/L.

Based on the results of the experiment, the graph of the concentration dependence values of the optical density of the kaolin of the "Angren" cone shows the following

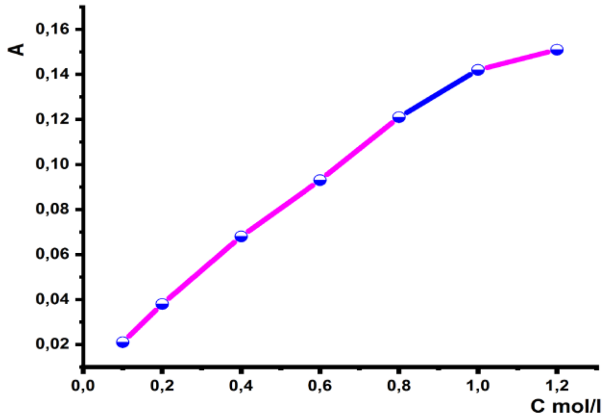

Figure 2. Draw. Angren kaolin in got in dense concentration in gardens

Prepare the resulting solution of potassium bichromate 6 and sausage 50 ml of salted and over 50 ml of Angren-activated kaolin, that is, 0.05 g of salted and shaker 150 ppm auxiliary rinsing agent for 1 hour. The resulting suspension is filtered using an optical spectrophotometer with a dense optical concentration of kiimati gas (Shimazu).

The result of the experiment is Angren kaolin a ring optics with a dense optical concentration in 3 video clips in the Kiimat district.

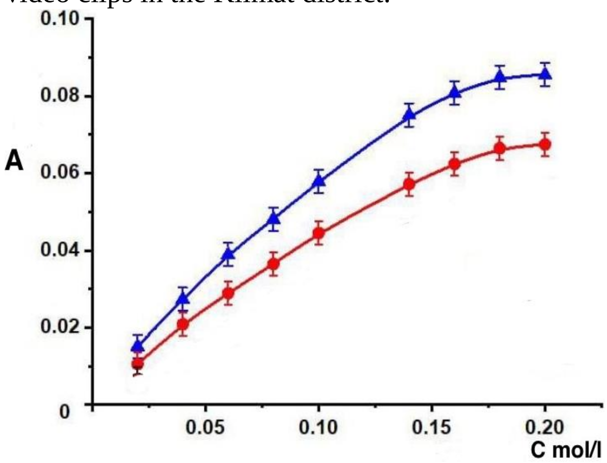

Figure 3. The optical density of the solution was measured at different values of pH to determine the dependence of the change in the optical density of Angren kaolin on the concentration, in which and the most favorable environmental indicator for the formation of a light-absorbing compound (pH), and a(c)=f(pH) dependence graph was drawn, and the optimal values of

Experimental results on the dependence of the optical density of the solution on pH are shown in Figure 4.

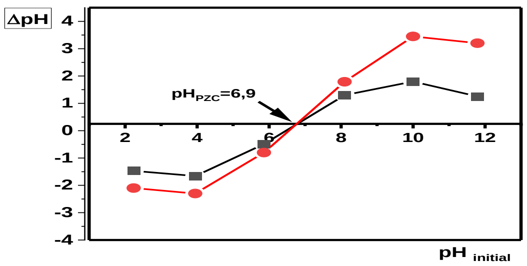

Figure 4. The dependence of the optical density of the solution on RN was calculated by the formula: ΔpH = pH(solution) - pH(NaCl solution) and the results are given in Table 2 optimal (alternative) values of RN.

Table 2

Angren kaolini	pH, initial	2,0	3,0	4,0	5,0	6,0	7,0	8	9	10	11	12
	pH, next	2,1	3,45	5,3	6,4	6,55	6,78	7,18	7	7,2	7,4	8,2
	ΔpH	-0,1	-0,45	-1,3	-1,4	-0,55	0,22	0,82	2	2,8	3,6	3,8

The graph of the dependence of the amount of adsorbent ingested (%) on pH is shown in Figure 5 below. His experiments in studying the effect of pH on adsorption of metal ions in Angren kaolin are for the Cr^{6+} ion, respectively 2, 3.59, 6.14, 7.1, 7.51, 10, 12 held in between.

The results of adsorption of metal ions were observed and then gradually increased to 120 minutes. It has been characterized by having a stable state of adsorption during interaction for more than 120 minutes. In doing so, 240 minutes indicated that an adsorption balance would occur. an increase in pH from 5.0 to 5.5 led to a decrease in intake. hydrolysis of the Cr^{6+} ion at a pH greater than 5.0 can cause this , thus preventing the migration of metal ions from solution to the adsorbent surface. At 240 minutes of optimal adsorption time, the efficiency was maximized to 29.3% (7.33 mg g-1). In a neutral pH 7.0 environment, a pH range of 2 to 12 was used for the adsorption of Cr^{6+}, and the optimal adsorption rose slightly until 19.8% was achieved, increasing to 150 minutes. at a pH of 4.0 to 6.0, high adsorption of Cr^{6+} in the Gills was found to be related to the connection of $Cr^{6+}$to the hydroxyl group of clay of an anionic form.

This is a decrease in adsorption of metal ions in the pH range, with metal ions to adsorb very low pH at adsorbent active sites a high concentration of competing H+ ions can be attributed. decreased adsorption hydroxide at pH greater than 6.0 is associated with the formation of their complexes. Based on the results, the maximum Cr^{6+}Ion was obtained with a pH of 5.0 for the adsorption environment. Several reagents such as inorganic and organic acids, alkaline and organic salts were used to activate or modify them in order to improve the adsorption capacity of Angren kaolinin. From the graph of the zero point of charge of the kaolin "Angren", it was found to be pH =6.7. The chemical composition of Angren kaolin suggests that it was found to contain relatively high levels of SiO_2 oxides. This suggests that a higher adsorbent of the sorbction property can be obtained from it.

In the processes of adsorption in solution, the following factors are important: firstly, the nature of adsorbents, secondly, the nature of solvents and, thirdly, the nature of adsorbate, the nature of intermolecular interactions in the "adsorbent-solvent-adsorbate" system, is important in the folding and concentration of organic molecules in the adsorbent surface area. In the scientific literature, it is noted that competitive adsorption between solvent and adsorption molecules is observed in solutions. Physical adsorption of adsorbtive molecules to adsorbents has been identified in this process. In addition, it has been argued that polarity, size, and configuration of the adsorbate molecule play a large role in adsorption processes. According to the results obtained, adsorption of Cr^{6+} ions to modified adsorbents was found to be 0.78 mg/g from Angren-activated kaolin, 0.52 mg/g from Angren-inactive kaolin, respectively.

Table 3.

Ci(mg/L)	Ce(mg/L)	1/Ce	logCe	lnCe	Qe(mg/g)	1/Qe	logQe
0,02	0,014	71	-1,8218	-4	0,02	50	-1,653
0,04	0,017	58	-1,7696	-4	0,026	38	-1,585
0,06	0,022	45	-1,6576	-3	0,038	26	-1,47
0,08	0,03	33	-1,5229	-3	0,05	20	-1,331
0,1	0,038	26	-1,4202	-3	0,062	16	-1,247
0,14	0,055	18	-1,3596	-2	0,085	11	-1,179
0,16	0,0666	15	-1,1765	-2	0,0934	10	-1,009
0,18	0,12	8	-1,0921	-2	0,1	10	-0,9
0,2	0,5	2	-1,01	-0	0,101	9,9	-0,775

7. Вести из лаборатории