Table 1. Objects of research

Liquid substances	Solid substances
Sunflower oil, kerosene, acetic acid, alcohol, hydrogen peroxide	Sodium chloride, boric acid, sodium bicarbonate, river sand (silicium dioxide), copper sulfate, citric acid, chalk (calcium carbonate)

Table 2. Solubility of different substances in water at 20 °C

Soluble/Unsoluble	Soluble in water	Unsoluble in water
Liquid substances	Acetic acid Alcohol Hydrogen peroxide	Sunflower oil Kerosene
Solid substances	Sodium chloride Boric acid Sodium bicarbonate Copper sulfate	Silicium dioxide Citric acid Calcium carbonate

All experiments were carried out at room temperature. The result of our research is presented in Table 2

Substances such as acetic acid, alcohol and hydrogen peroxide were given colorless homogeneous solutions after mixing. In the case of sunflower and kerosene , two - phase systems were obtained.

A similar experiment with solids gave a homogeneous solution with substances such as sodium chloride, boric acid, sodium bicarbonate, copper sulfate.

CONCLUSION

In the results of the study, we see that substances such as Acetic acid, Alcohol, Hydrogen peroxide, Sodium chloride Boric acid, Sodium bicarbonate, Copper sulfate have dissolved in water. But substances, such as Sunflower oil, Kerosene, Silicium dioxide, Citric acid, Calcium carbonate have not dissolved in water.

In conclusion we would like to say water is a universal solvent, but not all substances dissolve in it.

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INVESTIGATION THE INFLUENCE OF TECHNOLOGICAL PARAMETERS ON THE DETONATION CHARACTERISTICS OF STABLE GAS CONDENSATE PROCESSING PRODUCTS

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The octane number is the most important performance indicator of motor gasoline [1]. Products of stable gas condensate (SGC) processing, which were obtained in the process of zeoforming can be fully used for gasoline production. SGC is gained as a by-product of gas treatment.

In this project the research octane numbers (RON) of SGC on-zeolite processing products were calculated using such computer software products as “UniChrom” and “Compounding” [2] on the basis of analysis of determining the detailed hydrocarbon composition results. SGC on-zeolite processing products had been obtained by varying technological parameters, such as temperature, pressure and flow rate. The results of calculated RONs are given in Figures 1–3.

As can be seen from Figure 1, RON tends to rise as temperature grows. This fact is explained with the growth of chemical reactions rate leading to synthesis of products having higher RON. Speaking in a concrete way, cracking reactions resulting in obtaining of aromatic hydrocarbons by the way of hydrogen redistribution in olefins.

As for the pressure impact from Figure 2, RON of products decreases linearly as pressure grows. The impact of pressure is explained with suppression of cracking reactions.

According to Figure 3, the dependence of RON on the feedstock flow rate has a parabolic form. Such dependence can be explained in a following way: when feedstock flow rate grows, the feedstock-catalyst residence time is not enough yet in order to cracking reaction proceed. Afterwards the aromatic hydrocarbons are obtained leading to RON decreasing. At the same moment the residence time is enough for isomerization reactions and if feedstock flow rate rises, then RON rises too.

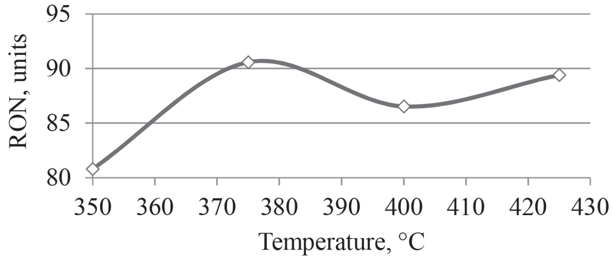

Fig. 1. *Dependence of RON on temperature*

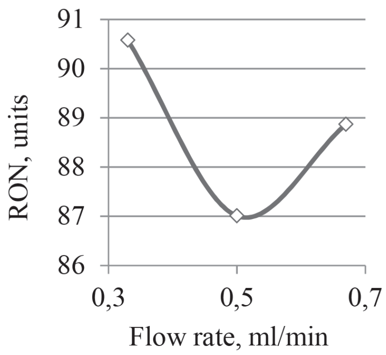

Fig. 3. *Dependence of RON on flow rate*

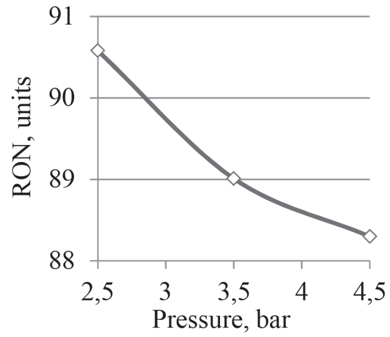

Fig. 2. *Dependence of RON on pressure*

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PARAMETERS OF DIESEL FUEL COMPOSITION THAT AFFECT THE EFFICIENCY OF DEPRESSANT ADDITIVES

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Depressant additives do not always have a pronounced effect on the low-temperature properties of diesel fuel (DF). Adding the same depressant to fuel samples with significantly different fractional and hydrocarbon compositions can have a positive, negative, or no effect on the low-temperature characteristics of DF. This phenomenon is largely dependent on the content of n-paraffin and aromatic hydrocarbons [1] as well as heteroatomic compounds in the fuel composition.

In order to identify the patterns of the effect of DF composition on the efficiency of depressants,