is synthesized as the following stage. After plasma treatment the powder product was collected and prepared for the investigating.

The resulting oxide powder underwent various analyses for basic parameters assessment. All the analyses were done in the TPU Center for Nanotechnologies with the help of licensed and verified equipment (electronic microscopes, BET analyzer, etc.).

The results analysis reveals that the powder obtained is a cubic phase of yttrium oxide with no carbon impurities. It is composed of agglomerated particles with a rounded shape, ranging in size up to 70 nm with 30 % falling within the 40–49 nm range (Fig. 1).

The investigation showed:

- SSA of obtained material is 30 m2/g;
- particle size of 41 nm in average;
- organic component (acetone) increased 4-times of process productivity;
- acetone decreased 8-times of energy consumption for production of 1 kg of product.

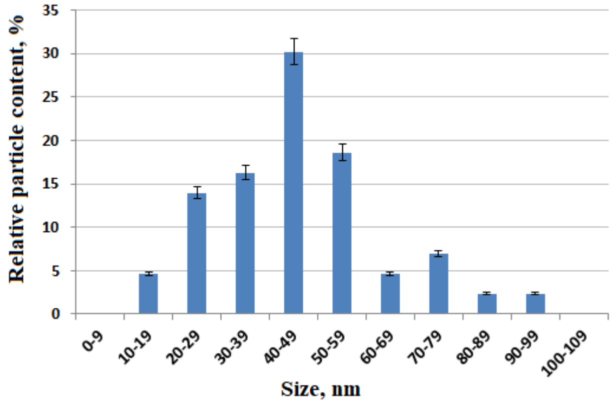

Fig. 1. *Dependence of relative particle content on the powder size*

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INJECTION TEMPERATURE AS A FACTOR IN THE DEPRESSANT EFFECT OF PETROLEUM RESINS

A. M. Titaeva, K. M. Titaev
Scientific supervisor – Ph.D., Associate Professor of Division for Chemical Engineering M. V. Kirgina
Linguist – Ph.D. student A. M. Titaeva

National Research Tomsk Polytechnic University
kmt5@tpu.ru

The addition of petroleum resins to diesel fuel (DF) improves its low-temperature properties due to changes in the structure and chemical properties when mixed. The observed effect depends on the composition of the fuel, the composition and type of petroleum resins, as well as the temperature at which petroleum resins are introduced into the DF.

The object of study in this work is a sample of straight-run DF and benzene resins, as well as mixtures of a sample of straight-run DF and benzene resins in concentrations of 0.0025; 0.0050; 0.0100; 0.0250 and 0.0500 % wt., prepared at resin injection temperatures of 55 and 80 °C.

The DF sample was thermostated in a liquid thermostat for 30 minutes to a given temperature. Then petroleum resins were added to the sample in the studied concentrations and the mixture was stirred. The resulting mixture was cooled to room temperature and left for 24 hours. Then the low-temperature properties were determined.

Cloud point (Cp), Cold Filter Plugging Point (CFPP) and Pour point (Pp) determined according to the method presented in [1–3].

Table 1 presents the results of the low-temperature properties of the studied DF sample.

According to the requirements of the standard [4], for low temperature properties of DF sample does not match any brand (sub standard fuel).

Table 2 shows the effect of the temperature at which benzene resins are introduced into DF on its low-temperature properties at different injection temperatures.

As can be seen from the data presented in Table 2, injection of benzene resin sat a temperature of 55 °C negatively affects Cp, while the injection of benzene resins at a temperature of 80 °C improves Cp (ΔCp = 1 °C).

Injection of BR at temperatures 55 and 80 °C improves Pp (ΔPp = 1–5 °C). Introduction of BS at a temperature of 55 °C has no effect on the CFPP of the sample (ΔCFPP = 0 °C), while at a temperature of 80 °C CFPP of the DF sample improves (ΔCFPP = 4 °C).

The revealed effect can be explained as follows: with increasing injection temperature, the solubility of petroleum resins improves, which leads to the formation of a larger number of micelles that surround and modify n-paraffin crystals. Micelles formed by petroleum resins act as stabilizers by dispersing n-paraffin crystals in the fuel. The injection temperature affects the size and stability of the micelles. Higher temperatures can result in formation of smaller and more stable micelles, improving dispersion. In addition, the injection temperature affects the rate and extent of adsorption. Higher temperatures promote faster and more complete adsorption of petroleum resins on n-paraffin crystals.

Table 1. Low temperature properties of DF sample

Sample	Cp, °C	CFPP, °C	Pp, °C
DF	0	0	–8

Table 2. Results of a study of low-temperature properties of mixtures of DF with benzene resins at an injection temperature of 55 and 80 °C

Property	DF + benzene resins injection at 55 °C					DF + benzene resins injection at 80 °C				
	Concentration, % wt.									
	0.0025	0.0050	0.0100	0.0250	0.0500	0.0025	0.0050	0.0100	0.0250	0.0500
Cp	2	1	0	1	2	–1	–1	–2	–1	–1
CFPP	0	0	0	0	0	–3	–4	–4	–4	–4
Pp	–9	–14	–13	–13	–9	–13	–13	–14	–13	–13

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THE INFLUENCE OF TEMPERATURE ON THE COMPOSITION OF THE PRODUCTS OBTAINED BY PROCESSING STABLE GAS CONDENSATE ON ZEOLITE MODIFIED WITH NICKEL SALTS

O. M. Torchakova, A. A. Altynov, I. A. Bogdanov
Scientific supervisor – PhD, associate professor M. V. Kirgina
Linguistic advisor – assistant I. A. Bogdanov

National Research Tomsk Polytechnic University
634050, Russia, Tomsk, 30 Lenin Avenue
torchakova05@gmail.com

The rapid expansion of the car fleet worldwide requires a proportional increase in the production of motor fuel. One of the ways to solve this problem is to use stable gas condensate (SGC) as a blended component of commercial gasoline. However, the use of SGC without catalytic processing is limited due to its operational characteristics, so the use and improvement of existing catalysts for SGC processing is an urgent task.

The purpose of this work was to process SGC on a zeolite catalyst of the ZSM-5 type modified