

Fig. 1. The "antenna" mechanism [1]



Fig. 2. The 2-[(phenylamino)methylene]-5,5-dimethyl-cyclohexane-1,3-dione (a) and the structure of samarium (III) complex $[SmL_3(NO_3)_3]$, where L is 2-{[(2-methoxyphenyl) amino]methylene}-5,5-dimethyl-cyclohexane-1,3-dione (b)

bands in emission spectra as well as millisecond lifetimes of excited states.

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Reference

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PRODUCTION COMPONENTS OF FUELS BY PROCESSING BLENDS OF DIESEL FRACTION AND RAPESEED OIL ON ZEOLITE CATALYST

D. V. Sosnina, I. A. Bogdanov, A. A. Altynov Scientific adviser – assistant I. A. Bogdanov

National Research Tomsk Polytechnic University Russia, Tomsk, Lenin Avenue, 30, dariasosna@mail.ru

The growth of the world economy leads to an increase in the consumption of fossil fuels, which are valuable feedstock for many industries. In par-

ticular, oil production makes it possible to provide a feedstock base for the chemical industry [1].

However, an increase in the extraction of fossil fuels leads to a large decrease in their reserves.

Distillate,	Temperature, °C									
	0	10	20	30	40	50	60	70	80	90
70 VOI.	41	100	137	157	182	218	254	290	337	345

Table 1. Product fractional composition

Thus, over the past decades, a decrease in proven oil reserves has been observed on the Russian Federation territory, and most of the discovered reserves are heavy oils from small and medium deposits, which greatly complicates the process of oil production [1-2].

In view of the reduction of fossil fuels reserves, there is a need to search for renewable feedstock, the processing of which allow to obtain hydrocarbons similar in composition and properties to petroleum hydrocarbons.

In this work, production fuels components by processing of diesel fraction and rapeseed oil blends on zeolite catalyst was implemented. The process was carried out on a flow-type laboratory catalytic unit. Technological parameters of process are temperature 425 °C, pressure 3.5 bar, feedstock space velocity 3h⁻¹, the ratio of diesel fraction/rapeseed oil 3:1.

According to the results of determining the characteristics of the obtained product, the density at 15 °C was 806.5 kg/m³, the kinematic and dynamic viscosities at 20 °C were 1.43 mm²/s and 1.15 mPa·s, respectively.

References

 Palankoev T. A., Dementiev K. I., Khadzhiev S. N. Perspective processes for the production of biofuels of the "Drop in" type and petrochemical products from renewable raw materials (review) // Neftekhimiya, 2019. – V. 59. – № 3. – P. 315–324. In agreement with the value of kinematic viscosity and density, the obtained product meets the requirements of [3] for the quality of diesel fuels.

The obtained results by the low-temperature properties showed that the obtained product does not become cloudy and does not freeze at a temperature of -70 °C. The cold filter plugging point of the product of the processing of the bled of diesel fraction/rapeseed oil is also lower -70 °C, which meets the requirements [3], for diesel fuels.

The Table shows the results of determining the fractional composition of the product obtained by processing a blend of diesel fraction/rapeseed oil on a zeolite catalyst.

As can be seen from the results presented in the Table, the fractional composition of the obtained product meets the requirements [3] for diesel fuels.

At the same time, the classic boiling limits for diesel fractions are 140–360 °C. The resulting processed product is characterized by a significant content of gasoline fractions (fractions with boiling limits of IBP-140 (180) °C) – about 20–40 % vol.; or kerosene fraction (fractions with boiling ranges of 140 (180)–240 °C) – about 20–40 % vol. Thus, depending on the consumer's request, certain motor fuels can be production from the obtained product.

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