

Levinbuk M.I., Mityagin V.A., Glagoleva O.F.

A new vector of development of the oil industry _____ **4-12**

Keywords: energy consumption, trends, electric vehicles, evolution motors, changing trends in the refining industry, growth opportunities petrochemicals

Abstract. Most of the oil produced in the world is directed to the production of motor fuels, and the upcoming reorganization of the transport communications market forces analysts to revise the technological basis and the economy of oil refining. New trends in carbon market can significantly affect the annual balance of consumption of crude oil in the refining and petrochemical industries. Therefore, it is necessary now, taking into account these new trends, to consider a new direction for the development of the oil industry, namely the reprofiling of the existing equipment of the refinery from the dominant production of motor fuels (gasoline, diesel fuels, jet fuel) to the production of petrochemical raw materials.

*A.V. Topchiev Institute of petrochemical synthesis Russian Academy of Sciences, Moscow;
All-Russian Scientific-Research Institute for Petroleum Processing JSC [VNII NP], Moscow*

PETROLEUM PRODUCTS: technology, innovation, market

*Piskunov I.V., Zvereva U.G., Belokon' N.Yu., Obukhov A.G., Trushin E.A.,
Rogov V.A., Popov S.M.*

The experience of the "LUKOIL" company in the production of high quality bitumen materials _____ **13-20**

Keywords: bitumen, PMB, «LUKOIL».

Abstract. An article describes practical experience of LUKOIL company in the field of research and development of bituminous materials. LUKOIL refineries have the potential to produce high-quality binders to meet the current needs of the bitumen market and ultimately to improve the quality and durability of road pavements in Russia.

"LLK-International" [«LUKOIL»], Moscow

Ganus A.I., Abdul'minev K.G., Bulatov D.F., Mukhutdinova E.K., Razina A.V.

Ways to reduce the benzene content in the reformates _____ **21-24**

Abstract. The process of catalytic reforming is one of the most demanded processes for obtaining automobile fuel in the Russian Federation. However, reforming gas contains a large amount of aromatic hydrocarbons (up to 70%), including benzene (2-7%), which does not meet the requirements of the current norms of the Technical Regulations of the Customs Union (TR TS 013/2011) in Russia, the content of aromatic hydrocarbons in commercial gasolines should not be more than 35%, including the benzene content - not more than 1%. This is the main problem of this process at present.

One of the options for reducing benzene content in reforming gasoline is the preliminary preparation of raw materials - removal of benzene precursors. Combined reforming, removal of benzene by fractionation of the reformat with the isolation of the benzene-toluenexylene fraction, reduction of the benzene content in the reformates by preliminarily alkylating with olefins, removal of the HC-85°C fraction from the reforming feedstock, followed by hydroisomerization, and the isolation and hydroisomerization of the benzene-containing reformat fraction can also be used.

Today, there are many options for reducing benzene. It is necessary to take into account their advantages and disadvantages for the optimal selection of process technology.

Ufa State petroleum technological university, Russian Federation

Bulatov D.F., Abdul'minev K.G., Babaev N.M.

Research and development of the technology of aromatization of hydrocarbons with the involvement of the residual fraction of reformat in the feedstock _____ **24-26**

Abstract. The paper contains information on the study of the technology of aromatization of hydrocarbons with the addition of the residual reformat fraction to the traditional catalytic reforming feedstock.

Ufa State petroleum technological university, Russian Federation

ANALYTIC METHODS for OIL and PETROLEUM PRODUCTS

Makhin D.Yu., Kapustin V.M., Koshevoy V.O.

Modern problems of the petroleum paraffin wax essestment (GOST 23683-89)_____27-30

Keywords: quality standards GOST 23683-89 (Russia), FDA 172.886 (USA), RAL-GZ 041 (Germany), GB / T 4985 (China), petroleum paraffin wax, group chemical composition, fractional composition.

Abstract. The article considers the production of petroleum paraffin waxes according to GOST 23683-89. The analysis of requirements to the quality of paraffin waxes is carried out, the problems and outlook of the methods of research are described. The comparison of modern ecological and technical requirements, methods of assessing the qualitative characteristics paraffin waxes (produced in Russia and abroad) in accordance with the current standards is presented. Suggestions are made on the need to amend GOST 23683-89 both with respect to quality requirements and methods for their evaluation, recommendations on the classification of paraffin waxes into the separate standards depending on the degree of their purification and the physic-chemical properties are given.

I.M. Gubkin oil and gas university [National research university], Moscow

CHEMMOTOLOGOS

Pimenov Yu.M., Ulit'ko A.V.

Process modeling of high-temperature deposit formation by diesel fuel combustion_____31-41

Keywords: Diesel fuels, combustion, high temperature deposit formation, methods of study, diesel, similarity, modeling, experiment, integral estimate.

Abstract. The article presents current issues of development of theory of modeling for chimmotology process including the high-temperature deposit formation in a diesel combustion chamber conditioned by the impersonal lack of formalization of the diesel fuel variables effect in describing the procedures directly influencing the engineering reliability during the fuel combustion in engines. The process modeling for high-temperature deposit formation during diesel fuel combustion is carried out by the authors based on the familiar chimmotology regularities and includes the construction of the structural and functional, physical and mathematical process models. It was suggested to create a physical model of the diesel cylinder for the quantitative modeling of high-temperature deposit formation process. This will ensure temperature and kinetic condition similarity of the fuel ignition and formation of non-complete combustion products with the regard of the self-dependent assignment and key factors variation, which determine the high-temperature deposit formation process within the limits corresponding to the actual magnitudes in the engine.

On the basis of mathematical modeling for deposit formation process as per the results of the active experiment to investigate the response surface and to test the fuel in the physical model, the authors obtained the algorithmic regularities of correlation between the fuel composition, conditions of its application in diesel engines and the results of high-temperature deposit formation process as multifactor non-linear regression models. The results of the modeling allow us to imagine the potential tendency of the fuel to the deposit formation through the whole area of condition factors variation as a generalized factor (integral estimate) of the property to the high-temperature deposit formation.

The authors show lack of uniqueness of the chemicals impact, which are included in the additive composition intended fsimior the diesel fuels, on the high-temperature deposit formation at the various conditions of the fuel combustion in an engine. The modeling indicates strongly that the deposit mass, received under one set of conditions, and cannot be the only and sufficient factor for characterizing the fuel property for deposit formation within the whole range of engine operation modes. Thus, the conclusion obtained during modeling about the depressor impact on the deposit formation quantity (increasing the fuel deposit formation level) qualitatively coincide with the information widely known in chimmotology and admit to quantitatively justify the need for application the ignition promoters in fuels containing the depressor additives.

Application of the suggested approach for modeling of the chimmotology processes admits not only to thoroughly study the deposit formation process in a diesel engine, but also to predict the result of application of any experiment type of diesel fuels, which have various chemical compositions to be used in the equipment under actual operating conditions.

*Federal Autonomous Enterprise "The 25th State research institute of himmotology,
Ministry of Defence of RF", Moscow*

Lashki V.L., Chudinovskikh A.L., Boykov D.V.
**Interpretation of the state of the condensed oil
from the position of classical mechanics**_____42-43

CONFERENCES. SEMINARS. EXHIBITIONS

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**MATERIALS of the PETROCHEMICAL
and REFINERS ASSOCIATION**

**Extracts of the protocol #140 of ANN board meeting of 17.05.2018 / Subject – composition and
physico-chemical properties of condensate of Achimov fields; Western norms in design and construction
of oil refining and petrochemical**_____47-48