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Department of chemmotology and prospective fuels and lubricants:

Main R&D results and future directions FSUE «Scientific research institute of standardization and unification»

Keywords: chemmotology, POL, import substitution, strategic materials.

Abstract. This article is focused on the main results achieved by the department of Chemmotology and prospective fuels and lubricants (POL) FSUE "NIIP" in the last 6 years since its inception. There are 4 key research areas within department: development of strategic fuels (or POL), improving of process safety for (POL) production, ensuring quality control of the new generation fuels and lubricants and creating of the scientific research on innovative chemmotology areas. The article shows some of the results achieved by the department regarding these aspects.

Scientists (or engineers) of the department carried out research in the field of theoretical and applied Chemmotology, developed and patented more than 8 new products for a variety of modern and future technology models, published a number of scientific articles. Researchers of the department accomplish routine organizational, technical and technological measures aimed at the arrangement of industrial production of scarce fuels, as well as they are active in scientific and social events by participating in the preparation and holding of international, national and industrial R&D conferences and exhibitions. Moreover, members of the department work in various scientific and technical dissertation councils and commissions.

FSUE «Scientific and research institute of standardization and unification», Moscow

**PETROLEUM PRODUCTS:
TECHNOLOGY, INNOVATION, MARKET**

Vezirov R.R., Vezirov I.R.

Combined unit of fuel oil vacuum distillation and tar coking

Keywords: fuel oil vacuum distillation, tar coking, selection of vacuum gas oil, feedstock conversion, one- and two-stage hydro ejector vacuum system, evaporating agent, process fluid, ejector, energy efficiency.

Abstract. This article presents the solution to problem for achieving the depth of selection of vacuum gas oil from fuel oil or the mixture of fuel oil with heavy oil residues. The existing level of equipment was analyzed; the technological and design problems and limitations of existing engineering solutions were identified. The combined unit of fuel oil vacuum distillation and tar coking, that provides greater selection of vacuum gas oil, is introduced. The configurations of vacuum systems, that reduce energy consumption to create the vacuum, are presented. The principle diagram of fuel oil vacuum distillation and tar coking is presented.

SUE «Institute of Petroleum Refining and Petrochemistry of RB»

Khabibova A.G., Djafarova N.V., Bayramova S.T., Kurbanova R.V., Kurbanova A.G., Aleskerova E.A.

Yodalkoksilirovanie heptene-1 propargyl alcohol and study the properties of the resulting compounds

Keywords: hepten-1, halogenethers, unsaturated C₃-alcohols, aminmethyl ether, trialkylsilil ether, dioxan compound.

Abstract. The unsaturated iod ether was obtained in result of iodalkoxylation of hepten-1 by propargyl alcohol. Reaction have been conducted in 0–5°C temperature by use of crystalline iod and HgO. Nitrogen and silicon derivatives received compound have been synthesized. In result of Kucerov reaction have been received dioxan compound. The structure of received product was confirmed by method of IR and NMR-spectroscopy.

Azerbaijan State University of Oil and Industry

Dolmatov L.V., Akhmetov A.F., Dolmatov A.V., Fazylova A.V.

Protective materials sleeper impregnation – thinners oil-based

Keywords: antiseptic, impregnation material, sleeper impregnation plant, kinematic viscosity, flash point.

Abstract. The article presents the results of researches on the development of the oil impregnating material NPM to protect wood from biodegradation. New impregnating materials such as NPM-1 can be recommended for experimental use in sleeper impregnation plants as diluents coal and shale oils. Application of new oil impregnating material NPM for wood preservation will significantly improve the environmental and sanitary situation in the sleeper impregnation plants and adjacent territories.

FSBEI HPE «Ufa State Petroleum Technological University», Ufa

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Copolymers of styrene with buthyl ester of methacrylic acid synthesized in ionic-liquid medium as antimicrobial additives for oil

Keywords: antimicrobial additives, bactericides, fungicides, copolymer, an ionic liquid, butyl acrylate, radical polymerization.

Abstract. In the presented work has been shown the results of investigations of copolymers butyl ether of methacrylic acid with styrene, as antimicrobial additives to synthetic oil. Synthesis of copolymer was carried out by a new method - by radical copolymerization of components in the ion-liquid medium synthesized on the basis of N-metilpirrolidon and acetic acid. Process of copolymerization was carried out at a mass ratio of styrene and a butylmetakrilat, 10-15:90-85% of masses respectively, concentration of mix of monomers in ionic liquid - 50% of masses, at a temperature of 80 °C, concentration of the radical initiator (peroxide benzoile) - 0,2% (masses) and durations of reaction of 5 hours. In the specified conditions the yield of copolymers made 80,87% at concentration of styrene in initial mix 10% and 73,85% mas. at concentration - 15%. Antimicrobic properties of the synthesized of samples copolymers are investigated in synthetic oil - butyl ether of alkenyl succinic acid at concentration 0,25-1,0 mas. in accordance with GOST 9,052-88 and GOST 9,082-77, with method of zone diffusion. As a standard it was used the antimicrobial additive - 8-oksi-quinoline used in compositions of fuels and lubricant oils. In the researches has been used two species of bacteria - *Pseudomonas aeruginosa*, *Mycobacterium laktikolium*, fungi – *Aspergillus niger*, *Penicillium chrysogenum*, *Penicillium cyclopium*, *Paecilomyces varioti*, barmy mushrooms – *Candida tropicalis*. Nutrient medium for cultivation of bacterial cultures: meat - peptonny agar (MPA), and for fungi – the mash agar (MA). The studied samples of copolymers of styrene with butylmetakrilaty, distinctive by the content of styrene in macrochain, at concentration of 0,25% of masses showed antimicrobic properties. With increasing of concentration of specified additives are observed rather high bactericide properties. So, at concentration 1% studied samples show higher antimicrobic efficiency and a zone of destruction of microorganisms make (lysis zone) 3,0-3,2 sm, opposite to 2,8 sm for a standard. At the indicated concentration they are showing also fungicide properties. Thus on the basis of the researches has been shown possibility of usage of copolymers of styrene and a butylmetakrilat synthesized in the ionic-liquid medium as antimicrobic additives to synthetic oils.

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Scientific basis synthesis of aromatic acetylene alcohol method Favorskaya and Grinyara-Iotsicha

Keywords: aromatic acetylene alcohols, bioactivity, product outlet, catalyst, ketones, kinetics, organomagnesium compounds, methods Favorskaya and Grinyara-Iotsicha, reaction mechanisms, intermediate and auxiliary connections, solvent, technological process, phenylacetylene.

Abstract. Acetylenic hydrocarbons and various derivatives thereof, due to their high reactivity and availability is widely used in organic synthesis. Among the numerous organic compounds are of particular importance aromatic acetylene alcohols (AAA). The combination of high reactivity with a triple bond makes these compounds valuable intermediates promising for use in fine organic synthesis in the preparation of valuable performance materials used in agriculture, medicine, chemical industry, as well as corrosion inhibitors, metal surface. AAA synthesized by reacting acetylene with phenylacetylene-croton aldehyde and ketones (acetone, methyl ethyl ketone, methyl isopropyl ketone, acetophenone and pinokalin) by the method of tabor. Also synthesize AAA reacting phenylacetylene and crotonaldehyde and ketones based organomagnesium compounds. Scientifically proven influence of various factors-the molar ratio of the starting materials, temperature, prodolzhitelnosti reaction and the nature of the solvent on the yield of the product itself. The kind's promozhutochnyh and dopolnitelnyh compounds and their education. The optimal conditions for the synthesis of a high yield in the process. Determined purity, structure, elemental composition, quantum chemical and physical constants of the synthesized compounds. The optimal conditions for the synthesis of a product with a high yield. The reaction mechanism based on literary sources. On the basis of experimental studies identified the following series of reactions reactivity of ketones Grinyara- Iotsicha acetophenone <pinokalin<methylisopropylketone <crotonaldehyde <ethyl ketone <acetone.

The optimal conditions for the synthesis of AAA method of Tabor: equimolar ratio of the starting materials; - 50°C temperature, the solvent THF, the reaction time of 4 hours. Under these conditions, with the AAA

synthesized in high yield. Comparative characteristics of the methods used for the synthesis of the output AAC arranged in the following series: Favorskaja <Grinyara–Iotsich.

Tashkent Chemical Technological Institute

MATHEMATICAL SIMULATION

Chudinova A.A., Buchatskaya N.I., Podgornyy V.V., Gavrikov A.A., Ivashkina E.N.

Development of technical solutions for increase of production efficiency of process of liquid-phase alkylation of benzene propylene with application of the method of mathematical modelling

Keywords: alkylation, isopropylbenzene, mathematical modeling, rectification.

Abstract. The mathematical model of reactor process of receiving an izopropylbenzene on the aluminum chloride is constructed. The computer model of the technological scheme of alkylation of benzene by propylene on the aluminum chloride is created in the environment of HYSYS. Integration of computer models allowed to carry out calculations for definition of the technological modes of production allowing to receive more quality commodity product. Concentration of an izopropylbenzene in a commodity product increases to 99,9% wt. It is reached at change of sequence of division in rectifying columns, namely due to change of loadings on ethyl- and butylbenzene.

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MATERIALS of the PETROCHEMICAL and REFINERS ASSOCIATION

Extracts of the protocol #129 of ANN board meeting of 31.03.2016 / Subject – Implementation of the program of modernization and reconstruction of enterprises of JSC “NK “Rosneft” on the Eastern refi neries