14(5) SOV/165-59-5-2/21

AUTHORS: Sergiyenko, S.R., Lebedev, Ye.V.

TITLE: High-molecular N-paraffin Hydrocarbons (C_{21} - C_{30}) of the Romashkin (Devon) Petroleum

PERIODICAL: Izvestiya Akademii nauk Turkmenskoy SSR, 1959, Nr 5, pp 16-19 (USSR)

ABSTRACT: The authors describe a method of study of high-molecular hydrocarbons in Romashkin (Devon) petroleum. This method, based on the chromatographic fractionation of hard hydrocarbons, was developed by V. Fuks /Ref 1/. Characteristics of solid hydrocarbon fractions, forming a complex compound with carbamide (1) and not forming a complex compound with carbamide (2) and liquid hydrocarbon fractions forming a complex compound with thiocarbamide (3) and not forming a complex compound with thiocarbamide (4) are shown on Table 1. The scheme of extraction and cracking process of high molecular hydrocarbons is shown in a graph (Page 16 a). By simultaneous use of ASK type silicagel, activated carbon and activated alumina as adsorbents, further dichloroethane, hexane, petroleum ether (50 - 70°), acetone, benzene, ether and their compounds as substitutes, ten individually classi-

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High-molecular N-paraffin Hydrocarbons (C_{21} - C_{30}) of the Romashkin (Devon) Petroleum

fied paraffin hydrocarbons C_{21} - C_{30} were obtained from Romashkin petroleum. The fractionation of solid, high-molecular hydrocarbons in a 3-section chromatographic column, showing the number of fraction, n^{10}_{D}, concentration and processing temperature is given on Graph 1. The quantitative distribution of N-paraffin hydrocarbons in the fraction of solid high-molecular hydrocarbons forming a complex compound with carbamide, showing the yield, processing temperature, carbon atoms in the molecule and T^{o} of initial high-molecular hydrocarbons with a complex compound formed by carbamide, is given on Graph 2. The results containing the number and extent of fractions, gram and percent of yield, total yield, n^{70}_{D}, T^{o} pl. (melting temperature) and the derived products are shown on Table 2. It was proved,

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High-molecular N-paraffin Hydrocarbons (C_{21} - C_{30}) of the Romashkin (Devon) Petroleum

that with increase of the molecular weight of N-paraffin hydrocarbons, their quantity in the petroleum decreases. ✓
There are 2 tables, 2 graphs and 2 references, one of which is Soviet and one German.

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5(3), 15(5) SOV/165-59-6-4/5 -15

AUTHORS: Sergiyenko, S.R., Yan, Tsuy-Din

TITLE: Composition and Properties of the High-Molecular Components of Karamay Petroleum

PERIODICAL: Izvestiya Akademii nauk Turkmenskoy SSR, 1959, Nr 6, pp 37-48

ABSTRACT: The authors describe the results of studies on the composition and properties of the high-molecular components of the Karamay petroleum, carried out according to a method described in References 1, 2, 3 and 4.: The petroleum from the Karamay oil fields in the province of Sinkiang is one of the potential industrial petroleum of China and its chemical properties differ considerably from all kinds studied previously. It has a low sulphur content and is relatively heavy with only 40% of benzene-gas fractions. The high-molecular components (above 350°C) isolated at a temperature not exceeding 220°C consist of: 73% hydrocarbons, 24% tars and 3% asphaltenes. The content of asphaltenes during processing with varying quantities of pentane is shown in Table 1; 80% of the hydrocarbonic components are paraffin-cycloparaffinic hydrocarbons, only 20% are aromatic hydrocarbons. The saturated hydrocarbons are highly cyclic, containing an average of 2.5 cycloparaffinic rings per molecule. The

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Composition and Properties of the High Molecular Components of Karamay Petroleum

distribution chromatogram of high molecular hydrocarbons is given on Graph 1 and the chromatogram of the interfractionation on Graph 2. By repeated chromatography of saturated hydrocarbons 16% of fractions were isolated showing a density of 0.89 and a refraction coefficient n_D^{20} = = 1.48 - 1.50, due to the increased number of rings. The chromatogram of the repeated division of saturated hydrocarbons is shown on Graph 3, and the repeated division of monocyclic aromatic hydrocarbons on Graph 4. Amongst the aromatic hydrocarbons those of a bicyclo-aromatic structure dominate. The division of high molecular hydrocarbons is shown on Page 39: hydrocarbons (above 350°C), chromatographic division with silica gel ASK, derived products, interfraction chromatography, derived products, repeated chromatography, derived products. The distribution of fraction upon chromatographic division of the high molecular hydrocarbons and the results of chromatographic interfraction is also shown. Bicyclic aromatic hydrocarbons have a smaller molecular weight and contain more sulphur than monocyclic aromatic hydrocarbons. The composition and properties of tars, particularly their poor solubility in phenol is a proof of low aromatization, which is also the reason for the low adsorption on silica gel ASK. The adsorption of tar on silica gel is shown in Table 2, and the results of the isolation by adsorption of tar from hydrocarbons of the

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Composition and Properties of the High Molecular Components of Karamay Petroleum

high molecular components in Table 3. The quantitative distribution of various hydrocarbonic groups within the high molecular components, their composition and properties are shown in Table 4, and a comparison of the characteristics of saturated hydrocarbons before and after repeated chromatography is given in Table 5. The dependence of the composition and properties on the tar fractionation is shown on Graph 5, and the dependence on the molecular weight on Graph 6. The distribution of tar fractions is given in Table 7 and the composition and properties of the fractions in Table 8. The molecular weight and the number of heteroatoms of the fractions increase with the rising polarity of the desorbing solvents, whereby the number of their functional groups increases accordingly.

There are 8 tables, 1 diagram, 6 graphs and 5 references, 4 of which are Soviet and 1 English.

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position and Properties of the High Molecular Components of Karamay Petroleum

ASSOCIATION: Institut geologii i razrabotki goryuchikh iskopayemykh, Akademii nauk SSSR (Institute of Geology and Processing of Combustible Minerals, AS USSR)

SUBMITTED: July 17, 1959

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5(3), 15(5) SOV/165-59-6-3/5-15

AUTHORS: Sergiyenko, S.R., Yan, Tsuy-Din

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TITLE: On the Chemical Nature of High-Molecular Paraffin-Cycloparaffin Hydrocarbons of Petroleum

PERIODICAL: Izvestiya Akademii nauk Turkmenskoy SSR, 1959, Nr 6, pp 49-60

ABSTRACT: The high-molecular saturated hydrocarbons of Karamay petroleum, which comprise 80% of all high-molecular hydrocarbons in it, were divided into three fractions by chromatography on silicagel and selective solvents: liquid hydrocarbons (n_D^{20} = 1.475 - 1.480) comprising more than 80%, solid hydrocarbons with a melting point of ~37°C (~10%), and saturated liquid hydrocarbons with a high refractive index (n_D^{20} = 1.48 - 1 50). Solid, as well as liquid high-molecular hydrocarbons of Karamay petroleum consist mainly of strongly branched paraffin chains, in which cyclopentane and cyclohexane rings take the place of substitutes. This is proved by the low melting point, the high refraction coefficient, the inability of solid hydrocarbons to form crystalline complexes with carbamide, the high specific gravity, etc. The application of selective dehydrogenation in the liquid phase made it possible to evaluate the total quantity of hexamethylene groups in the saturated part of high-molecular hydrocarbons, as well as to calculate approximately the character of distribution of five-

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5 (3)

AUTHORS: Petrov, Al. A., Sergiyenko, S. R., Nechitaylo, N. A., Tsedilina, A. L. SOV/62-59-6-22/36

TITLE: Synthesis and Properties of the Monomethyl-substituted Alkanes of the Composition C_{12}-C_{16} (Sintez i svoystva monometil-zameshchennykh alkanov sostava C_{12}-C_{16})

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 6, pp 1091 - 1097 (USSR)

ABSTRACT: Since the hydrocarbons of this structure are not yet sufficiently investigated, the synthesis of the monomethylated alkanes with a boiling temperature of more than 200° was investigated. With this monomethylated alkanes one may synthesize all theoretically possible isomers (there are only 29 compounds). They are furthermore of interest because they have thermodynamically stable structures and meet with all technical requirements of motorization. The hydrocarbons were synthesized according to Grignard's reaction (magnesiumbromoalkyls with methylketones). In this reaction the purity of the compounds obtained depends in a high degree on the purity of the initial substances (alkylbromides). This fact was especially considered

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Synthesis and Properties of the Monomethyl-substituted Alkanes of the Composition C_{12}-C_{16} SOV/62-59-6-22/36

in the present investigation. The methylketones were obtained by decomposition of the corresponding alkyl-acetoacetic acid. As intermediates tertiary alcohols were at first obtained which were dehydrated at 280°, redistilled , and hydrated in the autoclave on nickel at a temperature of from 150-170°. The temperature at which the hydrocarbons obtained crystallize was determined by plotting the heating curve by means of the photo--recording Kurnakov pyrometer. The purity degree was determined by means of a special thermographic device. N. I. Lyashkevich, to whom the authors express their gratitude, carried out the measurements in the laboratory for petroleum chemistry of the institute mentioned in the Association. The purity degree of the synthesized hydrocarbons was 97-98%. The thermogram was recorded by a special aluminum block which was designed in the Institut obshchey i neorganicheskoy khimii AN SSSR (Institute of General and Inorganic Chemistry of the AS USSR). By this automatic recording of the heating curves the melting process could be fixed exactly (Fig 1). With almost all compounds obtained two stages in the melting process (-46 and -45.4° melt-

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Synthesis and Properties of the Monomethyl-substituted Alkanes of the Composition C_{12}-C_{16} SOV/62-59-6-22/36

ing and crystallisation temperature) were observed. The properties of the hydrocarbons are given in a table by which it is shown that the density and the refractive index scarcely depend on the position of the outer methyl groups in the main chain, what is well in line with data by Tatevskiy (Ref 5). The crystallisation temperature is, however, strongly influenced by these methyl groups. The change of the crystallisation temperature at the transition of one homolog to the other, and of one isomer into the other is not steady (Figs 2,3 with comparative data from Ref 10). This unsteadiness is caused by the presence of either an even or an odd number of hydrocarbons in the main chain. The transition from an odd to an even number of hydrocarbons exerts a parallel influence on the melting point, the reverse transition, that is an increase in the molecular weight, exerts an antiparallel influence. The laws holding for paraffins, olefins, and greases, which are well known, may thus also be applied to ramificated alkanes. The crystallisation process of the latter takes place by forming such crystals as exhibit the shortest possible carbon chain.

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Synthesis and Properties of the Monomethyl-substituted Alkanes of the Composition C_{12}-C_{16} SOV/62-59-6-22/36

There are 3 figures, 1 table, and 11 references, 5 of which are Soviet.

ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute of the Academy of Sciences, USSR)

SUBMITTED: September 5, 1957

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5 (3)

AUTHORS: Sergiyenko, S. R., Chernyak, N. Ya. SOV/62-59-7-20/38

TITLE: Kinetics and Mechanism of the Oxidation of Dibenzyl in Liquid Phase (Kinetika i mekhanizm zhidkofaznogo okisleniya dibenzila)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 7, pp 1294 - 1303 (USSR)

ABSTRACT: The present paper deals with the oxidation of hydrocarbons which contain aromatic and aliphatic ingredients, and the resin formation. Dibenzyl serves as an example; it contains two aromatic rings which are combined by an aliphatic bridge. Furthermore, only a small number of oxidation products is possible in the case of dibenzyl. The kinetic rules governing the oxidation and its reaction scheme are investigated. The experiments were carried out in a closed system with circulating oxygen. The scheme of the apparatus is represented in figure 1. The absorption of the oxygen was determined from the drop in pressure. Moreover, the intervals were determined within which the oxygen content decreases to such an extent that new oxygen has to be introduced in order to guarantee an uninhibited reaction course. From these intervals the curve ΔV_{O_2} versus t was obtained

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Kinetics and Mechanism of the Oxidation of Dibenzyl in Liquid Phase SOV/62-59-7-20/38

(Fig 2). Furthermore, the time of the consumption of dibenzyl and the accumulation of intermediate- and final oxidation products were determined from the change of the functional groups. The content of dibenzyl in the reaction products was determined from the adsorption of the oxidized products in fine-grained silica gel. The content of peroxides and acids was determined potentiometrically, the aldehydes polarographically. The experimental temperatures were changed for the investigation of the reaction kinetics(110, 130, 140, and 150°). It was found that the oxidation proceeds at all temperatures autocatalytically. The reaction begins without induction period, accelerates, reaches a maximum, and dies down. The reaction is subjected to an exponential law. The polarographic anamorphoses of the absorption curves of O_2 show that the reaction proceeds in the chain mechanism. The curves of the kinetics of the consumption of initial dibenzyl and the accumulation of intermediate products are represented in figures 3a and b. From these follows that the process is inhibited in the further stage of the reaction under the influence of produced inhibiting

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Kinetics and Mechanism of the Oxidation of Dibenzyl SOV/62-59-7-20/38
in Liquid Phase

resin products. The activation energy of the beginning oxidation (29 kcal/mol) was determined from the experimental data and from it the activation energy of the reaction of peroxyradical with dibenzyl = 13 kcal computed according to the given reaction scheme. The reaction scheme which is based upon the radical- chain mechanism reproduces all experimental rules governing the reaction mechanism observed and takes into account the autoinhibiting effect caused by the destruction of the peroxyradicals. The hydroperoxide of dibenzyl and benzaldehyde were found as intermediate products. The influence of additions on the different reaction stages (resinous intermediate products etc.) are represented in figures 4,5, and 6. There are 6 figures, 4 tables, and 9 references, 8 of which are Soviet.

ASSOCIATION: Institut nefti AN SSSR (Institute of Petroleum of the AS USSR)

SUBMITTED: September 11, 1957

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5(3), 5(4) SOV/62-59-8-13/42

AUTHORS: Petrov, Al. A., Sergiyenko, S. R., Tsedilina, A. L., Nechitaylo, N. A., Sanin, P. I., Nikitskaya, Ye. A.

TITLE: Synthesis and Properties of the Dimethyl-substituted Alkanes Having the Composition C_{12}-C_{16}

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 8, pp 1421-1424 (USSR)

ABSTRACT: The present paper discusses the synthesis and properties of some of the compounds mentioned in the title. The properties of the synthesized materials are given in table 1. Nearly all substances crystallize at low temperatures; only 2,4-dimethyldecane and 3,5-dimethyldodecane vitrify at much lower temperatures than do their isomers or adjacent homologs. Besides reference 3 investigations aiming at an explanation of these phenomena have also been carried out by Petrov (Ref 4). It was assumed that the characteristic feature of vitrification of the two compounds mentioned is due to their structure. Various investigations were carried out to prove this assumption (determination of viscosity as a function of temperature (Table 2) and determination of molecular weight). From the results it is seen that the influence of the structure on the vitrification effect cannot be limited.

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Synthesis and Properties of the Dimethyl-substituted Alkanes Having the Composition C_{12}-C_{16}

It was only possible to establish a certain dependence on the branching degree of the compounds. There are 2 tables and 5 Soviet references.

ASSOCIATION: Institut nefti Akademii nauk SSSR (Petroleum Institute of the Academy of Sciences, USSR)

SUBMITTED: December 10, 1957

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5(4) SOV/62-59-9-9/40

AUTHORS:	Levshin, V. L., Mamedov, Kh. I., Sergiyenko, S. R., Pustil'nikova, S. D.
TITLE:	Fluorescence Spectra of Aromatic Hydrocarbons of the Diphenyl Series and Their Oxygen- and Sulfur Containing Analogs
PERIODICAL:	Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 9, pp 1571-1578 (USSR)

ABSTRACT:

Petroleum fractions of high molecular weight can be analyzed with fluorescence spectra, but the spectra of the individual components of the fractions are not well enough known, so that there is a lack of comparative information to interpret the spectra. It is the aim of this paper to carry out further investigations in this field. The authors investigated the spectra of the hydrocarbons of the homologous series of biphenyls starting with diphenyl itself. The further compounds extend the aliphatic chain, introduced between the benzene rings, to pentane. A type of compounds was also investigated in which one CH_2-group of the aliphatic chain is replaced by oxygen or sulfur. The table shows structure and properties of the nine

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Fluorescence Spectra of Aromatic Hydrocarbons of the Diphenyl Series and Their Oxygen- and Sulfur Containing Analogs

compounds investigated. The fluorescence spectra of the compounds solved in isooctane were recorded at room temperature and at the temperature of liquid nitrogen. The spectra were examined with a quartz spectrograph of the ISP-66-type. The synthesis of the substances investigated is described. The spectra of the individual compounds are represented on figures 1-8. The influence of the elongation of the aliphatic bridge makes itself felt by the strong splitting up of the spectral bands. The spectrum is markedly more intense at low temperatures and may be used for analyzing the substances. The luminiscence spectrum changes considerably when an oxygen- or sulfur atom is introduced. At strongly marked π-electron bonds between the two benzene rings, the spectrum is shifted toward the longer-wave range at low temperatures as compared to spectra at room temperature. There are 8 figures, 1 table, and 7 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova fizicheskiy fakul'tet (Moscow State University imeni M. V.

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SOV/62-59-9-9/40

Fluorescence Spectra of Aromatic Hydrocarbons of the Diphenyl Series and Their Oxygen- and Sulfur Containing Analogs

Lomonosov, Physics Department)
Institut nefti Akademii nauk SSSR (Petroleum Institute of the Academy of Sciences, USSR)

SUBMITTED: December 20, 1957

Card 3/3

SERGIYENKO, S.R., DEMENKOVA, P.Ya.; DELONE, I.O.; KURRATSKAYA, A.P.

Distribution of trace elements in petroleum tars and asphaltenes.
Trudy Inst.nefti 13:118-126 '59. (MIRA 13:12)
(Petroleum products) (Trace elements)

S/081/61/000/005/012/024
B110/B205

AUTHORS: Nozdrina, E. V., Sergiyenko, S. R.

TITLE: Application of methods of selective catalytic hydrogenation and dehydrogenation for the purpose of clarifying the structure of high-molecular aromatic hydrocarbons of petroleum

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 5, 1961, 532, abstract 5M146 (5M146) ("Tr. In-ta nefti AN SSSR", 1959, 13, 127-144)

TEXT: Attempts to hydrogenate the fraction ($d_4^{20} = 1.0146$; $n_D^{20} = 1.5813$; molecular weight = 435; C = 85.50 %; H = 10.03 %; S = 4.43 %) of condensed, bicyclic, aromatic hydrocarbons which had been separated chromatographically on silica gel from the resin-free residue of Romashki petroleum, have been made in a rotary autoclave, in the presence of the commercial catalyst WS_2-NiS-Al_2O_3, at 250 and 300°C, and at 180 atm for 40 hr. The hydrogenated substances were subjected to a chromatographic analysis. Single hydrogenation at 250°C (100 % catalyst per raw material) resulted in 85 % desulfurization and double hydrogenation (200 % catalyst in two

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hydrogenation processes) in 95 % desulfurization. The hydrocarbon molecule was not very strongly affected. Single hydrogenation at 300°C (60 % catalyst) results in 94.5 % desulfurization, and the second hydrogenation removes practically all the sulfur. Under the conditions of hydrogenation at 300°C, which lead to complete desulfurization, the condensed, bicyclic, aromatic systems practically vanish. [Abstracter's note: Complete translation.]

SERGIYENKO, S.R.; LEBEDEV, Ye.V.; PETROV, A.A.

Selective catalytic dehydrogenation of saturated high molecular weight hydrocarbons in the liquid phase. Trudy Inst.nefti 13:145-160 '59. (MIRA 13:12)
(Hydrocarbons) (Dehydrogenation)

5(3) SOV/80-32-3-31/43

AUTHORS: Sergiyenko, S.R., Semyachko, R.Ya., Galich, P.N.

TITLE: The Liquid-Phase Oxidation of High-Molecular Hydrocarbons of Petroleum (Zhidkofaznoye okisleniye vysokomolekulyarnykh uglevodorodov nefti)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 3, pp 641-649 (USSR)

ABSTRACT: In high-molecular hydrocarbons of petroleum, compounds are contained which have condensated aromatic structures in their molecules. These compounds are the sources for the formation of resinous asphaltene substances. A genetic system exists in these hydrocarbons which may be represented by the following series: condensated bicyclic aromatic compounds → condensated polycyclic aromatic compounds → resins → asphaltenes. At an oxidation temperature of 150 - 175°C the asphaltenes prevail in the oxidation products. The paraffin-cycloparaffin hybrid compounds are transformed during oxidation in the liquid phase at a temperature of 150 - 175°C to peroxide compounds which in turn are transformed to acid saponifiable hydroxyl-containing oxygen compounds. The bicyclic aromatic condensated hydrocarbons con-

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SOV/80-32-3-31/43

The Liquid-Phase Oxidation of High-Molecular Hydrocarbons of Petroleum

densate most easily of all hydrocarbons, followed by the monocyclic aromatic compounds. The paraffin-cycloparaffin hydrocarbons oxidize more easily at 150°C than at 175°C. There are 3 graphs, 3 tables, 1 diagram and 10 Soviet references.

SUBMITTED: May 16, 1957

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SOV/20-126-4-30/62

5(3)

AUTHORS: Sergiyenko, S. R., Kvitkovskiy, L. N., Petrov, Al. A.

TITLE: Viscosity-temperature Properties of High-molecular Hydrocarbons of a Mixed Structure (Vyazkostno-temperaturnyye svoystva vysokomolekulyarnykh uglevodorodov smeshannogo stroyeniya)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 4, pp 798-801 (USSR)

ABSTRACT: The viscosity of hydrocarbons is one of their fundamental properties, directly connected with their chemical structure. One of the most important characteristic features of the working properties of lubricating oils, is the change of their viscosity together with their temperature. The hydrocarbons of the oil fraction of petroleum have a mixed (hybrid) structure. Therefore it is of essential importance to observe the dependence of the viscosity upon the molecular structure of the hydrocarbon of such a mixed type, and especially the character of the changing viscosity-temperature properties. The most complicated hydrocarbons of a mixed structure containing condensed nuclei of the type of naphthalene, tetralin and decalin, besides structural links of paraffin, cyclo

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SOV/20-126-4-30/62

Viscosity-temperature Properties of High-molecular Hydrocarbons of a Mixed Structure

paraffin and benzene, have already been studied. The high-molecular part of petroleums however, contains a number of these structures. The present article has the aim of filling this gap. The first task was to define the effect of the amount of the condensed rings mentioned, and their position in the molecule, on the viscosity properties of the hydrocarbon concerned. For this purpose hydrocarbons of the naphthalene, tetralin and decalin series were synthetized with 32 carbon atoms in the molecule (Table 1, Ref 1). The measuring results of their viscosity are shown in table 2. The replacement of 10 carbon atoms of the paraffin chain by a ring of naphthalene, tetralin or decalin, makes its viscosity twice or three times as high; a further replacement of the next 10 atoms by one of the mentioned rings causes a rapid increase of viscosity, about 8-17 times. The first ring added, changes the temperature curve just little, by increasing its curvature, while the second ring added, suddenly increases its curvature. Such an increase of the curvature

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Viscosity-temperature Properties of High-molecular Hydrocarbons of a Mixed Structure

is characteristic of hydrocarbons containing 2 naphthalene rings in a molecule (Table 2, Fig 2), especially in the sphere of low temperatures. The position of the ring is also important for the value of viscosity as well as for the shape of the viscosity curve. The structures with 2 rings of naphthalene or decalin in one carbon atom show the highest values of viscosity. The viscosity decreases with a greater distance between these rings, and the curve of the temperature viscosity becomes less steep (Table 3). The complicated hybrid structures with rings of naphthalene or decalin or of cyclohexane- or benzene rings at the same time, have been studied least and are of special interest. If a cyclohexyl ring is brought into the molecule containing already a ring of naphthalene or decalin, the viscosity increases much more than if a benzene ring is added (Table 4). The shape of the curve mentioned is also increased. There are 2 figures, 4 tables, and 3 references, 1 of which is Soviet.

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SOV/20-126-4-30/62

Viscosity-temperature Properties of High-molecular Hydrocarbons of a Mixed Structure

ASSOCIATION: Institut geologii i razrabotki goryuchikh iskopayemykh Akademii nauk SSSR
(Institute of Geology and Mineral Fuels of the Academy of Sciences, USSR)

PRESENTED: January 13, 1959, by A. A. Balandin, Academician

SUBMITTED: January 8, 1959

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5 (3)

AUTHORS: Sergiyenko, S. R.; Perchenko, V. N. SOV/20-128-1-27/58

TITLE: Hydrogenolysis of Organic Sulfur Compounds as Dependent on Their Structure

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 1, pp 103-105 (USSR)

ABSTRACT: In the present paper 8 organic sulfur compounds were investigated. A nickel-tungsten sulfide mixture on aluminum oxide was used as a catalyst. The temperature range chosen guaranteed a process of desulfurizing without any secondary or by-processes. From data given in table 1 and figure 1 it results that the organic sulfur compounds investigated may be divided into 3 groups on account of the rate of sulfur separation during the selective catalytic hydrogenation. Dibenzyl sulfide and thiophenol may be classified among the first group of the most readily reacting compounds. The second group consists of aromatic and mixed alkyl-aromatic sulfides. The third group is composed of tetra-substituted thiophenes (dibenzthiophene and tetraphenyl thiophene). The latter proved to be absolutely stable under the assumed conditions (220°C and 200 atmospheric hydrogen pressure). If the duration of 50%-desulfurization of dibenzyl sulfide is put equal to 1, the values given in table 2 are obtained for the organic sulfur

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Hydrogenolysis of Organic Sulfur Compounds as Dependent on Their Structure

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compounds investigated. These values characterize the relative rates of desulfurization. Further, the amount of aromatic hydrocarbons which have to form at the separation of the sulfur atom from the sulfur compound is determined in the reaction products (benzene, toluene, ethyl benzene). In all cases investigated about 90% of the respective hydrocarbon were determined. 6.7% of mercaptan were determined in the hydrogenation products of n-butyl phenyl sulfide, whereas with benzthiophene it attained 0.9%. This confirms in the experimental way that the reaction of desulfurization takes place in 2 stages over the mercaptan as intermediate product - $C_6H_5SC_4H_9 \longrightarrow C_6H_5SH + C_4H_{10}$. Diethyl phenyl sulfide and dibenzyl sulfide were synthesized by S. D. Pustil'nikova. Z. K. Zemskova and P. V. Ratnikova participated in the analytical part of the work. Mercaptans were determined by means of potentiometric titration by a method elaborated by I. A. Rubinshteyn and Z. A. Kleymenova. There are 1 figure, 2 tables, and 7 Soviet references.

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5(4),5(3)

AUTHORS: Sergiyenko, S. R., Kvitkovskiy, L. N., SOV/20-128-4-37/65
Gordash, Yu. T., Petrov, Al. A.

TITLE: Adsorption Properties of Highly Molecular Hydrocarbons of a Mixed Structure

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 4, pp 769-772 (USSR)

ABSTRACT: (Abstracter's Note: Under "adsorption property" the authors mean in this case the "ability of being adsorbed"). In the introduction, the authors refer to the manifold use of adsorption to surfaces of solids in industry and research work, particularly to selective adsorption in chromatography. The adsorbability of various hydrocarbons is best characterized by their adsorption isothermal. The adsorption capacity of hydrocarbons of the benzene-kerosene fraction of petroleum rises in the order: saturated hydrocarbons $<$ olefines $<$ $<$ diolefines $<$ monocyclic aromatic hydrocarbons $<$ polycyclic aromatic hydrocarbons. The order mentioned is, however, not applicable to the chromatographic investigation of highly molecular petroleum fractions having complicated molecules with a mixed structure, and containing, at the same time,

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phenyl-polymethylene- and other rings. Therefore, this paper is concerned with the study of the influence of individual structural constituents of such molecules which, in part, were specially synthesized. The adsorption isothermals (Figs 1,2) were statically determined by the contact of the hydrocarbons dissolved in n-dodecane with silica gel (brand ASK) or aluminum oxide (quality "for chromatography" of the Stalinskiy Zavod = Stalino Works) by the method of K. D. Shcherbakova and A. V. Kiselev (Ref 2). Table 1 indicates the experimental data. Adsorption increases with the rising fraction of aromatic and other cyclic carbon atoms in the total content of carbon atoms. Adsorbability depends on the ratio between carbon atoms in aromatic rings and carbon atoms in paraffin chains. The position of aromatic rings within the molecule and their type are of inferior influence. The introduction of decaline- or cyclohexane structures into the molecule, which already contains aromatic rings, raises the adsorbability. Silica gel adsorbs, a little more selectively than aluminum oxide, the hydrocarbons containing two aromatic

Adsorption Properties of Highly Molecular Hydrocarbons of a Mixed Structure SOV/20-128-4-37/65

rings. The results suggest that a chromatographic separation of hydrocarbons, with the same molecular weight but different content of aromatic rings, is well possible. There are 2 figures, 1 table, and 3 Soviet references.

ASSOCIATION: Institut geologii i razrabotki goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Geology and Mining of Mineral Fuels of the Academy of Sciences, USSR)

PRESENTED: May 25, 1959, by M. M. Dubinin, Academician

SUBMITTED: May 23, 1959

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S/710/60/000/001/001/004
D055/D113

AUTHORS: Sergiyenko, S.R.; Lebedev, Ye.V.; Mikhnovskaya, A.A.

TITLE: The structure of high-molecular oil hydrocarbons

SOURCE: Kiyev. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy i gazovoy promyshlennosti. Nauchnyye zapiski, no. 1, 1960. Dobycha i pererabotka nefti, 13-24

TEXT: An account of the chemical structure of high-molecular oil hydrocarbons, based on experimental data obtained in the study of 15 oils from different deposits, mainly in the USSR, is given. It was found that oil hydrocarbons which contain 20 and more carbon atoms in the molecule, consist mainly of hybrid structures. Only paraffinic hydrocarbons are an exception, their content rarely reaching 10%. High-molecular hydrocarbons are an important part of oil (30-50%) and determine its basic composition and properties. The paraffino-cycloparaffinic hydrocarbons, which are richest in

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hydrogen, as a rule form the basic part (40-60%) of the high-molecular hydrocarbons; dicyclic-aromatic hydrocarbons are poorest in hydrogen; in between both as regards hydrogen-saturation and proportion to the other groups, are the monocyclic-aromatic hydrocarbons. The differences in the chemistry of oils are seen most clearly in the composition and properties of paraffino-cycloparaffinic hydrocarbons. In oils of different structure, 50-70% of the carbon atoms in the molecules of high-molecular hydrocarbons form paraffinic carbon. Liquid-phase dehydrogenization on platinized coal can be used as a method of selective dehydrogenization of hexamethylene rings. In high-molecular paraffino-cycloparaffinic hydrocarbons of Romashkino (Devonian) oil, the ratio of hexa- and penta-methylene rings varies - -1:1-1.5. Tri-substituted derivatives of benzene (the position of the substitutes in the benzene ring is 1,3,5- and 1,2,4-) predominate among the high-molecular monocyclic-aromatic hydrocarbons of Romashkino oil; mono-substituted and 1,4-di-substituted benzenes were found in small quantities, but no 1,2- and 1,3-di-substituted samples were found. Sulfur contained in

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SERGIYENKO, S R

PHASE I BOOK EXPLOITATION SOV/4726

Kiyev. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy rudnoy, neftyanoy i gazovoy promyshlennosti

Nauchnyye zapiski, vyp. 1: Dobycha i pererabotka nefti (Scientific Reports of the State Scientific Research and Project Institute for the Coal, Mining, Oil, and Gas Industries, No. 1: Extraction and Processing of Petroleum) Kiyev, 1960. 91 p. 1,000 copies printed.

Sponsoring Agencies: UkrSSR Gosudarstvennaya planovaya komissiya Soveta Ministrov; Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut ugol'noy, rudnoy, neftyanoy, i gazovoy promyshlennosti "Ukrniiproyekt."

Editorial Council: V. P. Aksenov, S. Ye. Anushin, S. I. Balinskiy, V. Ya. Volchanskiy, D. I. Gol'tsev, V. S. Grinshteyn (Resp. Secretary), B. V. Dzbanovskiy, M. M. Zherbin (Chairman), A. F. Kotov, M. I. Logvinov, Yu. M. Ostrovskiy, L. M. Orzhekhovskaya, G. V. Prisedskiy, V. T. Sklyar (Deputy Chairman), N. Yu. Stasiv, and V. V. Tsaritsyn; Resp. Ed. for this Collection: V. T. Skylar, Candidate of Chemical Sciences; Ed.: A. Novik.

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SOV/4726

Scientific Reports (Cont.)

PURPOSE: This collection of articles is intended for petroleum researchers, engineers, and refiners.

COVERAGE: The collection of articles deals with the production and refining of petroleum. Individual articles discuss the effect of bound water on the depletion of petroleum deposits under dissolved gas conditions, the effect of pressure on the viscosity of degasified petroleum, the structure of high-molecular petroleum hydrocarbons, the asphaltene and tar components of Carpathian crudes and menilite shale asphalts, and the aliphatic composition of alcohols produced by selective hydrogenation of the CO and H_2 product of synthesis. Other articles describe the carbamide dewaxing method for filtrates of wax distillates, the production of flotation agents with the use of oxidized petrolatum, and the investigation of six-membered aromatic and naphthenic hydrocarbons by means of infrared absorption spectra. The remaining articles are on the relations of pressure-volume-temperature-ethylene and on the phase equilibrium in ethylene-n-hexane, ethylene-cyclohexane, and ethylene-benzene systems. Specific volumes and compression coefficients at

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pressures up to 150 atm in the 30-150°C temperature range are given for the n-hexane-ethylene system. No personalities are mentioned. References accompany most of the articles.

TABLE OF CONTENTS:

PETROLEUM PRODUCTION

PETROLEUM REFINING

S/165/60/000/002/001/008
A104/A129

AUTHORS: Sergiyenko, S.R., Krasavchenko, M.I., Delone, I.O., and Rutman, L.I.

TITLE: The effect of the separation depth of distillate fractions on the composition and properties of hydrocarbons of heavy residues

PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no.2, 1960, 13-20

TEXT: This article is a continuation of two articles published in the periodical Trudy Instituta nefti, 1958, vol. 12, no. 175 and 187 (Refs. 1 and 2) and describes investigations into changes of the composition of oil products at varying processing stages. Products were studied which were derived from heavy and light Il'skiy petroleum; their composition and properties were described in Refs. 1 and 2. The hydrocarbon portion of the products was separated by adsorption (Ref. 3, Sergiyenko, S.R., etc: Trudy Instituta nefti, 1954, IV, 103). The chemical nature of the separated

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The effect of the separation depth ...

hydrocarbons and the effect of the separation depth of distillate fractions, cracking degree and degree of oxidation on them was determined by chromatographic analysis. (Refs. 4 and 5, Sergiyenko, S.R., DAN SSR, 1953, no. 1 , and Trudy Instituta nefti, 1954, IV, 103). The analysis was carried out in an adsorption 40x17 cm column filled with 200 ml of activated porous silica gel; 150 ml of the hexane fraction containing no benzene passed through the column at 60-80°C followed by 10 g of test fraction diluted with the same solvent in the ratio of 1:3. Desorption of hydrocarbons is carried out with the help of the solvent in the following order: 200 ml hexane fraction, 100 ml benzene, 100 ml dehydrated alcohol-benzene mixture and 100 ml of the same mixture with non-dehydrated alcohol. The solvent is distilled on a water bath in nitrogen current; filled tubes were brought to constant weight and the refractive index of the residues was determined. Refractive index limits of different groups were based on information of Ref. 6, Clerc, R.J. and Kincannon, C.V., Analytical chemistry, and T.P.Wier, Jr., 1950, vol. 22,no. 7. With the raise of cracking depth and the parallel reduction of hydrocarbons in the cracking residues the amount of asphaltenes, carbones and carboids increased. The transformation process of the hydrocarbon portion in- ✓

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S/165/60/000/002/001/008
The effect of the separation depth ... A104/A129

to asphaltene substance is assumed to be as follows: monocyclic aromatic hydrocarbons - condensed aromatic hydrocarbons - tar-asphaltene substances. The heavy Il'skiy petroleum contains 18.5% of hydrocarbons of which 50% are paraffinic cycloparaffinic hydrocarbons. There are 8 tables and 6 references: 5 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut geologii i razrabotki goryuchikh iskopayemykh Akademii Nauk SSSR (Institute of Geology and Processing of Combustible Minerals of the Academy of Sciences of the USSR) and Odesskiy neftopererabatyvayushchiy zavod (Odessa Oil Refinery)

SUBMITTED: September 29, 1959

Card 3/3

SERGIYENKO, S.R.; NOZHKINA, I.A.; MAYOROV, L.S.

Character of the sulfur distribution in the high molecular weight hydrocarbon fraction of Romashkino crudes. Khim.sera-i azotorg.soed. sod. v neft.i nefteprod. 3:173-182 '60. (MIRA 14:6)

1. Institut geologii i razrabotki goryuchikh iskopayemykh AN SSSR.
(Hydrocarbons) (Sulfur)

SERGIYENKO, S.R.; PERCHENKO, V.N.; MIKHNOVSKAYA, A.A.

Effect of the structure of sulfur organic compounds on the rate of the reactions of oxidation and catalytic hydrogenation. Khim.sera- i azotorg.soed.sod.v neft.i nefteprod. 3:353-361 '60. (MIRA 14:6)

1. Institut geologii i razrabotki goryuchikh iskopayemykh AN SSSR.
(Sulfur organic compounds) (Oxidation) (Hydrogenation)

84858

5 3300 2209, 1153 only

S/062/60/000/010/012/018
B015/B064

AUTHORS: Petrov, Al. A., Sergiyenko, S. R., Tsedilina, A. L., Sanin, P. I., Nikitskaya, Ye. A., and Nechitaylo, N. A.

TITLE: Synthesis and Properties of High-molecular Hydrocarbons of Mixed Structures. Information 1. Synthesis of Hydrocarbons of the Composition C_{24}

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 10, pp. 1848 - 1857

TEXT: The authors synthesized several hydrocarbons that, up to a certain extent, may serve as models for the hydrocarbons contained in high-boiling petroleum fractions. The present paper reports on the synthesis and properties of 23 hydrocarbons with mixed structures, containing 24 hydrocarbon atoms per molecule. Compared to a similar investigation carried out by R. Schiessler et al. (Ref.2), the present studies were made on a larger scale. The influence of the degree of cyclization of the hydrocarbon molecules, the effect of the relative position of some cycles in the paraffin chain of the molecules, and the effect of the

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Synthesis and Properties of High-molecular Hydrocarbons of Mixed Structures. Information 1. Synthesis of Hydrocarbons of the Composition C_{24}

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degree of substitution of the aromatic or cycloparaffin rings in the molecule upon the properties of the whole molecule were investigated (cf. Scheme of the structural changes). The hydrocarbons were synthesized by the Grignard reaction. The alcohols were dehydrated in the vapor phase by means of an aluminum catalyst used (method of the American Petroleum Institute); this was, however, done in vacuum (3-4 mm). Purification was carried out by distillation and absorption. The conditions of synthesis are described in detail for 1,1-diphenyl dodecane, while only a short information is given on the preparation of the remaining 22 hydrocarbons. Since a peculiar behavior of 2,4,6-trimethyl chloro benzyl was observed under the preparation conditions of the Grignard reagent, the characteristics of the reaction between methylated benzyl halides and magnesium are discussed (Table 1, data on diaryl ethanes obtained by reacting some substituted benzyl chlorides with magnesium). Table 2 gives the structural formulas and the most important properties of the 23 hydrocarbons obtained. The anomalies of viscosity as a function of the temperature of the polymethyl-substituted benzene derivatives are remarkable, i.e., the aromatic hydrocarbons having

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Synthesis and Properties of High-molecular Hydrocarbons of Mixed Structures. Information 1. Synthesis of Hydrocarbons of the Composition C_{24}

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several methyl groups on the ring have a much higher viscosity than the monosubstituted isomers. In the near future, the authors will publish a paper on the physico-chemical properties of the hydrocarbons described here (data on various spectra). There are 2 tables and 10 references: 5 Soviet, 3 US, 1 German, and 1 British.

ASSOCIATION: Institut geologii i razrabotki goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Geology and Prospecting of Mineral Fuels of the Academy of Sciences USSR)

SUBMITTED: May 6, 1959

Card 3/3

SERGHIENKO, S.R. [Sergiyenko, S.R.]; NOJKINA, I.A. [Nozhkina, I.A.];
MAIOROV, L.S. [Mayorov, L.S.]

Separation of macromolecular compounds of petroleum by the combined method of molecular distillation and chromatography. Analele chimie 15 no.4:127-135 O-D '60. (EEAI 10:3)

(Macromolecular compounds) (Petroleum)
(Hydrocarbons) (Distillation) (Chromatography)

SERGIYENKO, S.R.

"Academician Sergei Vasil'evich Lebedev; his life and scientific activities" by S.R. Sergienko. Nauka i zhizn' 27 no. 4:76 Ap '60. (MIRA 14:5)
(Lebedev, Sergei Vasil'evich, 1874-1934)

S/080/60/033/04/29/045

AUTHORS: Sanin, P.I., Petrov, Al.A., Sergiyenko, S.R., Nikitskaya, Ye.A.

TITLE: The Viscosity Properties of Some Cyclic Hydrocarbons of the Composition C_{24}

PERIODICAL: Zhurnal prikladnoy khimii, 1960, Vol 33, Nr 4, pp 919 - 930

TEXT: The viscosity properties of 22 hydrocarbons of the composition C_{24} were studied within the temperature range from 150 to -40°C. The results are shown in 2 tables. The study of viscosity properties of bicyclic and tricyclic hydrocarbons of the composition C_{24} containing isolated hexamethylene and benzene rings showed that the transition from an aliphatic hydrocarbon not containing cycles to mono-, di- and tri-cyclic hydrocarbons (by substitution of the hexyl group by a hexamethylene or benzene ring) is accompanied by an increase in the viscosity and a deterioration of the temperature dependence of the viscosity. Bicyclic aromatic hydrocarbons containing methylated benzene rings are distinguished by a considerably higher viscosity than the corresponding hydrocarbons with non-methylated benzene rings. Naphthene hydrocarbons formed during hydrogenation of aromatic hydrocarbons, which do not contain alkyl groups in the benzene ring, have a higher viscosity and a correspondingly weaker temperature dependence than the

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S/080/60/033/04/29/045

The Viscosity Properties of Some Cyclic Hydrocarbons of the Composition C_{24}

initial aromatic hydrocarbons. The opposite is observed in the case of hydrogenation of aromatic hydrocarbons containing methylated benzene rings. In this case hydrogenation leads to a decrease of viscosity, which is especially considerable for hydrocarbons with disubstituted rings; the temperature dependence of viscosity improves correspondingly. The phenomenon observed, which was noted earlier for condensed polycyclic aromatic hydrocarbons, should be allowed for in the investigation of higher aromatic petroleum fractions by the hydrogenation method.
There are: 3 graphs, 3 tables and 20 references, 9 of which are Soviet, 5 English, 3 American and 3 German

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR i Institut geologii i razrabotki goryuchikh iskopayemykh AN SSSR (Institute of Petrochemical Synthesis of the AS USSR and Institute of Geology and Development of Mineral Fuels of the AS USSR)

SUBMITTED: October 3, 1959

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5.3300 (B)

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SOV/20-130-2-26/69

AUTHORS: Sanin, P. I., Petrov, Al. A., Sergiyenko, S. R., Academician AS Turkm SSR, Nikitskaya, Ye. A.

TITLE: Viscosity Properties of Alkyl-aromatic Hydrocarbons and Their Hydrogenated Analogs

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 2, pp 338 - 340 (USSR)

ABSTRACT: An investigation of the viscosity of aromatic hydrocarbons containing isolated benzene rings, and their hydrogenated analogs, showed (Table 1) that the change in viscosity on hydrogenation considerably depends on the structure of the hydrocarbons. Hydrogenation of certain structures reduces the viscosity extraordinarily. The aromatic hydrocarbons (C_{24}) investigated here may be divided into 2 groups: 1) without substituents on the ring (Table 1, Nrs 1-5); 2) with methyl groups on the ring (Nrs 6-8). Hydrogenation (or transformation of aromatic into naphthene hydrocarbons, respectively) of the hydrocarbons of the 1st group increases the viscosity, and causes a higher viscosity increase with de- 4

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creasing temperature. According to the data obtained by the authors, this known phenomenon also applies to polycyclic aromatic hydrocarbons with isolated benzene rings (without alkyl groups as substituents on the ring). Hydrogenation of bicyclic aromatic hydrocarbons with methyl groups on the benzene ring (Nrs 6-8) produced naphthene hydrocarbons with considerably lower viscosity than that of their initial substances. The viscosity decreased more in the hydrocarbons with 2 methyl groups on the ring. This dependence is contrary to that observed in hydrocarbons without substituents on the ring. Table 2 shows comparative data of the viscosity for both types of hydrocarbons. The above phenomenon is of general importance to the dependence of viscosity of hydrocarbons on their structure. It also renders possible a new interpretation of some results of hydrogenation of aromatic petroleum fractions. Thus, the viscosity of synthetic polycyclic aromatic hydrocarbons consisting of condensed benzene rings is reduced by hydrogenation while the viscosity index rises. The contrary applies to hydrogenation of aromatic hydrocarbons containing isolated benzene rings (Refs 1,2). 4

[illegible]

Viscosity Properties of Alkyl-aromatic Hydrocarbons and SOV/20-130-2-26/69
Their Hydrogenated Analogs

The data obtained by the authors make it possible to assert that the viscosity on hydrogenation of the higher-boiling petroleum fractions may also be reduced by the presence of polycyclic aromatic hydrocarbons with isolated benzene rings containing alkyl- (methyl-) groups on the ring. The cause of the viscosity change of some types of aromatic hydrocarbons on hydrogenation is unknown and must be investigated yet. There are 2 tables and 4 references, 3 of which are Soviet.

ASSOCIATION: Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Institute of Petroleum-chemical Synthesis of the Academy of Sciences, USSR) Institut geologii i razrabotki goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Geology and the Working of Combustible Minerals of the Academy of Sciences, USSR)

SUBMITTED: September 22, 1959

Card 3/3

SERGIYENKO, Semen Romanovich; LEBEDEV, Yevgraf Venediktovich; ARTYKOVA, T.V.,
red. izd-va; FLUTKOVA, S.G., tekhn. red.

[Selective catalytic dehydrogenation of high molecular weight hydrocarbons] Izbiratel'naia kataliticheskaia degidrogenizatsiia vysokomolekuliarnykh uglevodorodov. Ashkhabad, Izd-vo Akad.nauk Turkmenskoi SSR, 1961. 71 p. (MIRA 14:12)
(Hydrocarbons) (Dehydrogenation)

SERGIYENKO, S.R.

Outstanding Soviet scientist Academician N.D,Zelinskii; on the one-hundredth anniversary of his birth. Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.1:3-12 '61. (MIRA 14:8)
(Zelinskii, Nikolai Dmitrievich, 1861-1953)

GARBALINSKIY, V.A.; SERGIYENKO, S.R.; ANBROKH, R.V.

Chemical mechanism of the production of oxidized petroleum bitumens from the cracking residue. Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.3:33-39 '61. (MIRA 14:7)

1. Institut khimii AN Turkmenskoy SSR i Odesskiy neftepererabatyvayushchiy zavod.
(Bitumen) (Oxidation) (Asphalt)

S/202/61/000/005/004/004
A006/A101

AUTHORS: Sergiyenko, S. R., Pustil'nikova, S. D.

TITLE: On the genetic connection in the chemical structure of asphaltenes, resins, and high-molecular naphtha hydrocarbons

PERIODICAL: Akademiya nauk. Turkmenskoy SSR. Izvestiya, Seriya Fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 5, 1961, 47-59

TEXT: An investigation was made for the purpose of bringing about the gradual transition of naphthaneous asphaltenes according to the scheme: asphaltenes → resins → hydrocarbons. The final purpose of such a transformation was to obtain pure hydrocarbon molecules where the carbon skeleton of the original asphaltene molecules had been preserved. To solve this problem the authors used the reaction of selective catalytic hydrogenation in the presence of a skeleton nickel catalyzer. The initial material were asphaltenes singled out of Romashkino (Devonian) naphtha with 1700 molecular weight and the following elementary composition: C - 84.04; H 7.96; S - 4.70; O - 3.30%. Skeleton nickel was used as catalyzer and was prepared from Ni-Al nickel alloy (50 : 50). The

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hydrogenation process was conducted in a rotating 1-liter-capacity autoclave at 150°C; 150 atm pressure for 10 hours. The amount of the catalyzer was gradually increased beginning with 150% during hydrogenation within the first 10 hours. The results obtained were analyzed. The composition and properties of hydrocarbons obtained were compared with corresponding hydrocarbon groups singled directly out of the same naphtha from which the asphaltenes had been selected. The following conclusions are made: The paraffin-cycloparaffin hydrocarbons obtained by hydrogenation of asphaltenes approach, in their composition and properties, the group of high-molecular hydrocarbons, singled out directly of naphtha. Their basic difference is a higher cyclicity (2.1 of ring per molecule against 1.2) and a small sulfur content (0.23%) corresponding to the presence of sulfurous compounds in an amount of 2.3%. Complete desulfurization of this hydrocarbon group will still increase their resemblance with an analogous hydrocarbon group contained in naphtha. 2) The group of monocycloaromatic hydrocarbons obtained by hydrogenation approaches also the composition and properties of corresponding hydrocarbons singled out of the high-molecular portion of Romashkino naphtha. The basic difference is a lesser molecular weight of the former (338 against 400) and a somewhat higher total cyclicity (2.9 against 2.7); this causes the lower content of aliphatic carbon atoms in the molecule (43

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A006/A101

On the genetic connection in the chemical ...

against 56) a higher carbon content at an elementary analysis (87.37 against 85.87) and a higher specific weight (d_4^{20} = 0.9445 against 0.9184). 3) The bicycloaromatic hydrocarbons obtained from asphaltene hydrogenation have very different compositions and properties than high-molecular bicycloaromatic hydrocarbons singled out of Romashkino naphtha. The former have a higher molecular weight (440 against 374) and 5.3 total cyclicity against 3.9 including that of aromatic rings (3.0 against 2.3) and cycloparaffin rings (2.3 against 1.6). These basic characteristic features determine all the other properties of bicycloaromatic hydrocarbons, as well as their structural group and elementary composition strongly differing from those of hydrocarbons singled directly out of naphtha. 4) Among the hydrocarbons produced by hydrogenation of asphaltenes, there were 42% polycycloaromatic compounds containing on the average 3.6 benzene rings per molecule. From the high-molecular portion of naphtha such compounds could not be singled out. There were 71% hydrocarbons and 29% sulfurous compounds, when assuming that the molecules of the latter contained one atom of sulfur. 5) The investigation shows that in the asphaltene molecules the polycyclic systems are the prevailing structural links. In these polycyclic structures a great part is played by the multi-nuclear condensed systems containing both purely carbocyclic (benzene and polymethylene) and heterocyclic rings which

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A006/A101

On the genetic connection in the chemical ...

contain sulfur, oxygen and nitrogen atoms. 6) This first experimental transition of naphthaneous asphaltenes to resins and hydrocarbons under conditions of soft catalytic hydrogenation proves the genetic connection in the chemical structure of asphaltenes, resins and high-molecular hydrocarbons of naphtha. The analyses were carried out with the participation of Z. K. Zemskov and L. V. Ratnikov. There are 2 figures, 6 tables and 18 references (9 Soviet-bloc and 9 non-Soviet-bloc). The reference to the most recent English-language publication reads as follows: Weller, S., Pepiletz, M. J., and Friedman, S. - Ind. Eng. Chem. v. 43, no. 7, - 1951, 1972.

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SUBMITTED: May 15, 1961

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S/202/61/000/006/003/004
A006/A101

AUTHORS: Sergiyenko, S.R., Kurbskiy, G.P.

TITLE: The chemical nature of Dzhebol petroleum

PERIODICAL: Akademiya nauk Turkmenskoy SSR, Izvestiya, Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 6, 1961, 64 - 73

TEXT: The authors investigated petroleum from wells 14 and 26 of the Dzhebol deposit in the Timano-Pechersk province (Komi ASSR), and present information on their hydrocarbon composition as to fraction, components and groups. The petroleum was distilled in a ЦИАТИМ-58a (TsIATIM-58a) device into a series of fractions up to 500°C. Distillation up to 200°C was performed at atmospheric pressure and in a vacuum at up to 350°C, and up to 500°C in a direct-heated Klyayzen retort. Residues boiling at over 500°C were separated in large-size chromatographic columns (2,280 mm high, 30 mm in diameter) by two variants: 1) using as desorbents a series of desaromatized 60 - 80°C fractions, their mixture with benzene and alcohol-benzene; 2) separating the residue into a hydrocarbon portion and then into 3 resin fractions using a smaller column containing 150 g silicagel. The results obtained show that both these methods yield comparable results

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The chemical nature of Dzhebol petroleum

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concerning the hydrocarbon content and the total content of resinuous substances. There is however, a marked difference in respect to the distribution of resin fractions due to the different polarity of desorbents employed. The second method should be preferred. The total balance of the two types of petroleum investigated shows the following distribution of components: Petroleum from well no.14: hydrocarbons 96.7, resins 2.9; asphaltenes 0.4; petroleum from well no. 26: 95.7, 4.01 and 0.3 respectively. Detailed data are contained in a number of tables. There are 9 tables and 6 references: 5 Soviet-bloc and 1 non-Soviet bloc.

✓

ASSOCIATION: Neftyanaya laboratoriya Ukhtinskogo territorial'nogo geologicheskogo upravleniya (Petroleum Laboratory of the Ukhta Territorial Geological Administration)

SUBMITTED: September 4, 1961

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S/202/61/000/006/004/004
A006/A101

AUTHORS: Sergiyenko, S.R., Kurbskiy, G.P.

TITLE: The nature of the effect of high-temperature distillation on high molecular petroleum compounds

PERIODICAL: Akademiya nauk Turkmenskoy SSR, Izvestiya, Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 6, 1961, 74 - 87

TEXT: Using petroleum samples from the Nizhne-Omrinskoye deposit, the authors studied the nature of chemical changes in the high-molecular portion of the petroleum under the effect of high distillation temperatures. For this purpose the composition and properties of the high-molecular portion were determined by employing method I when the specimens were subjected to extended heating at high temperatures (singling-out of fractions boiled away at up to 500°C) and method II, excluding heating over 200-250°C. The characteristic properties of the petroleum investigated are: $d_4^{20} = 0.8284$, $n_D^{20} = 1.4695$; molecular weight 200; kinematic viscosity at 20°C = 6.23 cst, acidity number 0.14; Konradson coke number 1.2; sulfur content 0.27%. The content of basic components is: oils 60.2%; paraffin 5.5 (melting point 51°C), resins 3.1 and asphaltenes 0.2%. The

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The nature of the effect ...

results obtained are tabulated and show that in the case of light petroleums with low resin and sulfurous compound content, and major amount in the hydrocarbon portion of paraffin-cycloparaffin hydrocarbons, vacuum distillation with gradual temperature increase up to 500°C, has only a slight effect on the yield and the properties of the hydrocarbon groups. Its effect is marked, however, on the properties of resin-asphaltene components, manifested in the process of asphaltene-formation and changes in the nature of resins, such as age, molecular weight and the content of heteroatoms. About 99% hydrocarbons are extracted from residues over 350°C by a 60 - 80° desaromatized fraction of petroleum ether during chromatographic separation. Therefore it is not expedient to employ mixtures of petroleum ether with carbon tetrachloride on ACK(ASK) silicagel.. The information includes details on the chemical nature of the Devonian petroleum investigated. There are 10 tables and 15 references: 11 Soviet-bloc and 4 non-Soviet bloc. The reference to the most recent English language publication reads as follows: 14. Knotnerus, J., - J. Inst. Petrol. XII, vol. 42, 396, 1956)

Card 2/3

GORDASH, Yu.T.; SERGIYENKO, S.R.; SEMYACHKO, R.Ya.; REKUNOVA, E.A.

Chemical nature of the macromolecular hydrocarbon portion of Mukhanova petroleum. Dokl. AN BSSR 5 no.3:112-117 Mr '61. (MIRA 14:3)

1. Institut fiziko-organicheskoy khimii AN BSSR. Predstavleno adademikom AN BSSR B.V. Yerofeyevym.
(Mukhanova region—Petroleum—Analysis)

SERGIYENKO, S.R.

New stage of development of Soviet science. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.4:3-9 '61. (MIRA 14:12)
(Research)

3

SERGIYENKO, S.R.

The 22d Congress of the CPSU and problems of science. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.6:3-12 '61. (MIRA 15:3)
(Turkmenistan—Research)

SERGIYENKO, S.R.

M.V.Lomonosov and the development of Russian science; on the 250th anniversary of his birth. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.6:13-28 '61. (MIRA 15:3)
(Lomonosov, Mikhail Vasil'evich, 1711-1765)

SERGIYENKO, S.R.; KURBSKIY, G.P.

Composition and properties of natural bitumen of the Voia and Niamed' deposits. Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.1:35-43 '62.

Composition and properties of Lem'iu petroleum. Ibid.:44-50
(MIRA 16:12)

1. Neftyanaya laboratoriya Ukhtinskogo territorial'nogo geologicheskogo upravleniya i Institut khimii AN Turkmenskoy SSR.

SOV/6146

PHASE I BOOK EXPLOITATION

Sergiyenko, Semen Romanovich, and Yevgraf Venediktovich Lebedev

Izbiratel'naya kataliticheskaya degidrogenizatsiya vysokomolekulyarnykh uglevodorodov (Selective Catalytic Dehydrogenation of High-Molecular Hydrocarbons) Ashkhabad, Izd-vo AN TurkSSR, 1961. 71 p. 500 copies printed.

Sponsoring Agency: Akademiya nauk Turkmenskoy SSR.

Ed. of Publishing House: T. V. Artykova; Tech. Ed.: S. G. Flutkova.

PURPOSE: This book is intended for technical personnel in the fields of petroleum and petrochemistry.

COVERAGE: This book describes a selective catalytic dehydrogenation process developed by the authors for high-molecular saturated hydrocarbons in the liquid phase. When used in conjunction with chromatographic separation and spectral analysis, the process makes it possible to determine ring structure and the ratio of

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Selective Catalytic Dehydrogenation (Cont.) SOV/6146

five-member rings to six-member rings in molecules of high-molecular petroleum hydrocarbons. The experimental data are presented in tables. The authors state that the selective catalytic dehydrogenation process will eventually be used to obtain aromatic hydrocarbons from the high-molecular fraction of crudes. No personalities are mentioned. There are 76 references: 55 Soviet, 14 German, and 7 French.

TABLE OF CONTENTS:

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S/202/63/000/001/003/006
E075/E136

AUTHORS: Sergiyenko, S.R., Garbalinskiy, V.A., Medvedeva, V.D., and Petrova, A.A.

TITLE: Selective dehydrogenation of paraffinic hydrocarbons on zinc chromate

PERIODICAL: Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk. no.1, 1963, 30-37

TEXT: In an attempt to produce olefins from hydrocarbons having more than 2-5 carbon atoms, n-heptane and n-hexadecane were dehydrogenated on $ZnCrO_4$ supported on ZnO. ZnO was used as a support, since it was previously reported by S.R. Sergiyenko that it promotes the dehydrogenation of ethylbenzene to styrene and minimizes cracking reactions. The catalyst was prepared by adding $(NH_4)_2CrO_4$ to ZnO suspended in the solution of 203 g $ZnCl_2$ in 2 litres H_2O. For n-heptane the dehydrogenation proceeds most satisfactorily at 500 °C and the space velocity of 1.5 h^{-1}. The liquid product contains 10% olefins and no aromatic hydrocarbons.

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Selective dehydrogenation of ... S/202/63/000/001/003/006
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About one quarter of the olefins is constituted by 1-heptene. The remainder contains 2-heptene and 3-heptene, their cis and trans forms being in equal quantities. n-hexadecane was dehydrogenated under the same conditions as n-heptane and gave 2.5 times as much olefins. Cracking in this case amounted to 3 - 8% and the liquid product contained 25 - 27% olefins, two thirds of which were C_{16} olefins.

There are 5 figures and 4 tables.

ASSOCIATION: Institut khimii (Chemical Institute)
Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR
(Physicotechnical Institute, AS Turkmen. SSR)

SUBMITTED: November 12, 1962

Card 2/2

PERCHENKO, Vladimir Nikolayevich; SERGIYENKO, Semen Romanovich;
ARTYKOVA, T.V., red.izd-va; IVONT'YEVA, G.A., tekhn. red.

[Selective catalytic hydrogenation of sulfur-organic compounds]
Izbiratel'noe kataliticheskoe gidrirovanie seraorganicheskikh
soedinenii. Ashkhabad, Izd-vo Akad. nauk Turkmenskoi SSR,
1962. 91 p. (MIRA 16:4)
(Sulfur organic compounds) (Hydrogenation) (Catalysis)

KVITKOVSKIY, L. N.; SERGIYENKO, S. R., akademik

Sorption by molecular sieves of the type A. Dokl. AN SSSR 147 no.6:1399-1401 D '62. (MIRA 16:1)

1. AN Turkmenskoy SSR (for Sergiyenko).

(Zeolites)

L 13327-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS AFFTC/
APGC/RPL Fs-4/Pc-4/Pr-4/Pi-4 RM/BW/WW/JW/JWD/H
ACCESSION NR: AP3003853 S/0020/63/151/003/0587/0590

85
82

AUTHOR: Sergiyenko, S. R. (Academician, AN Turkmen SSR); Kvitkovskiy, L. N.

TITLE: Thermal stability of synthetic C_{32} hydrocarbons of a hybrid structure

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 587-590

TOPIC TAGS: C_{32} hydrocarbon, hybrid hydrocarbon, aliphatic-aromatic hydrocarbon, synthetic hydrocarbon, hydrocarbon thermal stability, Kurnakov pyrometer, endothermic effect, exothermic effect, cracking, polymerization, condensation, saturated hydrocarbon, unsaturated hydrocarbon, aluminosilicate catalyst, hybrid hydrocarbon synthesis, dodecene, 1-1-dinaphthyl-1-docosane, alpha-naphthyldocosane, differential thermal analysis

ABSTRACT: A number of synthetic "hybrid" C_{32} hydrocarbons with aliphatic and aromatic (benzene, naphthalene, tetralin, decalin, cyclohexane) radicals as part of their structure have been synthesized. The effect of such a structure, which is similar to that of hydrocarbons occurring in high-boiling fractions of petroleum, on thermal stability was studied [by differential thermal analysis] with a Kurnakov pyrometer. A [DTA] curve of saturated C_{32} hydrocarbons is

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ACCESSION NR: AP3003853

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shown in Fig. 1 of the Enclosure. Section OA of the curve, corresponding to the lowest temperature range investigated, is characterized by the absence of endo- or exothermic effects. Section AB(corresponding to 385—400C)indicates the course of endothermal cracking, and section BC (corresponding to 405—470C), the course of exothermic polymerization and condensation of the radicals and reactive unsaturated molecules formed during the cracking. The section of the curve to the right of point C characterizes simultaneous cracking and condensation. Study of the thermal stability of unsaturated C_{32} hydrocarbons showed that the presence of a double bond in the molecule reverses the sequence of the endo- and exothermic processes, as shown in the thermogram of 1-1-dinaphthyl-1-dodecene (Fig. 2). Observation of this reversal can serve as an indication of the presence of olefins in hydrocarbon mixtures. The sequence of endo- and exothermic processes in saturated C_{32} hydrocarbons is reversed by the presence of an aluminosilicate catalyst. It was shown, that at 220—245C the catalyst produces an exothermal effect in 11-α-naphthyldocosane which is probably caused by chemosorption. Orig. art. has: 3 figures and 1 table.

ASSOCIATION: Institut khimii Akademii nauk Turkmen SSR (Institute of Chemistry, Academy of Sciences Turkmen SSR)

SUBMITTED: 01Apr63	DATE ACQ: 15Aug63	ENCL: 02
SUB CODE: CH	NO REF SOV: 009	OTHER: 000

Card 2/2

ye

SERGIENKO, S.R., prof., dr.; GARBALINSKIY, V.A., dipl. ing., cand. sci.

Chemistry of the process of obtaining oxidized petroleum bitumens.
Acta chimica Hung 37 no.2:213-225 '63.

1. Akademiya nauk Turkmenskoy SSR, Ashkhabad.

SERGIYENKO, S.R., akademik, red.; SHNEYER, M.S., red.izd-va;
IVONT'YEVA, G.A., tekhn. red.

[Petrochemistry] Neftekhimiia. Ashkhabad, Izd-vo AN
Turkm.SSR, 1963. 340 p. (MIRA 16:12)

1. Akademiya nauk Turkmenskoy SSR (for Sergiyenko).
(Soviet Central Asia--Petroleum chemicals)

SERGIYENKO, S.R.

New trends in petrochemical synthesis. Izv. AN TurkSSR. Ser. fiz.-tekh., khim. i geol. nauk no.2:3-10 '63. (MIRA 17:8)

MURADOVA, G.A.; SERGIYENKO, S.R.; KOROTKIY, A.G.

Spectral characteristics of high molecular weight of hydrocarbons of Aligul'skaya oil. Izv. AN Turk.SSR. Ser. fiz.-tekh., khim. i geol. nauk no.2:16-23 '63. (MIRA 17:8)

1. Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR i Institut khimii AN Turkmenskoy SSR.

SERGIYENKO, [illegible]; [illegible], V. [illegible]; [illegible], B.A.

Basic trends in the utilization of saturated high molecular weight hydrocarbons of western Turkmenian petroleums as a chemical raw material. Izv. AN Turk.SSR. Ser. fiz.-tekh., khim. i geol. nauk no.2:30-33 [illegible]. (MIRA 17:8)

1. Institut khimii AN Turkmenskoy SSR.

PHASE I BOOK EXPLOITATION SOV/6491

Perchenko, Vladimir Nikolayevich, and Semen Romanovich Sergiyenko

Izbiratel'noye kataliticheskoye gidrirovaniye seraorganicheskikh soyedineniy (Selective Catalytic Hydrogenation of Sulfur Organic Compounds) Ashkhabad, 1962. 91 p. 700 copies printed.

Sponsoring Agency: Akademiya nauk Turkmenskoy SSSR.

Ed. of Publishing House: T. V. Artykova; Tech. Ed.: G. A. Ivont'yeva.

PURPOSE: The book is intended for the study of selective catalytic hydrogenation of waste and side products of processed petroleum.

COVERAGE: This book is a study of properties, reactions, and chemical structure of waste and side products of catalytic and thermal processing of petroleum. These sulfur-containing organic compounds are considered as hidden reserves in the exploitation of

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various obtainable commercial products, as a means of increasing raw material utilization, and as a means of effecting an improvement in petroleum processing. Also the optimal conditions for the differentiation of sulfur organic compounds with various structures are studied by the use of selective catalytic hydrogenation reactions. There are 164 references, mostly Soviet.

TABLE OF CONTENTS:

Card 2/4

SERGIYENKO, S.R.; MOISEYKOV, S.F.; KOZLOV, M.I.; LORDKIPANIDZE, G.A.

Prospects of the development of the petroleum refining and petrochemical industries in Turkmenistan. Izv.AN Turk.SSR.Ser. fiz.-tekh., khim.i geol.nauk no.3:3-12 '63. (MIRA 17:3)

SERGIYENKO, S.R.; GARBALINSKIY, V.A.

Chemical characteristics of saturated high molecular hydrocarbons of Aligul petroleum. Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.3:45-52 '63. (MIRA 17:3)

1. Institut khimii AN Turkmenskoy SSR.

MURADOVA, G.A.; SERGIYENKO, S.R.; KOROTKIY, A.G.

Spectral characteristics of the products of catalytic dehydrogenation of saturated high molecular hydrocarbons of Aligul petroleum. Izv. AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.3:32-39 '63. (MIRA 17:3)

1. Fiziko-tekhnicheskiy institut AN Turkmenskoy SSR i Institut khimii AN Turkmenskoy SSR.

SERGIYENKO, S.R.; TAIMOVA, B.A.; GARBALINSKIY, V.A.

Potential possibilities of high molecular hydrocarbons of Aligul petroleum. Izv.AN Turk.SSR.Ser.fiz.-tekh., khim.i geol.nauk no.3:40-44 '63. (MIRA 17:3)

1. Institut khimii AN Turkmenskoy SSR.

SERGIYENKO, Semen Romanovich; BABUSHKINA, S.I., ved. red.

[High-molecular petroleum compounds] Vysokomolekuliarnye soedineniia nefti. 2. perer. i dop. izd. Moskva, Khimiia, 1964. 540 p. (MIRA 17:8)

SERGIYENKO, S.R.; RABOCHEV, I.S.

Chemistry as a decisive factor in increasing the productivity of agriculture. Izv. AN Turk. SSR. Ser. biol. nauk no.1:3-8 '64.
(MIRA 17:9)

SERGIYENKO, S.R.; MEDVEDEVA, V.D.; GARBALINSKIY, V.A.

Selective action of catalysts in the dehydrogenation of paraffin hydrocarbons. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim i geol. nauk no.3:25-30 '64 (MIRA 18:1)

1. Institut khimii AN Turkmenskoy SSR.

SERGIYENKO, S.R.

Scientific and technological progress in Turkmenistan during the last 40 years. Izv. AN Turk SSR. Ser. fiz.-tekh., khim. i geol. nauk no.5:3-11 '64. (MIRA 17:12) [illegible], A.I.; [illegible], G.A.; [illegible], A.G.

Molecular structure of the high-molecular weight hydrocarbons of Koturtepe oil. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.5:46-60 '64. ([illegible] 1[illegible]:12)

1. Institut khimii AN Turkmenskoy SSR.

[illegible], [illegible]; [illegible], [illegible]; [illegible], [illegible]; [illegible], [illegible]

Effect of the length of n.paraffin chains on the selectivity of dehydrogenation on a zinc-chromium catalyst. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.5:1- [illegible] '64. (MIRA 17:12)

1. Institut khimii AN Turkmenskoy SSR.

SERGIYENKO, S.R.; GARBALINSKIY, V.A.; PETROVA, A.A.; CHIROVA, Ye.V.; MURADOVA, G.A.

Composition and properties of hydrocarbons from condensates of the Islim deposit. Izv. AN Turk. SSR. Ser. fiz.-tekh., khim. i geol. nauk no.1:37-47 '65. (MIRA 18:7)

1. Institut khimii AN Turkmenskoy SSR.

ACCESSION NR: AP5008890 S/0202/65/000/001/0048/0053

AUTHOR: Sergiyenko, S. R.; Garbalinskiy, V. A.; Chelpanova, M. P.; Gukasova, R. G

TITLE: Chemical nature of undersea petroleum of the Cheleken deposit

SOURCE: AN TurkmSSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 1, 1965, 48-53

TOPIC TAGS: offshore oil, undersea petroleum, petroleum composition, Cheleken petroleum, selective dehydrogenation

ABSTRACT: Low-tar high-paraffin petroleum from an offshore well located west of the Cheleken peninsula in Turkmenistan was investigated. Selective liquid-phase dehydrogenation of the high-molecular hydrocarbons followed by chromatographic separation and spectroscopic analysis enabled the authors to explore the hybrid structure of these hydrocarbons and to determine the relative proportion of the hexa- and pentamethylene rings present. The content of the aromatic hydrocarbons in the benzine fractions ranged from 7 to 20%, and in the kerosene fractions, from 30 to 33%. In the latter, the content of normal paraffins was about 25%, and in the higher boiling fractions, 30 to 35%. The saturated (paraffin and paraffin-cycloparaffin) hydrocarbons comprised from 61 to 86% of

ACCESSION NR: AP5008890

the high-boiling (above 300C) hydrocarbon part of the petroleum. The aromatic hydrocarbons isolated from the high-molecular fractions are hybrid polycyclic structures containing an average of 2.5 to 5.0 rings per molecule, of which 2.0 to 5.0 rings per molecule are aromatic. As indicated by the high index of hydrogen deficit in the molecule (from 14 to 23), polycondensed systems make up a significant portion of the molecule. Orig. art. has: 7 tables.

ASSOCIATION: Institut khimii AN Turkmenskoy SSR (Institute of chemistry, AN Turkmen SSR)

SUBMITTED: 20Oct64 ENCL: 00 SUB CODE: FP, ES

NO REF SOV: 001 OTHER: 000

Card 2/2

SERGIYENKO, S.R.; KOZYURO, V.I.

Composition and properties of ozocerite in the Cheleken deposits. Izv. AN Turk.SSR.Ser.fiz.-tekh., khim. i geol.nauk no.5:25-31 '65. (MIRA 18:11)

1. Institut khimii AN Turkmenskoy SSR. Submitted June 30, 1965.

SERGIYENKO, S.R.; CHELPANOVA, M.F.; GARBALINSKIY, V.A.; KOZYREVA, A.S.

Chemical nature of the high molecular part of the sea petroleum of the Cheleken fields. Izv. AN Turk. SSR. Ser. fiz.-tekh. khim. i geol. nauk no.3:33-43 '65. (MIRA 18:12)

1. Institut khimii AN Turkmenskoy SSR. Submitted Dec. 14, 1964.

ACC NR: AM5026678

for engineers of the petroleum conversion and petroleum chemical industry; and can be of interest for students of petroleum higher educational institutions.

TABLE OF CONTENTS (abridged):

Part One

Composition, Properties and Reactions of High-Molecular Hydrocarbons of Petroleum

Part Two

Composition, Properties and Reactions of High-molecular Heterogenous Compounds of Petroleum

SUB CODE: 07,11/ SUBM DATE: 06May64/ ORIG REF: 005/ OTH REF: 004

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