L 22481-65 EWT(1) IJP(c)/ASD(a)-5/AFWL/SSD/AS(mp)-2/AFETR/RAEM(j)/ESD(gs)/ESD(t)

ACCESSION NR: AP5002259 S/0139/64/000/006/0111/0121

AUTHOR: Ternov, I. M.; Bagrov, V. G.; Rzayev, R. A.; Klimenko, Yu. I.

TITLE: Motion of polarized electrons possessing a vacuum magnetic moment

SOURCE: IVUZ. Fizika, no. 6, 1964, 111-121

TOPIC TAGS: electron motion, electron polarization, magnetic moment, polarization, spin, Dirac equation

ABSTRACT: The motion of the electron with oriented spin in a constant and homogeneous magnetic field is considered by introducing as polarization operators the four-dimensional polarization vector and the polarization tensor, in accord with the deductions of an earlier paper by some of the authors (Ternov, Bagrov, and Rzayev, ZhETF v. 46, 374, 1964). The wave function of the electron moving in the magnetic field is determined and the variation of the spin of the moving electron is studied. The effect of the vacuum magnetic moment of the electron on the longitudinal and transverse orientations of the spin is analyzed. An exact solution of the Dirac equation with account of the vacuum moment is used to calculate the

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probability of the change in the spin orientation of a radiating electron. It is shown that account of the interaction between the electrons and the vacuum leads to an additional although small electron polarization, and that the longitudinal polarization of the electrons is not conserved. "The authors thank Professor A. A. Sokolov and B. A. Lysov for a discussion of the results." Orig. art. has: 55 formulas.

ASSOCIATION: Moskovskiy gosuniversitet imeni M. V. Lomonosova (Moscow State University)

SUBMITTED: 02Jul64 ENCL: 00 SUB CODE: MP, EM

NR REF SOV: 006 OTHER: 001

Card 2/2

KLIMENKO, Yu. V.

DECEASED

1964

c. 63

Non Ferrous metals
analysis - ores

SOV/97-58-11-9/11

AUTHORS: Tikhonov, V.A., Okruzhko, M.Ye., Gladyshev, B.M. and Klimenko, Z.G. (Engineers)

TITLE: Concrete Made From Cement Based on Iron-Clay (Betony na zheleznisto-glinitnom tsemente).

PERIODICAL: Beton i Zhelezobeton, 1958, Nr.11, pp.434-436 (USSR)

ABSTRACT: Cement based on iron-clay could be used for ordinary, air-entrained, no-fine, and fine aggregate (sand) concretes. Crushing strength of concrete based on this cement is 1.5-2 times higher than the strength of concrete made with ordinary cement. Adhesion of iron-clay cement to reinforcement is sufficient to secure cohesion of the concrete and reinforcement. It is therefore possible to use this cement for reinforced concrete constructions. Iron-clay cement was investigated in the Department of Technology of Silicates of Lvov Polytechnic Institute (Kafedra tekhnologii silikatov L'vovskogo politekhnicheskogo instituta). This cement is obtained by finely grinding together 20% quicklime, 10-30% pyrite of slag and 50-70% pulverized brick or burnt clay. Highest intensity of

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SOV/97-58-11-9/11

Concrete Made From Cement Based on Iron-Clay.

hardening is achieved when steam curing takes place under a pressure of 6 atm or more. Mix of 1 : 3 of plastic consistency was investigated, and it was found that during 4-hour curing under 6 atm., the compression strength of the concrete articles varied from 200 to 500 kg/cm^2, and the strength in bending from 50 - 100 kg/cm^2. The concrete mix was prepared in a plastic consistency with a water/cement ratio of 0.5, and 325 kg cement per m^3 of concrete. The concrete was mixed in the proportion of 1 : 2.2 : 4.2 (by weight). The strength of the concrete was tested using testing samples shaped as figure '8' with a waist cross-section of 15 x 15 cm and length of 60 cm. Further tests were carried out to establish the cohesion between the concrete and the reinforcement. The test cubes were 15 x 15 x 15 cm. and the reinforcement was of 12 mm diameter. Cohesion in concrete mark 200 and 150 reinforced with standard reinforcement was found to be 25 and 17 kg/cm^2 respectively. The advantage of concrete based on iron-clay cement is its strength in compression. Tests with this cement were carried out also in the factory for reinforced concrete constructions Dorstroytrest (Zavod

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Concrete Made From Cement Based on Iron-Clay. SOV/97-58-11-9/11

betonnykh i zhelezobetonnykh konstruktsiy Dorstroytrosta). air-entrained, concrete was prepared from iron-clay cement of activity 400 kg/cm^2. Aluminium powder in the quantity of 400-600 g/m^3 was used to air-entrain the concrete. The resulting concrete weighed 600/1000 kg/m^3, and its strength of compression was in the limits of 45-100 kg/cm^2. No-fine concrete was prepared using aggregate of 30-40 mm and 120 kg/m^3 of iron-clay cement, with activity of 235 kg/cm^2. This no-fine concrete weighed 1750 kg/m^3 and its strength in compression was 43 kg/cm^2. Slabs from fine aggregate concrete were manufactured by the Dorstroytrest factory. When the mix was 1 : 5 of plastic consistency the blocks after curing had a strength in compression of 168 kg/cm^2; with a mix of 1 : 9 the strength was 68 kg/cm^2. These figures show that fine-aggregate concrete made from iron-clay cement is suitable for walling units. There is 1 table.

Card 3/3

TIKHONOV, V.A.; KLIMENKO, Z.G.

Synthesis and study of the hydrogarnet having the composition $3CaO-Al_2O_3-0.43SiO_2-5.14H_2O$. Zhur.prikl.khim. 35 no.6:1368-1371 Je '62. (MIRA 15:7)

(Hydrogarnet)

TIKHONOV, V.A.; KLIMENKO, Z.G.; SIROTYUK, O.A.

Effect of the phase composition of cement stone on its mechanical strength. Dokl. LPI 5 no. 1/2:156-160 '63. (MIRA 17:6)

ADEL', I.B.; KLIMENKO, Z.K.

Increasing the thermal stability of muds with sodium silicate. Izv. vys. ucheb. zav.; neft' i gaz 8 no.1:71 '65. (MIRA 18:2)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M. Gubkina.

EMRUDOVA, T.V.; GORODNOV, V.D.; FLIMENKO, Z.K.; MAKSIMENKO, N.S.; SHORYGINA, N.N.; ADEL', I.D.

Production of oxidized lignin in the Krasnodar Hydrolysis Plant. Gidroliz. i lesokhim.prom. 18 no.1:18-19 '65.

(MIRA 18:3)

KLIMENKOV, A.A.

Repeated operations in cancer of the resected stomach. Vest.AMN SSSR 17 no.6:41-49 '62. (MIRA 15:8)

1. Institut eksperimental'noy i klinicheskoy onkologii AMN SSSR.
(STOMACH—SURGERY) (STOMACH—CANCER)

KLIMENKOV, A.F.

Discharge capacity of riverbeds in the southern Far East. Sbor. nauch. rab. DVNIIS no.1:145-160 '61.

(MIRA 16:11)

CHERNENKO, V.G.; KLIMENKOV, A.F.

Prospects for water resources development in the basin of the Amur. Sbor. nauch. rab. DVNIIS no.3:110-122 '62. (MIRA 17:5)

USSR / Cultivated Plants. Grains. M-3

Abs Jour: Ref Zhur-Biol., 1958, No 16, 72919.

Author : Vil'dflush, R. T.; Bragin, A. M.; Klimenkov, K. S.
Inst : Belorussian Agricultural Academy.
Title : Effectiveness of Different Methods of Applying Organic and Mineral Fertilizers Under Corn.

Orig Pub: Tr. Belorussk. s.-kh. akad., 1957, 23, No 2, 79-92.

Abstract: Method and conditions for carrying out experiments are presented in detail. The highest positive effect (experiments in 1955) is obtained by applying manure with full mineral fertilizer (N,P,K). Addition to harvest comprised 55% in comparison with a variant without fertilizer; with the application of 20 t/ha of manure as the basic fertilizer and mineral fertilizers in the form of side-dressing, the harvests decrease. Application of a mixture

Card 1/2

KAFTOROVICH, S.N., insh.-mekh.; KLIMENKOV, V., red.; TARNAVSKAYA, G., tekhn. red.

[Handbook for tractor operators] V pomoshch' traktoristu. Minsk, Gos. izd-vo BSSR, Red. sel'kos. lit-ry, 1954. 209 p. (MIRA 11:7)
(Tractors)

KLIMENKO, V. I.

3-1-Kmz

Change of the properties of graphite owing to irradiation with neutrons. V. I. Klimenko and Yu. N. Alekseyko. *Sovetya Akad. Nauk S.S.S.R. Po Mirnomu Ispol'zovaniyu Atomnoi Energii, Zasedaniya Otdel. Fiz.-Mat. Nauk 1955*, 322-40 (in Rus) (summary, 340-1).—Measurements of the elec. and thermal conductivities, of the modulus of elasticity, of the hardness, and of the dimensions of graphite (I) samples which were irradiated with a neutron flux up to the integral dose $nt = 10^{20}$ cm.$^{-2}$, are shown in curves. The irradiation was done in a nuclear reactor yielding a flux $nv = 2 \times 10^{11}$ cm.$^{-2}$ sec.$^{-1}$ The elec. resistance increased 3-3.5, the modulus of elasticity 2, and the thermal cond. decreased up to 20 times. The specific vol. increased several %. Debye-Scherrer diagrams are presented showing large changes of the I structure owing to irradiation. Annealing of irradiated samples showed that the regraphitization starts at temps. which are just a little above the irradiation temp. At 200-300° this reaction becomes noticeable, but a good rate is only obtained at 1000-1100°, and the graphitization is complete at 2000°. For annealing at 200-300° the activation energy and the energy yields were detd. The expts. lead to the conclusion that the irradiation effects in I are a function of the irradiation temp. and of the neutron spectrum. The irradiation causes in I the formation of a solid soln. of interstitial C atoms in the I lattice, together with a degraphitization. Werner Jacobson

21(4) PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958.

Doklady sovetskikh ustanovok; yadernaya reaktory i yadernaya energetika. (Reports of Soviet Scientists: Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, L.I. Rovinov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Ye. I. Zeryukina is the science editor of this volume. See SOV/2581 for titles of all volumes of the set. References appear at the end of the articles.

PART II. EXPERIMENTAL AND RESEARCH REACTORS

Leypunskiy, A.I., V.S. Demin, N.N. Ponomarev, I.I. Bondarenko, O.D. Kazachkovskiy, G.I. Vorobyev, N.N. Ponomarev-Stepnoy, M.S. Yermolenko, Yu.Ya. Stavisskiy, V.I. Vasiliyev, L.N. Usachev, and N.N. Ponomarev-Stepnoy. Experimental Power Reactors in the USSR (Report No. 2729) 215

Ilinin, I.P., V.A. Sotnikovskiy, I.S. Shlepnev, Ye.Ye. Slyshkin, S.V. Kizimovskiy, and N.N. Ponomarev-Stepnoy. Pilot-plant Reactor with Variable and Pulsatable UO2 (Report No. 2500) 230

Goncharov, V.V. and et al. Some New and Detailed Thermal Research Reactors (Report No. 2185) 243

Kuzhevich, S.V., F.Ya. Gorbatenkov, V.I. Klimenko, F.V. Slyshkin, and V.M. Shirokov. Dismantling an Experimental Graphite-uranium Isotope Producing Reactor After Four Years of Operation (Report No. 2297) 319

Pavlov, S.N., Yu.S. Vyazemskiy, V.N. Gryazev, V.S. Klimenko, V.V. Ignatenkov, and V.A. Tuzhnikov. An Intermediate Reactor for Obtaining High Intensity Neutron Fluxes (Report No. 2142) 334

PART III. PHYSICS AND ENGINEERING OF REACTOR DESIGN

Leypunskiy, A.I., A.I. Abramov, V.N. Andreyev, A.I. Petrenko, [illegible], V.I. Galanov, V.I. Galkov, L.B. Galin, A.N. Gulevich, O.P. Kiselevskiy, M.V. Kiselev, N.V. Kiselyarov, N.N. Ponomarev, V.A. Sorokin, R.M. Shkalayev, G.N. Safronkin, Yu.Ye. Stavisskiy, V.I. Vasiliyev, L.N. Usachev, N.I. Petlyev, Peter Ouvrard. Research on the Physics of Fast Neutron Reactors (Report No. 2038) 377

Bryant, V.E. and R.L. Zeller. Homogeneous Natural Uranium Reactor (Report No. 2296) 398

Pavlovich, S.N., Yu.S. Antelfeyev, V.P. Bakhov, I.V. Kuznetsov, I.I. Levina, Ye.V. Kiselevskiy, A.N. Novikov, G.S. Gorbatkin, [illegible], and Ye.I. Zhuvelov. Fast Zero Up in Water-water Power Reactors and Experiments With the Uranium Rotor Lattice (Report No. 2145) 411

Sidorenko, V.A. Self-regulation in a Water-water Power Reactor (Report No. 2128) 434

[illegible] 459

N L 10246-66 EWT(1)/EWP(e)/EWT(m)/EPF(n)-2/T/EWP(t)/EWP(k)/EWP(v)/EWP(b)

ACC NR: AP5028908 EWA(c) IJP(c) SOURCE CODE: UR/0020/65/165/003/0524/0525

44,55 ES/JD/JG/LHB/GG 44,55

AUTHOR: Konobeyevskiy, S. T. (Corresponding member AN SSSR); Klimenkov, V. I.; Kosenkov, V. M. 44,55

ORG: none

21,44,55 19

TITLE: An x-ray investigation of radiation defects in beryllium oxide

27 27

SOURCE: AN SSSR. Doklady, v. 165, no. 3, 1965, 524-525

TOPIC TAGS: beryllium compound, radiation defect, neutron irradiation, Laue pattern, x ray diffraction, crystal, inorganic oxide, x ray investigation, crystal lattice, crystal anisotropy

ABSTRACT: Samples of sintered BeO were irradiated with an integrated flux of 2×10^{21} fast neutrons at a temperature less than 100C. As a result of irradiation the samples disintegrated into powder. The size of the powder particles formed by irradiation was found to be equal to the grain size of the unirradiated samples (~100 μ). Each powder particle was a monocrystal. The diffraction lines of unirradiated samples showed an undistorted structure. Irradiation resulted in broadening of the diffraction lines and a decrease in the line intensity. At all angles $2\theta > 95°$ no diffraction peaks could be discerned from the background. The broadening of the peaks was sharply anisotropic. The width of the line (010) was practically unaltered, while the line (002) was broadened 3.5 times. The degree of broadening of the other lines depended on the angle between the diffraction and the base planes. Anisotropic broadening was also observed in the powder patterns, indicating that

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anisotropy can probably be attributed to internal distortions of the BeO lattice. The broadening of the line (002) on exposure to an integrated flux of 2×10^{20} fast neutrons/cm^2 and greater was very complex. Simultaneously with an anisotropic broadening of the line the authors reported an anisotropy in the increase of the lattice constant exposed to irradiation. The Laue pattern of a particle of powder ($70 \times 60 \times 100$ μ) formed by irradiation showed two series of spots: the normal pattern and a series of broadened spots. The origin of the latter could not be adequately explained. The experimental data were interpreted as indicating that irradiation with nvt = 2×10^{20} fast neutrons/cm^2 produced single defects which upon further exposure formed clusters causing the distortion of the crystal lattice of BeO. Orig. art. has: 3 figures and 1 table. [CS]

SUB CODE: 20/ SUBM DATE: 08Apr65/ ORIG REF: 001/ OTH REF: 009/ ATD PRESS: 4161

Card 2/2

22874
S/089/61/010/005/002/015
B102/B214

26.2240
21.1700

AUTHOR: Klimenkov, V. I.

TITLE: The behavior of graphite in nuclear reactors

PERIODICAL: Atomnaya energiya, v. 10, no. 5, 1961, 447-460

TEXT: Since graphite is much used as moderator and construction material for reactors it is of interest to know the effect of radiation on it. The present paper gives a review of the results of investigations carried out by Soviet and other scientists for this purpose. Part of the material for this paper is taken from the papers read at the Second Geneva Conference on Atoms. The experiments carried out so far show that the radiation effects are so important that they must be taken into account in the construction of graphite reactors. To these effects belong above all the known Wigner effects. On account of the fact that the effect of radiation is strongly dependent on the temperature of the graphite and is weak at high temperatures, it is desirable above all to use graphite in reactors at high temperatures. The problem thus arises to study the effect of radiation on the properties of graphite at high temperatures and

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S/089/61/010/005/002/015

The behavior of graphite in nuclear reactors B102/B214

also its oxidation. It is known since 1955 that the changes in the properties of graphite brought about by radiation show saturation (i.e. compensation of defect formation due to radiation by defect annihilation due to heat); the higher the temperature the more rapidly is the saturation obtained. The higher the dose the lower is the temperature at which this saturation is obtained. The temperature for $\sim 10^{21}$ n/cm^2 is 30°C. The significant anisotropy effect observed is due to the anisotropy of the graphite crystal itself and the texture. The effects of radiation on CSF-graphite at high temperatures (400-500°C and higher) were investigated by Nightingale et al. (Second Geneva Conference, 1958; number of paper not given) and are reproduced here. The author assumes that the change of volume of the graphite occasioned by the radiation is a result of the increase in the volume of the elementary cell as well as of the contraction caused by the compression of the packing at high temperature irradiation. Both these effects compete on account of their very different dependence on the temperature (the former is strongly temperature dependent at low temperatures (30°C), and the latter at high temperatures (1000°C) with the temperature independent result. This follows also from the comparison of the changes of length and cross section measurements. Accordingly, the

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The behavior of graphite in nuclear reactors S/089/61/010/005/002/015 B102/B214

reactor itself shows a collection of the radiation defects in those parts of the graphite which are at the lowest temperature as well as in those parts which are nearest to the source since the defect formation certainly depends also on the neutron energy. Investigations at the First Atomic Power Plant in USSR showed that the high temperature (700-800°C) which the graphite has in this reactor hinders important deformations. This is in contrast to the BNL-reactor (USA) in which the two factors: high neutron flux and low temperature occur together and cause significant deformations of the graphite. These radiation effects can be minimized by annealing (heating of the graphite above the temperature at which the irradiation takes place). During this process the latent energy accumulated in the graphite is released. Experiments of this kind have been done many times before (BNL, and BEPO reactors); there was an unwanted release of this energy in 1952 in Windscale. This energy can be as much as 500 cal/g. Its release is characterized as follows: At about 200°C there appears a narrow peak in the energy release which is more rapid than it is assumed according to the specific heat of graphite, and self heating of graphite results. Experiments on this were carried out at the BEPO reactor (Dickson et al., Paper No. 1805, Second Geneva Conference, 1958) and these are

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The behavior of graphite in nuclear reactors S/089/61/010/005/002/015
B102/B214

reported here in detail. A great disadvantage of graphite is its easy oxidizability at high temperature particularly because its oxide is volatile and can not form a protective layer. The large porosity has also a disadvantageous effect. The oxidation increase with temperature is proportional to $e^{-E/kT}$. This can be minimized by a suitable gas medium (CO_2, however, is not suitable since it is endothermically reduced to CO by the graphite). The examples of the First Atomic Power Plant in USSR and of the MP (IR) reactor show that the protection of the graphite by gas is possible also in water cooled reactors. In the reactor of Atomic Power Plant and in the IR-reactor N_2 with 0.1-0.2 vol% O_2 is employed. N_2 is employed for the protection of the graphite also in Beloyarskaya atomnaya elektrostantsiya im. I. V. Kurchatova (Beloyarsk Atomic Power Plant imeni I. V. Kurchatov). The author thanks B. M. Dolishnyuk and A. G. Lanin for going through the manuscript; and L. Ya. Stolchevaya for preparing the diagrams. There are 12 figures and 22 references: 13 Soviet-bloc and 9 non-Soviet-bloc. The references to English-language publications read as follows: R. Powell et al. Second Geneva Conference 1958, Paper No. 462; G. Dickson et al. Paper No. 1805; A. Anderson et al. Paper No. 303; F. Farmer et al. Paper No. 2331.

Card 4/5

21.1000
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26367
S/089/61/011/002/003/015
B102/B201

AUTHORS: Klimenkov, V. I., Zavgorodniy, A. Ya.

TITLE: Energy stored in the graphite of an MP(IR) reactor

PERIODICAL: Atomnaya energiya, v. 11, no. 2, 1961, 126-132

TEXT: A study has been made of storage and distribution of latent energy in the graphite of an IR reactor. The investigation was conducted on samples from graphite blocks taken from the reactor during disassembling, and also on samples taken by a special drill in the course of two years after disassembling of the graphite assembly. During this time the reactor worked with a mean power of 50 Mw and with a graphite temperature in the center of the brick-work ranging between 400 and 600°C. The integral thermal neutron flux in the center was $6.7 \cdot 10^{21}$ n/cm^2. The samples extracted with a drill were cylindrical, 50 mm long, and 10 mm in diameter. The largest samples were 25 mm long and 28 mm in diameter. The characteristics of the liberation of latent energy were examined with the aid of a vacuum calorimeter by the method of two successive heat treatments with constant heat supply. The electric heater warranted a heating rate of 13°C/min

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B102/B201

Energy stored in the graphite ...

(without liberation of latent energy). The sample temperature was measured with thermocouples and recorded by an automatic potentiometer of the type ЭПП-09 (EPP-09); this device is able automatically to record a maximum rate of 150°C/sec. The latent energy was obtained by comparing the curves of two successive heatings of irradiated samples. Fig. 3 presents curves characterizing the liberation of latent energy: $q = f(T)$, $dq/dT = f(T)$; $q = kW\Delta t/p$, where W is the constant heating power, Δt is the duration of heating, p is the weight of the sample (in grams), and k is the equivalent of the calorimeter. The samples were heated in the vacuum calorimeters between 600 and 650°C. The error in the determination of the total latent energy was about 50 cal/g. The maximum energy liberated on heating to 600°C was 125 cal/g, and the total latent energy amounted up to 540 cal/g, which is in good agreement with data found earlier. For samples taken two years after disassembling (integral thermal neutron flux: $\sim 3 \cdot 10^{20}$ n/cm^2; temperature ~ 100°C), the total latent energy was found to be 320 cal/g. A new fact was that the rate of energy liberation rose strongly on heating to high temperatures (350-600°C and over). It was double the amount of specific heat of graphite. The distribution of latent energy had already been the subject of a report by B. V. Brokhovich at the Second Geneva Atomic

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26367

S/089/61/011/002/003/015
B102/B201

Energy stored in the graphite ...

Conference (1958). The observed drop of latent energy with growing graphite thickness is related to the variation of the neutron spectrum and of the graphite temperature. Results are in good agreement with those obtained by Dickson et al. A study of the hazard resulting from the liberation of latent energy showed values between 0.33 and 0.25 cal/g·deg for the mean rate of energy liberation with the maximum latent energy being taken to be 540 cal/g; this value is lower than the specific heat of graphite (0.36 cal/g). The spontaneous heating of graphite due to liberation of latent energy is a source of hazard for aluminum tubes and for the envelopes of uranium lumps. Investigation results showed, in agreement with those obtained on the BEPO reactor, that the conditions under which latent energy is liberated, are almost adiabatic. There are 4 figures and 9 references: 5 Soviet-bloc and 4 non-Soviet-bloc. The four references to English-language publications read as follows: Nucl. Engng. 2, No. 20, 453 (1957); Nucleonics, 15, No. 12, 43 (1957); Dickson et al., Paper No. 1805, Second Geneva Conference, 1958; Cottrell et al., Paper No. 2485, Second Geneva Conference, 1958.

SUBMITTED: February 20, 1961

Card 3/8

2

Successive reactions on surfaces of a single catalyst. Preparation of acetone from ethyl alcohol. M. YA. KAGAN AND Y. C. KLIMENKO. *J. Phys. Chem.* (U.S.S.R.), 24, 344-54(1950).—In the presence of Me_2CO, by using Fe with 0-10% of Mg or Ca, zincite or ZnO with 10% MgO, catalysts, from EtOH and H_2O, ratio of 1 to 3-4.5, the EtOH is first dehydrogenated to aldehyde, which in turn gives EtOAc, the latter breaking into EtOH and HOAc. The HOAc gives CO_2 and Me_2CO. Iron or glass tubes were used. Temps. varied from 430 to 550°, the Fe-Ca catalyst apparently working at a lower temp. than the others, and more efficiently, giving 80% yields at 470°, at a speed of one mol. per hour with a catalyst chamber length of 20 cm. P. H. Karmarkar

30

synthetic rubber. A. D. Abkin, V. S. Khmarskiy, P. P. Kondakov and S. S. Medvedev. Russ. 47,316, July 31, 1936. A mixt. of chloroprene and vinyl chloride is subjected to a continuous polymerization with other substances in the presence or the absence of catalysts.

METALLURGICAL LITERATURE CLASSIFICATION

A

B

Russian [illegible]. Vsesoiuznyi Nauchno-Issledovatel'skii Lesokhimicheskii Institut (I. V. Filipovich and V. S. Klimenkov, inventors). Russ. [illegible], April [illegible], 1957.

Wood pulp is impregnated with chloroprene contg. a polymerization promotor, and the chloroprene is polymerized on the fiber at 20-42°. The product is rolled with the introduction of various ingredients used in the manuf. of rubber.

USSR/[illegible] METALLURGICAL LITERATURE CLASSIFICATION

PROCESSES AND PROPERTIES -- [illegible]

20

Impregnating timber. Tsentral'nyi Nauchno-issledovatel'skii Lesokhimicheskii institut "Tsniklin" (inventors, V. S. Khrapkov and I. V. Filipovich). Russ. [illegible] Sept. [illegible], 1957. Wood is treated with an oxyl or an oxyl-[illegible] or hydroxyamide, as an accelerator of polymerization, and then impregnated with vapor or mon. of vinyl chloride, chlorovinyl, or another deriv. of divinyl, and the impregnating material is polymerized.

METALLURGICAL LITERATURE CLASSIFICATION

KLIMENKOV4V8 600

1. MEDVEDEV, S.; CHILIKINA, Ye.; KLIMENKOV, V.

2. USSR (600)

"The Polymerization of Chlorophrene" Part I. "The Kinetics of the Polymerization of Chlorophrene in the Condensed Phase Under the influence of Hydrogen Peroxide of Tetralin", Zhur. Fiz. Khim, 13, No. 9, 1939. Moscow, Physico-Chemical Institute imeni Karpov, Laboratory of Polymerization Processes. Received 21 April 1939.

9. [redacted] Report U-1615, 3 Jan 1952

KLIMENKOV, V.S.; KARGIN, V.A.; KITAYGORODSKIY, A.I.

Density of packing of highly polymeric compounds. Khim. i Fiz. Khim. Vysokomolekul. Soedineniy, Doklady 7-oy Konf. Vysokomolekul. Soedineniyam '52, 231-41. (MLRA 5:7)
(CA 47 no.15:7817 '53)

Kimenko V.I.

Packing densities of high polymeric compounds V. I.

KLIMENKOV, V.S.

New methods of modifying artificial and synthetic fibres. M. V. Mikhailov, Z. V. Ukhanova, V. S. Klimenkov and A. A. Kurnosikov (Tekstil. Prom., 1954, 14, No. 6, 16—19).—New fibres were obtained from mixtures of (a) acetylcellulose and other cellulose derivatives with polyacrylonitrile, chlorinated polyvinyl chloride or its copolymers, and (b) polyamides with polyhydrocarbons or other synthetic high-mol. compounds. Study of these modified fibres confirmed the practical possibility of changing all the physico-chemical and mechanical properties of the fibres and of imparting to them important qualities such as hygroscopicity, dye-ability, heat stability, non-flammability, rigidity and elasticity. During the investigations, new possibilities were found for chemical conversions by way of saponification, and for dyeing some of the synthetic fibres by introducing into the mass a coloured polymeric component.

J. Text. Inst. (R.B.C.).

3

KLIMENKOV, V.S.

Category : USSR/Atomic and Molecular Physics - Physics of high-molecular substance D-9

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1016

Author : Klimenkov, V.S., Kargin, V.A.
Title : Relaxation Properties of Synthetic Fibers

Orig Pub : Soobshch. o nauch. rabotakh Vses. khim. o-va im. Mendeleyeva, 1955, vyp. 3, 46-49

Abstract : See Ref. Zhur. Khim, 1956, 47173

Card : 1/1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120003-3"

Sci Res Int Artificial Fibers

Klimenko V.S

The viscosity of illite suspensions

MIKHAYLOV, N.V.; TOKAREVA, L.G.; KLIMENKOV, V.S.

Increasing the heat resistance of vinyl chloride polymers. Tekst. prom. 16 no.7:26-28 Jl '56. (MLRA 9:8)
(Vinyl polymers) (Textile fibers, Synthetic)

KLIMENKOV, V. S., and KARGIN, V. A.

"Relaxation of synthetic fibers made of copolymers," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb, 57, Moscow, Fiber Research Inst.

B-3,084,395

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000723120003-3"

KOTINA, V.Ye.; KLIMENKOV, V.S.; DEMINA, N.V.; KARATCHIKOVA, A.V.

Changes in properties of nitron silk during thermal stress relaxation. Khim.volok. no.1:30-32 '59. (MIRA 12:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Textile fibers, Synthetic--Testing)

DYURNBAUM, V.S.; ABKIN, A.D.; KLIMENKOV, V.S.

Production of copolymers of acrylonitrile with methacrylamide and of fibers derived from them. Khim. volok. no.2:24-28 '59. (MIRA 12:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.
(Acrylonitrile) (Methacrylamide) (Rayon)

ZVERKV, M.P.; KLIMENKOV, V.S.

Some thermomechanical properties of isotactic polypropylene. Vysokom.soed. 1 no.5:758-760 My '59. (MIRA 12:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Propene)

87478
S/183/60/000/006/003/005
B020/B058

15.5560

AUTHORS: Zharkova, M. A., Kudryavtsev, G. I., [redacted]

TITLE: Study of the Conditions of Copo ymer Production From Acrylonitrile With Alpha Vinyl Pyridine, Suitable for Fibration

PERIODICAL: Khimicheskiye volokna, 1960, No. 6, pp. 15-19

TEXT: The paper reports on the results of studies concerning: a) copolymerization of acrylonitrile (AN) with α-vinyl pyridine (α-VP) for the purpose of producing a copolymer with predetermined molecular weight and the determination of the optimum concentration of the spinning solution, b) the determination of the optimum concentration of the salt solution, c) the conditions for the production of suitable spinning solutions, and d) the trial formation in precipitating baths with aqueous salt solutions and the study of the physical and mechanical properties of the fiber obtained. In copolymerization, the molecular weight of the copolymer is influenced by the amount of the initiator (azo-diisobutyric acid-dinitrile), the temperature, type of solvent and amount of the regulator (monoethanol amine). Copolymers with a ratio AN : α-VP of 85 : 15 and 90 : 10 weight%

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Study of the Conditions of Copolymer Production From Acrylonitrile With Alpha Vinyl Pyridine, Suitable for Fibration

S/183/60/000/006/003/005
B020/B058

were studied. The influence of the amount of regulator on the change in time of the intrinsic viscosity (Fig. 1), and the dependence of the intrinsic viscosity on the regulator concentration (Fig. 2) are determined. The change of the intrinsic viscosity of the solution in dependence on the amount of initiator used is mentioned in Figs. 3 and 4. It can be seen from Fig. 5 that with rising temperature, the intrinsic viscosity of the copolymer produced drops from 2.5 at 60°C to 1.3 at 75°C. The dependence of the intrinsic viscosity of the copolymer on the initial concentration of the monomer mixture (Fig. 6) shows that the probability of a chain rupture through the solvent increases with sinking concentration of the monomers in the solution. As may be seen from the tabulated data concerning the conditions of the copolymerization of AN with α-VP in the production of spinning solutions, the rate of polymerization in 45 to 50% sodium thiocyanate, under otherwise equal conditions, is always the same and the copolymers have the same intrinsic viscosity (1.39 to 1.4). Fig. 7 shows the dependence of the viscosity of a concentrated sodium thiocyanate solution on the intrinsic viscosity of the copolymer. It can be seen from Fig. 8 that at an intrinsic viscosity of 1.38, 10.5% to 11.2%

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Study of the Conditions of Copolymer Production From Acrylonitrile With Alpha Vinyl Pyridine, Suitable for Fibration S/183/60/000/006/003/005 B020/B058

solutions are suitable for the shaping of the fiber, and at an intrinsic viscosity of 0.97, 15% solutions. The fiber produced under the optimum conditions determined had the following values: metric number 3970, breaking length 25.6 km, elongation 32%; the fiber can be dyed well with acid, acetate and alkaline dyes. There are 8 figures, 1 table, and 4 references: 2 Soviet and 2 US.

ASSOCIATION: VNIIV (All-Union Scientific Research Institute of Synthetic Fibers)

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87479

S/183/60/000/006/004/005
B020/B058

15.5560

AUTHORS: Gruzdev, V. A., Klimenkov, V. S., Serkova, L. A., Michurina, G. A., Zhuchkova, N. G., Bondarenko, V. M.

TITLE: Thermooxidative Destruction of Polypropylene and the Fiber on Its Basis

PERIODICAL: Khimicheskiye volokna, 1960, No. 6, pp. 19-22

TEXT: The authors wanted to study the influence of the composition of the polypropylene fractions on the thermooxidative destruction and the clarification of the possibilities of stabilizing the polymer in shaping and the fiber. Polypropylene with the following characteristic values was used for the study: molecular weight 200,000, contents of the amorphous fraction 4.3%, contents of the heptane fraction 5.7%, ash contents 0.4%. The fibers were produced according to the process described in Ref. 3. The thermooxidative destruction of the polypropylene was studied between 140 and 240°C, since the fiber is shaped at these temperatures. The data obtained are given in Fig. 1, and show that a period of activation of the process exists, whose value decreases with rising temperature, and whose

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Thermooxidative Destruction of Polypropylene and the Fiber on Its Basis

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B020/B058

occurrence depends on the accumulation of radicals. The dependence of the intrinsic viscosity of the polypropylene heated to 200°C (Fig. 2) and 140°C (Fig. 3) on the composition of the fractions is traced graphically. It can be seen from Fig. 2 that the change of the composition of the fraction at temperatures above the melting point of the polymer does not cause any change of the intrinsic viscosity during heating, and thus neither influences the thermooxidative destruction. It can be seen from Fig. 3 that the introduction of 15% of the amorphous polypropylene fraction reduces the activation period to about one-twelfth. Fig. 4 shows the change of the intrinsic viscosity of the polymer in dependence on the antioxidants used. The most effective antioxidants at 200° C are Neozone D and Ionol. However, the activity of these antioxidants greatly decreases when increasing the temperature to 240°C (Table 1). The effect of various antioxidants on the ermooxidative destruction of polypropylene is mentioned in Table 2, from ch it can be seen that the addition of 0.1% Ionol and 0.25% Neozone D sufficient for the stabilization of polypropylene at 200°C. Fig. 5 shows e dependence of intrinsic viscosity and strength of the fiber on the uration of heating and the polymer composition. Table 3 gives data on the effect of the stabilizer used and the duration of heating on the thermo-idative stability of the fiber, which show that fibers with 1% Neozone D

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Thermooxidative Destruction of Polypropylene and the Fiber on Its Basis

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B020/B058

and Ionol respectively, or a mixture of 0.5% Neozone D with 0,5% of a phenol-styrene condensation product do not change their properties when heated for 50 hours at 140°C. There are 5 figures, 3 tables, and 3 Soviet references.

ASSOCIATION: VNIIV (All-Union Scientific Research Institute of Synthetic Fibers)

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S/190/60/002/011/005/027
B004/B060

AUTHORS: Zverev, M. P., Klimenkov, V. S., Kostina, T. F.

TITLE: Dependence of the Thermomechanical Properties of Polypropylene on Its Structural Composition. II

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 11, pp. 1620 - 1624

TEXT: The authors dealt with the problem of the interaction between atactic and isotactic macromolecules of polypropylene. In the article under consideration, they report on the effect of fractional composition on strength relative prolongation, and modulus of elasticity of polypropylene at 30°C. Specimens prepared by Etlis and Minsker, with a molecular weight of 120,000, were used for the tests. The atactic fraction was either extracted by means of ether or by means of heptane. A three-dimensional copolymer was obtained in the latter case, whose molecules were found to consist of atactic and isotactic links. The production of fibers of different fractional compositions has already been described by the authors in Ref. 3. Fibers elongated by 300% at 30 - 100°C were

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Dependence of the Thermomechanical Properties of Polypropylene on Its Structural Composition. II

S/190/60/002/011/005/027
B004/B060

transition from the vitrified to the high-elastic state. V. A. Kargin, T. I. Sogolova, and N. V. Mikhaylov are mentioned. There are 3 figures and 12 references: 8 Soviet, 3 US, and 1 Italian.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (All-Union Scientific Research Institute of Synthetic Fibers)

SUBMITTED: April 14, 1960

Card 3/3

Dependence of the Thermomechanical Properties of Polypropylene on Its Structural Composition. II

S/190/60/002/011/005/027
B004/B060

investigated here; they consisted 1) of isotactic polypropylene, 2) of 93% isotactic and 7% atactic polypropylene, 3) of 93% isotactic polypropylene and 7% three-dimensional copolymer. The authors reached the following conclusions: 1) Due to recrystallization and orientation, the fiber stability increases with the temperature at which the fibers were elongated. 2) The modulus of elasticity shows a maximum of fibers elongated between 100° and 110°C. The different values of the modulus of elasticity at different polypropylene compositions are explained by the fact that on stretching there occurs, besides re-crystallization, also a translation of crystals without appreciable deformation, so that the atactic structures in-between have an elasticizing effect. The modulus of elasticity of fibers stretched at 100°C was examined between -40° and +120°C, and it was found that a) in the range -40° to -20°C, viz. in the vitrified state, the modulus of elasticity is not dependent on the fractional composition; b) on the transition to the high-elastic state, the modulus of elasticity varies in dependence on the fractional composition, the fibers with atactic fraction exhibiting greater changes. Crystallinity can be estimated on the basis of these effects on the

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DYURNBAUM, V.S.; ABKIN, A.D.; KLIMENKOV, V.S.

Kinetics of copolymerization of acrylonitrile with some vinyl monomers. Khim.volok. no.3:8-11 '61. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Acrylonitrile) (Vinyl compounds)

27566
S/183/61/000/005/002/003
B101/B110

15 5560

AUTHORS Zharkova, M. A., Rassolova, E. A., Kudryavtsev, G. I., Klimenkov, V. S.

TITLE: Copolymerization of acrylonitrile and 2-methyl-5-vinyl pyridine in aqueous sodium thiocyanate solution

PERIODICAL: Khimicheskiye volokna, no. 5, 1961, 13 - 17

TEXT: The authors attempted to improve the quality of acrylonitrile fibers by means of pyridine derivatives. Previous papers (Khim. volokna, no. 3, 15 (1960); ibid., no. 6, 15 (1960)) dealt with the copolymerization of acrylonitrile (AN) and α-vinyl pyridine (α-VP). In the present paper, the system AN - 2-methyl-5-vinyl pyridine (MVP) was studied, since a simple method of producing MVP has been developed in the Soviet Union. 50% sodium thiocyanate proved to be an optimum solution for copolymerization. Experiments at room temperature and 70°C showed that the formation of sufficiently concentrated homogeneous spinning solutions (12 - 15%) with a maximum ratio AN:MVP = 85:15 is limited due to the poor solubility of MVP. Copolymerization of AN and MVP is analogous to that of AN and

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α-VP. The yield after 60 min is 60 - 65%. The reaction rate drops linearly with the time of polymerization. Fig. 4 shows that the pH of the medium exerts a considerable effect upon the yield. These data are not in agreement with those obtained by Yamamoto (see below). Only in acid media does the specific viscosity depend on pH; in alkaline media it is constant. The initiator used in copolymerization was azodiisobutyric acid dinitrile. The polymerization rate was found to be a linear function of the square root of the initiator concentration. With 0.05% initiator (optimum concentration), the polymer yield after 1.5 hr is 75 - 80%. A rise in temperature (from 60 to 80°C) accelerates the process. 70°C is optimum for a 7% monomer solution, since the polymerization rate is not high enough as to cause overheating. The activation energy is 14.5 kcal/mole. To obtain optimum spinning solutions, the specific viscosity should not exceed 1.0 - 1.2. Therefore, experiments were made with various regulators: monoethanol amine, thiourea, thymol, lauryl mercaptan, diproxide (= dipropyl xanthogenatedisulfide), thiourea dioxide. Monoethanol amine was the only substance to affect the molecular weight of the polymer. 0.7% of monoethanol amine (with α-VP only 0.2%) was required to obtain AN-MVP copolymers of the desired viscosity. The effect of the ratio

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Copolymerization of... S/183/61/000/005/002/003
B101/B110

of components was studied with a 7% monomer concentration, at 70°C, pH = 7, 0.5% initiator, and without a regulator. Results: (1) the copolymerization constants of Ref. 5 (see below) were confirmed; (2) with 5% MVP, yield: 86%, with 30% MVP, only 52%; (3) the specific viscosity dropped from 4.86 to 1.8 as the MVP content increased. There are 11 figures, 2 tables, and 5 references: 2 Soviet and 3 non-Soviet. The three most important references to English-language publications read as follows: British Patent 752135, 22/VI, 1955; USA Patent 2847389, 12/VIII 1958; Ref. 5: Yamamoto, Ind. Chem. Soc., 62, no. 3, 476 (1959).

ASSOCIATION: VNIIV

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31885
S/183/62/000/001/001/001
B110/B147

15.5560

AUTHORS: Dorokhina, I. S., Abkin, A. D., Klimenkov, V. S.

TITLE: Copolymers of acrylonitrile and vinyl acetate

PERIODICAL: Khimicheskiye volokna, no. 1, 1962, 49 - 54

TEXT: The composition of copolymers of acrylonitrile (I) and vinyl acetate (II) in (a) aqueous emulsions, and (b) homogeneous dimethyl formamide solutions (DMF) with peroxide initiators in different steps of polymerization was studied. The following values were found for a: monomer:H_2O = 1:3, emulsifier concentration = 3% by weight of the monomer, K_2SO_5 concentration = 0.3% by weight of the monomer, temperature = 50°C; the values for b were: concentration of monomers in DMF = 4 moles/liter, benzoyl peroxide concentration = 0.048 moles/liter, temperature = 50°C. Copolymerization was first investigated in 30 - 40 ml dilatometers for a conversion of 10 - 15%. The copolymer obtained from an aqueous emulsion was coagulated by a 10% aqueous NaCl solution, that obtained from DMF by a 60 - 70% DMF solution. In this case, the copolymers were extracted by benzene. Further copolymerization in

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S/183/62/000/001/001/001
B110/B147

Copolymers of acrylonitrile...

aqueous emulsions was investigated in a 6 liter reaction vessel in N_2 atmosphere ($< 0.05\%$ O_2) in the presence of K_2SO_5. The authors determined: (1) the composition according to nitrogen content (Kjeldahl), (2) characteristic viscosity of 0.5% solutions of the copolymers in DMF, (3) their solubility (qualitatively), (4) density, (5) vitrification temperature according to V. A. Kargin et al. (Ref. 6: ZhFKh, 23, 630 (1949)). When the degree of conversion was low, copolymers of different characteristic viscosities were obtained. The lower η_{char} of the copolymers obtained in DMF solution are caused by chain transfer through the solvent. The dependence of η_{char} on the initial monomer composition is caused by different reactivities of monomers and radicals formed from them. This dependence is practically the same for copolymers from a DMF solution and from aqueous emulsion. For an arbitrary initial component ratio, the copolymer is always enriched with I. The copolymerization constants ($r_1 = 4.2$, $r_2 = 0.05$) obtained according to L. Gindin et al. (Ref. 8: ZhFKh, 21, 1269 (1947)) show that the rate of addition of I to its own and to a foreign radical is higher than that of II. Since with

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S/183/62/000/001/001/001
B110/B147

Copolymers of acrylonitrile...

arbitrary initial monomer ratios I is faster consumed than II, only II polymerizes in many cases. Integral copolymer composition changes with the degree of transformation, with the content of I decreasing. Differential copolymer composition changes stronger than integral copolymer composition, with homopolymerization of II taking place when I is exhausted. The intramolecular distribution of chain links was calculated from the formulas for the distribution functions according to L. Gindin et al. (Ref. 11: DAN, SSSR, 56, 2, 177 (1947)). With a high content of I in the initial mixture, the macromolecules are made up of long links of I connected by 1 - 2 links of II. Copolymerization of I and II (initial molar fraction of I = 0.679) with 70% yield results in an equimolar ratio with an integral composition of ~80% M of I. Macromolecules of the copolymer (50:50) consist of successive sections of I and II with 1 - 10 links of each component. Solubility increases, and specific gravity and vitrification temperature decrease when the fraction of II is increased. The fraction of the copolymer enriched with II acts as a plasticizer in fiber production, and deteriorates the properties of the fiber (resistance to heat). There are 6 figures, 5 tables, and 12 references: 5 Soviet and 7 non-Soviet. The three most recent references to English-language publications read as

X

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S/183/62/000/001/001/001
B110/B147

Copolymers of acrylonitrile...

follows: F. R. Mayo et al., J. Am. Chem. Soc., 70, 1523 (1948); R. M. Fordyce et al., J. Am. Chem. Soc., 70, 2489 (1948); T. Alfrey et al., J. Polymer. Sci., 5, 719 (1950).

ASSOCIATION: VNIIV

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DYURNBAUM, V.S.; ABKIN, A.D.; KLIMENKOV, V.S.

Composition and intramolecular distribution of copolymers of acrylonitrile with butylvinylsulfonate and methacrylamide. Khim. volok. no.2:10-14 '62. (MIRA 15:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.
(Acrylonitrile) (Sulfonic acids) (Methacrylamide)

S/069/62/024/005/003/010
B107/B186

AUTHORS: Dorokhina, I. S., Abkin, A. D., Klimenkov, V. S.

TITLE: The part played by the distribution of monomers between the phases in the emulsion copolymerization of acrylonitrile and vinyl acetate

PERIODICAL: Kolloidnyy zhurnal, v. 24, no. 5, 1962, 549 - 553

TEXT: The distribution of monomeric acrylonitrile and of vinyl acetate between the hydrocarbon phase and the liquid phase was examined at 50°C, both with and without the addition of Mk (MK) as emulsifier. A likely reaction mechanism of the polymerization is suggested. The distribution by volume was determined after shaking together a mixture of monomers and water for one hour. The initial proportion by weight was 3:1. The proportionate amounts of acrylonitrile and vinyl acetate were determined by refractometry, applying a correction for the solubility of the hydrocarbon phase in water. The results are collected in Table 1 and Table 2. The ratio of acrylonitrile to vinyl acetate in the hydrocarbon phase is seen to be only slightly displaced, whereas considerable deviations appear

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in the aqueous phase. The solubility of the monomers is slightly greater in soap solution than in water. Polymerization experiments carried out with different quantities of emulsifier indicated that the polymerizing reaction proceeds firstly in the soap micelle and later in the polymeric monomer particles. There are 4 figures and 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna, Moskva - Mytishchi (All-Union Scientific Research Institute for Synthetic Fibers, Moscow - Mytishchi)

SUBMITTED: August 12, 1961

Table 1. Legend: a - composition of initial monomer mixture (acrylonitrile-vinyl acetate); b - hydrocarbon phase; c - aqueous phase; d - solubility of monomers in water in %; e, k, m - mole%; f, l, n - wt.%; g, i - composition of monomeric mixture (acrylonitrile - vinyl acetate); h, j - quantity of monomers in % of initial quantities.

Table 2. Legend: a - composition of initial monomer mixture (acrylonitrile-vinyl acetate); b - soap solution (1% MK); c - hydrocarbon phase in the presence of the emulsifier; d - solubility of monomers in %; e, h, l - mole%; f, i, m - wt.%; g, k - composition of the monomer mixture acrylonitrile - vinyl acetate; j, n - quantity of monomers in % of initial quantities; o - in 1% MK solution; p - in pure emulsifier.

[illegible]		[illegible]							
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
100—0	100—0	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
82.5—17.5	74.5—25.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
61.6—38.2	42.5—57.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
34.6—65.4	24.5—75.4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0—100	0—100	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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100—0	100—0	100—0	100—0	[illegible]	100—0	100—0	71.5	[illegible]	[illegible]
82.5—17.5	71.5—28.5	87.5—12.5	81.1—18.9	28.66	81—19	72.5—27.6	71.26	7.63	—
61.6—38.4	43.5—56.5	72.6—27.4	63.1—37.1	23.41	87.2—12.8	63.1—61.1	77.33	6.55	—
34.6—65.4	24.6—75.4	25.2—74.7	17.2—82.7	13.2	37.2—62.1	27.2—72.7	61.7	0.1	—
0—100	0—100	0—100	0—100	14.8	0—100	0—100	50.2	0.3	86.0

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DOROKHINA, I.S.; KLIMENKOV, V.S.; ABKIN, A.D.

Preparation of fiber-forming copolymers of acrylonitrile and vinyl acetate. Khim. volok. No.5:16-21 '62. (MIRA 15:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Acrylonitrile)
(Vinyl acetate polymers)

DOROKHINA, I.S.; KLIMENKOV, V.S.

Obtaining copolymers of acrylonitrile and vinyl acetate in concentrated aqueous solutions of sodium thiocyanate. Khim.volok. no.2:5-8 '63. (MIRA 16:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.
(Acrylonitrile) (Vinyl acetate) (Sodium thiocyanate)

DYURNBAUM, V.S.; KLIMENKOV, V.S.

Preparation of fiber-forming copolymers of acrylonitrile with 2-methyl-5-vinylpyridine in aqueous media and the production of fibers from them. Khim. volok. no.4:8-11 '63. (MIRA 16:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

S/183/63/000/002/001/003
A051/A126

AUTHORS: Zharkova, M.A., Rassolova, E.A., Kudryavtsev, G.I., Klimenkov, V.S.

TITLE: Production of fibers based on acrylonitrile (AN) and 2-methyl-5--vinylpyridine (MVP) copolymer

PERIODICAL: Khimicheskiye volokna, no. 2, 1963, 8 - 12

TEXT: This is the fourth article in a series of reports on the production of fibers based on AN copolymer in aqueous solutions of sodium thiocyanate. Studies were conducted on the properties of concentrated solutions of AN and MVP copolymer, in a 5% aqueous solution of sodium thiocyanate, based on previous data obtained by the authors to find the main law sequence of the copolymerization process. Conditions of the fiber formation of a given composition were investigated. The results of the experiments are submitted. The investigation of the copolymerization process of the AN and MVP system revealed certain differences to that of the acrylonitrile-α-vinylpyridine system (AN-α-VP). The AN and MVP copolymer has certain technological advantages. The reduced viscosities of these copolymer solutions make it possible to use more concentrated solutions

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Production of fibers based on acrylonitrile S/183/63/000/002/001/003
A051/A126

or polymers of a higher molecular weight. The AN-MVP system allows for a wider range of the polymer concentration change than the AN-α-VP system. The fibrous solution shows a tendency to structuralizing, especially when using copolymers with a specific viscosity above 2. Experiments showed the optimum specific viscosity to be 1.25 - 1.5. A slight temperature elevation of the solution reduces the latter. Investigated solutions of 0.8, 1.25, 1.48 initial specific viscosity, left to stand, did not gelatinize at 25°C, 70°C, even when left for 1,000 h. The homogeneity of the fibrous solutions, after the end of the dehydration process, remained constant. There are 5 figures and 1 table.

ASSOCIATION: VNIIV

SUBMITTED: June 12, 1962

Card 2/2

L 17481-63 EWP(j)/EWT(m)/BDS AFFTC/ASD Pc-4 RM

ACCESSION NR: AP3004759 S/0183/63/000/004/0018/0020

60

AUTHORS: Michurina, G. A.; Zverev, M. P.; Bychkov, R. A.; Klimenkov, V. S.

TITLE: Formulation of polypropylene fibers from a polymer solution

SOURCE: Khimicheskiye volokna, no. 4, 1963, 18-20

TOPIC TAGS: polypropylene, polymer

ABSTRACT: Authors studied several polypropylene properties in solution, their dependence upon the structure of the compound and the temperatures which are within the limits of fiber formulation. The dependence of viscosity in the polymer-solvent system upon the temperature and the intensity of the shift has also been studied. High-boiling hydrocarbons with boiling points between 200 and 250C were used as solvents. Various polymeric structures were separated by the method described by I. Natta et al (J. Am. Chem. Soc., 77, 1955, 1708). It was found that the polypropylene solutions or atactic and stereoblock-copolymer structures become fluid at various shift intensities and temperatures. The viscosity of the system changes very little between 20 and 80C. However, it increases sharply with further increase in temperature, reaching a maximum at 120C. The crystalline structure of the polymer is destroyed between 150 and 160C. The

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L 17481-63
ACCESSION NR: AP3004759

results show that formulation of fibers from solutions of isotactic polymers can be accomplished only at temperatures close to the melting point of the polymer. The presence of solvent in the polypropylene fibers at the moment of extrusion results in the production of fibers with better physical and mechanical properties. Orig. art. has: 4 figures.

ASSOCIATION: VNIIV (All-Union scientific research institute for synthetic fibers)

SUBMITTED: 23Jul62 DATE ACQ: 20Aug63 ENCL: 00

SUB CODE: CH NO REF SOV: 004 OTHER: 003

Card 2/2

ACCESSION NR: AP4039348 S/0183/64/000/003/0015/0019

AUTHOR: Zverev, M. P.; By*chkov, R. A.; Kostina, T. F.; Klimenkov, V. S.

TITLE: Modification of polypropylene fiber properties.

SOURCE: Khimicheskiye volokna, no. 3, 1964, 15-19

TOPIC TAGS: polypropylene fiber, polypropylene polystyrene fiber, polypropylene polystyrene compatibility, IR spectra, deformation, mechanical strength, polymer amorphisation, structure breakdown, relative elongation, isotactic polypropylene, isotactic polystyrene, steric hindrance, structure mobility

ABSTRACT: The compatibility and properties of fibers made of mixtures of polypropylene and polystyrene were investigated. The densities of the polymer mixtures and the contraction were determined. IR spectra were critically examined and thermomechanical properties (deformation, strength) were determined. Increasing the amount of polystyrene in polypropylene caused partial amorphization of the polymers. The two polymers are not microcompatible, as shown by IR data and the presence of 2 melting regions in mixtures containing over 12 weight% polystyrene. The positive value of the amount of contraction is not a criteria for determining

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ACCESSION NR: AP4039348

microcompatibility. It is proposed that the geometric dimensions of the macromolecules of the initial polymers and the different dimensions of the secondary structures affect the amount of specific volume contraction. The formation of defects in the secondary structure of polystyrene is greater than in polypropylene; a small amount of the latter in polystyrene causes contraction of the polystyrene. Addition of small amounts of polystyrene caused the polypropylene structure to break down. Increasing the amount of polystyrene in polypropylene reduced the relative elongation and the mechanical strength of the latter due to the microheterogeneity of the system and the increased hardness of the polypropylene structure. Mixtures of isotactic polypropylene and polystyrene have satisfactory physical-mechanical properties if the amount of polystyrene does not exceed 12%. The energy of activation of creep increased with increase in polystyrene content; this was explained by steric hindrances created by the polystyrene which impede the mobility of the polypropylene structure. "In conclusion we consider it our obligation to thank K. S. Minsker for supplying us the isotactic polystyrene." Orig. art. has: 7 figures and 2 tables.

ASSOCIATION: None

Card 2/3

ACCESSION NR: AP4039348

SUBMITTED: 11Apr63

ENCL: 00

SUB CODE: OC

NO REF SOV: 008

OTHER: 003

Card 3/3

ZVEREV, M.P.; BYCHKOV, R.A.; KOSTINA, T.F.; KLIMENKOV, V.S.

Modification of the properties of polypropylene fibers. Khim. volok. no.3:15-19 '64. (MIRA 17:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

L 9625-66 EWT(m)/EWP(j)/T RM

ACC NR: AP6000277 SOURCE CODE: UR/0183/65/000/005/0013/0015

AUTHORS: Kudryavtsev, G. I.; Romanova, T. A.; Zharkova, M. A.; Klimenkov, V. S.

ORG: VNIIV

TITLE: Some chemical properties of cross-linked PAN (polyacrylonitrile) fibers

SOURCE: Khimicheskiye volokna, no. 5, 1965, 13-15

TOPIC TAGS: fiber, acrylonitrile, acrylonitrile polymer, acrylic resin, polymer, plastic, synthetic fiber

ABSTRACT: The paper presents results of a study on the change in reactivity towards saponification of chemically cross-linked PAN-fibers (polyacrylonitrile fibers). The study was undertaken to extend the presently available literature data on the physical properties of cross-linked PAN-fibers as compiled by G. I. Kudryavtsev, T. A. Matyash, M. A. Zharkova, and V. S. Klimenkov (Khim. volokna, No. 4, 13, 1961). The saponification kinetics at 100C of nitrile and other nitrogen-containing saponifiable groups in PAN-fiber cross-linked by hydrazine hydrate, hydroxylamine, and ammonium sulfide was studied. The degree of saponification was determined by measuring the amount of ammonia released by the fibers after treatment with 40% KOH solution. The experimental results are presented in tables and graphs (see Fig. 1). It was found that these results did not agree with the usual kinetic expressions.

Card 1/3 UDC: 677.494.745.32:061.3

L 9625-66

ACC NR: AP6000277

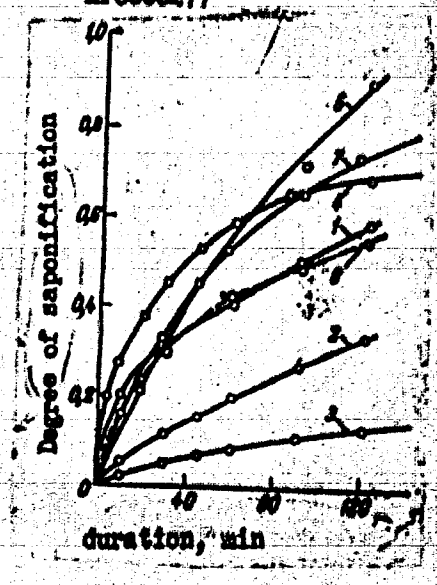

Fig. 1. Reaction kinetics of saponification of chemically cross-linked fibers: 1 - noncross-linked fiber; 2 - fiber cross-linked with hydrazine hydrate (weakly); 3 - the same (strongly cross-linked); 4 - fiber cross-linked with ammonium sulfide (optimum); 5 - the same (weakly); 6 - fiber cross-linked with hydroxylamine (strongly); 7 - the same (weakly).

The experimental results were processed according to the diffusion equation of Krenk

$$\frac{M_t}{M_\infty} = \frac{4}{r}\sqrt{\frac{D}{\pi}}\cdot\sqrt{T} = K\sqrt{T},$$

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L 9625-66

ACC NR: AP6000277

where M_t is the amount of reagent diffused into the cylindrical fiber in time t, M_∞ - the same for $t \rightarrow \infty$, r - the radius of fiber, and D - the coefficient of diffusion in cm^2/sec. From this expression, values for diffusion coefficient D were calculated. The results are tabulated. It is concluded that cross-linkage of fibers may lead to a change in the chemical properties of the fibers. The formation of a different polymeric layer on the fiber surface may give rise in some cases (hydrazineation) to an armoring effect, i.e., to a protection of the fibers against the action of corrosive agents (concentrated alkali). The authors thank Ye. A. Vasil'yeva-Sokolova for the fiber specimens cross-linked with ammonium sulfide. Orig. art. has: 2 tables, 1 graph, 1 photograph, and 2 equations.

SUB CODE: 07, 11/ SUBM DATE: 23Apr65/ ORIG REF: 009/ OTH REF: 003

Card 3/3

BONDARENKO, V.M.; ZVEREV, M.P.; KLIMENKOV, V.S.; BEREZKINA, T.A.; GERSHANOVICH, Yu.G.

Fiber formation from polypropylene. Khim. volok. no.6:10-13 '65. (MIRA 18:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna (for Bondarenko, Zverev, Klimenkov). 2. Kurskiy kombinat (for Bereskina, Gershanovich).

ACC NR: AP7000329 (A) SOURCE CODE: UR/0413/66/000/022/0077/0077

INVENTOR: Kudryavtsev, G. I.; Zharkova, M. A.; Romanova, T. A.; Klimenkov, V. S.

ORG: none

TITLE: Method of preparing modified polyacrylonitrile fiber. [announced by the All-Union Scientific Research Institute of Synthetic Fiber (Vsesoyuznyy nauchno-issledovatel'skiy institut iskustvennogo volokna)] Class 29, No. 188617

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 22, 1966, 77

TOPIC TAGS: polyacrylonitrile, hydrazine, synthetic material

ABSTRACT: A method of preparing modified polyacrylonitrile fiber is introduced. To raise the chemical and thermal resistance of the fiber, it is treated in a hydrazine solution and heat treated in an inert-gas medium at 150—200C. [Translation] [KP]

SUB CODE: 11/SUBM DATE: 17Sep64/

Card 1/1 UDC: 677.494.745.32:546.171.5

CZECHOSLOVAKIA UDC 616.24-003.65-057:(622):616.745-073.97

KLIMKOVA-DEUTSCHOVA, Eliska; SYNEK, Vladimir; FISAROVA, Marie; KROFTA, Vaclav; JANKOVA, Jarmila; Neurological Clinic, Med. Fac. Charles University (Neurologicka Klinika Lek. Fak. KU), Plzen, Chief (Prednostka) Docent Dr E. KLIMKOVA-DEUTSCHOVA; Department of Occupational Diseases, State Faculty Hospital (Oddeleni pro Choroby z Povolani Statni Fakultni Nemocnice), Plzen, Chief (Prednosta) Dr F. HUZL.

"Importance of Polyelectromyographic Examination of the Respiratory Muscles in Patients Suffering from Miner's Silicosis and Pneumoconioses."

Prague, Pracovni Lekarstvi, Vol 19, No 2, Mar 67, pp 49 - 51

Abstract /Authors' English summary modified/: 50 patients in various stages of siliconsis were examined polyelectromyographically. The findings were compared to X-ray photographs and to the vital lung capacity. In the stage of dust stigmatization and reticulation, the finding of normal and increased activity of the respiratory muscles prevail; high rate of decreased activity of these and an increased activity of auxiliary muscles are found in simple and

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KOLESNIKOVA, G.N.; DAVYDOVA, S.L.; [illegible]

The synthesis of metacrylates and acrylates containing aluminum, boron, germanium.

Report submitted for the 12th Conference on high molecular weight compounds devoted to monomers, Baku, 3-7 April 62

LUTSEVICH, P.A.; MONGALEV, G.F.; MIKHALEVICH, N.G.; ZINOVICH, K.F.; SAFRONENKO, A.P.; KLIMENKOV, P.A.; GAYDUKEVICH, N.M.; SILIN, M.S.; BRAZOVSKIY, P.V.; KOVPAK, M.D.; MELESHKEVICH, O.A.; KAMENTSEVA, V.N.; KULIKOVSKIY, A.V.; TARAYKOVICH, P.I.; ALEYNIKOV, G.A.; SHMULEVICH, Sh.S.; GRACHEVA, K.I.; NIKOLAYEVA, Yu.N.; VOLOKHOV, M.A.; DOMASHEVICH, O., red.; KARKLINA, E., red.; ZUYKOVA, V., tekhn. red.

[Manual for livestock raisers] Spravochnik zhivotnovoda. 2., dop. i perer. izd. Minsk, Gos.izd-vo sel'khoz.lit-ry BSSR, 1963. 462 p. (MIRA 16:8)

1. Glavnyy zootekhnik Upravleniya nauki Ministerstva sel'skogo khozyaystva Belorusskoy SSR (for Safronenko).
(Stock and stockbreeding)

SAZYKIN, Yuriy Vasil'yevich; MITROPOL'SKIY, Aleksandr Grigor'yevich; SHEMETKOV, Mikhail Filippovich; KURITSYNA, Nina Mikhaylovna; TORKAYLO, I., red.; KLIMENKOVA, Ye., red.; KALECHITS, G., tekhn.red.

[Beekeeper's manual] V pomoshch' pchelovodu. Minsk, Gos.izd-vo BSSR. Red. sel'khoz.lit-ry, 1959. 154 p. (MIRA 13:4)
(Bee culture)

KLIMENKOVA, Ye.T.; SAZYKIN, Yu.V.; SHEMETKOV, M.F.; SULKOVSKIY, M.I.; KOSTOGLODOV, V.F.; SHUL'GA, K., red.; ZUYKOVA, V., tekhn. red.

[Handbook for beekeepers] Spravochnik pchelovoda. Minsk, Gos.izd-vo sel'khoz. lit-ry BSSR, 1963. 360 p. (MIRA 16:4)

(Bee culture)

PIRKIS, L.N.; BONDAR', M.I.; KLIMENOK, B.V.

Carbamide deactivation in the carbamide dewaxing of diesel fuels. Izv. vys. uchob. zav.; neft' i gaz 7 no.2:45-48 '64. (MIRA 17:10)

1. Ufimskiy neftyanoy institut.

Tubular laboratory furnace for the study of catalytic processes by the fixed method. B. V. Kiluanuk (Moscow Petroleum Inst.). *J. Applied Chem.* (U.S.S.R.) 19, 1381-2(1946)(In Russian).—A tube of Mo glass of 2.5 cm. diam. had an outer sheath for the thermocouple, 3 side tubes at the upper end for introduction of the catalyst, the starting material, and, if necessary, a gas (air), and a three-way stopcock at the lower end for removal of the products. The tube is wound uniformly with 5.5-6.0 m. of 0.3-1.0 mm. platinum wire over a length of 80 cm.; it can be heated to 800° with 240-300 w. and reaches final temp. in 20-30 min. or longer 2.5-3 hrs. with the lowest heater. Between 300 and 600° the temp. is uniform over a length of about 15 to about 35 cm. from the upper end.

CA

Electron-microscopic investigation of the coke formed on aluminosilicate catalysts in the cracking of hydrocarbons. B. V. Khmurych and A. B. Shekhter (Inst. Phys. Chem. Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 84, 149-50(1952).—Electron-microscopic pictures were taken of the same spot of the catalyst in the course of cracking of C_8H_{18} and of 2,2,4-trimethylpentane at 500°. A change of structure is noticeable after 20 min. Porosity disappears, with the pores becoming clogged up with a C deposit. No new discrete particles are seen; rather, the surface appears to be uniformly coated. The mean thickness of the coat, after 20 min., is estd. to 100 A., and after 2 hrs., to about 200 A. At 500°, in 20 min., with C_8H_{18}, the amt. of coke deposited is about 2.5 mg./g. catalyst; with heptane, in 2 hrs. at 500°, 6 mg./g. catalyst. For graphitic packing, this 6 mg. is sufficient to cover only about 10 sq. m. with a unimol. layer. As, on the other hand, the specific surface area of this catalyst is about 600 sq. m./g., and the deposit is evidently multimol., it follows that the deposition of coke takes place only on a small fraction of the catalyst surface. N. Thon

KLIMENOK, B. V.

USSR/Chemistry - Isotopes Aug 52

"Preparation of Acetylene and Ethane Tagged With Radioactive C^{14}," N. P. Keyyer, B. V. Klimenok and G. V. Isagulyants, Inst of Phys Chem, Acad Sci USSR

"DAN SSSR" Vol 85, No 5, pp 1029-1031

Radioactive acetylene was prepd from barium carbide contg C^{14} and water. Radioactive ethane was prepd from the tagged acetylene by means of hydrogenation over a Ni catalust at room temp. Submitted by Acad A. N. FRUM 12 Jun 52

PA 239T13

KLIMENOK, B. V.

USSR/Chemistry - Isotopes 11 Sep 52

"The Synthesis of Ethylene Tagged With C^{14}," L. Ya. Margolis, B. V. Klimenok, O. A. Golovine, Inst of Phys Chem, Acad Sci SSSR

"Dok Ak Nauk SSSR" Vol 86, No 2, pp 313-315

Ethylene, tagged with C^{14}, was prepd by reducing acetylene at low (10^{-5}mm) pressures and at atm pressure using $CrCl_3$ in HCl. The use of the latter insures the complete reduction of acetylene into ethylene. Large quantities of radiactive ethylene are prepd more readily at atm pressure. If the radiactive ethylene is to undergo prolonged storage, the authors recommen converting it to ethylebromide, which may be reconverted readily to ethylene with metallic zinc. Presented by Acad A. N. Frumkin 10 Jun 52

PA 235T25

KLIMENOK B. V.; ISAGULYANTS G. V.; and KEYER N. P.

Preparation of Acetylene and Ethano Tagged with Radioactive Carbon C^{14}., Page 1566, Sbornik statey po obshchey khimii (Collection of Papers on General Chemistry), Vol II, Moscow-Leningrad, 1953, pages 1630-1636.

Inst of Physical Chemistry, Acad Sci USSR

KLIMENOK, B. V.

(3)

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4412. INVESTIGATION OF CHEMICAL REACTIONS IN CATALYTIC CRACKING OF ISO-OCTANE AND N-HEXANE BY KINETIC METHOD. Klimenok, B.V., Ingerov, K.A. and Gordeeva, V.A. (Dokl. Akad. Nauk SSSR (Rep. Acad. Sci. U.S.S.R.), 11 Jan, 1954, vol. 94, (2), 281-284). Cracking and fractionation were carried out in laboratory plant, which is illustrated, and the primary reactions were disclosed by measuring the products for different reaction times. The chief primary reaction was the rupture of one C-C bond to form one paraffin and one olefin molecule. The usual point of rupture was between the second and third carbon atoms of iso-octane and between the third and fourth of n-hexane. (L).

..-13-56

5

Preparation of methane labeled with carbon-14. B. A. Andreev, B. V. Klimenok, and M. M. Sakharov. *Doklady Akad. Nauk* [illegible] 100, 9 (1954).—$BaC^{14}O_3$ treated with H_2SO_4 gave CO_2, which was circulated with H_2 over the activated catalyst by means of an electromagnetic circulating device, the reaction being run at about 315° (initially 340°). The poisoning of the catalyst by Hg was prevented by Au-wire tampons inserted in the connecting tubes. The product was collected in a cold trap. The catalyst was prepd. by grinding together 2–4 g. Ru with 10 g. asbestos and activated by boiling in 6M HNO_3 10–15 min., then thoroughly washing and drying 30 min. at 400°. The yield of CH_4 was 85–7% both gravimetrically and radiometrically. O. [illegible]

KLIMENOK, B.Y.

Exchange of carbon between hydrocarbons in the presence of aluminosilicate catalysts. B. Y. Klimenok, N. A. Andreev, O. V. Kelov, and M. M. Sokolov. *Doklady Akad. Nauk S.S.S.R.* 99, 101-3(1954).—A method is described for testing the C^{14} exchange between hydrocarbons in the presence of aluminosilicates. CH_4, 160 cc. with radioactivity of 80 μc. and 800 cc. of C_2H_4 were allowed to react over 100 cc. of aluminosilicate catalyst (I) in a glass lab. cracking app. at 500° for 1 hr. The product was sepd. into C_2H_4 and C_2H_4. After purification the CH_4 had a radioactivity of 0.62 μc. (specific radioactivity 0.016 μc./mol.), 0.78% of the original. Similarly with C_2H_4, 400 cc. mixed with $C^{14}H_4$, 232 cc. with radioactivity 300 μc., allowed to react at 500° with I for 47.5 min., and purified had a radioactivity of 0.35 μc. (0.17% of the original). Radioactive exchange between hydrocarbons occurs only to a slight extent. A method for measuring the radioactivity is described.

David S. Gifford

KLIMENOK, B. V.

USSR/Chemistry - Catalytic Cracking

Card 1/2

Authors : Audreyev, E. A., Andianova, T. I., Klimenok, B. V., Krylov, O. V., Roginskiy, S. Z., Memb. Corres. of Acad. of Sc. USSR; and Sakharov, M. M.

Title : Radio-chemical investigation of secondary reactions of catalytic cracking of hydrocarbons

Periodical : Dokl. AN SSSR, 96, 781 - 784, June 1954

Abstract : The radio-chemical methods of investigating the secondary reactions of catalytic cracking, consist in the simultaneous introduction into the reactor of the hydrocarbon to be cracked, plus one of the cracking products marked with radioactive carbon C^{14} and, consequent, radiometric analysis of the basic cracking products. Experiments show, that the conversion of the hydrocarbon molecules, in conditions of catalytic cracking, are not completed during one process

Dokl. AN SSSR, 96, Ed. 4, 781 - 784, June 1954 (Additional Card)

Card 2/2

Abstract : of adsorption on the surface of the catalyst. The primary products of hydrocarbon molecule decomposition become desorbed in the gaseous phase. Three references. Tables.

Institution : ...

Submitted : March 9, 1954

CO_2 formation during cracking with