USSR / Microbiology. Microbes, Pathogenic to Man and Animals. General Problems. F

Abs Jour : Ref Zhur - Biologiya, No 5, 1959, No. 19541

Author : Gordina, P. V.; Lazurenko, I. S.; Remova, T. N.; Silakova, A. V.; Tsetkov, V. S.

Inst : Not given

Title : The Reaction of Whooping Cough and Whooping Cough-Diphtheria Vaccine

Orig Pub : Zh. mikrobiol., epidemiol. i immunobiol., 1958, No 6, 21-26

Abstract : No abstract given

Card 1/1

LAZURENKO, I. S.

Specific Prevention of Pertussis, published by MEDGIZ, MOSCOW, 1958
ed. by M. S. Zakharova, Dir. Lab. of Specific Prophylaxis of Pertussis, Inst. Epidem. and Microbiol. im N.F.Gamaleya, Acad. Medical Sci. USSR

At the scientific conference on the specific prophylaxis of pertussis conducted by the Institute of Epidemiology and Microbiology im. N. F. Gamaleya , Acad. Medical Sci. USSR, together with other Institutes and medical establishments, papers were read by the following: (See Table of Contents)

GORDINA, R.V., LAZURENKO, I.S., REMOVA, T.N., SILAKOVA, A.V., TSVETKOV, V.S.

Reactivity induced by whooping cough and whooping cough-diphtheria vaccines. Zhur.mikrobiol.epid. i immun. 29 no.6:21-26 Je '58 (MIRA 11:7)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR i Instituta pediatrii AMN SSSR.

(WHOOPING COUGH, immunology,
whooping cough & whooping cough-diphtheria vaccines, eff. (Rus))
(DIPHTHERIA, immunology,
whooping cough-diphtheria vaccine, eff. (Rus))
(VACCINES AND VACCINATION,
whooping cough & whooping cough-diphtheria vaccines (Rus))

LAZURENKO, S.R., inzh.; LAPINSKIY, Ye.I., inzh.; CHUDAKOV, V.D., inzh.

Analyzing the comparative studies of industrial tractors. Trakt. i sel'khozmash. no.7:13-14 Jl '64. (MIRA 18:7)

1. Chelyabinskiy traktornyy zavod.

LAZUREVSKY, L.

"Chemical Study of Fritillaria Raddeana Rgl. " Sadykov, A. and Lazurevsky, L. (p. 163)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1943, Volume 13, no. 3.

LAZURINA, V.L.; MATVEYEVA, I.V.

Technical station in a school. Fiz.v shkole 20 no.4:90-92 Jl-Ag '60. (MIRA 13:8)

1. 458-ya srednyaya shkola, Moskva.
(Technical education)

LAZURKEVICH, Z. V.

Third All-Union Conference on Electron Microscopy. Mikrobiol. zhur. 23 no.3:76-77 '61. (MIRA 15:7)

(ELECTRON MICROSCOPY--CONGRESSES)

LAZURKEVICH, Z.V. [Lazurkevych, Z.V.]

Methods for raising microbiologically sterile animals and their use in scientific experiments. Mikrobiol.zhur. 24 no.2: 60-64 '62. (MIRA 15:12)
(LABORATORY ANIMALS) (MICROBIOLOGY)

KORDYUM, V.A.; LAZURKEVICH, Z.V.; ZHAROVA, L.G. [Zharova, L.H.]

Simple method for checking bacteriological purity of cultures of unicellular algae and detecting bacterial mutants. Mikrobiol. zhur. 24. no.4: 61-63 '62. (MIRA 16:5)
(ALGAE--CULTURES AND CULTURE MEDIA)
(BACTERIOLOGY--TECHNIQUE)

KORDYUM, V.A.; EYNOR, L.O.; LAZURKEVICH, Z.V.; CHERNYKH, S.I.

Characteristics of respiration of the thermophilic variant of Chlorella vulgaris. Dop. AN URSR no.6:665-668 '63. (MIRA 17:9)

1. Institut mikrobiologii AN UkrSSR i Institut botaniki AN UkrSSR. Predstavleno akademikom AN UkrSSR D.K.Zerovym.

KORDYUM V.A. [Kordium, V.A.]; LAZURKEVICH, Z.V. [Lazurkevych, Z.V.]; ZHAROVA, L.S. [Zharova, L.S.]

Possibility of using a temperature-gradient device for studying cardinal temperature points in the growth of micro-organisms. Mikrobiol.zhur. 27 no.2:83-86 '65. (MIRA 18:5)

1. Institut mikrobiologii i virusologii AN UkrSSR.

LAZURKIN, V.M.

Geology of the lower Lena (Lena Depression). Trudy Nauch.-issl. inst. geol. Arkt. 81:461-483 '57. (MIRA 11:5)
(Lena Valley--Geology)

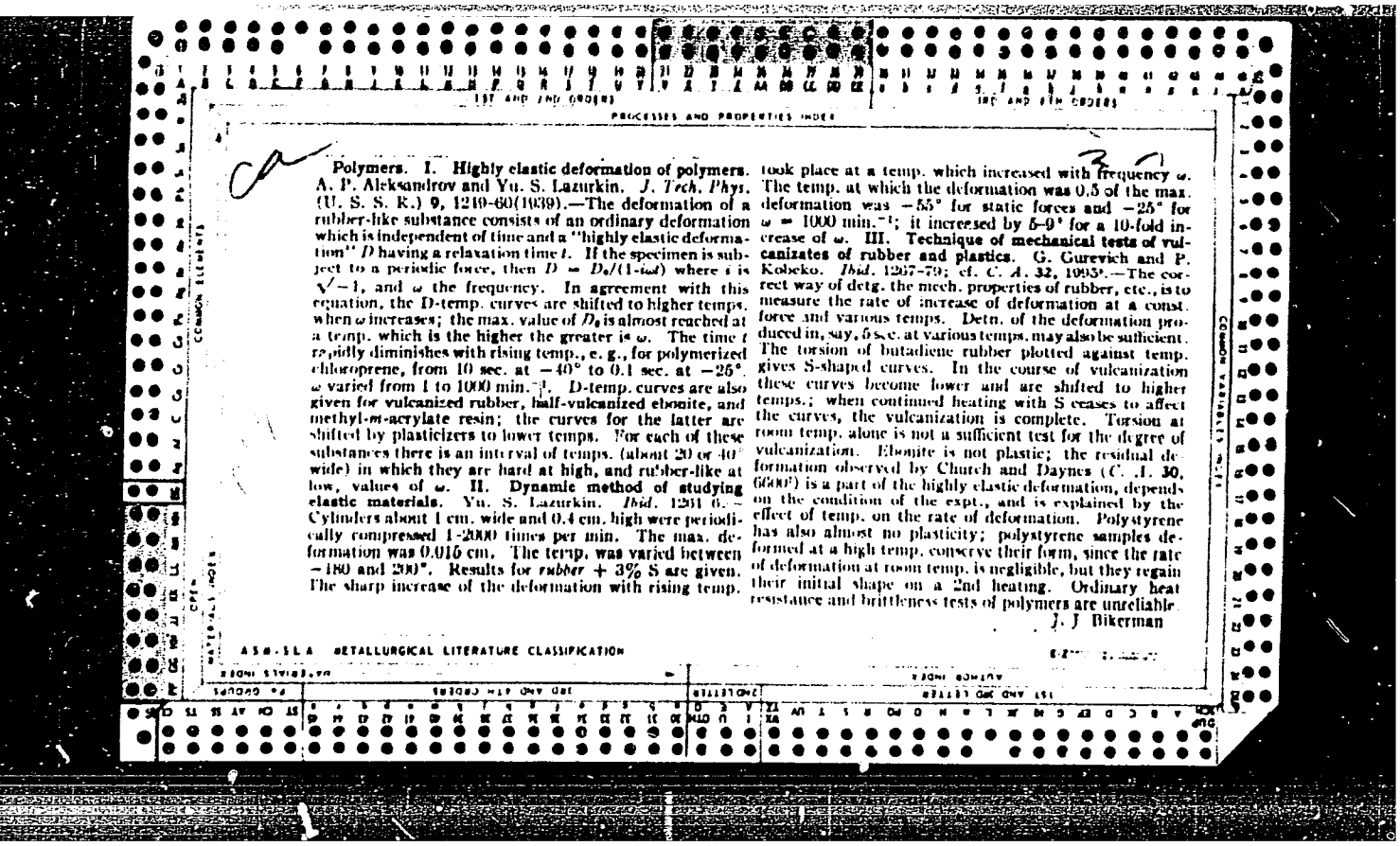
LAZURKIN, V.M.

Geological interpretation of individual structures photographed with a standard camera. Inform.biul.NIIGA no.11:67 '58.
(MIRA 12:6)

(Photographic interpretation)

LAZURKIN, V.M.

New data on the geology of the northern Verkhoyansk Range. Inform. biul.NIIGA no.14:50-58 '59. (MIRA 13:7)
(Verkhoyansk Range--Geology)

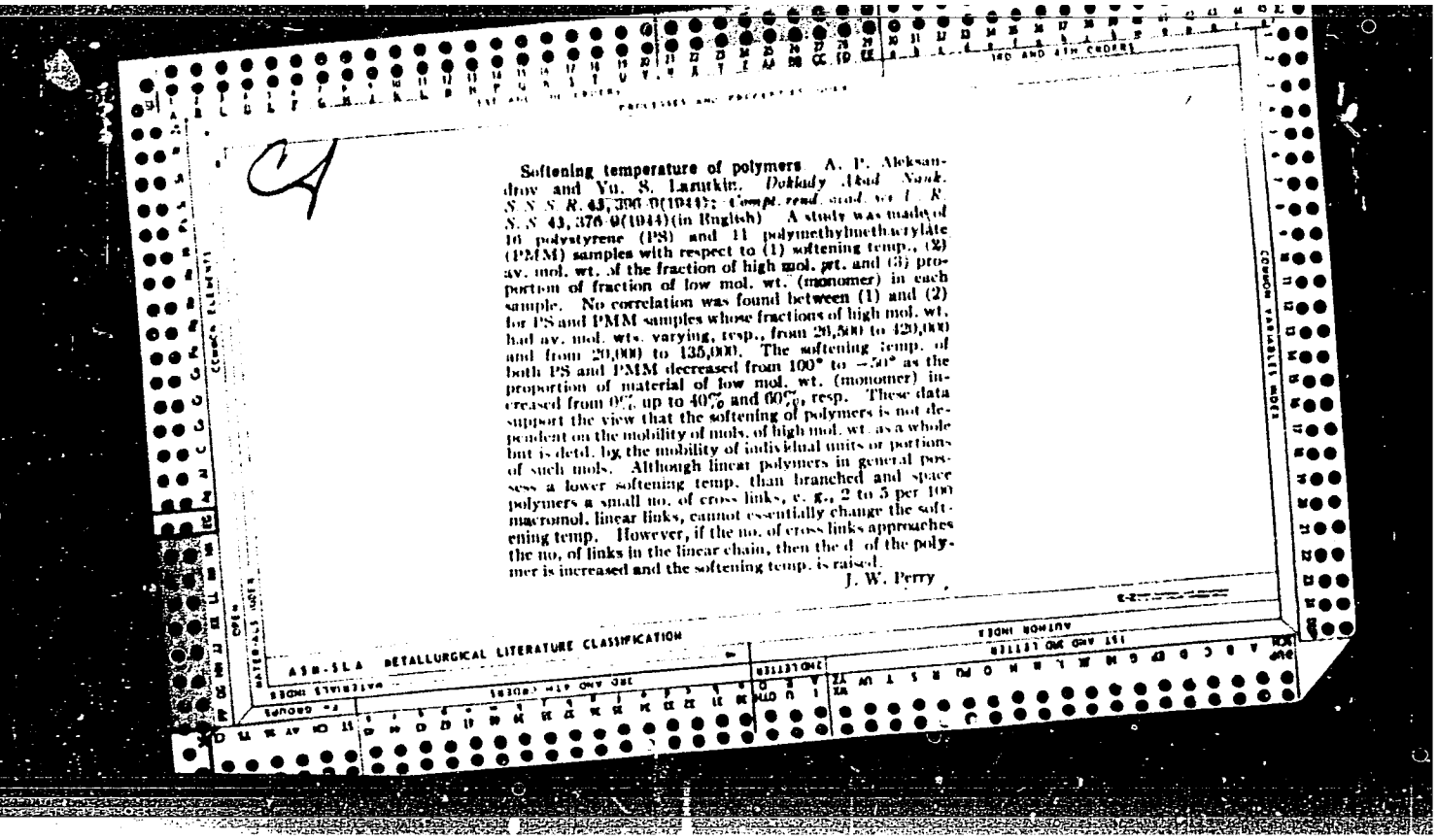


PROCESSES AND PROPERTIES INDEX

Polymers. I. Highly elastic deformation of polymers. A. P. Aleksandrov and Yu. S. Lazurkin. *J. Tech. Phys.* (U. S. S. R.) 9, 1249-60(1939).—The deformation of a rubber-like substance consists of an ordinary deformation which is independent of time and a "highly elastic deformation" D having a relaxation time t. If the specimen is subject to a periodic force, then $D = D_0/(1-i\omega t)$ where i is $\sqrt{-1}$, and ω the frequency. In agreement with this equation, the D-temp. curves are shifted to higher temps. when ω increases; the max. value of D_0 is almost reached at a temp. which is the higher the greater is ω. The time t rapidly diminishes with rising temp., e. g., for polymerized chloroprene, from 10 sec. at −40° to 0.1 sec. at −26°. ω varied from 1 to 1000 min.$^{-1}$. D-temp. curves are also given for vulcanized rubber, half-vulcanized ebonite, and methyl-*m*-acrylate resin; the curves for the latter are shifted by plasticizers to lower temps. For each of these substances there is an interval of temps. (about 20 or 40° wide) in which they are hard at high, and rubber-like at low, values of ω. **II. Dynamic method of studying elastic materials.** Yu. S. Lazurkin. *Ibid.* 1261-6.—Cylinders about 1 cm. wide and 0.4 cm. high were periodically compressed 1-2000 times per min. The max. deformation was 0.016 cm. The temp. was varied between −180 and 200°. Results for *rubber* + 3% S are given. The sharp increase of the deformation with rising temp. took place at a temp. which increased with frequency ω. The temp. at which the deformation was 0.5 of the max. deformation was −55° for static forces and −25° for ω = 1000 min.$^{-1}$; it increased by 5–9° for a 10-fold increase of ω. **III. Technique of mechanical tests of vulcanizates of rubber and plastics.** G. Gurevich and P. Kobeko. *Ibid.* 1267-79; cf. *C. A.* 32, 1995⁹.—The correct way of detg. the mech. properties of rubber, etc., is to measure the rate of increase of deformation at a const. force and various temps. Detn. of the deformation produced in, say, 5 s.c. at various temps. may also be sufficient. The torsion of butadiene rubber plotted against temp. gives S-shaped curves. In the course of vulcanization these curves become lower and are shifted to higher temps.; when continued heating with S ceases to affect the curves, the vulcanization is complete. Torsion at room temp. alone is not a sufficient test for the degree of vulcanization. Ebonite is not plastic; the residual deformation observed by Church and Daynes (*C. A.* 30, 6600) is a part of the highly elastic deformation, depends on the condition of the expt., and is explained by the effect of temp. on the rate of deformation. Polystyrene has also almost no plasticity; polystyrene samples deformed at a high temp. conserve their form, since the rate of deformation at room temp. is negligible, but they regain their initial shape on a 2nd heating. Ordinary heat resistance and brittleness tests of polymers are unreliable.

J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Softening temperature of polymers. A. P. Aleksandrov and Yu. S. Lazurkin. *Doklady Akad. Nauk. S.S.S.R.* 43, 396-9(1944); *Compt. rend. acad. sci. U. R. S. S.* 43, 376-9(1944)(in English). A study was made of 10 polystyrene (PS) and 11 polymethylmethacrylate (PMM) samples with respect to (1) softening temp., (2) av. mol. wt. of the fraction of high mol. wt. and (3) proportion of fraction of low mol. wt. (monomer) in each sample. No correlation was found between (1) and (2) for PS and PMM samples whose fractions of high mol. wt. had av. mol. wts. varying, resp., from 20,500 to 420,000 and from 20,000 to 135,000. The softening temp. of both PS and PMM decreased from 100° to −50° as the proportion of material of low mol. wt. (monomer) increased from 0% up to 40% and 60%, resp. These data support the view that the softening of polymers is not dependent on the mobility of mols. of high mol. wt. as a whole but is detd. by the mobility of individual units or portions of such mols. Although linear polymers in general possess a lower softening temp. than branched and space polymers a small no. of cross links, e. g., 2 to 5 per 100 macromol. linear links, cannot essentially change the softening temp. However, if the no. of cross links approaches the no. of links in the linear chain, then the d. of the polymer is increased and the softening temp. is raised.

J. W. Perry

35. Synth. Rub. & Allied Prod.

S.C.b.

Strength of amorphous and crystallising rubber-like polymers. A. P. ALEKSANDROV and V. S. LAZURKIN (Doklady Akad. Nauk. U.S.S.R., **48**, 308 11; Compt. Rend. Acad. Sci. U.S.S.R., **1944**, **45**, 291 4; Chem. Abs., **1945**, **39**, 5114). – Rubber-like elastomers can be grouped in two classes, depending on the effect of fillers on tensile strength: (i) Sodium polymerised isoprene, polybutadiene, Buna N, Buna S, and methyl rubber have inherently low tensile strengths (15 40 kg./sq. cm.) which can be increased up to about 200 kg./sq. cm. by incorporation of fillers. (ii) Natural rubber, chloroprene, Butyl rubber have inherently high tensile strengths (150 350 kg./sq. cm.) which are not greatly increased by fillers. The different response to fillers may be due to the fact that stretching of the unfilled elastomers induces crystallisation only in members of the second group, which thereby undergo a form of "self-loading." This viewpoint is supported by the fact that heating stretched rubbers of the second group above the m.p. of the crystallites causes a sharp drop in tensile strength. The mechanism whereby active fillers acts to equalise strains in stressed elastomers is discussed.
3S6634241

1944

LAZURKIN, Yu.S.; FOGEL'SON, R.L.

Nature of the large deformations of high-molecular compounds in the vitreous state. Zhur.Tekh.Fiz. 21,267-86 '51. (MLRA 4:3)
(CA 47 no.17:8468 '53)

1. Inst. Phys.Problems, Acad.Sci. U.S.S.R., Moscow.

USSR/Physics - Plastics Mar 51

"Nature of Strong Deformation of High-Molecular Substances in the Vitreous State," Yu. S. Lazurkin, R. L. Fogelson, Inst Phys Problems, Acad Sci USSR

"Zhur Tekh Fiziki" Vol XXI, No 3, pp 267-286

Characteristic of plastics is temp of brittleness. (cf. Boyer and Spenser, "J Applied Phys" 15, 398, 1944; Uberreiter, "J Chem Phys" 18, No 4, 399, 1950). Studies phenomena of forced elasticity of high-mol substances and finds they obey formula: $\tau = \tau_0 \cdot \exp (U - a\sigma)/kT$ giving relation between relaxation time (τ) of elastic deformation and temp (T) and tension (σ).
LC

180T110

LAZURKIN, Yu. S.

Dissertation: "Mechanical Properties of Polymers in a Vitreous State." Dr Phys-Math Sci, Inst of Physical Problems imeni S. I. Vavilov, Acad Sci USSR, 29 May 54. Vechernyaya Moskva, Moscow, 20 May 54.

SO: SUM 284, 26 Nov 1954

LAZURKIN, Y. S. and USHAKOV, S.P.

"Mechanical properties of buradiene styrene polymers and butadiene ntirile polymers," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 29 Jan-2 Feb 57, Moscow, Vavilov Inst.

B-3,084,395

LAZURKIN, Yu. S. and KUVSHINSKIY, Ye. V.

"On the Qualities of Polymeric Glass and the Mechanics of Glass Formation of High Molecular Combinations,"

Inter-vuz Scientific Conference (Mezhvuzovskiye nauchnyye Konferentsii)

Vestnik Vysshey Shkoly, 1957, # 9 pp. 73 - 76 (USSR)

Abst: In January 1957, the Second All-Union Conference on Photosynthesis took place, organized by the institute of Plant Physiology of the Academy of Sciences, USSR, and by the Facultys of Soil-Biology of the Moskva University. About 700 representatives of 130 scientific-research institutes, vuzes and ministeries were present. The introductory report was made by Academician A. L. Kursanov who described the development of photosynthesis during the last ten years and invited the scientists to concentrate their work on the application of radioactive and stable isotopes. Nearly 100 reports were read: 13 on photochemistry, 9 on the investigation of chloroplast structure, 19 on the investigation of pigments, 9 on the photosynthesis of water plants, bacteria, etc.

LAZURKIN, Yu. S. and USHAKOV, G. P.

"The Effect of Radiation on the Properties of Silicone Resins"

Truly Transactions of the First Conference on Radioaction Chemistry, Moscow,
Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscow

LAZURKIN, V.S.

(Institute of Atomic Energy, Acad. Sci. USSR, Moscow)

"Cold-Drawing of Glass-Like and Crystalline Polymers,"
paper submitted at Soviet High-Polymers, Itnl. Conference, Nottingham, Uk, 21-24 July 1958.

E-3,109,661

LAZURKIN, Yu S

89-3-6/30

AUTHORS: Lazurkin, Yu. S. , Ushakov, G. P.

TITLE: The Effects of γ-Irradiation on the Properties of Silicon Rubbers (Vliyaniye oblucheniya na svoystva silikonovykh rezin)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 3, pp. 275 - 280 (USSR)

ABSTRACT: Silicon rubbers are subject to a number of changes in consequence of γ-irradiation; these changes are caused by the "radiation sewing". Young's modulus increases linearly with the dosage of irradiation; this is the case up to dosages originating from 150 - 200 mg of Ra-equivalent. The vitrification temperature (-120 to -125°C) practically does not change in irradiations up to 100 mg of Ra-equivalent and increases to (-100 to -115°C) when the irradiation is carried out by a 270 mg Ra-equivalent. In the case of "radiation sewing" the velocity of crystallization decreases. The melting temperature drops from -35°C at the starting point to -55°C when the rubber was irradiated by a 40 mg Ra-equivalent. An irradiation with a 100 mg Ra-equivalent suppresses crystallization almost completely. By this a hard rubber is obtained,

Card 1/2

89-3-6/30

The Effect of γ-Irradiation on the Properties of Silicon Rubbers

the modulus of which amounts to 200 - 250 kg/cm^2, and which shows great resistance to cold.(Tg $\approx$ -125°C). Its extension in breaking is, however, very small (15 - 20 %), its strength being 30 - 40 kg/cm^2. There are 5 figures, 2 tables, and 12 references, 6 of which are Slavic.

SUBMITTED: May 25, 1957

AVAILABLE: Library of Congress

1. Silicon rubbers-Properties-γ-Irradiation effects

Card 2/2

Lazurkin, Yu. S.

AUTHORS: Varshavskiy, Ya. M., Vasil'yev, G. Ya., Karpov, V. L., Lazurkin, Yu. S., Petrov, I. Ya., 20-2-31/60

TITLE: On Isotopic Exchange Between Gaseous Hydrogen and Solid Polymers Under the Action of Nuclear Radiation (Ob izotopnom obmene mezhdu gazoobraznym vodorodom i tverdymi polimerami pri deystvii yadernykh izlucheniy)

PERIODICAL: Doklady AN SSSR, 1958, Vol. 118, Nr 2, pp. 315-316 (USSR)

ABSTRACT: In the case of irradiation of polymeric hydrocarbons gaseous products, which mainly conatain hydrogen, are separated out. The explanation of the problem of the reversibility of the corresponding process, i.e. of the possibility of the penetration of hydrogen from the gaseous phase into the molecules of the polymer during the irradiation would be desirable. The authors tried to explain this problem by the method of the marked atoms, using deuterium; they studied the exchange of isotopes between the gaseous deuterium and various solid polymers in the radiation field of a nuclear rector. The following polymers of the vinyl-series were examined: Polyethylene, polypropylene, polystyrol, divinyl-caoutchouc, polymethyl-metacrylate. The performance of

Card 1/3

the measurements is described shortly. A table illustrates the effectively found percentage of deuterium in the above given polymerics after the irradiation. The results of various parallel measurements differ at the most for 0,02 per cent. On occasion of all these polymers it was shown in particular that the penetration of deuterium is not connected with the adsorption of gaseous deuterium. The control tests, which were made for this purpose, showed that, if there is no radiation, no dueterium was found in the polymer. The effects, observed here, obviously are cuased by a chemical interaction between the molecules of the polymer and the molecules of the deuterium on occasion of the action of deuterium. The highest quantity of deuterium penetrated into polyethylene and into polypropylene. In polybutadiene and polystyrol the exchange is some what slower, whereas in the case of polymethyl-metacrylate no signs were noticed of an exchange. At present a mechanism with the formation of free radicals, is assumed for polyethylene: $R\text{-}CH_2\text{-}R_1\text{-}\sim \rightarrow R\text{-}\dot{C}H\text{-}R_1 + H$. Probably the deuterium penetrates in the case examined here because of a reaction between a polymeric radical and a deuterium molecule into the polymer: $\dot{R} + D_2 \longrightarrow RD + D$, $RH + D \longrightarrow \dot{R} + HD$. The equili-

brium concentration of the solved deutrium in the polymer has the order of 10^{-6} mol/g.The penetration of deuterium into the molecules of the polymers may, to some degree, also be caused by exchange of isotopes between the gaseous dueterium and the free radicals. There are 1 table, and 5 references, 4 of which are Slavic.

PRESENTED: June 24, 1957, by V.A. Kargin, Academician

SUBMITTED: June 24, 1957

AVAILABLE: Library of Congress

5(4) SOV/20-122-6-27/49

AUTHORS: Tsvetkov, Yu. D., Bubnov, N. N., Makul'skiy, M. A., Lazurkin, Yu. S., Voyevodskiy, V. V., Corresponding Member, AS USSR

TITLE: The Investigation of the Spectra of the Electron Paramagnetic Resonance of Some Polymers Which Were Irradiated at 77°K (Issledovaniye spektrov e.p.r. nekotorykh polimerov, obluchennykh pri 77°K)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 6, pp 1053-1056 (USSR)

ABSTRACT: The authors carried out the above investigation for the purpose of solving several problems connected with the structure and chemical behavior of organic radicals in the solid phase as well as with the mechanism of chemical transformations in solid organic bodies under the influence of ionizing radiation. Polyethylene, polyvinyl chloride, "Teflon" (polyethylene tetrafluoride), polydimethyl siloxane, polyisobutylene, polymethyl methacrylate and natural rubber were investigated. Carrying out of the experiments is described in short. At 77°K a very intensive signal of paramagnetic electron resonance

Card 1/3

The Investigation of the Spectra of the Electron Paramagnetic Resonance of Some Polymers Which Were Irradiated at 77°K

with a g-factor near 2.0036 was observed in all samples. After "thawing" of the sample down to room temperature the signal was in all cases found to change. In some cases, the signal vanished completely as a result of "thawing" (polyisobutylene, polydimethyl siloxane, natural rubber). In the case of other materials the character of the signal and its fine structure changed considerably. A comparison of all data obtained gave the following result: The character of the spectra obtained by investigating not "thawed" samples can be fully explained by the assumption that the predominant primary chemical act in irradiation is the stripping of one of the C-H bonds in the main chain (or in the absence of a main chain the stripping of a C-H bond in a lateral chain). The spectrum of paramagnetic electron resonance recorded at 77°K consists of 6 components. The even number of the spectrum in this as well as in other cases is connected with the formation of the radical $\sim CH_2-\dot{C}H-CH_2\sim$. The authors then discuss several details, especially such as concern the investigation of Teflon. By the irradiation of Teflon at low temperatures it is possible

The Investigation of the Spectra of the Electron Paramagnetic Resonance of Some Polymers Which Were Irradiated at 77°K

to obtain materials with fully satisfactory mechanical properties. These substances contain a large quantity (~0.1 %) of free radicals. There are 2 figures and 7 references, 4 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute for Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: July 24, 1958

21 (8), 15 (9)

AUTHORS: Mokul'skiy, M. A., Lazurkin, Yu. S., Fiveyskiy, M. B., Kozin, V. I. SOV/20-125-5-15/61

TITLE: The Reversible Radiation-mechanical Effects in Polymers (Obratimyye radiatsionno-mekhanicheskiye effekty v polimerakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 5, pp 1007-1010 (USSR)

ABSTRACT: By the action of an ionizing radiation the mechanical properties of polymers may be changed to a considerable extent. The authors of the present paper investigated some mechanical properties of polymers during irradiation. The investigation was carried out in water-cooled vertical channels. The fluxes of the neutrons and γ-quanta, as well as the energy dose absorbed by the samples were measured on this occasion. Moreover, several simple devices for measuring the mechanical characteristics of polymers under irradiation were constructed, and, especially, a device for recording the extension curves ($\sigma - \varepsilon$) for use in a reactor were reconstructed. The authors investigated polymers of different radiation resistance and different character of the most important radio-chemical variations. By comparing the

Card 1/4

mechanical properties of the samples located in the radiation field with the properties of original samples (and with samples which, though irradiated, were tested after irradiation) reversible radiation-mechanical effects were discovered. They are based upon a temporary reversible variation of the mechanical properties of the polymers. This variation occurs during irradiation and vanishes as soon as irradiation ceases. The authors observed the following reversible processes: 1) Decrease of the strength of polymethylmetacrylate. 2) Decrease of the limit of the enforced elasticity σ_B of polyvinyl chloride. 3) Increase of breaking elongations of polyvinylchloride. 4) Increase of relaxation rate of the tensions in the investigated substances. 5) Increase of the creep rate of polyvinylchloride, polystyrene, teflon, and rubber. Points 2-5 are then discussed in detail; thus it was found that σ_B decreases in the case of a dose rate of 46000 rad/sec by $\sim$25 % and increases approximately linearly with an increase of the dose rate. After irradiation ceases, the reversible effect vanishes after less than 1 minute and only a remanent effect

remains. A table contains the values of creep rate under various conditions. As a result of the irreversible destruction effect, the creep rate increases. Also this effect increases linearly with increasing dose rate. The diagrams 3-4 show the considerable reversible change of creep rate caused by the switching-on and -off of irradiation. The reversible radiation-mechanical effects may be of physical and also of chemical nature. The molecules excited by the ionizing particles during the dissipation of energy "pass through" states with weak excitations, which do not suffice for the stripping-off of the chemical bonds, but which correspond to local heating to high temperatures of short duration. This may accelerate the relaxation processes and change several properties of the substance. However, also a chemical mechansim must be taken into account. To what extent it is able to explain the reversible radiation-mechanical effects can be explained only after further investigations. There are 4 figures, 1 table, and 2 Soviet references.

24 (4), 21 (8)

AUTHORS: Vasil'yev, G. Ya., Usatiy, A. F., Lazurkin, Yu. S., Markov, A. A.

SOV/20-125-6-11/61

TITLE: Measurement of the Luminescence and Darkening of Glass During the Process of Their Irradiation in a Nuclear Reactor (Izmereniye lyuminestsentsii i potemneniya stekol v protsesse ikh oblucheniya v yadernom reaktore)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 6, pp 1219-1222 (USSR)

ABSTRACT: The present paper is intended to work out the construction of a device for the simultaneous measurement of the luminescence and darkening of transparent materials in a nuclear reactor and to deal with the carrying out of experiments by means of this apparatus. The usefulness of parallel measurements of the yield of the luminescence and of the darkening of the sample may be seen from the close connection between these phenomena during irradiation. The device consists of an aluminum tube of 5 m length and 60 mm diameter, inside of which two tubes of the darkening tract (polished inside) and one polished tube of the luminescence tract were fitted. Further details of the apparatus are described. Luminescence

and darkening were measured in the perpendicular, dry, channel of 65 mm (with external water-cooling) of the experimental reactor VVR. In this reactor ordinary water is used as moderator and coolant. The channel was near the active zone of the reactor. By variation of the power of the reactor various values are obtained for the differential dose. In the case of all experiments temperature remained below 35°. The samples consisted of 10 mm thick disks with a diameter of 20 mm. The following quantities were measured by remote control: a) the brightness of luminescence and its time dependence at various differential doses. b) The darkening of the samples and their time dependence at various differential doses. c) Measurement of darkening after irradiation was stopped. Measurements were carried out on various types of quartz, pyrex glass, cerium glass, polymethylmethacrylate, and polystyrene. In the case of all quartz samples, the relation $B = \beta P$ holds up to a differential dose of P = 2000 rad/sec, where β denotes the specific brightness coefficient of luminescence. In the case of polymethylmethacrylate and polystyrene the brightness of luminescence increases with progressing

time and increasing integral dose. The optical density D for some dozens of minutes remains on the equilibrium level, the amount of which depends on the differential dose, and changes only little with an increase of the integral dose. The measurements carried out in the course of this investigation are only the first part of a series of measurements which is planned. There are 3 figures and 2 Soviet references.

PRESENTED: January 8, 1959, by A. P. Aleksandrov, Academician

SUBMITTED: September 23, 1958

LAZURKIN, Yu.S.

S/190/60/002/01/13/021
B004/B061

21.6200

AUTHORS: Mokul'skiy, M. A., Lazurkin, Yu. S., Fiveyskiy, M. B., Kozin, V. I.

TITLE: Study of the Mechanical Properties of Polymers During the Process of Irradiation. I. Strength and Ultimate Forced Elasticity of Solid Polymers During the Process of Irradiation in a Nuclear Reactor

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 1, pp. 103-109

TEXT: The authors exposed polyvinylchloride (PVC) and polymethylmethacrylate (PMMA) to irradiation in a BBP(VVR) nuclear reactor. Data on the neutron beam are given in Table 1. The irradiation was carried out with a dose of 46,000 - 56,000 rad/sec at 20 - 60°C in vertical channels cooled with water. During irradiation, the strength and ultimate forced elasticity σ_f were determined with the apparatus illustrated in Fig. 2, and the creep by that in Fig. 1. Fig. 3 shows the

Card 1/2

dependence of the strength of PMMA on the integral dose, Fig. 4, the dependence of σ_f with PVC on the integral dose. The decrease in σ_f is almost proportional to the radiation intensity (Fig. 5). The irradiation was interrupted by switching off the reactor, and it was seen that σ_f increase immediately about 25 - 30% (Fig. 6). The breaking length also increased after switching-off of the irradiation (Table 2, Fig. 7). As well as the known irreversible processes, based on interlacing and destruction, reversible processes also occur on irradiation. There are 7 figures, 2 tables, and 5 Soviet references.

SUBMITTED: October 15, 1959

Card 2/2

LAZURKIN, Yu.S.

S/190/60/002/01/14/021
B004/B061
82082

21.1200

AUTHORS: Mokul'skiy, M. A., Lazurkin, Yu. S., Fiveyskiy, M. B.

TITLE: Investigation of the Mechanical Properties of Polymers During the Process of Irradiation. II. Creep of Solid Polymers and Rubbers During the Process of Irradiation in a Nuclear Reactor

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 1, pp. 110 - 118

TEXT: The aim of this work was to establish changes in mechanical properties which re-form after cessation of the irradiation. The method of examination is described in Ref. 1. The authors examined the creep rate in dependence on the mechanical stress applied and the integral dose. Fig. 1 shows the change in creep for unplasticized polyvinyl-chloride at a radiation intensity of 46,000 rad/sec, a stress of 0.5 kp/mm^2, and 52°C. For comparison, data are given, that were obtained from nonirradiated material, and material taken out of the radiation

Card 1/2

field. Fig. 2 shows the same data for a stress of 1 kp/mm^2. The time dependence of creep is reproduced in Fig. 3. A Table gives the experimental data. The same experiments were carried out with unplasticized polystyrene, plasticized PVC (Fig. 4), vulcanized rubber from natural rubber of the type НК (NK) (Fig. 5), from СКН-18 (SKN-18) nitrile rubber (Fig. 6), and from polyisobutylene rubber (Fig. 7). In all the substances examined, the creep rate increased in bounds, and decreased again when the radiation was switched off. This effect increased with increasing irradiation intensity. A reversible change in the relaxation rate was observed. The authors mention a paper by Yu. S. Zuyev (Ref. 4), thank N. V. Zvonov for making the experiments on the reactor possible, and the mechanics I. F. Yermakov and K. K. Shcherbo for their collaboration. There are 7 figures, 1 table, and 6 Soviet references.

SUBMITTED: October 15, 1960

FIVEYSKIY, M.B.; LAZURKIN, Yu.S.; MOKUL'SKIY, M.A.

[Simple calorimetric method for measuring the absolute energy dose received by substances situated in powerful fields of ionizing radiations] Prostoi kalorimetricheskii metod izmereniia absoliutnoi energeticheskoi dozy, polucha-emoi veshchestvami v moshchnykh poliakh ioniziruiushchikh izluchenii. Moskva, In-t atomnoi energii, 1960. 10 p. (MIRA 17:1)

L 17604-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(l) Pc-4/Pr-4/
Peb/Pu-4 AS(mp)-2/ASD(m)-3 GG/MLK/RM
AM4022018 BOOK EXPLOITATION S/

Ushakov, G. P.; Gushcho, Yu. A.; Lazurkin, Yu. S.; Kazakov, V. S. B+1

Effect of the phase state of polyethylene during irradiation on the character of the lattices being formed (Vliyaniye fazovogo sostoyaniya polietilena pri obluchenii na kharakter obrazuyushcheysya setki) Moscow, 1960. 19 p. illus., biblio. 155 copies printed. (At head of title: Ordena Lenina Institut Atomnoy Energii im. I. V. Kurchatova AN SSSR)

TOPIC TAGS: Crystalline polymer, radiation chemistry, amorphous polymer, polyethylene

PURPOSE AND COVERAGE: Data concerning the influence of radiation "stitching" on the melting point of polyethylene crystals are contradictory: both a lowering with increasing dosage and practical constancy have been observed. This discrepancy may be due to the difference in temperatures at which irradiation has been performed. The lattice being formed may have a different character during irradiation in the crystalline state than during irradiation in the amorphous state, despite the approximately identical consistency, and may affect the melting point

Card 1/2

of the crystals differently. Clarification of this question is the purpose of the present study.

TABLE OF CONTENTS:

SUB CODE: GC, OC SUBMITTED: 00 NR REF SOV: 007

OTHER: 010

KISELEV, A.G.; MOKUL'SKIY, M.A.; LAZURKIN, Yu.S.

[Anisotropy of hyperfine splitting in electron paramagnetic resonance spectra of irradiated oriented polymers] Anizotropiia sverkhtonkogo rasshchepleniia v spektrakh elektronnogo paramagnitnogo rezonansa oblu-chennykh orientirovannykh polimerov. Moskva, In-t atom-noi energii, 1960. 22 p. (MIRA 17:2)

S/190/60/002/010/011/026
B004/B054

AUTHORS: Ushakov, G. P., Gushcho, Yu. A., Lazurkin, Yu. S., and Kazakov, V. S.

TITLE: The Effect of the Phase Condition of Polyethylene During Irradiation Upon the Type of the Resulting Network

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10, pp. 1512-1520

TEXT: The authors studied the dependence of radiation cross linking on the state of low-pressure polyethylene. Polyethylene samples were irradiated in thin-walled aluminum containers in the presence of helium in the reactor (dose 150 - 1625 Mrad). Crystalline samples were irradiated at 45 - 50°C, and amorphous, molten samples at 130-160°C. A table gives the change of the melting point caused by irradiation, the change of the vitrification temperature, and of the high-elasticity module E_∞. Fig. 1 shows E_∞ as a function of temperature, Fig. 2 thermomechanical curves of the samples irradiated, Fig. 3 E_∞ as a function of the irradiation dose, and Fig. 4 the nonmonotonous dependence of the melting point T_m

Card 1/2

on the dose. The authors found that the crystallization properties of irradiated polyethylene strongly depend on its phase condition during irradiation. Irradiation in a molten state led to a fast drop of T_m and a decrease of the crystallization degree. On irradiation in a crystalline state, the authors first observed a slight drop of T_m, then a constant value, and then a slight increase. The crystallization degree decreased more slowly than on irradiation of melts. These effects are interpreted as different types of network in the amorphous and crystalline states. In the amorphous state, the network fixes the disordered state of chains. In crystalline samples, however, the cross links fix the local order of polymer chains. This effect corresponds to the effect of increase of T_m in rubbers when their chains are oriented. There are 4 figures, 1 table, and 18 references: 7 Soviet, 7 US, and 3 British.

SUBMITTED: May 10, 1960

S/190/60/002/011/014/027
B004/B060

AUTHORS: Kiselev, A. G., Mokul'skiy, M. A., Lazurkin, Yu. S.

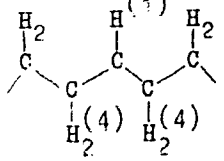
TITLE: Anisotropy of Hyperfine Splitting in Electron Paramagnetic Resonance Spectra of Irradiated Oriented Polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 11, pp. 1678 - 1687

TEXT: The authors wanted to identify the radicals forming on the irradiation of polymers by the hyperfine structure of the epr spectrum. Experiments were made by stretching oriented polymers. The epr spectra were taken at various angles between orientation of the polymer and the magnetic field at 9000 Mc/sec in the high-frequency modulated magnetic field. The investigation covered low-pressure polyethylene stretched in the cold state; polytetrafluoro ethylene (Teflon), stretched at 300°C; polyvinyl chloride stretched at 72°C; polymethyl methacrylate stretched at 140°C. Irradiation took place either in the reactor (in evacuated quartz ampuls at 40-50°C) or by beta radiation of a Au^{198} needle (half life 64.6 h). As is shown by Fig. 1, the intensities of the lines and their number depend.

Card 1/5

in polyethylene, on the angle between elongation axis and magnetic field direction. This result is discussed on the basis of the formation of an alkyl radical:



The latter has four equivalent $H^{(4)}$ protons and a central $H^{(1)}$ proton. For the components shown in Fig. 1, equations are derived on the basis of the projection i of $H^{(1)}$ and $H^{(4)}$ protons:

I) $H_{ext} = H_o - (1/2)\{[1] + 4[4]\}$ (one possibility: $m_{I_1} + 4m_{I_4}$)

IIa) $H_{ext} = H_o - (1/2)\{-[1] + 4[4]\}$ (one possibility: $-m_{I_1} + 4m_{I_4}$)

IIb) $H_{ext} = H_o - (1/2)\{[1] + 2[4]\}$ (4 possibilities: $m_{I_1} - m_{I_4} + 3m_{I_4}$)

IIIa) $H_{ext} = H_o - (1/2)\{-[1] + 2[4]\}$ (4 possibilities: $-m_{I_1} - m_{I_4} + 3m_{I_4}$)

IIIb) $H_{ext} = H_o - (1/2)[1]$ (6 possibilities: $m_{I_1} - 2m_{I_4} + 2m_{I_4}$).

H_{ext} denotes the outer field, $H_0 = \hbar\omega/g_e\beta_B$; g_e = g factor of the free electron, β_B = Bohr magneton, m_{I_1} and m_{I_4} the projection of the proton spin of $H^{(1)}$ and $H^{(4)}$ protons on the magnetic field direction. The dependence, found experimentally, of the position of spectral lines fits theoretical notions. $H^{(1)}$ and $H^{(4)}$ protons are not equivalent to each other. The density of the unpaired electron is lower on $H^{(1)}$ than on $H^{(4)}$. Data confirm the formation of an alkyl radical on irradiation at 77°K. Polyethylene irradiated at 40-50°C gave an epr spectrum with 7 components, each of which was a doublet. This spectrum corresponds to a uniform interaction of an unpaired electron with 6 protons. This is believed to point to the formation of an allyl radical $\sim CH_2^{(4)}\text{-}CH^{(2)}\text{-}CH^{(1)}\text{-}CH^{(2)}\text{-}CH_2^{(4)}\sim$. Anisotropy was likewise observed in oriented Teflon; the spectra, however, were not analyzed. No anisotropy was observed with polyvinyl chloride and polyamide. The absence of anisotropy in polymethyl methacrylate and polystyrene is explained by the fact that there is no proton in the immediate vicinity of

the unpaired electron, that might cause, as with polyethylene, an anisotropy of hyperfine splitting. The authors refer to investigations conducted by V. V. Voyevodskiy (Ref. 1) at the Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics of the AS USSR). There are 7 figures and 7 references: 3 Soviet, 2 US, and 2 British.

SUBMITTED: May 10, 1960

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B004/B060

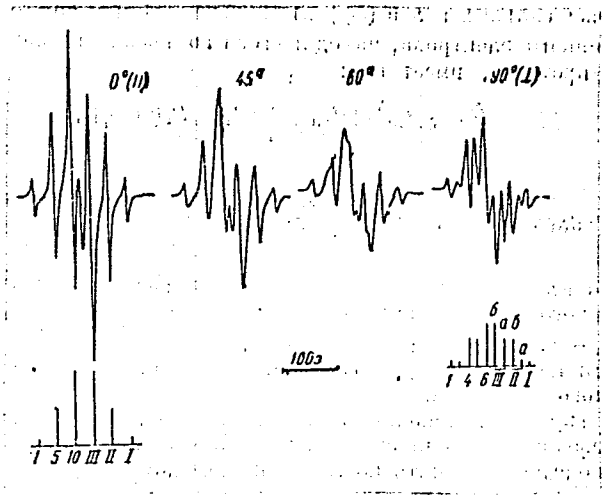

Fig. 1: Spectra of oriented low-pressure polyethylene irradiated at 77°K. Measurement made at -30°C. 0°, 45°, 60°, 90° are the angles between orientation of sample and direction of magnetic field. For 0° and 90° the theoretical scheme of position of lines and their relative intensities is given.

Card 5/5

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S/089/60/009/004/016/020
B006/B070

AUTHORS: Fiveyskiy, M. B., Lazurkin, Yu. S., Mokul'skiy, M. A.

TITLE: A Simple Calorimetric Method of Measuring the Absolute Energy Dose Received by Substances in Strong Fields of Ionizing Radiation

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 4, pp. 321 - 323

TEXT: A steady calorimetric method is used for measuring the radiation energy received by a sample if the dose rate is not too high and the effect of other energy-generating processes in the sample is negligible. For intense irradiation (high dose rate), this method is not applicable, particularly because the establishment of thermal equilibrium takes too long a time; in this case, the sample is so strongly heated that it either melts or disintegrates; at least the high absorbed integral dose changes the structure and properties of the sample significantly. For this reason, the authors of the present "Letter to the Editor" developed in 1957 a simple nonsteady calorimetric method which is suitable for studies on reactors and other sources of strong radiation. The method has been tested during the last few years. The principle of the method is as follows. A sample for dose-measuring is placed at time t=0 in a radiation

Card 1/4

field which is homogeneous and constant within the sample, under such conditions that the temperature at the center of the sample increases linearly for a time τ independently of the surrounding temperature. τ is proportional to the square of the characteristic sample dimension d and inversely proportional to the coefficient of thermal diffusivity χ. Therefore, dT/dt is a function of the dose rate and heat capacity of the sample, and the dose rate can be calculated from the formula $P = 0.417\ c(dT/dt)_0$. c is the specific heat of the sample material (cal/g.degree); $(dT/dt)_0$ is measured in deg/hour, and P in Mrad/hour. Polystyrene, polyethylene, silicone rubber, Teflon, molten quartz, etc. were used for the dosimeter. The sample had a cylindrical form (30 mm diameter and 50 mm height). This size has a τ value of 2 - 3 minutes which is required for the measurement of dT/dt (Fig. 1). In this time interval, the mutual shielding of the parts of the sample may be neglected. Copper-constantan thermocouples were used for the measurement of temperature. The construction of the dosimeter is very simple (Fig. 2). All parts with the exception of the thermocouple consist of nonactivizable materials. The

84236

A Simple Calorimetric Method of Measuring the Absolute Energy Dose Received by Substances in Strong Fields of Ionizing Radiation

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B006/B070

whole instrument was inserted in a perpendicular hole in a reactor and checked in a radiation-free zone before measurements were carried out. In this manner, the dose rates for different substances were measured in the holes of the BBP (VVR) reactor. The error was 5 - 10%. Fig. 3 shows the distribution of the dose rate along a hole in this reactor for polyethylene and quartz glass. With this method the anomalies of the T(t) curves may also be found. Thus, for example, the T(t) curve of polytetrafluoroethylene shows a sharp bend which may ascribed to a phase transformation due to irradiation (cf. Fig. 4). There are 4 figures and 4 references: 3 Soviet and 1 US.

SUBMITTED: April 14, 1960

Card 3/4

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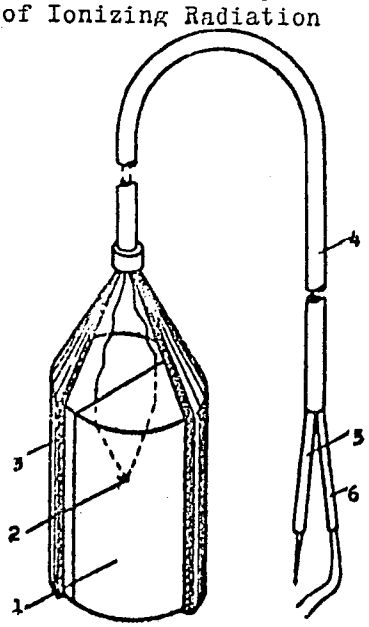
S/089/60/009/004/016/020
B006/B070

A Simple Calorimetric Method of Measuring the Absolute Energy Dose Received by Substances in Strong Fields of Ionizing Radiation



1 – specimen. 2 – thermocouple hot junction. 3 – aluminum foil. 4 – flexible suspender-insulator. 5 – thermocouple cold junction. 6 – terminals connected to a measuring instrument.

Card 4/4

PEROV, Boris Vital'yevich; GUDIMOV, Matvey Matveyevich; LAZURKIN, Yu.S., dokt. fiz.-mat. nauk, prof., retsenzent; SHEYNFAYN , L.I., red. izd-va; ROZHIN, V.P., tekhn. red.

[Oriented organic glass] Orientirovannoe organicheskoe steklo. Moskva, Gos.nauchno-tekhn. izd-vo Oborongiz, 1961. 49 p. (Plastics) (MIRA 14:6)

MOKUL'SKIY, M.A.; LAZURKIN, Yu.S.

Beta emitter based on Au^{198} for use in studies of the physical properties of materials subjected to irradiation. Atom. energ. 10 no.2:160-162 F '61. (MIRA 14:1)
(Gold--Isotopes) (Beta rays)

ALEKSANDROV, A.A.; GAVRILOV, V.Yu.; KISELEV, A.G.; LAZURKIN, Yu.S.; MOKUL'SKIY, M.A.

Origin of broad electron paramagnetic resonance lines in nucleic acids and their complexes with proteins. Dokl. AN SSSR 141 no.6: 1483-1485 D '61. (MIRA 14:12)

1. Predstavleno akademikom A.F.Aleksandrovym.
(Paramagnetic resonance and relaxation) (Nucleic acids)
(Ferromagnetism)

USATIY, A. F. and LAZURKIN, Yu. S.

"Observation of Radicals in Proteins During Irradiation Using the ESR Method. Kinetic Laws."

paper presented at the Symposium on Biological Effects of Ionizing Radiation at the Molecular Level (IAEA), 2-6 July 1962, Prag, Czech.

S/844/62/000/000/090/129
D204/D307

AUTHORS: Ushakov, G. P., Lazurkin, Yu. S. and Gushcho, Yu. A.

TITLE: The nature of lattices formed when either crystalline or amorphous polyethylene is irradiated

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 526-530

TEXT: The present study, which is a continuation of earlier work (Vysokomolekulyarnyye soyedineniya, 2, 1512 (1960)), was carried out to determine the effect of lattices formed when amorphous or crystalline polyethylene (PE) is irradiated, on the physical and mechanical properties of the polymer after irradiation. Low- and high-pressure PE specimens were irradiated (up to 1625 Mrad), under He, in both amorphous (130 - 160°C) and crystalline (45 - 50°C) states. Crystalline specimens were then heated to 150°C and slowly cooled. Amorphous PE gave rise to 'a-lattices', whilst both a- and 'k-lattices' formed in crystalline irradiated samples. The modulus

Card 1/3

of elasticity (E) for k-lattices decreased with increasing dose of irradiation (increasing cross-linking), but this effect was considerably weaker than that observed for a-lattices; thus for network density corresponding to 12 - 13 C atoms between cross-linkages a-type PE was rubbery (E ~ 230 kg/cm^2), whilst k-type PE was still rigid and crystalline (E ~ 4800). The m.p. of a-PE decreased almost linearly with the growing proportion of cross-linkages whilst the corresponding effect for k-PE was less pronounced and discontinuous. The degree of crystallinity was simultaneously lowered, slowly for the k-, and rapidly for the a-lattice specimens. The a-lattices are formed by the cross-linking of convoluted polymeric chains. When crystalline PE is irradiated, the cross-linkages for either between locally ordered parallel chains of similar trans-configuration, to give the hitherto unknown k-lattices, or between disordered nonparallel chains (in the amorphous regions) to give the a-lattice. As in the case of amorphous irradiated specimens, the lowered crystallinity of k-PE is due to the decreased inter-chain distance on cross-linking. The m.p. is lowered when such lattices are formed, owing to (a) decreased crystallizability

S/844/62/000/000/090/129
D204/D307

and crystal size, and (b) decreased flexibility of the polymer chains. There are 3 figures.

ASSOCIATION: Institut atomnoy energii AN SSSR (Institute of Atomic Energy, AS USSR)

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S/844/62/000/000/109/129
D408/D307

AUTHORS: Lazurkin, Yu. S., Mokul'skiy, M. A. and Fiveyskiy, M. B.

TITLE: Nature of the reversible acceleration of mechanical relaxation processes in polymers under irradiation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 638-641

TEXT: By "acceleration of mechanical relaxation processes" is understood a wide range of phenomena, including acceleration of stress relaxation, acceleration of creep, and decrease of ultimate forced elasticity. In the present work the authors studied the acceleration of creep СКН-18 (SKN-18) nitrile rubber irradiated in a nuclear reactor, this being a continuation of previous investigations, with the difference that in the earlier work the effect of irradiating rigid polymers was studied. Samples of the test material were stretched under constant load for 45 hours to attain equilibrium deformation, almost all the deformation occurring during the first 10 - 20 minutes; other samples were stretched for 16 mins. The

Card 1/2

Nature of the reversible ...

stretched samples, still under load, were irradiated at intensity 2×10^4 rad/sec, whereupon creep was initiated at the rate of 4×10^{-3} sec^{-1} in both cases. The results indicated that the acceleration of creep and relaxation in resins was caused by rupture of lattice bonds, i.e. the so-called 'chemical' mechanism, and not by the "physical" mechanism (described in an earlier work) as is the case when rigid polymers are irradiated. Efficiency of the destruction process was evaluated by the method of Tobolskiy et al for the analysis of chemical relaxation. By means of the kinetic theory of resin elasticity an equation was derived relating the rate of creep under irradiation to the number of bonds rupturing per second in 1 cm^3 of material. Substituting into this equation the experimental data for SKN-18 rubber, natural rubber and polyisobutylene, the numbers of bonds rupturing per 100 ev of absorbed energy were estimated to be 3, 4, and 19 respectively. There is 1 figure.

ASSOCIATION: Institut atomnoy energii AN SSSR (Institute of Atomic Energy, AS USSR)

Card 2/2

KOZLOV, P.V., otv. red.; ANDRIANOV, K.A., red.; DOGADKIN, B.A., red.; DOLGOPLOSK, V.A., red.; YENIKOLOPYAN, N.S., red.; KARGIN, V.A., red.; KOLESNIKOV, G.S., red.; KOROTKOV, A.A., red.; KORSHAK, V.V., red.; LAZURKIN, Yu.S., red.; MEDVEDEV, S.S., red.; MIKHAYLOV, N.V., red.; PASYNSKIY, A.G., red.; SLONIMSKIY, G.L., red.; SMIRNOV, V.S., red.; TSVETKOV, V.N., red.; FREYMAN-KRUPENSKIY, D.A., tekhn. red.

[Adhesion of polymers] Adgeziia polimerov; sbornik statei. Moskva, Izd-vo AN SSSR, 1963. 142 p. (MIRA 16:10)
(Polymers) (Adhesion)

KOLESNIKOV, G.S., otv. red.; ANDRIANOV, K.A., red.; DOGADKIN, B.A., red.; DOLGOPLOSK, B.A., red.; YENIKOLOPYAN, N.S., red.; KARGIN, V.A., red.; KOZLOV, P.V., red.; KOROTKOV, A.A., red ; KORSHAK, V.V., red.; LAZURKIN, Yu.S., red.; MEDVEDEV, S.S., red.; MIKHAYLOV, N.V., red.; PASYNSKIY, A.G., red.; SLONIMSKIY, G.L., red.; SMIRNOV, V.S., red.; TSVETKOV, V.N., red.; FREYMAN-KRUPENSKIY, D.A., tekhn. red.

[Heterochain high-molecular weight compounds] Geterotsepnye vysokomolekuliarnye soedineniia; sbornik statei. Moskva, Izd-vo "Nauka," 19[illegible] [illegible],6 p. (MIRA 17:3)

KOLESNIKOV, G.S., otv. red.; ANDRIANOV, K.A., red.; DOGADKIN, B.A., red.; DOLGOPLOSK, B.A., red.; YENIKOLOPYAN, N.S., red.; KARGIN, V.A., red.; KOZLOV, P.V., red.; KOROTKOV, A.A., red.; KORSHAK, V.V., red.; LAZURKIN, Yu.S., red.; MEDVEDEV, S.S., red.; MIKHAYLOV, N.V., red.; PASYNSKIY, A.G., red.; SLONIMSKIY, G.L., red.; SMIRNOV, V.S., red.; TSVETKOV, V.N., red.; FREYMAN-KRUPENSKIY, K.A., tekhn. red.

[Carbochain high-molecular weight compounds] Karbotsepnye vysokomolekuliarnye soedineniia; sbornik statei. Moskva, Izd-vo AN SSSR, 1963. 287 p. (MIRA 17:1)

S/089/63/014/003/018/020
B102/B186

AUTHOR: Lazurkin, Yu. S.

TITLE: Symposium on Molecular Mechanism of Biological Action of Ionizing Radiation

PERIODICAL: Atomnaya energiya, v. 14, no. 3, 1963, 330 - 332

TEXT: The international symposium organized by the IAEA and the Academy of Sciences of the ČSSR was held in June 1962 in Brno (ČSSR); it was attended by 85 scientists from 21 countries. Among them the following Soviet of Soviet-bloc personalities gave lectures: Usatiy and Lazurkin (USSR), kinetics of accumulation of radicals in albumins; Drasil (ČSSR), direct and indirect effect in radiation affection of ascitic cancer cells (Ehrlich); Belyayeva (USSR) measurement of composition of water-soluble cytoplasm albumins; Amiragova, Savich, Shal'nov (USSR), effect of inorganic peroxides on radiochemical transformations of purines and pyrimidines in aqueous solutions; Cherkasova and Fomichenko (USSR), effect of X-rays on the albumin content of various sections of the central nervous system and the liver; Drobnik (ČSSR), lethal effect of P^{32} transmutation and UV

Card 1/2

Symposium on Molecular ...

ß-irradiation; Benesh and Soshka (ČSSR), role of the predecessors of DNA in the bone marrow cells; Karpfel, Palechek, Shlotova (ČSSR), effect of introduction of DNA into bone marrow; Petrova (ČSSR) radiobiologic reactions on α-irradiation of alga zygnema; Skalki, Mat'yasheva and Soshki (ČSSR), linear increase with dose (30-300 r) of free deoxyribopolynucleotides in the tissue of irradiated animals; Gradechnaya, Arber, Kellenberger (ČSSR), inactivation and reactivation of lambda-phages on irradiation; Fradkin, Gol'dfarb, Vinetskiy (USSR), radiation effect on phages at rest.

LAZURKIN, Yu.S.; BARTENEV, G.M.; USHAKOV, G.P.; VOYEVODSKAYA, M.V.

Mechanical properties of rubberlike polymers in the solid state at low temperatures. Vysokom. soed. 6 no.3:504-511 Mr'64. (MIRA 17:5)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.

PERMOGOROV, V.I.; LAZURKIN, Yu.S.; SHMURAK, S.Z.

Study of the complexes of nucleic acids with acridine orange by the optical activity dispersion method. Dokl. AN SSSR 155 no.6: 1440-1443 Ap '64. (MIRA 17:4)

1. Predstavleno akademikom A.P. Aleksandrovym.

L 10792-65 EWT(m)/EPF(c)/EWP(j)/T Pc-4/Pr-4 ESD(gs)/AFETR RM
ACCESSION NR: AP4030370 S/0190/64/006/003/0504/0511

AUTHORS: Lazurkin, Yu. S.; Bartenev, G. M.; Ushakov, G. P.; Voyevodskaya, M. V.

TITLE: Mechanical properties of rubber-like polymers in the solid state at low temperatures

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 3, 1964, 504-511

TOPIC TAGS: rubber, vulcanized rubber, butadiene styrene polymer, butadiene nitrile polymer, glassy state, structuration temperature, tensile strength, forced elasticity, brittle strength, solid state, frost resistance/SKN 40 rubber

ABSTRACT: The present investigation of the methods for estimating the frost resistance of the rubbers is similar to several earlier ones conducted by the authors, except that a larger number of specimens was studied. It was conducted with unfilled vulcanized rubbers on a butadiene-styrene base (SKS-70, SKS-50, SKS-30, SKS-10), and also on a butadiene-nitrile base (SKN-40, SKN-26, SKN-18). Polystyrene and polyacrylonitrile rubbers were also studied. Their mechanical characteristics were determined at temperatures below that of vitrification, by means of the apparatus MIP-100, at a constant elongation rate of 0.06 mm/minute. The test specimens were of dumbbell shape 2 mm thick, with a 16-mm long central constricted

Card 1/2

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ACCESSION NR: AP4030370

2

portion. The tests were conducted with thermostatic cooling by liquid nitrogen, at temperatures from -195.6C to that of mechanical vitrification. The coefficients of linear expansion were determined by means of an NIIRP dilatometer, and the temperature of structural vitrification was ascertained from the break point in the linear shrinkage curve. It was found that in butadiene-styrene rubbers the temperature of mechanical vitrification rises with increased styrene content, the brittle strength remains constant, and the region of forced elasticity diminishes. In butadiene-nitrile rubbers the vitrification temperature also rises with increased acrylonitrile content, but (due to a simultaneous rise of the brittle strength) the region of forced elasticity remains practically constant. The vulcanized rubber derived from SKN-40 had the highest brittle strength. The concept of frost resistance of packing rubber materials was defined in terms of the temperature of mechanical vitrification and temperature of brittleness. Orig. art. has: 6 charts and 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promy*shlennosti (Scientific Research Institute of the Rubber Industry)

SUBMITTED: 25Mar63 ENCL: 00

SUB CODE: MT NO REF SOV: 009 OTHER: 008

Card 2/2

L 35481-65 EWT(m)/EWA(b) RM

ACCESSION NR: AP5005607 S/0190/65/007/002/0362/0365

AUTHORS: Permogorov, V. I.; Frank-Kamenetskiy, M. D.; Serdyukova, L. A.; Lazurkin, Yu. S. 16 B

TITLE: Determining heats of helix-coil transition from the melting curves of desoxyribonucleic acid having additional interchain linkages

SOURCE: Vysokomolekulyarnyy soyedineniya, v. 7, no. 2, 1965, 362-365

TOPIC TAGS: desoxyribonucleic acid, binding energy, dye, nucleotide

ABSTRACT: There are as yet no reliable data on the binding energy of the complementary chains in the double helix of DNA. This is due chiefly to the experimental difficulty of direct microcalorimetric determination. The authors worked out a method of determining the binding energy by introducing into DNA a small number of local intermolecular or covalent supplementary bonds (or clips) between the complementary chains. When a dye (actinomycin or acridine orange) acts on DNA, the melting curve of DNA changes characteristically. The melting point and the melting-temperature range increase. If all dye molecules introduced into the solution are bound to DNA so that each clip is formed by one dye molecule, the clip concentration is determined by the formula c = 2D/P, where D is the molar concen-

Card 1/2

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ACCESSION NR: AP5005607

tration of the dye and P is the molar concentration of DNA nucleotides. By measuring the dependence of the melting point and melting range on this concentration, it is possible to determine from simple formulas the binding energy and the additional energy. This requires, however, that, as the DNA melts, the dye must not go into solution but stay bound to the DNA molecules. This condition is essential only till melting reaches 60-70%, and it was found that actinomycin, proflavine, and acridine orange meet it at low ionic strength of the solution. Results show that the heat of the helix-coil transition in DNA depends markedly on the ionic strength of the solution. At a melting point of 55C, this heat of transition is 2.7 ± 0.7 kcal/mole. Orig. art. has: 1 figure, 1 table, and 2 formulas.

ASSOCIATION: none

SUBMITTED: 19Jul64 ENCL: 00 SUB CODE: OC, LS

NO REF SOV: 008 OTHER: 001

Card 2/2

PERMOGOROV, V.I.; LAZURKIN, Yu.S.

Mechanism of actinomycin - DNA complex. Biofizika 10 no.1:17-25 '65. (MIRA 18:5)

1. Institut atomnoy energii Kurchatova, Moskva.

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

Thin-layer protein chromatography on hydroxylapatite- containing plates. Biokhimiia 30 no. 3:559-562 My-Je '65 (MIRA 19:1)

1. Nauchno-issledovatel'skiy institut epidemiologii i mikrobiologii imeni Pastera, Leningrad.

LAZURKINA, V.D.

LAZURKINA, V.D.

Case of ovarian arrhenoblastoma without virilism. Trudy AMN SSSR 21 no.4:78-81 '52. (MLRA 10:8)

1. Iz ginekologicheskogo otdeleniya (zav. - st. nauchnyy sotrudnik L.A.Novikova) i patologoanatomicheskogo otdela (zav. - st. nauchnyy sotrudnik Z.V.Gol'bert) TSentral'nogo nauchno-issledovatel'skogo onkologicheskogo instituta im. P.A.Gertsena (dir. - chlen- korr. AMN SSSR prof. A.I.Savitskiy)

(OVARIES, neoplasms,
arrhenoblastoma without virilization)
(ARRHENOBLASTOMA,
without virilization)

LAZURKINA, V.D.

Combined therapy in primary sarcoma of the vagina. Vest.rent. i rad. 31 no.4:74-75 Jl-Ag '56. (MLRA 9:10)

1. Iz ginekologicheskogo otdeleniya (zav. otdeleniyem T.Ye.Yeliseyeva) TSentral'noy klinicheskoy rentgeno-radiologicheskoy bol'nitsy (nach. I.M.Lobodenko) Ministerstva putey soobshcheniya.

(VAGINA, neoplasms
sarcoma, primary, combined ther.)
(SARCOMA
vagina, combined ther. of primary sarcoma)

LAZURKINA, V.D.

Experience in radiotherapy for vulva cancer. Vop. onk. 6 no. 9:102-106 S '60. (MIRA 14:1)

(VULVA—CANCER)

LAZURKINA, V.D., mladshiy nauchnyy sotrudnik

Chaul therapy for cavernous hemangioma of the vagina. Vest. rent. i rad. 35 no. 5:62-63 My-Je '60. (MIRA 14:2)

1. Iz rentgenoterapevticheskogo otdela (zav. - starshiy nauchnyy sotrudnik I.A. Pereslegin) Gosudarstvennogo nauchno-issledovatel'skogo instituta rentgenologii i radiologii Ministerstva zdravookhraneniya RSFSR (direktor - doktor med.nauk I.G. Lagunova).
(VAGINA—TUMORS) (X RAYS—THERAPEUTIC USE)

NIVINSKAYA, M.M.; LAZURKINA, V.D.

Some problems in the clinical aspect and radiation therapy in primary melanoblastoma of the vulva. Med. rad. 9 no.2:8-14 F '64. (MIRA 17:9)

1. Rentgeno-radiologicheskiy otdel (zav.- prof. I.I. Tager) Instituta eksperimental'noy i klinicheskoy onkologii AMN SSSR i rentgeno-terapevticheskiy otdel (zav.- dotsent I.A. Pareslegin) Gosudarstvennogo nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR.

SAVCHENKO, Ye.D.; LAZURKINA, V.D.

Clinical and pathomorphological changes in tissues in radiotherapy of cancer of the female external genitalia. Med.rad. 9 no.9:33-40 S '64. (MIRA 18:4)

1. Patomorfologicheskiy otdel (zav. - dotsent Ye.D.Savchenko) i rentgenote-rapevticheskiy otdel (zav. - doktor med.nauk I.A. Pereslegin) Nauchno-issledovatel'skogo rentgeno-radiologicheskogo instituta Ministerstva zdravookhraneniya RSFSR.

LAZURKINA, V.D., kand. med. nauk, PERMITSKAYA, S.Ia., GRIGOR'YEVA, N.V.

Late changes in the urinary bladder following radiation therapy for cancer of the cervix uteri. Vest. rent. i rad. 40 no.2: 47-52 Mr-Ap '65. (MIRA 18:6)

1. Urologicheskoye otdeleniye (zav.- doktor med. nauk I.S. Tsukkin) i radiologicheskoye otdeleniye (zav.- kand. med. nauk A.M. Nemman) Gorodskoy klinicheskoy bol'nitsy No.67, Moskva.

PAVLOVA, T.G. (Moskva); LAZURKINA, V.D. (Moskva)

Method for computing the absorbed doses in intracavitary gamma-therapy of cancer of the cervix uteri. Trudy TSentr. nauch.-issl. inst. rentg. i rad. 11 no.1:88-97 '64.
(MIRA 18:11)

LAZUKOV, G.I.

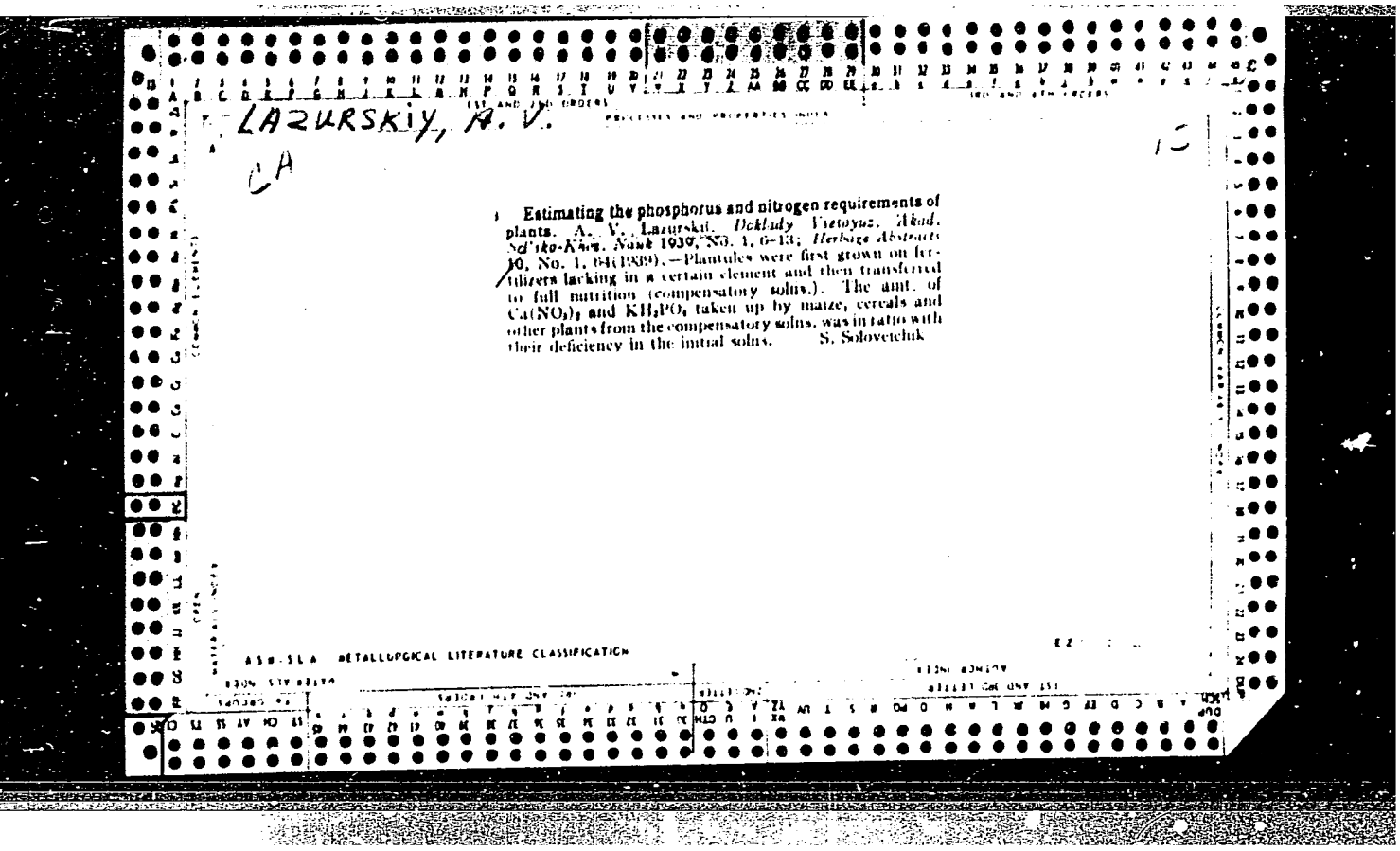
Extent and nature of the Syryanka glaciation in the northwestern part of the West Siberian Lowland. Vest.Mosk.un.Ser.biol., pochv., geol., geog. 14 no.4:209-216 '59. (MIRA 13:6)

1. Kafedra obshchego zemlevedeniya Moskovskogo universiteta.
(Siberia, Western--Glacial epoch)

IAZUKOV, G.I.

Glaciomarine sediments of northern Eurasia. Vest. Mosk. un. Ser.5: Geog. 15 no.3:48-53 My - Je '60. (MIRA 13:7)

1. Kafedra obshchego zemlevedeniya Moskovskogo universiteta.
(Eurasia--Geology, Stratigraphic)
(Sediments (Geology))

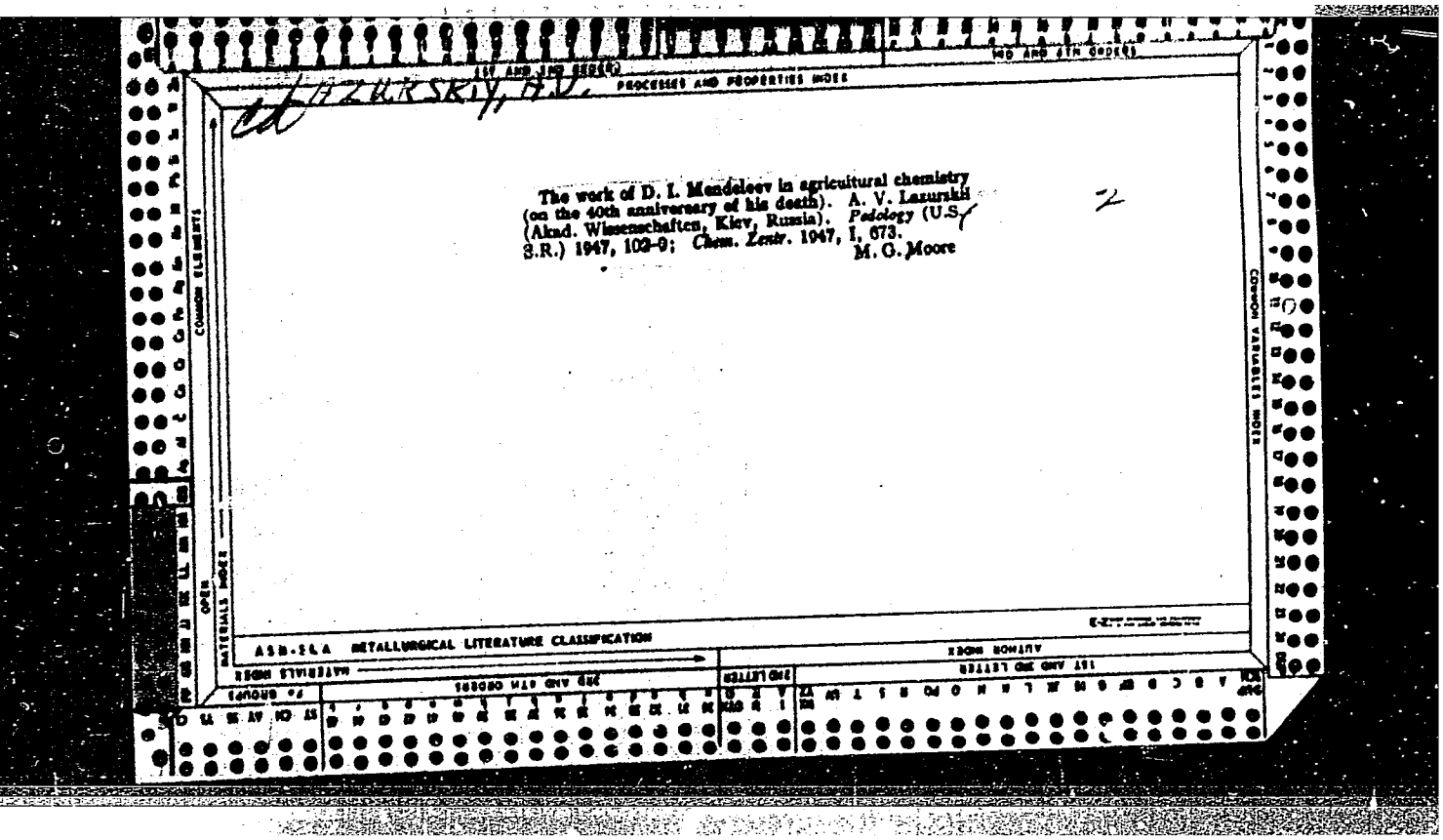


LAZURSKIY, A. V.

CA

Estimating the phosphorus and nitrogen requirements of plants. A. V. Lazurskii. *Doklady Vsesoyuz. Akad. Sel'sko-Khoz. Nauk* 1939, No. 1, 6–13; *Herbage Abstracts* 10, No. 1, 64(1939).—Plantules were first grown on fertilizers lacking in a certain element and then transferred to full nutrition (compensatory solns.). The amt. of $Ca(NO_3)_2$ and KH_2PO_4 taken up by maize, cereals and other plants from the compensatory solns. was in ratio with their deficiency in the initial solns. S. Soloveichik

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



LAZURSKII, A.V.

The work of D. I. Mendeleev in agricultural chemistry (on the 40th anniversary of his death). A. V. Lazurskii (Akad. Wissenschaften, Kiev, Russia). *Pedology* (U.S.S.R.) 1947, 102-9; *Chem. Zentr.* 1947, I, 673.
M. G. Moore

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APPROVED FOR RELEASE: 08/31/2001 CIA-RDP86-00513R000929010002-8"

LAZURS'KYY, O.V.; DUSHECHKIN, O.I., diysnyy chlen.

Effect of a single enrichment of soil with phosphates on the dynamics of phosphoric acid in the soil, on crop yield, and on the quality of sugar beets. Dop.AN URSR no.5:375-380 '51. (MLRA 6:9)

1. Akademiya nauk Ukrayins'koyi RSR (for Dushechkin). 2. Instytut fiziolohiyi roslyn i ahrokhimiyi Akademiyi nauk Ukrayins'koyi RSR (for Lazurs'kyy). (Phosphates) (Beets and beet sugar)

LAZURSKIY, O. V.

Experiments with thermophosphates prepared from Ukrainian phosphorites. O. V. Lazurskii and E. D. Khoroshikova. *Mestnye Mineral. Udobreniya Ukr. S.S.R.* (Kiev: Izdatel. Akad. Nauk Ukr. S.S.R.) *Sbornik* 1954, No. 1, 183-91; *Referat. Zhur., Khim.* 1956, Abstr. No. 26192.—Melted phosphates produced in elec. furnaces at 1450-1500° from Krolevets and Podolsk phosphorites and addn. of fluxes (soda or ground chamotte brick with iron slag) granulated with water cooling, and also Podolsk phosphorite heated in a muffle furnace (3 hrs. at 1250°), are used in agricultural expts. In the expts. with millet on clay soil, these materials show no advantage over ordinary phosphate flour as detd. by the content of labile forms of phosphoric acid in soil or by the effect on the crop (specifically on the grains).

N. Vasileff

LAZURS'KIY, O.V.; KHOROSHKOVA, E.D.

On the fertilizer system for use in grain-beet crop rotation
Dop.AN URSR no.4:368-372 '55. (MLRA 9:2)

1.Institut fiziologii roslin ta agrokhimii AN URSR. Predstaviv diysniy chlen AN URSR O.I.Dushechkin.
(Fertilizers and manures) (Rotation of crops)

LAZURSKIY, A.V.

The role of phosphates in increasing soil fertility. A. I. Dushechkin, A. V. Lazurskii, and V. D. Manzon (Inst. Plant Physiol. and Agrochem., Kiev). *Pochvovedenie* 1955, No. 10, 1–10.—Plot expts. with phosphates on a somewhat podzolized meadow chernozem were conducted for 5 years in a 9-year rotation test. The P added varied from 60, 120, etc. up to 480 kg./ha. in the form of acid phosphate and rock phosphate. Available P was detd. by extg. with 0.5*N* AcOH and 0.5*N* HCl. The latter method gave higher values than the AcOH method. In both cases the amt. of available P has been decreasing after the 1st or 2nd year, with rock phosphate showing a trend of increasing again on the 5th year. With the rock the pH has gradually risen, from 5.0 to 6.8. The higher the quantity of P added the higher was the microbial flora. Of special significance was the rise in *Azotobacter* which apparently helped the N supply. J. S. Joffe

LAZURSKIY, A.V.

USSR/Cultivated Plants - Grains. H.

Abs Jour : Ref Zhur - Biol., No 10, 1958, 44028

Author : Lazurskiy, A.V., Tomashevskaya, Ye.G., Manzon, V.D.

Inst : AS Ukrainian SSR

Title : Effectiveness of Organic Mineral Mixtures Applied to Winter Wheat and Perennial Grasses.

Orig Pub : V sb.: Mestn. organ. udobreniya USSR. Kiyev, AN USSR, 1957, 87-101.

Abstract : In the experiments of the Institute of Plant Physiology and Agricultural Chemistry of the Academy of Sciences of USSR on the slightly acid meadow-chernozem podzolized soil, the addition to the phosphorus fertilizers (in a dose of 60 kg/h P_2O_5) of 2 tons/ha of manure increased the amount of active P in the soil and had a positive effect on nitrification. However, no clear relation

Card 1/2

LAZURSKIY, O.V. [Lazurs'kyi, O.V.], kand. sel'skokhozyaystvennykh nauk

Ground phosphorites as an important fertilizer in the Ukrainian S.S.R. Visnyk AN URSR 29 no.2:53-59 F '58. (MIRA 11:4)
(Ukraine--Phosphorites)

YUKHIMCHUK, F.P.[IUkhymchuk, F.P.], otv. red.; VISHINSKIY, O.M. [Vyshyns'kyi, O.M.], red.; GOLOMBA, R.A.[Holomba, R.A.] red.; DMITRENKO, P.O.[Dmytrenko, P.O.], doktor sel'khoz. nauk, red.; IL'YASHENKO, M.G.[Illiashenko, M.H.], red.; KOLOBOV, O.M., red.; KUKSIN, M.V., red.; LAZURSKIY, O.V. [Lazurs'kyi, O.V.], kand. sel'khoz. nauk, red.; POPOV, F.A., red.; SAMBUR, G.M.[Sambur, H.M.], red.; SAMTSEVICH, S.A.[Samtsevych, S.A.], red.; FEDOROVA, N.A., kand.sel'khoz nauk. red.; YASHOVSKIY, I.V.[IAshovs'kyi, I.V.], red.

[Nutrition and fertilizers of farm crops] Zhyvlennia ta udobrennia sil's'kohospodars'kykh kul'tur. Kiev, Urozhai, 1964. 137 p. (MIRA 17:10)

1. Ukrains'kyy naukovo-doslidnyy instytut zemlerobstva.

YUKHIMCHUK, F.P.[IUkhymchuk, F.P.], otv. red.; VISHINSKIY, O.M. [Vyshyns'kyi, O.M.], red.; GOLOMBA, R.A.[Holomba, R.A.], red.; DMITRENKO, P.O.[Dmytrenko, P.O.], red.; IL'YASHENKO, M.G.[Illiashenko, M.H.], red.; KOLOBOV, O.M., red.; KUKSIN, M.V., red.; LAZURSKIY, O.V.[Lazurs'kyi, O.V.], red.; POPOV, F.A., red.; SAMBUR, G.M.[Sambur, H.M.], red.; SAMTSEVICH, S.A.[Samtsevych, S.A.], red.; FEDOROVA, N.A., red.; KATRENKO, K.A., red.

[Fertilizers and cultivation practices] Dobryva ta agrotekhnika. Kyiv, Urozhai, 1964. 160 p. (MIRA 17:12)

1. Kiev. Ukrains'kyi naukovo-doslidnyi instytut zemlerobstva.

ACCESSION NR: AP4042264 S/0089/64/017/001/0060/0063

AUTHORS: Daruga, V. K.; Lazutkin, I. I.; Nikolayev, A. N.; Sakharov, V. K.; Sinitsy*n, B. I. Tsy*pin, S. G.

TITLE: Study of the passage of neutrons through carbon and through a carbon-iron mixture

SOURCE: Atomnaya energiya, v. 17, no. 1, 1964, 60-63

TOPIC TAGS: reactor material, neutron cross section, neutron interaction, neutron spectrum, fast neutron spectrometry

ABSTRACT: In view of the fact that theoretical calculations are made difficult by lack of detailed information on the cross sections for the interaction between neutrons and matter, the authors consider the spatial distribution of neutrons of different energies passing through layers of carbon from 10 to 130--150 cm thick. The passage of neutrons through an iron-carbon mixture containing 37.4% of iron

Card 1/5

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by volume was also investigated. The B-2 channel of the BR-5 reactor served as the neutron source. The measurements were made under conditions of semi-infinite geometry, and the neutrons with E > 3 MeV leaving the channel had the same energy distribution as the fission spectrum, becoming softer at low energies. Sulfur and aluminum threshold indicators, thorium fission chambers, and proportional recoil-proton counters were used as fast-neutron detectors. Thermal and epithermal neutrons were detected with copper and indium resonant indicators. To permit comparison with the available results, the experimental data were converted into neutron attenuation functions of an infinite flat isotropic source. The experimental data show that the neutron relaxation length in iron increases for low energies, while in carbon it remains practically constant over a wide range of energies. Consequently the addition of iron to the carbon decreases the relaxation length of the neutrons in the upper groups (E > 2 MeV), while the addition of carbon to iron decreases the relaxation length of the neutrons in the 1--1.5 MeV. By choosing

Card 2/5

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the suitable composition of the mixture it is possible to make the neutron relaxation lengths practically equal over a wide energy interval. The use of such a mixture, which is relatively cheap and heat resistant, is quite promising. "The authors are grateful to M. Ya. Kulakovskiy for participating in the discussion of the experimental results and to A. A. Goncharenko for help with the work." Orig. art. has: 3 figures, 2 formulas, and 2 tables.

ASSOCIATION: None

SUBMITTED: 18Dec63 DATE ACQ: ENC: 02

SUB CODE: NP NR REF SOV: 009 OTHER: 003

Card 3/5