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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Highly purified alumina sols. Z. Ya. Berezinova and V. A. Kargin. *Acta Physicochim. U. R. S. S.* 8, 675-6 (1938).—Sols of Al_2O_3, prepd. from $AlCl_3$ and aq. NH_3 and purified by dialysis, coagulate after the peptizing agent is removed; the gels of Al_2O_3 thus obtained are again peptized on electrodialysis between Pt electrodes at potential gradients of from 100 to 200 v. per cm. Peptization occurs after 60-70 hrs. and a sol contg. 1.2 g. of Al_2O_3 per l. is formed. The elec. cond. (lowest value 0.7 $\times 10^{-6}$ ohm^{-1}) and cataphoretic velocity (v) have been measured. The computed ζ-potential is 44 mv. v for sols prepd. in an atm. of H has also been detd. in an atm. of H. These latter sols are stable for several days and have cond. less than 1 $\times 10^{-6}$ mho; they are not cataphoretically transferred for 30-40 min. The charges on particles of Al_2O_3 (and of SiO_2) sols are of secondary importance in stability and coagulation phenomena. B. C. P. A.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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PROCESSES AND PROPERTIES INDEX

The mechanism of absorption of electrolytes by sols of the hydrated oxide of aluminum. Z. Ya. Berestneva and V. A. Kargin. *J. Phys. Chem.* (U.S.S.R.) 10, 593 (1937).—An $Al(OH)_3Cl$ sol was prepd. by pptn. of $AlCl_3$ with 70% of the theoretical amt. of NH_4OH followed by thorough dialysis. When ultrafiltrates from this sol are dild. tenfold, the e. m. f., is increased in all cases 51 mv., and for 100-fold, 102 mv. From the e. m. f. values for Al_2O_3 sols treated with varying amts. of Na_2SO_4 it follows that the max., like that found in electrometric titrations, corresponds to an absorption of electrolyte to the stage $Al(OH)_3Cl$ or $Al_2O_3 \cdot 1/3H_2SO_4$. Large decreases in the elec. cond. observed when Ag_2SO_4 is added to Al_2O_3 sols are due to interaction with adsorbed residual Cl^- ions with pptn. of AgCl and formation of the strongly adsorbed $Al_2O_3 \cdot 1/3H_2SO_4$ giving much lower conductance than the less strongly adsorbed Cl^- ions. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

7

Application of Aluminium Amalgam Electrode to the Determination of the Activity of Aluminium Ions in Aqueous Solutions. Z. Berestneva and V. Kargin (*Acta Physicochimica U.R.S.S.*, 1937, **6**, (3), 329–336). [In English.] A new form of aluminium amalgam electrode containing not more than 6×10^{-4}% by weight of aluminium is used to determine the potential (E) of aluminium amalgams in aqueous solutions correct to ± 1 mv. Values of E for aqueous solutions of pure aluminium trichloride of concentrations 1N to 0·001N are tabulated. J. S. G. T.

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PROCESSES AND PROPERTIES INDEX

Application of an aluminum-amalgam electrode to the determination of the activity of aluminum ions in aqueous solutions. Z. Ya. Berestneva and V. A. Kargin. *J. Phys. Chem.* (U. S. S. R.) 8, 800-4(1936).—An Al-Hg electrode contg. not over 0×10^{-6}% of Al by wt. was used to measure the electrode potential in aq. soln. with an accuracy of ±1 mv. The electrode potentials against a satd. calomel electrode for 1.0, 0.1, 0.01 and 0.001 *N* solns. of $AlCl_3$ are 1.28, 1.30, 1.33 and 1.34 at 18°. Data are given up to 30° and in the presence of NaCl and $BaCl_2$ solns. The potentials against 1 *N* $AlCl_3$ soln. are 1.27, 1.26 and 1.24 for 5×10^{-4}, 2×10^{-4} and 10^{-4}% of Al in the amalgam, resp. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

Adsorption of barium chloride in acid and basic silica sols. Z. Berestneva and V. Kargin. *Acta Physicochim. U. R. S. S.* 4, 675-94(1936)(*in* German).—By means of a Ba-amalgam electrode it was found that adsorption of the Ba ion by a silica sol is measurable only above p_H 8. The activity of the Na ion, measured by a Na amalgam electrode, remains practically unchanged during coagulation of a SiO_2 sol by $BaCl_2$ and the amt. of OH ion adsorbed is small compared to the Ba ion. During coagulation of the alk. sol equiv. ion exchange does not occur. L. W. E.

COMMON ELEMENTS

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

m

7

***Use of the Barium Amalgam Electrode for the Determination of the Activity of Barium Ions in Aqueous Solutions.** Z. J. Berestneva and V. A. Kargin (*Acta Physicochimica U.R.S.S.*, 1935, **2**, 163–170).—[In German.] A barium amalgam electrode is described. Values of its potential against barium chloride solutions of strengths 1·0–0·001*N* were determined. Sodium ions present to the extent of a concentration 0·1*N* in the solution of barium chloride do not affect the value of the electrode potential. Application of the electrode to determine the activity of barium ions in aqueous solutions is described. J. S. G. T.

COMMON ELEMENTS

MATERIALS INDEX

A.S.M.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

MATERIALS INDEX

AUTHOR INDEX

1ST AND 2ND LETTER

3RD AND 4TH ORDERS

2ND LETTER

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1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Alkali amalgam electrodes and their application in colloidal solutions. Z. I. Bergstneva and V. A. Kargin. *Acta Physicochim. U. R. S. S.* **2**, 151-62(1935)(in German).—The amalgam contg. 0.01 to 0.2% of alkali metal by wt. was prepd. by vacuum distn. of Na or K vapor into Hg liquid. NaCl and KCl solns. were from 0.001 to 1.0 *N*, and the temp. was 18° to 25°. The potentials are const. without renewal of surface 5-20 min. for Na and 20-25 for K amalgam, and are easily reproducible for different electrodes on surface renewal. The potential for the K-amalgam electrode contg. 0.051% by wt. of K against a 0.1 *N* KCl soln. at 21° is 2.1437 v.; that for a 0.015% Na electrode against *N* NaCl soln. is 2.0313. Other values agree excellently with those calcd. by the Nernst formula. The addn. of H_2S or As_2O_3 raises the electrode potential and the results are not reproducible. Owing to this poisoning, alkali metal-amalgam electrodes, contrary to the belief of Freundlich, Joachimsohn and Ettich (*C. A.* **23**, 3838), can not be used in the case of As_2S_3 sols. F. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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ACCESSION NR: AP3000199

ASSOCIATION: none

SUBMITTED: 00 DATE ACQ: 12Jun63 ENCL: 00

SUB CODE: CH NR REF SOV: 002 OTHER: 001

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

ACCESSION NR: AP3000199 S/0115/63/000/005/0054/0057

AUTHOR: Malkova, E. M.; Radovskaya, T. L.; Belozerova, M. P.; Berestneva, Z. T.

TITLE: Methods for testing the checking gas mixtures

SOURCE: Izmeritel'naya Tekhnika, no. 5, 1963, 54-57

TOPIC TAGS: low oxygen analysis, colorimetric analysis

ABSTRACT: A well-known colorimetric method for determing very low concentrations (0.001 - 1% by volume) of oxygen involves oxidation of a monovalent-copper ion into a bivalent-copper ion by the oxygen contained in the gas being tested. A pipetting device with a sampling cell was made by the authors. The device and the working procedure are described in detail. Another method for the same purpose was investigated by Brooks (Analytical Chemistry, No 3, 1952) and involved diethyl-dithiocarbamic acid whose colored solution had a colloidal nature. Hence, the color-intensity measurements required a photometer or a turbidimeter whose readings were less accurate and less convenient to take than those of a photocolorimeter. To avoid this difficulty, the use of thiosemicarbazide is suggested. Orig. art. has: 2 figures.

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L 27276-65

ACCESSION NR: AP4010046

spherolites structure, but the spherolites themselves become less compact and are superficially washed out. The amorphous phase was found to occupy the space between separate crystalline fibrils, which are of a complex nature being branched to a marked degree and slightly spiralled. Orig. art. has: 4 figures.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR (Institute of Organometallic compounds, Academy of Sciences, USSR)

SUBMITTED: 12Aug63

SUB CODE: SS, OC

ENCL: 00

NR REF SOV: 004

OTHER: 000

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L 27275-65 EWT(m)/EWP(j) Pc-4 RM

ACCESSION NR: AP4010046 S/0062/64/000/001/0155/0157

AUTHORS: Musarelyan, I. N.; Berestneva, G. L.

TITLE: Film structures produced on composite mixture base

SOURCE: AN SSSR. Izvestiya. Ser. khim. no. 1, 1964, 155-157

TOPIC TAGS: polymer, plasticizer, composite polymer, polymer film, polymer film structure, spherolite film structure, high molecular plasticizer, low molecular plasticizer

ABSTRACT: An effort was made to obtain a distinct spherolite film structure on a base of a polymer mixture of various compositions which would be similar to that obtained by G. A. Andrianova (Dissertation, Moscow, 1963). The amorphous portion was separated from the obtained mixtures by means of differential solution. Film samples were suspended in a tetralin-containing test tube which was then placed in a thermostat at 70° for 10 to 15 days, until complete removal of amorphous phase. The samples were then thoroughly rinsed with a stream of tetralin, preheated to 70°, and examined under a MIN-8 polarization microscope. It was found that sample retains its

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MUSAYELYAN, I.N.; BERESTNEVA, G.L.

Structure of films prepared on the basis of a mixture of components. Izv.AN SSSR. Ser.khim. no.1:155-157 Ja '64. (MIRA 17:4)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

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BERESTNEVA, G.L.; TSVANKIN, D.Ya.; KOZLOV, P.V.

Effect of stretching on the structure and properties of polyethylene-terephthalate films. Part 5: X-ray diffraction studies of crystallization processes occurring in uniaxially oriented films. Vysokom.-soed. 3 no.12:1787-1793 D '61. (MIRA 15:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut i Institut elementoorganicheskikh soyedineniy AN SSSR.
(Ethylene polymers) (Crystallization)

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23760

Orderly precrystalline ... S/190/61/003/006/001/019
B110/B216

groups and to turbidity of the sample. Accordingly, the acetone-treated sample gave the well-defined diffraction pattern shown in Fig. 2. At higher temperatures, the increased flexibility of the molecular chains facilitates the occurrence of relaxation processes. The latter enable the formation of precrystalline structures and, finally, the crystallization with formation of spherolites. There are 2 figures, 1 table, and 13 references: 10 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref 13: A. B. Tompson, D. W. Wood, Nature, 176, 78, 1955.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy kino-fotoinstitut (All Union Scientific Research Cinematography and Photography Institute). Fiziko - Khimicheskiy institut im L. Ya. Karpova (Physical Chemical Institute imeni L. Ya. Karpov) - Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute for Tire Industry)

SUBMITTED: February 25, 1960

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Orderly precrystalline ...

molecules. The specific surface of a maximally elongated film is ~ 2.5 times larger than the degree of order of the new orderly structure, but somewhat smaller than in the initial film. Fig. 2 represents microphotometric curves of variously treated PETP films. Orientation in the sample produces an order involving much larger elements than the microelements present in the unoriented sample. The density drops during the first stage of elongation and then increases again. Macropores are present in the isotropic amorphous film. The density of PETP samples elongated 450% is higher than that of the initial film, owing to orienting "healing" of pores. This healing which sets in at the very outset of elongation explains the relatively small differences in the density values, as compared to the values for the total surfaces. Healing has no influence on the total surface, since the latter is determined by the presence of closely packed structural microformations. The change in birefringence (table) shows that the destruction of the precrystalline structure is due to changes in the position, characteristic of the initial structure, of the elements. This is confirmed by the diffraction pattern of the elongated sample. The increase of flexibility must lead to crystallization, i. e., to long-range order of the molecule centers, to orientation of the side

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Orderly precrystalline ... S/190/61/003/006/001/019
[illegible]

The PETP films were heated (B), treated with acetone (A), or elongated at room temperature by 50 and 450 [illegible]. The [illegible] were investigated (A) by optical examination (birefringence), by the compensation method, (B) by thermodynamic studies, sorption of acetone vapor using spring weights at 25°C and (C) determination of the integral heat of wetting in acetone in the adiabatic calorimeter and (D) measurement of density changes by means of graduated tubes. The crystallinity was determined by X-ray analysis. Fig. 1 shows the sorption isotherms of acetone by PETP films. The table gives experimental data of various film samples, obtained by calculation of the specific surface from sorption data obtained by (A), (C) and (D) using the equation of S. Brunauer, P. H. Emmett, E. Teller (BET) (Ref. 11: J. Amer. Chem. Soc., 60, 309, 1938). The increase of the total internal film surface during the first stage of elongation is due to destruction of the orderly and therefore specially dense structure of the isotropic sample formed during film formation. The data presented illustrate that the closely packed, orderly structure changes to a losely packed and less orderly structure during this process (the specific surface increases nearly by a factor of 6). Further elongation leads to a renewed increase ot the packing density of the

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B110/B216

15 8510 1043, 2209, 1872

AUTHOR: Berestneva, G. L., Berestnev, V. A., Gatovskaya, T. V., Kargin, V. A., Kozlov, P. V.

TITLE: Orderly precrystalline structure of polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 6, 1961, 801 - 805

TEXT: Before crystallization, the chain molecules of polymers in the amorphous state may be in an orderly state, even before the occurrence of lang-range order. Crystallization with formation of large structures (spherolites) is therefore often very rapid, requiring little energy, when polymers are converted from the vitreous to the highly elastic state. A mechanical field applied to a polymer with precrystalline orderly structure may destroy the latter. Further elongation leads to the formation of new oriented structures, which are studied in the present work. The rapidly crystallizing polyethylene terepathalate (PETP) was used for the study, crystallization being observed by crystal analysis, thermodynamically, and visually by the turbidity caused by the formation of interfaces.

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BERESTNEVA, G.L.; KOZLOV, P.V.

Effect of stretching on the structure and properties of poly(ethylene terephthalate) films. Part 4: Investigation of the macrostructure of stretched films by means of etching. Vysokom. soed. 2 no. 12:1854-1859 D '60. (MIRA 14:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy kinofotoinstitut.
(Terephthalic acid) (Films (Chemistry))

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S/190/60/002/011/024/027
B004/B060

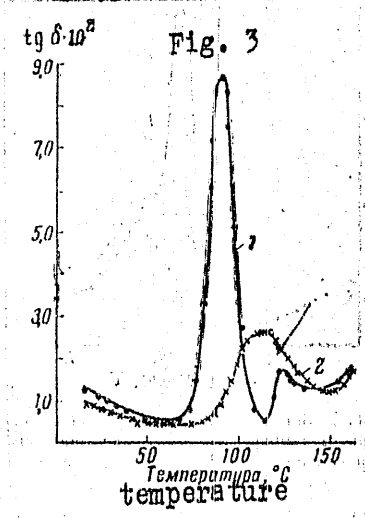

Fig. 3

Legend to Fig.3:
tan δ = φ(t°) in face-centered polyethylene terephthalate film, stretched at 80°C, additionally heated to 170°C
(f = 1000 cps)
1 - nonoriented, amorphous sample,
2 - face-centered, heated sample.

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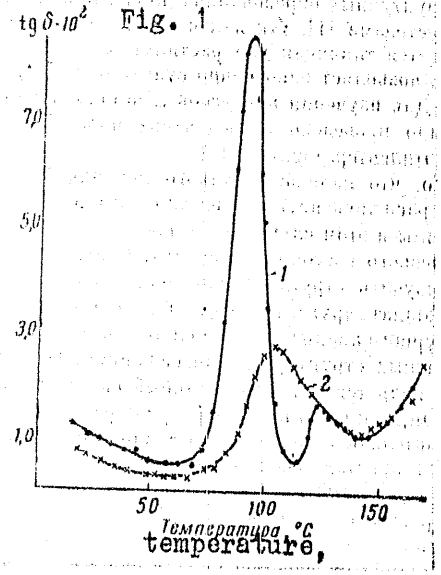
B004/B060

Fig. 1



Legend to Fig.1:
tan δ = φ(t°) in nonoriented amorphous polyethylene terephthalate film (f = 1000 cps)
1 - with temperature increase, 2 - with temperature drop

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Effect of Stretching Upon the Structure and Properties of Films Made of Polyethylene Terephthalate. III. Study of Dielectric Losses in Face-centered Films

S/190/60/002/011/024/027
B004/B060

polymers submitted to mechanical pre-treatment. There are 3 figures and 8 references: 6 Soviet, 1 US, and 1 German.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy kino-fotoinstitut (All-Union Scientific Research Institute of Motion Pictures and Photography). Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: July 1, 1960

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

Effect of Stretching Upon the Structure and Properties of Films Made of Polyethylene Terephthalate. III. Study of Dielectric Losses in Face-centered Films

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B004/B060

frequency f in the temperature range of [illegible] - 100°C. An [illegible] measuring bridge of the type МЛЕ-1 (MLYe-1) was used for the measurement. Silver electrodes were applied onto the samples. The investigation comprised 1) an amorphous, nonstretched film, (Fig.1 [illegible]) a film stretched at 60°C (below the vitrification temperature, and 3) a film which was face-centered at 80°C (vitrification temperature) which was additionally heated for 10 min at the optimum crystallization temperature of 170°C (Fig.3). The diagrams were constructed with rising and dropping temperature. At 1) and 2) the diagrams exhibit the course characteristic of amorphous structure. In contrast therewith, for 3) a characteristic of the crystal structure was observed in the course of the curve $\tan\delta = \varphi(t^0)$, and no turbidity nor brittleness appeared. The authors conclude therefrom that stretching above the vitrification temperature gives rise to a crystallization within the primary structure, without turbidity being caused by spheroid structures. The investigation concerned extends the dependence of the function $\tan\delta = \varphi(t^0)$ on the polymer structure (as found by G. P. Mikhaylov and B. I. Sa[illegible]) to

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S/190/60/[illegible]
[illegible]

AUTHORS: Berestneva, G. L., Barshteyn, L. L., [illegible], Mikhaylov, G. P., Nordbek, K. Ye.

TITLE: Effect of Stretching Upon the Structure and Properties of Films Made of Polyethylene Terephthalate. III. Study of Dielectric Losses in Face-centered Films

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. [illegible], No. [illegible], pp. 1739 - 1743

TEXT: The article under consideration deals with the problem of primary structure formation in thin films, face-centered by stretching, below and above the vitrification temperature. The authors wanted to find out the conditions at which the formation of spheroid structures can be avoided in polyethylene terephthalate films, and at which the film remains transparent and elastic. The texture characteristic of stretched films is a hindrance to X-ray analysis. The authors therefore measured the dielectric losses of face-centered films made of polyethylene terephthalate and determined the function [illegible] at 1000 cps

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BERESTNEVA, G.L.; KOZLOV, P.V.

Effect of stretching on the structure and properties of polyethylene terephthalate films. Part 2: Two-dimensional stretching of the films. Vysokom. soed. 2 no.4:601-606 Ap '60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy kino-fotoinstitut.
(Polyethylene) (Terephthalic acid)
(Films (Chemistry))

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BERESTNEVA, G.L.

KOZLOV, P.V.; BERESTNEVA, G.L.

Effect of stretching on the structure and properties of polyethylene tetephthalate films. Part 1: Uniaxial stretching of the films. Vysokom. soed. 2 no.4:590-600 Ap '60. (MIRA 13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy kino-fotoinstitut.
(Polyethylene) (Terephathalic acid)
(Films (Chemistry))

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEVA, G.L.; KOZLOV, P.V.

Measurement of the birefringence of polyethyleneterephthalate films. Vysokom.soed. 1 no.1:126-127 Ja '59. (MIRA 12:9)

1. Vsesoyuznyy nauchno-issledovatel'skiy kino-fotoinstitut.
(Terephthalic acid--Optical properties)

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30-2-17/49

At the Congress of the International Institute for Sociology in Lebanon

The results of the congress in the author's opinion are positive. The Soviet delegation used the chance to take up personal contact with the scientists, rectors of universities, public and national officials and the journalists of Lebanon.

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1. Sociology-Lebanon

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BERESTNEV, V F.

30-2-17/49

AUTHOR: Semenov, Yu. N. , Candidate of Philosophical Sciences

TITLE: At the Congress of the International Institute for Sociology in Lebanon (Na kongresse meshdunarodnogo instituta sotsiologii v Livane)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 2, pp 75-77(USSR)

ABSTRACT: This institute has existed since 1893, consists of about 100 members and more than 150 corresponding members. It periodically holds international congresses which deal with topical problems of the development of social sciences. The 17th congress of this institute was held in Beirut from September 23 - 29, 1957, and sociologists from more than 30 countries took part. The author regrets the absence of sociologists from people's democratic countries. For the first time a Soviet delegation consisting of V. F. Berestnev, S. G. Shiroyan and the author of this article took part in it. About 50 reports were given. On the part of the Soviet delegation only V. F. Berestnev reported on the problem of the collaboration of civilizations(from the experience of Soviet peoples).

Card 1/2

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BERESTNEV, V.F.

(Vladimir Fedorovich)

"On Soviet Socialist Culture," (Dissertation), Academic degree of Doctor in Philosophical Sciences, based on his defense, 6 July 1954, in the Council of the Inst of Philosophy, Acad Sci USSR.

-M- 3,054,778, 2 Oct 57

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

KOZLOVA, A.N.; PETRUSEVA, A.I.; BERESTNEV, V.A.

Studying the deformation of viscose fibers. Khim. volok. no.2:54-56 '65. (MIRA 18:6)

1. NIIShP.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.; DUBOVA, L.S.; PRYANIKOVA, T.S.; FEDIN, L.A.

Inhomogeneity of oriented fibers. Vysokom. soed. 6 no.7:1302-1307 Jl '64 (MIRA 18:2)

1. Nauchno-issledovatel'skiy institut shinnoy promyslennosti.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.; RAZIKOV, K. Kh.; KARGIN, V.A.

Supermolecular structure of an extra strong viscose cord fiber. Vysokom. soed. 6 no.7:1167-1173 Jl '64 (MIRA 18:2)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti, Institut khimii polimerov AN SSSR i Fiziko-khimicheskiy institut imeni Karpova.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.

Supermolecular structure of fibers and the structural dependencies of mechanical properties. Khim. volok. no.6:4-13 '64.

(MIRA 18:1)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.; LYTKINA, M.B.; GATOVSKAYA, T.V.; KARGIN, V.A.

Studying the characteristics of the molecular structure of the various types of viscose fibers. Khim. volok. no.1:71-74 '62. (MIRA 18:4)

1. NIIShP (for Berestnev, Lytkina). 2. Fiziko-khimicheskiy institut im. Karpova (for Gatovskaya, Kargin).

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

RAZIKOV, K. Kh.; BERESTNEV, V.A.; KARGIN, V.A.

Structure of natural cellulose fibers. Report No.1: Elements of the secondary structure of cotton and ramie fibers. Khim. i fiz.-khim. prirod. i sint. polim. no.1:5-17 '62

(MIRA 18:1)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

ACCESSION NR: AP4042181

limiting value. Concerning the crystallinity of cellulose, the experimental data confirm the hypothesis that the rigid-chain, noncrystalline polymers such as cellulose can form microstructural aggregates with a considerable degree of orientation, but these aggregates never attain the high perfection observed in crystalline polymers. In the superviscose fibers, very highly ordered structural macroformations are found, the appearance and development of which were investigated. The effect of stretching and modifiers on the structural formations is discussed. For polymers such as polyethylene, polyethylene terephthalate or polyamide fiber, the formation of micromorphological structures proceeds in two stages: during the production of unstretched polymer, oriented macrostructures are already formed in the viscose solution; during stretching, macrofibrils are formed in the polymer, inside which the macroformations decompose, first partially to separate, large elements (while their internal order is retained), and then completely to small formations of bundle dimensions. In order to obtain ordered anisodiametric particles, the stages of microformological structure formation must therefore be rigidly controlled. Orig. art. has: 5 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promy*shlennosti (Scientific Research Institute of the Tire Industry); Institut khimii polimerov AN SSSR (Institute of Polymer Chemistry AN SSSR); Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

ACCESSION NR: AP4042181 S/0190/64/006/007/1167/1173

AUTHOR: Berestnev, V. A., Razikov, K. Kh. Kargin, V. A.

TITLE: Study of the supramolecular structure of super-strength viscose cord fiber

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 7, 1964, 1167-1173, and insert facing p. 1168

TOPIC TAGS: cord, viscose cord fiber, super-strength, viscose fiber, electron microscopy, microstructure, macrostructure, polyethylene, polyethylene terephthalate, polyamide, viscose cord, viscose fiber, X-ray diffraction, cellulose

ABSTRACT: Fibers of a super-strength viscose cord (5.45/1 x 2) were investigated under the electron microscope at direct magnifications of up to 30,000. Photomicrographs of the longitudinal and oblique sections of microfibrils of supercord viscose fiber, microdiffraction pictures of high-velocity electrons and x-ray diagrams of the fiber texture are shown. The optically dense structural formations were found to consist of the same hydrated cellulose material as the total fiber. The fact that the macroformations in viscose fiber give a clear microdiffraction picture shows that the microformological structure of the hydrated cellulose fibers has a very high orientation, such as 200-250, which is far from being the

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DUBOVA, L.S.; BERESTNEV, V.A.; NAGDASEVA, I.P.; Prinimali uchastiye:
ALEKSEYEVA, Ye.S.; PRYAMIKOVA, T.S.

Studying the double refraction of some polyamide fibers.
Khim.volok. no.5:52-55 '64. (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut shveynoy promyshlennosti.

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ACCESSION NR: AP4027715

the formation and growth of the supermolecular structure upon forming and drawing the fiber. A complex mechanism is proposed for the stabilization of the physical-mechanical properties at high temperatures and dynamic deformation: this mechanism is based on the association of the inhibition of thermochemical destruction of the polymer and on the stabilization of the fine-dimensioned supermolecular structure in the process of breaking down the fibrous materials. "Electron-microscopic data were obtained jointly with K. Kh. Razikov" "Authors express sincere appreciation to A. V. Orlov and K. Kj. Razikov for help in obtaining experimental data." Orig. art. has: 5 tables and 8 figures.

ASSOCIATION: NIIShP; VNIIV; Institut im. Karpova

SUBMITTED: 04Dec62	DATE ACQ: 22Apr64	ENCL: 00
SUB CODE: CH, MA	No. REF. SOV: 018	OTHER: 001

Card 3/3

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

ACCESSION NR: AP4027715

differences in the properties of the stabilized and unstabilized materials. Thus the deterioration of properties in the unstabilized fiber is attributed to thermo-oxidative destruction of the polymer. The oxidation inhibition by DNFDA is futher illustrated by the higher dynamic properties of stabilized fibers. The structure of the fibers was examined with polarized and electron microscopes; photographs are included. The unstabilized capron fiber has a coarse macrostructure within the fiber which is absent at the surface of the fiber. By adding a small amount of stabilizer (0.5%) to the monomer melt, a fiber is obtained which has fine-dimensioned anisodiametric supermolecular macroformations and coarse oriented particles in the core and spherulite type structures in the surface. Based on these observations, it is proposed that self-reinforcement is clearly manifested and its influence on the properties of the stabilized capron fiber is shown. The physico-mechanical properties of the unstabilized capron cord extracted with acetone were reduced with continued heating (strength reduced by 2/3, elongation by 1/2) at 150C for 150 hours. The reduction in strength of the extracted and of unextracted stabilized capron cord was only about 1/4 while there was actually a slight improvement in the elongation. This led to the assumption that there is a strong bond between the stabilized molecules and the polyamide which affects

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

ACCESSION NR: AP4027715 S/0183/64/000/002/0035/0041

AUTHOR: Berestnev, V. A.; Nazdaseva, I. P.; Kozyreva, Z. M.; Tokareva, L. G.; Fotemkina, Z. I.; Mikhaylov, N. V.; Kargin, V.A.

TITLE: The effect of heat stabilizers on the structure of capron fiber.

SOURCE: Khimicheskiye volokna, no. 2, 1964, 35-41

TOPIC TAGS: Capron fiber, structure, heat stabilizer, mechanical property, capron cord, morphology, heat treatment, elongation, polymer destruction, thermooxidative destruction, oxidation inhibitor, electron microscope, polarized microscope, fiber forming, fiber drawing, stabilizer polyamide bond, stabilization mechanism

ABSTRACT: The morphological character of capron fiber and the mechanical properties of capron cord stabilized with N, N'-di-beta-naphthy l-p-phenylenediamine (DNFDA) were investigated. Studies showed that heat treatment at 20-140C had little effect on the strength of the cord (34.5/4 x 2 and 10.7/1 x 2). On prolonged heating at elevated temperatures the strength of the stabilized fiber did not change significantly while the unstabilized fiber strength was reduced drastically. Heating under nonoxidizing conditions did not produce significant

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BERESTNEV, V.A.; DOBOVA, L.S.; KARGIN, V.A.

Quantitative evaluation of some parameters of the supermolecular structure of viscose fibers. Khim. volok. no.4: 32-33 '63. (MIRA 16:8)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (for Berestnev, Dubova). 2. NIFKhI im. L.Ya. Karpova (for Kargin).

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

L 15606-63

ACCESSION NR: AP3004702

effect on the filaments rather than a cutting one. The authors stress the polymorphic nature of the supermolecular structure of caprone fibers. Orig. art. has: 6 pictures.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti, Fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of the Tire Industry, Physical-Chemical Institute)

SUBMITTED: 25Dec61

DATE ACQ: 28Aug63

SUB CODE: CH

NO REF SOV: 012

ENCL: 00

OTHER: 004

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

L 15606-63 EWP(j)/EWT(m)/BDS/ES(v) AFFTC/ASD Pe-4/Pe-4 RM

ACCESSION NR: AP3004702 S/0190/63/005/008/1156/1159

AUTHORS: Berestnev, V. A.; Rasikov, K. Kh.; Kargin, V. A. 64 63

TITLE: Supermolecular structure of caprone fibers 15

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 5, no. 8, 1963, 1156-1159

TOPIC TAGS: caprone fibers, supermolecular structure, macrofibrils, polymorphism

ABSTRACT: The materials under study were 20 μ thick caprone filaments which were stretched at room temperature to 4.5-5 times their original length. Ultrathin slices of these were obtained by means of an ultramicrotom and subjected to electron microscope studies under direct 30 000 magnification. A longitudinal section of a macrofibril reveals a string of large globular structures forming the axis of the filament, with a layer of small globules forming a coat around it. Beside these there coexist irregular globular structures of mixed spherulites and clusters of needle-like elements presumably derived from the breakup of spherulites. These structures are embedded in a homogeneous optically translucent medium, probably consisting of orderly supermolecular formations. The existence of a relief in some of the slices suggests that the ultramicrotom has a shearing

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GATOVSKAYA, T.V.; PAVLYUCHENKO, G.M.; BERESNEV, V.A.; KARGIN, V.A.

Sorption of low molecular compounds by polymers at high temperatures. Vysokom.soed. 5 no.7:960-965 Jl '63. (MIRA 16:9)

1. Fiziko-khimicheskiy institut imeni Karpova.
(Polymers) (Sorption)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

NOSOV, M.P.; BERESTNEV, V.A.

Necking down of capron fibers. Vysokom.soed. 5 no.7:1080-1084 Jl '63. (MIRA 16:9)

1. Kiyevskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna i Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Nylon--Optical properties)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

L 14950-63 EPR/EWP(j)/EPF(c)/EWT(m)/BDS ASD Pu-4/Pc-4/Pr-4 RM/WW

ACCESSION NR: AP3003782 S/0190/63/005/007/0960/0965

AUTHORS: Gatovskaya, T. V.; Pavlyuchenko, G. M.; Berestnev, V. A.; Kargin, V. A. 74 73

TITLE: Sorption of low molecular compounds by polymers at high temperatures

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 5, no. 7, 1963, 960-965

TOPIC TAGS: sorption, polymer, polyolefin

ABSTRACT: An improved apparatus was constructed to determine the sorption of n-dodecane by polyethylene at 75-200C and of n-octane by polybutylene at 25-110C. The apparatus was entirely glass-sealed and permitted the recording of temperature, pressure, and weight of the polyolefin samples. Isotherms of sorption at various temperatures were charted, and it was found that the sorption capacity of polyethylene increases with temperature, reaching a maximum at 130C, the melting point for this crystalline polymer. In polybutylene, on the other hand, the sorption capacity decreases from 25C to 60C. From there on it rises up to its melting point. The conclusions drawn from the obtained results point to a higher flexibility in the polybutylene macromolecules as compared with polyethylene, which may be due to a shorter carbon chain and a greater branching out of polybutylene. Orig. art. has: 4 charts.

ASSOCIATION: Physico-Chemical Institute

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

Self-reinforcing effect in ... S/190/63/005/004/017/020
B101/B220

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry); Nauchno-issledovatel'skiy institut im. L. Ya. Karpova (Scientific Research Institute imeni L. Ya. Karpov)

SUBMITTED: October 19, 1961

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

S/190/63/005/004/017/020
B101/B220

AUTHORS: Berestnev, V. A., Kargin, V. A.

TITLE: Self-reinforcing effect in fibers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 4, 1963, 581-585

TEXT: Ultra-thin sections of fibers of hydrated cellulosis, polycapramide, polyene anthamide and polyethylene terephthalate were examined with the electron microscope. It was found that these fibers contained anisodiametrical macroformations whichare oriented predominantly in the axis of the macrofibrils and consist of macromolecular bundles. These formations act self-reinforcing, since they consist of thesame substance as the non-oriented surrounding medium. On deformation, the macroformations migrate inside the macrofibrils. To produce cord of ultra-high strength the aim should be to synthesize reinforced or self-reinforcing fibers. There are 8 figures.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

Synthesis of graft copolymers. XII

S/190/63/005/002/002/024
B101/B102

solutions of cadmium, magnesium, zinc, manganese or copper acetate showed that with copper acetate the residual strength was still 95% after 100 hrs at 150°C. The threads were colored pale blue and Cu^{2+} could be identified qualitatively. The films consisting of the copper salt of polyacrylic or polymethacrylic acid protect the fiber from heat. There are 4 tables.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Elemental Organic Compounds AS USSR)

SUBMITTED: July 21, 1961

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

S/190/63/005/002/002/024
B101/B102

AUTHORS: Korshak, V. V., Mongova, S. K., Shkolina, M. A., Nagdaseva, T. P., Berezkin, V. A.

TITLE: Synthesis of graft copolymers. XII

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 5, no. 2, 1963, 171-175

TEXT: Tests are discussed in reference to the grafting of acrylic and methacrylic acids onto caprone fiber at room temperature and the stabilization of the graft copolymer by metal salts. Commercial caprone threads with Schopper strength 14.3 kg were heated at 80-120°C and then immersed for a short time in anhydrous acrylic or methacrylic acid at room temperature. This mild treatment, chosen because of the sensitivity of the polyamide to acids, yielded only a thin microfilm on the fiber, so the grafting could not be determined from the increase in weight of the fiber. In the threads of graft copolymer, the strength was considerably reduced after 100 hrs heating at 150°C; the highest value was 38% residual strength. Treatment of the threads of graft copolymers for several hours with 2.5-5%

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BERESTNEV, V.A.; LYTKINA, M.B.; KARGIN, V.A.

Change of the structure of fibers of viscose cord during warming up. Khim.volok no.6:47-51 '63. (MIRA 17:1)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (for Berestnev, Lytkina). 2. Fiziko-khimicheskiy institut im. Karpova (for Kargin).

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.; DUBOVA, L.S.; ALEKSEYEVA, Ye.S.

Structure of polyamide fibers studied by the etching test. Khim. volok. no.5:29-31 '63. (MIRA 16:10)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

L 17479-63

ACCESSION NR: AP3004761

Orig. art. has: 2 figures and 1 table.

ASSOCIATION: NII shinnoy promy*shlennosti (NII for the Tire Industry); NIFKhI im. L. Ya. Kerpova (NIFKhI)

SUBMITTED: 27Sep62 DATE ACQ: 20Aug63 ENCL: 00

SUB CODE: MA NO REF SOV: 003 OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

L 17479-63 EWP(j)/EWT(m)/BDS ASD Pc-4 RM

ACCESSION NR: AP3004761 S/0183/63/000/004/0032/0033

AUTHORS: Beresnev, V. A.; Dubova, L. S.; Kargin, V. A.

TITLE: Quantitative evaluation of several parameters of macromolecular structure of viscose fibers

SOURCE: Khimicheskiye volokna, no. 4, 1963, 32-33

TOPIC TAGS: nephelometry, viscose fiber, triethylbenzylammonium

ABSTRACT: The quantity, concentration and relative position of the reinforcing macroformation of viscose fibers which determines their mechanical properties must be determined to evaluate the characteristic structure of self-reinforcing fibers. Concentration was determined nephelometrically by dissolving the fibers in aqueous triethylbenzylammonium hydroxide (TEBA), which dissolves only the binding particles which are less solvent-resistant than the reinforcing particles. Comparison of the optical density of the TEBA solution and the fiber strength was not monotonic since strength depends on more than number of reinforcing particles. However, the fibers that stretched the most did give the highest density. "We express thanks to M. B. Lyatkinoy (NIIShP) for supplying samples."

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.; ALEKSEYEVA, Ye.S.; NOSOV, M.P.

Measuring birefringence by the thickness of the fiber. Khim.volok. no.2:40-43 '63. (MIRA 16:5)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (for Berestnev, Alekseyeva). 2. Kiyevskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna (for Nosov).
(Textile fibers--Optical properties)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

Assessing the flexibility ... S/020/62/143/003/016/029
B110/B138

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-Chemical Institute imeni L. Ya. Karpov)

SUBMITTED: December 19, 1961

Card 3/3

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

75 and 130°C. The sorption isotherms for 140, 150 and 200°C coincide with the 130°C one. This means that sorption reached maximum at the melting point of the spherolites. The merging of the 125°C sorption isotherm with the 130°C one at about 60% relative vapor pressure, is probably due to the plastifying effect of n-dodecane, causing the polymer to melt at low temperature. The size of the thermodynamic segment was calculated to find flexibility. The graph showing the size of the thermodynamic segment as a function of relative vapor pressure of n-dodecane at various temperatures shows that the presence of a low-molecular compound does affect it. It was therefore necessary to extrapolate to the zero content of the adsorbate. At 75°C the segment consists of about 600 carbon atoms. A temperature rise increases the flexibility of the chains, and the possibility of realizing a large number of conformations. On melting, chain flexibility rises steeply and all conformations are realized. In this case the minimum segment value of 60 carbon atoms is only five times higher than the length of the adsorbate molecules. This appears to be the optimum flexibility for crystal formation. Rubbers and rubberlike polymers with highly flexible chains with 20-40 carbon atoms in the segment show poor crystallizability owing to the great difference between the entropies of the crystalline and amorphous state. There are 3 figures.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

S/020/62/143/003/016/029
B110/B138

AUTHORS: Gatovskaya, T. V., Pavlyuchenko, G. M., Berestnev, V. A., and Kargin, V. A., Academician

TITLE: Assessing the flexibility of polyethylene chains from the sorption values

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 3, 1962, 590 - 591

TEXT: The chains in crystalline polymers must be flexible for good ordering and crystal lattice formation. The sorption values at room temperature can be used to find the flexibility of amorphous molecules, but they must be determined during melting, when no crystalline ranges are present. Another method must therefore be found. The sorption properties of polyethylene were ascertained within a wide temperature range and below the melting temperature of its crystals. The melting point of a regular polyethylene specimen with molecular weight of about one million was determined on a polarization microscope. The spherolites disappear at 131-136°C and drops appear at 164°C. The sorption isotherms were obtained by using spring weights in an air thermostat. Sorption gradually increases between

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BERESTNEV, V.A., NAGDASEVA, I.P., LYTKINA, M.B., SULEYMANOVA, Z.I., ORLOVA, A.V., DUBOVA, L.S.

Study of the relationship between mechanical properties and structure of cord fibers.

Report presented at the 13th Conference on high molecular compounds Moscow, 8-11 Oct 62

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BERESTNEV, V.A.; GATOVSKAYA, T.V.; KARGIN, V.A.

Manometer for measuring pressure with an increased accuracy. Zav. lab. 28 no.9:1137 '62. (MIRA 16:6)

1. Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya. Karpova.

(Manometer)

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.; GATOVSKAYA, T.V.; KARGIN, V.A.

Structural changes in cord fibers of tires in service. Kauch.i rez. 21 no.1:34-36 Ja '62. (MIRA 15:1)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L.Ya. Karpova.

(Tire fabrics)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

Cord properties of polyenantamide fiber

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A051/A126

the fiber polymer. Obtained test results on the physico-mechanical properties and the structure of the fiber showed that the quality of the second batch of enant fiber is higher than the first. The authors assume a relation between certain structural features of the fibers and the mechanical properties. The mechanical properties of polyamide fiber seem to be determined not by the orientation of the elements of the molecular structure, but rather by the arrangement of other structural elements, possibly certain secondary structural formations. This assumption is proven true by the fact that fiber destruction is determined by the development of macro-defects in it. There are 5 figures and 1 table.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry)

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A051/A126

AUTHORS: Nardaseva, I.P., Berestnev, V.A., Kozyreva, Z.M.

TITLE: Cord properties of polyenantamide fiber

PERIODICAL: Kauchuk i rezina, no. 9, 1962, 40 - 43

TEXT: The physico-mechanical properties of polyenantamide cord were studied on two batches: no. 1 (1959 production) and no. 2 (1960 production) by comparing them to serial capron cord. Static and dynamic methods of determination were used; tensile strength under repeated expansion was tested on a ВДР-1 (VDR-1) machine, under a static load of 4.5 kg, deformation amplitude of 4.8%, and temperature of 130°C. The Goodrich-type instrument was used to determine the tensile strength at repeated deformations by expansion-compression. The enant cord (batch no. 2) was found to be close to serial capron cord in most of its properties. It is somewhat superior to capron in expansion-compression at high deformation amplitudes. Temperature resistance of both tested cord batches is equal to that of serial capron cord. The heat resistance of the cord is thought to be affected by oxidation products of the low-molecular admixtures in

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BERESTNEV, V.A.; RAZIKOV, K.Kh.; KARGIN, V.A.

Particular features of the supermolecular structure of various kinds of viscose fibers. Khim.volok. no.4:51-55 '62. (MIRA 15:8)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (for Berestnev). 2. Fiziko-khimicheskiy institut im. Karpova (for Razikov, Kargin).

(Rayon)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

BERESTNEV, V.A.; GRECHUSHKINA, N.I.; LYTKINA, M.B.; KARGIN, V.A.

Study of the structural characteristics of various viscose fibers by means of light microscopy. Khim.volok. no.3:45-48 '62. (MIRA 16:2)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (for Berestnev, Grechushkina, Lytkina). 2. Fiziko-khimicheskiy institut im. L.Ya.Karpova (for Kargin).
(Rayon)

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oriented microstructural elements. The anisotropy of thread properties is evidently caused by the fiber shape. From a micropicture of a fiber (not reproducible) in which there is a hole the authors infer from the fact that this hole is neither circular nor elliptic that there are stress inhomogeneities in the fibers. The results yielded by examinations of fibers by a polarization microscope (400 - 600 - fold magnification) cause the authors to conclude that some fibers lack an orientation of the molecular structure; an orientation of the surface layer of the fiber was established in a number of cases. Thus, the structure of chemical threads appears to consist of fibers having a nonoriented regular macroformation. The anisotropy of a number of properties in these materials is caused by the fibrous structure. There are 4 figures and 3 Soviet references.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: April 18, 1961

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

S/020/61/139/005/009/021
B104/B201

AUTHORS: Berestnev, V. A., Razikov, K. Kh., Alekseyeva, Ye. S., and Kargin, V. A., Academician

TITLE: Structure of oriented polymers

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 139, no. 5, 1961, 1093-1094

TEXT: The structure of polymers includes a so-called supermolecular formation which reaches beyond the molecular dimensions. The authors used an electron microscope to examine this supermolecular formation on thread sections cut by a microtome. Longitudinal and cross sections were prepared, and special care was taken to save the structure from damages in the cutting process. In this process, all threads were found to split into small fibers with diameters ranging between 1 and 10μ. The fibers had partly a nonoriented, coarse spherulitic structure, and fine globular formations; others had nonoriented macroformations. The authors base on these results to assume that the structure of chemical threads consists of anisodiametric elements, the fibers. The fibers do not contain any

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B110/B216

Orderly precrystalline ...

groups and to turbidity of the sample. Accordingly, the acetone-treated sample gave the well-defined diffraction pattern shown in Fig. 2. At higher temperatures, the increased flexibility of the molecular chains facilitates the occurrence of relaxation processes. The latter enable the formation of precrystalline structures and, finally, the crystallization with formation of spherolites. There are 2 figures, 1 table, and 13 references: 10 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: Ref 13: A. B. Tompson, D. W. Wood, Nature, 176, 78, 1955.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy kino-fotoinstitut (All Union Scientific Research Cinematography and Photography Institute). Fiziko - Khimicheskiy institut im L. Ya. Karpova (Physical Chemical Institute imeni L. Ya. Karpov) - Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute for Tire Industry)

SUBMITTED: February 25, 1960

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molecules. The specific surface of a maximally elongated film is ~ 2.5 times larger than the degree of order of the new orderly structure, but somewhat smaller than in the initial film. Fig. 2 represents microphotometric curves of variously treated PETP films. Orientation in the sample produces an order involving much larger elements than the microelements present in the unoriented sample. The density drops during the first stage of elongation and then increases again. Macropores are present in the isotropic amorphous film. The density of PETP samples elongated 450% is higher than that of the initial film, owing to orienting "healing" of pores. This healing which sets in at the very outset of elongation explains the relatively small differences in the density values, as compared to the values for the total surfaces. Healing has no influence on the total surface, since the latter is determined by the presence of closely packed structural microformations. The change in birefringence (table) shows that the destruction of the precrystalline structure is due to changes in the position, characteristic of the initial structure, of the elements. This is confirmed by the diffraction pattern of the elongated sample. The increase of flexibility must lead to crystallization, i. e., to long-range order of the molecule centers, to orientation of the side

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The PETP films were heated (B), treated with acetone (A), or elongated at room temperature by [illegible] and [illegible] times. [illegible] were investigated (C) by optical examination (birefringence), by the compensation method, [illegible] sorption of acetone vapor using spring weights at [illegible] and (D) determination of the integral heat of wetting in acetone in the adiabatic calorimeter and (D) measurement of density changes by means of graduated tubes. The crystallinity was determined by x-ray analysis. Fig. 1 shows the [illegible] isotherms of acetone by PETP films. The table gives experimental data of various film samples, obtained by calculation of the specific surface from sorption data obtained by (A), (C) and (D) using the equation of S. Brunauer, P. H. Emmett, E. Teller (BET) (Ref. 11: J. Amer. Chem. Soc., 60, 309, 1938). The increase of the total internal film surface during the first stage of elongation is due to destruction of the orderly and therefore specially dense structure of the isotropic sample formed during film formation. The data presented illustrate that the closely packed, orderly structure changes to a losely packed and less orderly structure during this process (the specific surface increases nearly by a factor of 6). Further elongation leads to a renewed increase ot the packing density of the

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B110/B216

15 8510 1043, 2209, 1372

AUTHOR: Berestneva, G. L., Berestnev, V. A., Gatovskaya, T. V., Kargin, V. A., Kozlov, P. V.

TITLE: Orderly precrystalline structure of polymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 6, 1961, 801 - 805

TEXT: Before crystallization, the chain molecules of polymers in the amorphous state may be in an orderly state, even before the occurrence of lang-range order. Crystallization with formation of large structures (spherolites) is therefore often very rapid, requiring little energy, when polymers are converted from the vitreous to the highly elastic state. A mechanical field applied to a polymer with precrystalline orderly structure may destroy the latter. Further elongation leads to the formation of new oriented structures, which are studied in the present work. The rapidly crystallizing polyethylene terephthalate (PETP) was used for the study, crystallization being observed by crystal analysis, thermodynamically, and visually by the turbidity caused by the formation of interfaces.

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LYTKINA, M.B.; BERESTNEV, V.A.; YEVSTRATOV, V.F.; KARGIN, V.A.

Physical and mechanical properties of viscose cord. Khim.volok. no.6:29-33 '61. (MIRA 14:12)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti. (Rayon)

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300°C and more. A discussion was held with respect to the papers presented in which 17 representatives of various scientific organizations and plants in different cities participated. Lyubimova of the Nauchno-issledovatel'skiy institut bumagi (Scientific Research Institute of Paper) (VNIIB) spoke on the methods for improving the quality of cellulose used in the production of viscose fibers of high modules. Epshteyn spoke on the experimental cordless tires, in which the rubber-resin formulations based on the combinations of high-styrene, aniline-formaldehyde or other resins, serve as reinforcing layers. N. N. Lin'kov and I. I. Seleznev supplemented the paper by V. F. Yevstratov by analyzing the functioning of the cord thread in the tire. The elongation of the cord thread by 16 - 20% is considered to be the optimum for tires, but the specific indices are determined by the type of road and the material of the cord thread. F. I. Yashunskaya stated precisely the demands placed on the cord threads. P. F. Badenkov reported that the volume of scientific research work in the field of perfecting the fibers for tire cord lags behind the demands for increasing the quality of the tires.

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A051/A129

A creative discussion on the perfecting of...

paper to the characteristics of the most important tasks and directions of scientific development, especially physics and physical chemistry, in the field of polymer fibers. The properties of these fibers include elastomer fibers with an average module, elastic properties, thermal characteristics, non-reversible losses when heated, the molecular weight and the fractional composition. V. A. Kargin and N. V. Mikhaylov calculated the theoretical stability of the maximum-orientated cellulose fibers, which showed values of 300 kg/mm^2, or about 200 km of breaking length. This theoretical computation is apparently true to some approximation for chemical fibers of any composition. Strength indices have been reached in the laboratories equalling half of the assumed theoretical limit. V. F. Yevstratov spoke on the demands placed on the future cord for tires. The demands on future fabrics for the production of rubber articles were discussed by S. Ye. Strusevich. The use of conveyor belts, flat and edge-type belts in production will increase the durability of articles. Fabrics or threads made of high-index fibers, such as polyether and fortisan, are considered to be advantageous. Hydrate cellulose fibers are included in this group. Of the polyamide fibers tested, anide and enant were found to be the most suitable for the rubber article industry. Fluorine-containing special fibers are necessary for heat-resistant articles for temperatures reaching

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A051/A129

AUTHORS: Yashunskaya, F. I., Berestnev, V. A., Nagdaseva, I. P.

TITLE: A creative discussion on the perfecting of chemical fibers used in the rubber industry

PERIODICAL: Kauchuk i rezina, no. 5, 1961, 54 - 55

TEXT: The discussion which took place on February 20 - 22, 1961, was organized by the Central Board of the VKhO im. D. I. Mendeleyev, Sections for Rubber and Chemical Fibers, the scientific research institutes VNIIV and NIIShP and by the local organizations of the VKhO im. D. I. Mendeleyev at NIIShP. V. V. Krashak, corresponding member of the USSR Academy of Sciences, spoke on the synthesis of new polymers. Some of the most promising new methods of polymer synthesis were given as follows: 1) stereospecific polymerization, 2) grafting and block-copolymerization, 3) cyclopolymerization of non-conjugated diene hydrocarbons, 4) dehydration and recombined polymerization, 5) polycondensation on the interface of phases as a chemical method of direct formation of the ready fiber, 6) hydrolytic polymerization, 7) polycoordination using complex compounds with metals, such as beryllium, obtaining claw-type polymers. Professor N. V. Mikhaylov dedicated his

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BERESTNEV, V. A. Cand Chem Sci -- "Changes of the structure of cord fibers during their disintegration." Mos, 1961 (State Committee of the Council of Ministers USSR for Chemistry. Order of Labor Red Banner Sci Res Phys Chem Inst im L. Ya. Karpov). (KL, 4-61, 186)

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showed that the fibers were covered only on the surface by metal sulfides. Therefore, this surface treatment of the fibers with metal chlorides protects the surface against oxidation, and does not change the other mechanical properties of the fiber. There are 2 figures, 2 tables, and 6 Soviet-bloc references.

ASSOCIATION: NIIShP (V. A. Berestnev, I. P. Nagdaseva, A. N. Pogorelko); NIFKhI im. L. Ya. Karpova (NIFKhI imeni L. Ya. Karpov) (V. A. Kargin)

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B101/B206

Increase of thermostability...

the latter was acidic. If it was alkaline, the cord was first treated with the salt solution, then with the impregnation solution. After this treatment the cord fibers were heated for 100 hr at 150°C with 2 kg load, and tensile strength as well as breaking elongation were measured. Table 1 gives the results. Since a mixture of $CdCl_2$ and $CuCl_2$ showed the best effect, experiments followed with: (1) 0.035% $CuCl_2$ + 0.065% $CdCl_2$; (2) ditto plus impregnation solution of the type РШ-40 (RSh-40); (3) 0.1% $CuCl_2$ + 0.1% $CdCl_2$; (4) ditto plus RSh-40; (5) 0.03% $CuCl_2$ + $CdCl_2$ plus impregnation solution on resin-89 basis. Results: (a) The unheated fiber had a tensile strength of about 15.20 kg and an elongation of 27.3 - 32.9%; (b) the heated, untreated fiber had a tensile strength of 3.1 - 3.28 kg and an elongation of about 6.4%; (c) treatment with the solutions mentioned produced a tensile strength increase of the heated fiber to 11.46 - 14.49 kg, and an elongation increase to 15.8 - 18.34%. The authors point out that this surface treatment is only effective for thin fabrics exposed to oxygen, but not for heavy products such as tires. Treatment of the fibers with H_2S and microscopic investigation (conducted by Ye. S. Alekseyeva)

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B101/B206

AUTHORS: Berestnev, V. A., Nagdaseva, I. P., Pogorelko, A. N., Kargin, V. A.

TITLE: Increase of thermostability of caprone fiber

PERIODICAL: Khimicheskiye volokna, no. 4, 1961, 26 - 28

TEXT: The authors discuss the increase of thermostability of caprone fiber by oxidation inhibitors. Since an addition of such substances to the initial polymer might impair its mechanical properties, the authors think it more convenient to apply such inhibitors on the finished fiber as a protective coat. In this case, the process may be combined with others such as impregnation or dyeing. The authors report on the treatment of caprone fiber with aqueous solutions of metal salts. Caprone cord of the type 14K (14K) was used for tests. It was immersed in the salt solution for 5 - 8 sec, and then dried for 5 min at 115 - 120°C. Cord fabric was immersed for the same time in the salt solution, and dried for 5 min at 132 - 136°C. In a combination with impregnation by latex emulsion, the metal salts were directly dissolved in the impregnation solution if

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BARTENEV, G.M.; BERESTNEV, V.A.

Conference on the strength of polymers and polymer materials.
Kauch.i rez. 19 no.9:57-58 S '60. (MIRA 13:10)
(Polymers--Congresses)

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A051/A026

Activities in the Department of Physics of the VKhO im. D.I. Mendeleyev

necessity of reaching the same mechanical properties with the leather article itself or the leather-replacing substance. Short papers were presented by the following people: V.A. Usenko, Professor - on the selection of the optimum value of the twist for the threads made of various fibers, Professor A.N. Solov'ev - on the effect of the twist on the physico-mechanical properties of the threads, A.A. Rogovina - on the effect of temperature and air oxygen on the durability of the threads, Ye.G. Eyges - on certain changes of the fabric structure in aging, V.A. Berstnev - on the role of the micro- and macrostructure during the destruction process of the fiber, etc. Several resolutions were adopted.

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A051/A026

Activities in the Department of Physics of the VKhO im. D.I. Mendeleyev

V.M. Tendler reported on the work of N.Ye. Chernomordik, "Angle of Anisotropy of Vitrous Plastics Taking Into Account Vessel Construction". V.O. Kononenko and V.M. Chernysheva spoke on "The Shock Absorbing Properties of Plastics". The third day of the meeting dealt with the work performed on studying the physical, physico-chemical and mechanical properties of textile materials and polymer protections for leather. Professor G.N. Kukin opened the meeting and stressed the importance of polymers in the textile and light industries. He suggested studying the changes of the molecular structure of the fibers, taking place during their exploitation, solving the problem of fiber strength as complex articles, investigating the field of aging in fibers and threads. Professor K.I. Koritskiy spoke on "The Methods for Computing the Strength of Threads Made of Staple and Continuous Fibers". The author also spoke of his suggested method for theoretical analysis of the formation of woven fabric from twisted threads, determining the values of the main parameters and properties of the twisted yarn. Professor G.N. Kukin also reported on "The Methods of Determining the Dynamic Fatigue of Textile Materials". V.I. Yeliseyeva gave a paper on "The Characteristics of the Fatigue Stability of Polymer Protection of Leather", where the main feature of the latter was given as being the

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A051/A026

Activities in the Department of Physics of the VKhO im. D.I. Mendeleyev

temperature, was brought forward. G.A. Patrikeyev presented a criticism of the two previous papers, stating that they had no practical value, since the application of the term "elasticity coefficient" was not applicable for complex materials. He also stated that vitrous plastics were not to be considered a material, but rather a complex construction. A debate followed where Perlsnteyn and others participated. V.A. Lepetov reported on the subject of elastic constants expressed through the hardness index, according to Shore. The author also expressed certain ideas concerning the shapes of rubber-commercial articles working under compression. V.G. Gurevich spoke on the results of tests performed by vitrous plastic workers, on smooth samples and those with grooves. The data obtained experimentally showed that the destruction of vitrous plastic takes place only in cases when the tension applied to the sample exceeds a certain limit value. G.M. Bartenev, B.I. Panshin, G.I. Finogenova, and I.V. Razumovskaya reported on certain computations made of the tensile strength of plastics. N.I. Malinin gave a paper on "The Creep and Relaxation of High Polymers and Plastics in the Transitory State". An attempt was made here to describe the elastic-resilient deformation of polymers, which are in the transitory state (from the vitrous to the high-elastic state).

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A051/A026

Activities in the Department of Physics of the VKhO im. D.I. Mendeleyev

M.A. Mokul'skiy - on the changes of the mechanical properties of polymers during irradiation, V.R. Regel' - on the experimental set-up for studying the connection between the static fatigue and age in repeated cyclic loading, S. B. Ratner - on the fatigue destruction of plastics, G.A. Patrikeyev - on the macromolecular mechanics, etc. The second day of the meeting was devoted to the "Problems of Construction Properties of Polymer Materials". Professor N.I. Prigorovskiy stressed the point that contrary to low-molecular materials, polymer materials have many properties calling for a thorough study of the properties of polymers used in machine-building as construction materials. R. M. Sheyderovich and V.S. Streyalev spoke on "The Construction Factors of Static Fatigue of Orientated Vitrous Plastics". The criterion of evaluation of the construction properties of these materials was taken to be their deformity, i.e., the appearance of these deformations when the stability of construction of the article made of these materials is lost. A.L. Rabinovich reported on "Certain General Characteristics of the Mechanical Properties of Construction Material Vitrous Plastics". The approximate theory of the relationship between the stability limit and the direction of deformation at a given rate and

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A051/A026

Activities in the Department of Physics of the VKhO im. D.I. Mendeleyev

tion and Cracking", dealing with two main aspects: experimental data were presented showing that the theory stating that the creep and destruction of plastics had the same physical nature, was false, although they were interconnected, and when investigating the destruction process of organic glass it was found that the formation of cracks occurred prior to the appearance of so-called cracks "of silver", which are micro-spaces on the surface, joined together by an altered polymer material" by rods ". Professor G.M. Bartenev and Professor V.Ye. Gul' gave a paper on "The Nature of the Stability of Polymers", also dealing with the "rods" which form in orientating polymers when destroyed, namely in elastics. The general and specific features of the destruction process of hard and rubber-like polymers were discussed. Academician P. A. Rebinder reported on "The Creep and Tensile Strength of Polymers Considering the Effect of the Active Medium". V.A. Berestnev referred to this paper later by stating that the mechanical properties of the fibers change during processing with various substances. G.L. Slonimskiy reported on "The Role of the Mechano-Chemical Aspect During the Processing and Exploitation of Polymers." P.V. Melent'eva spoke on the subject of mechanical testing of polymer materials.

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S/063/60/005/006/010/014
A051/A026

Activities in the Department of Physics of the VKhO im. D.I. Mendeleyev

tions in exchanging ideas and knowledge. Professor G.M. Bartenev presented a survey paper, "Certain Problems of Polymer Stability", where he dealt with the main aspects of research in this field. The part played by mechanico-chemical phenomena in the destruction of polymers, especially in the process of rubber fatigue was gone into. Corresponding Member of the AS USSR, S.N. Zhurkov, gave a paper on "The Role Played by the Chemical and Intramolecular Bonds in the Destruction of Polymers", where he presented new experimental data explaining the nature of the change in the temperature-time relationship and the polymer stability in their orientation and mastification. The data pointed to the fact that the activation energy of the destruction process (U_0) does not change under the various forms of processing of the polymer, but the coefficient γ changes. Yu.S. Lazurkin commented on the previous paper saying that the formula presented by Zhurkov was similar to that of the one expressing the relationship of the relaxation time to the tension during the deformation process of the polymers. Both authors compared the numerical values of the coefficients of the two formulae. Professor Ye.V. Kuvshinskiy and M.I. Bessonov presented a paper on "The Connection Between the Destruction of Plastics and the Deforma-

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S/063/60/005/006/010/014
A051/A026

AUTHORS: Berestnev, V.A.

TITLE: Activities in the Department of Physics of the VkhO im. D.I. Mendeleyev

PERIODICAL: Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva im. D.I. Mendeleyeva, 1960, No. 6, Vol. 5, pp. 701-703

TEXT: A meeting on the stability of polymers and polymer materials was organized in Moscow in 1960 by the VKhO im. D.I. Mendeleyev Physics of Polymers Section, together with the Polymer Section of the Research Council on the problem "Physical Bases of Stability and Plasticity" at the Department of Physics and Mathematics AS USSR, by the committee on stability of the NTO of the Machine-Building Industry, by the NTO of the Light Industry, by the Committee on the Application of Polymers in Machine-Building of the State Committee of the Council of Ministers of the USSR on Automation and Mechanics. The physical and physico-chemical bases of stability were the subjects of the discussion, as well as stability problems of polymer materials used in machine-building, questions of stability and fatigue of textile materials and polymer protections. G.L. Slonimskiy, Chairman of the Physics Section of Polymers at the VKhO im. D.I. Mendeleyev, emphasized the need for cooperation between various organiza-

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Effect of the Type of Lubricating Preparations on Properties of Caprone Cord

S/183/60/000/005/005/007
B028/B054

preparation had the disadvantage of poor adhesion to rubber. It was 30% lower than in Velosit which showed the best values. The latter is, therefore, recommended as lubricant. The heat resistance of caprone cord was independent of the type of lubricant. There are 2 figures, 1 table, and 8 references: 7 Soviet and 1 US.

ASSOCIATION: NIISHP (Scientific Research Institute of the Tire Industry): Berestnev, V. A., Nagdaseva, I. P.
VNIIV (All-Union Scientific Research Institute of Synthetic Fibers): Serebryakova, Z. G.

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

S/183/60/000/005/005/007
B028/B054

AUTHORS: Berestnev, V. A., Nagdaseva, I. P., Serebryakova, Z. G.

TITLE: Effect of the Type of Lubricating Preparations on Properties of Caprone Cord

PERIODICAL: Khimicheskiye volokna, 1960, No. 5, pp. 24-26

TEXT: The present paper deals with the treatment of caprone fiber with lubricants which contain no surface-active substances and, thus, do not reduce its strength. The authors tested as lubricants for caprone fiber: Velosit (a mixture of saturated hydrocarbons), preparation OC-20 (OS-20), egalizer A, and Avirol'. The following data were obtained:

Lubricant	Lubricant content in the fiber, %	Strength kg	Breaking elongation, %	Fatigue strength, 1000 cycles
Velosit	0.80	15.4	24.2	147
OS-20	0.85	15.6	27.5	133
egalizer A	0.88	15.7	23.0	101
Avirol'	0.80	15.3	24.7	159

In spite of the good fatigue strength attained with Avirol', this

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BERESTNEV, V.A.; GATOVSKAYA, T.V.; KARGIN, V.A.

Investigation of the structural changes in fibers by measurements of their specific surface areas and pore volumes. Vysokom.soed. 2 no.6:916-925 Je '60. (MIRA 13:6)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova i Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Fibers) (Sorption)

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S/138/60/000/009/009/012
A051/A029

A Conference on the Strength of Polymers and Polymer Materials

V.A. Berestnev on: "The Role of Micro and Macrostructure in the Destruction Process of the Fiber", etc. Several recommendations made by members were adopted.

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S/138/60/000/009/009/012
A051/A029

A Conference on the Strength of Polymers and Polymer Materials

The paper by G.M. Bartenev, B.I. Panshin, G.I. Finogenov and I.V. Razumovskaya contained formulae for calculating the durability of organic glass and glass-textilite in cyclic tests. N.I. Malinin reported on "Creep and Relaxation of High Polymers and Plastics in the Transition State". G.I. Sionimskiy remarked that the latter paper was based only on foreign material and that there was a great deal more on the subject in Soviet literature. V.M. Tendler reported on N.Ye. Chernomordik's paper, " The Anisotropic Angle of Glass Plastics in Designing Ship Structures." G.N. Kukin reported on the important role of polymers in the textile and light industries. K.I. Koritskiy read a paper on: "Methods for Calculating the Stability of Threads Made of Staple and Continuous Fibers." G.N. Kukin read another paper on: "Methods of Determining the Dynamic Fatigue of Textile Materials". V.I. Yeliseyev reported on "The Characteristics of Fatigue Stability of Polymer Coatings of Leather". V.A. Usenko read a paper on: "The Selection of the Optimum Value of the Twist for Threads of Various Fibers". A.N. Solov'yev on: "The Effect of the Twist on the Physico-Mechanical Properties of the Threads"; A.A. Rogozina on: "The Effect of the Temperature and Air Oxygen on the Thread Durability". Ye. G. Eyges on: "Certain Changes of the Fiber Structure and Threads in Fatigue".

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S/138/60/000/009/009/012
A051/A029

A Conference on the Strength of Polymers and Polymer Materials

Considering the Effect of the Active Medium." V.A. Berestnev elaborated some of the theoretical aspects of Rebinder's paper and their practical application. G.L. Slonimskiy read a paper on: "The Role of Meshano-Chemistry in the Processes of Treatment and Application of Polymers"; P.V. Melent'yev on: "Mechanical Testing of Polymer Materials"; M.A. Mokul'skiy on: "Changes in the Mechanical Properties of Polymers in the Irradiation Process"; V.R. Regel' on: "Arrangement of Experiments for the Study of the Connection Between Static Fatigue and Exhaustion in Repeated Cyclic Stresses"; V.R. Ratner on: "Fatigue Destruction of Plastics"; G.A. Patrikeyev on: "Macromolecular Mechanics", etc. A great deal of attention was given to the problem of construction properties of polymer materials. R.M. Shneyderovich and V.S. Strelyayev reported on: "Construction Factors of Static Stability in Orientated Glass Plastics"; A.L. Rabinovich read a paper on: "Certain General Characteristics of the Mechanical Properties of Construction Glass Plastics". G.A. Patrikeyev criticized the last two papers, claiming that they had no practical significance. Perl'shteyn added his comments on the same subject. V.A. Lepetov commented the possibility of expressing the elastic constants of rubber through the hardness according to Shore. B.G. Gurevich reported on the test results of glass plastics in smooth samples and in those with bore holes.

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S/138/60/000/009/009/012
A051/A029

A Conference on the Strength of Polymers and Polymer Materials

ing. Papers on the following problems were submitted: the physical and physico--chemical foundations of polymer stability, stability of polymer materials used in machine-building, stability and fatigue of textiles and polymer coatings. 15 Chairman G.L. Slonimskiy pointed out in his introductory speech that the conference was being held for the purpose of introducing physicists, physico-chemists occupied in the polymer branch, mechanical engineers and scientists in the textile and light industries into the work carried out in these branches. G.M. Bartenev presented a paper on "Certain Problems of the Stability of Polymers". He dealt with the problems of time and temperature dependence of stability, elaborating the conception of "stability limit". S.N. Zhurkov read a paper on "The Role of Chemical and Intramolecular Bonds in the Rupture of Polymers". Yu.S. Lazurkin discussed the paper by Zhurkov, stating that the formula on the temperature-time relationship of stability is similar to the formula expressing the dependence of the relaxation time on the tension in the deformation process of polymers. The coefficients of both formulae were compared. Ye.V. Kuvshinskiy and M.I. Bessonov presented a paper on "The Connection of the Destruction of Plastics with Deformation and Cracking." G.M. Bartenev and V.Ye. Gul' read a paper on "The Nature of the Stability of Polymers"; P.A. Rebinder on "Creep and Stability of Polymers

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

S/138/60/000/009/009/012
A051/A029

AUTHORS: Bartenev, G.M.; Berestnev, V.A.

TITLE: A Conference on the Strength of Polymers and Polymer Materials

PERIODICAL: Kauchuk i Rezina, 1960, No. 9, pp. 57 - 58

TEXT: A soveshchaniye po prochnosti polimerov i polimernykh materialov (Conference on the Strength of Polymers and Polymer Materials) was held in May 1960 in Moscow. It was organized by Sektsiya fiziki polimerov (Section for the Physics of Polymers) at the Central Board of VKhO im. D.I. Mendeleyev, by the Sektsiya polimerov (Department of Polymers) of the Nauchnyy sovet po probleme "fizicheskiye osnovy prochnosti i plastichnosti" (Scientific Council on Problems of "Physical Bases of Strength and Elasticity"), at the Cotdeleniye fiziko-matematicheskikh nauk AN SSSR (Department of Physico-mathematical Sciences of the AS USSR), by the Komitet po prochnosti NTO mashinostroitel'noy promyshlennosti (Committee for Stability of NTO of the machinebuilding industry), by NTO legkoy promyshlennosti (NTO of the Light Industry), by the Komissiya po primeneniyu polimerov v mashinostroyenii Goskomiteta Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu (Commission for the Application of Polymers in Machine-Building in the State Committee of the USSR Council of Ministers on automation and machine-build-

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SOV/32-25-2-31/62

Determination of the Change of the Irregularity of the Caprone Fibre in the Course of Its Production Process

normal and the passage of a polarized light ray

d = diameter of the fibre).

The values d and Δ are experimentally determined by the polarisation microscope. This method of double refraction of radiation can be used in various stages of the production of caprone fibre, e.g. in spinning, threading, stretching, and finishing. Several investigations (Table) showed that no considerable change of the fibre diameter can be observed in the transition from finishing to finished rayon whereas the double refraction of radiation is doubled. These differences can be determined by the anisotropy-determination-method but cannot be determined by the "fibre-number". There are 1 table and 4 Soviet references.

ASSOCIATION: Nauchno-issledovatel'skiy institut shinnoy promyshlennosti (Scientific Research Institute of Tyre Industry)

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APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800031-6

25(6), 15(8) SOV/32-25-3-31/62

AUTHORS: Orlova, A. V., Berestnev, V. A.

TITLE: Determination of the Change of the Irregularity of the Caprone Fibre in the Course of Its Production Process (Opredeleniye izmeneniya neravnomernosti kapronovogo volokna v protsesse yego polucheniya)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 3, pp 339-340 (USSR)

ABSTRACT: A method has been worked out by which the differences in diameter and orientation of caprone fibres can be directly determined. It is based on the measurement of the anisotropy of the fibre by means of a polarization microscope because the refraction coefficient along the cross section and in the cross section differs from the orientation direction of the molecular chains. The anisotropy was determined according to the following equation:

$$(n_j - n_\alpha) = \frac{\Delta}{d}$$

(n_j = refractive index along the fibre

n_α = refraction index transversal to the fibre axis

Δ = difference between the passage of a

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The Mechanism of the Fatigue of Fibers S/183/59/000/06/015/027
B004/B007

M S Borodovskiy (Refs 9,10), and thank M S Kosov for the experimental data placed at their disposal, as well as G.L. Glonimskiy, R.Z. Faynberg, and V Z. Kresin for their advice. There are 1 figure and 13 references, 7 of which are Soviet.

ASSOCIATION: NIFKhI im L. Ya. Karpova (Scientific Research Institute for Physical Chemistry imeni L.Ya. Karpov), NII shinnoy promyshlennosti (Scientific Research Institute of the Tire Industry)

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