L 18434-66 EWT(m)/EWP(j) RM
ACC NR: AP6003413 SOURCE CODE: UR/0190/66/008/001/0056/0060

AUTHORS: Perepelkin, A. N.; Kozlov, P. V.

ORG: Scientific Research Institute of Cinematography (Nauchno-issledovatel'skiy kinofotoinstitut)

TITLE: Effect of chemical structure upon the glass point of polycarbonates

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 1, 1966, 56-60

TOPIC TAGS: polycarbonate plastic, thermomechanical property

ABSTRACT: The effect of variations in the chemical composition of the monomeric unit in polycarbonates (I) (obtained by phosgenation of 4,4-dihydroxydiphenylalkanes) upon the glass point of the polymer has been investigated. The (I), prepared according to I. P. Losev, O. V. Smirnova, and Ye. V. Korovina (Vysokomolek. soyed., 5, 1491, 1963), were derived from monomers prepared by condensation of various aldehydes or ketones with: 1) phenol; 2) o- or m-cresol; 3) halogenated phenols. The glass point T_g was determined by means of thermomechanical testing of individual samples on dynamometric scales. It was established that: 1) increase in the length of aliphatic chains or introduction of methyl groups into the benzene

Card 1/2 UDC: 678.01:53+678.674

L 18434-66

ACC NR: AP6003413

ring lowers the glass point; 2) insertion of an aromatic ring at the central carbon atom; 3) introduction of a central carbon atom into the saturated aliphatic cycle or of halogen into the benzene ring--all result in a rise of the glass point. The authors express their gratitude to O. V. Smirnova, Ye. V. Korovina, and El' Said Ali Khasan for polycarbonate samples. Orig. art. has: 1 table and 3 figures.

SUB CODE: 07/ SUBM DATE: 11Feb65/ ORIG REF: 004

Card 2/2

ZHBANKOV, R.G.; KOMAR, V.P.; RODIONOVA, M.I.; KOZLOV, P.V.

Peculiar features of the infrared spectra of cellulose esters in the crystalline state. Vysokom. soed. 8 no. 1:157-162 Ja '66 (MIRA 19:1)

1. Fizicheskiy institut AN BSSR i Moskovskiy gosudarstvennyy universitet imeni Lomonosova. Submitted March 6, 1965.

L 40106-66 EWT(m)/EWP(j)/T IJP(c) RM

ACC NR: AR6020538 (A) SOURCE CODE: UR/0081/66/000/003/S013/S013

33
B

AUTHOR: Romanenko, V. P.; Braginskiy, G. I.; Kozlov, P. V.

TITLE: Effect of certain phosphates on the deformation of acetylcellulose

SOURCE: Ref zh. Khim, Part II, Abs. 3S79

REF SOURCE: Tr. Leningr. in-ta kinoinzhenerov, vyp. 9, 1963, 89-94

TOPIC TAGS: phosphate, cellulose, plasticizer

ABSTRACT: The temperature dependence of acetylcellulose (AC) plasticized with triphenyl, tricresyl, and trioctyl phosphates was studied. The AC samples had the same average molecular weight (70,000) and different contents of bound CH_3COOH (62.06-26.30%). The studies were made in the range from -80 to +160°. It is shown that unplasticized AC of various degrees of saponification is in the vitreous state at all testing temperatures. As the content of bound CH_3COOH in AC decreases, the modulus of elasticity increases. The values of elastic deformations of plasticized AC samples at temperature below the glass transition temperature of the plasticizer (PL) decrease sharply as compared to unplasticized samples. When the plasticizer is present in the liquid state in the polymer, it increases the looseness of the packing of structural elements and of the elastic properties of AC. The authors hold that the PL studied plasticize AC by inclusion in the interpacket regions, being typical interpacket PL. A. Kh. [Translation of abstract].

SUB CODE: 07,11

Card 1/1

L 40127-66 EWT(m)/EWP(j)/T IJP(c) RM
ACC NR: AP6013900 SOURCE CODE: UR/0020/66/167/006/1321/1324

40
36
B

AUTHOR: Kozlov, P. V.; Kaymin', I. F.; Kargin, V. A. (Academician)

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet)

TITLE: The heat expansion mechanism in oriented linear polymers

SOURCE: AN SSSR. Doklady, v. 167, no. 6, 1966, 1321-1324

TOPIC TAGS: linear polymer, heat expansion, polymer physical chemistry

ABSTRACT: Heat related changes in the length of samples cut from isotropic cellulose triacetate film in a direction parallel or perpendicular to the axis of orientation, were analyzed to clarify the shrinking of polymers when heated. The base film was drawn out from 15 to 50% in relation to the initial length and pre-annealed in a free state (10 min, 230C). The temperature of the cut samples was raised at 2 deg/min. The results are plotted graphically and indicate that reversible shrinkage is peculiar only to oriented systems, its intensity relating to the level of orientation. The effect is characteristic for amorphous or crystalline polymers and occurs in glassy or elastic states. An interpretation of the observed phenomenon is given in terms of the amplitude of skeletal temperature vibrations. The authors express

Card 1/2 UDC: 536.413.2

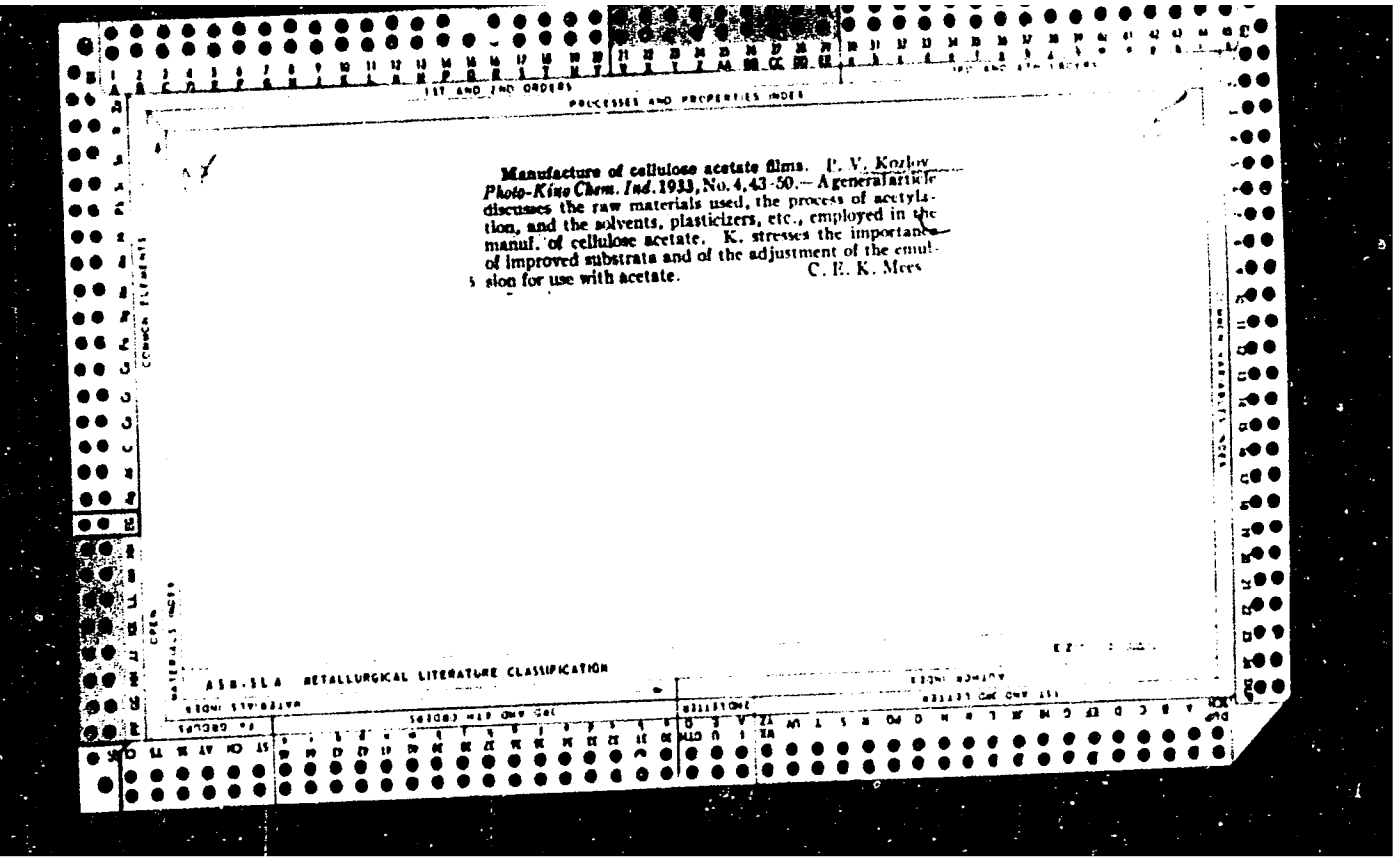
L 40127-66

ACC NR: AP6013900 4

their sincere gratitude to L. G. Zhitkova for providing them with cellulose triacetate film, and to N. F. Bakeyev, Yu. M. Malinskiy, and V. V. Guzeyev for useful discussions on the results of this work. Orig. art. has: 4 figures.

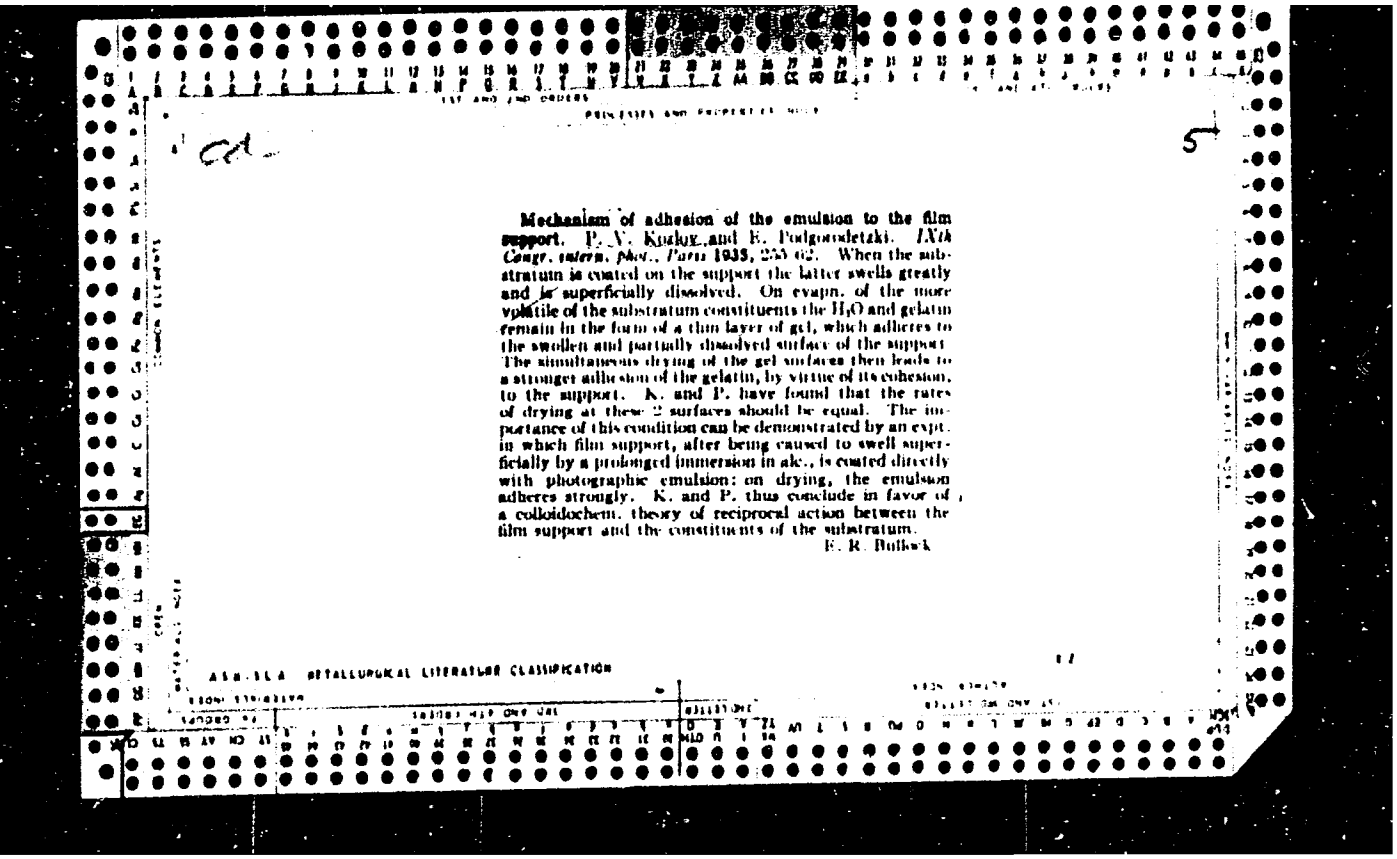
SUB CODE: 07/ SUBM DATE: 27Oct65/ ORIG REF: 007/ OTH REF: 002

Card 2/2



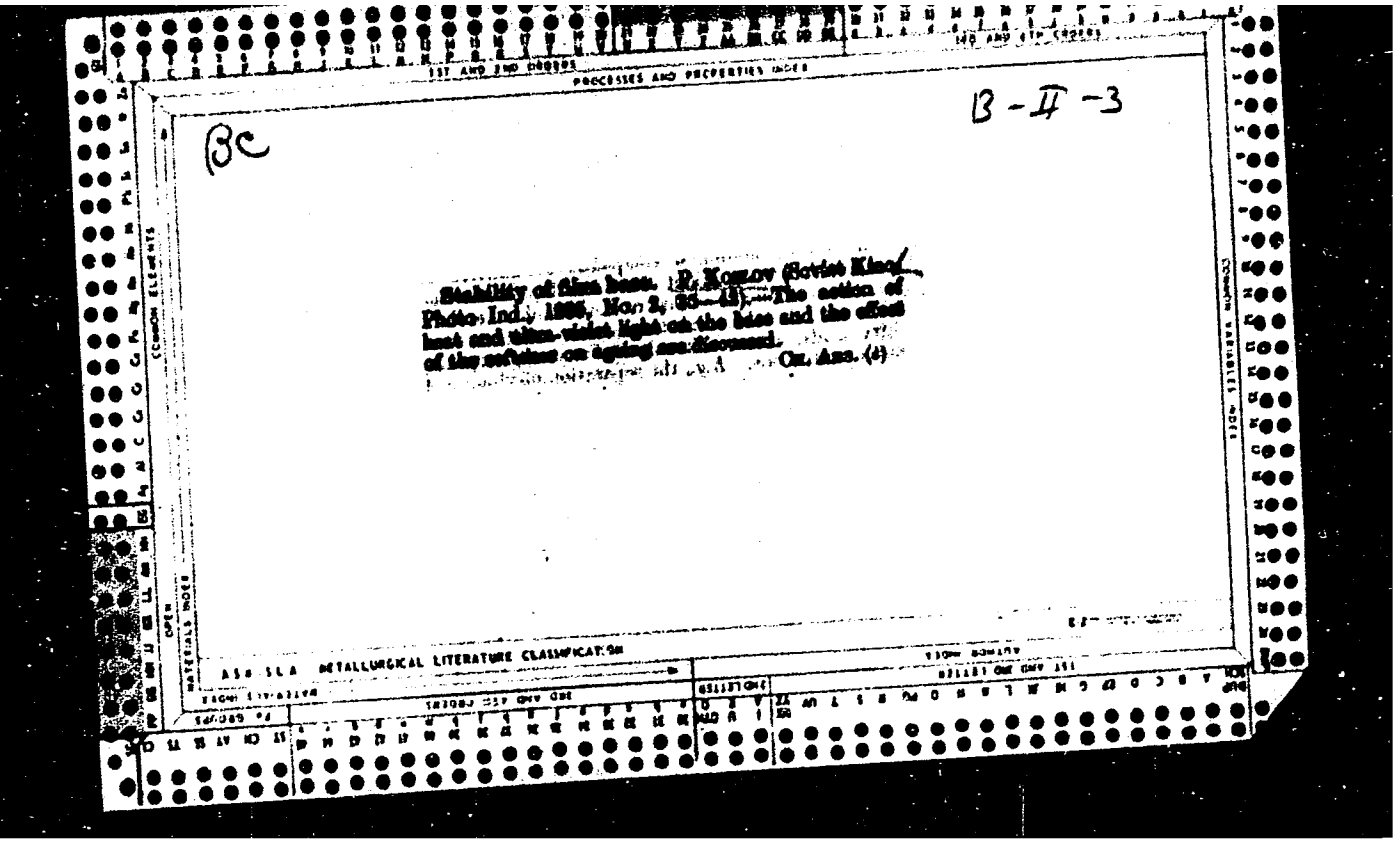
Manufacture of cellulose acetate films. P. V. Kozlov. *Photo-Kino Chem. Ind.* 1933, No. 4, 43-50.—A general article discusses the raw materials used, the process of acetylation, and the solvents, plasticizers, etc., employed in the manuf. of cellulose acetate. K. stresses the importance of improved substrata and of the adjustment of the emulsion for use with acetate.

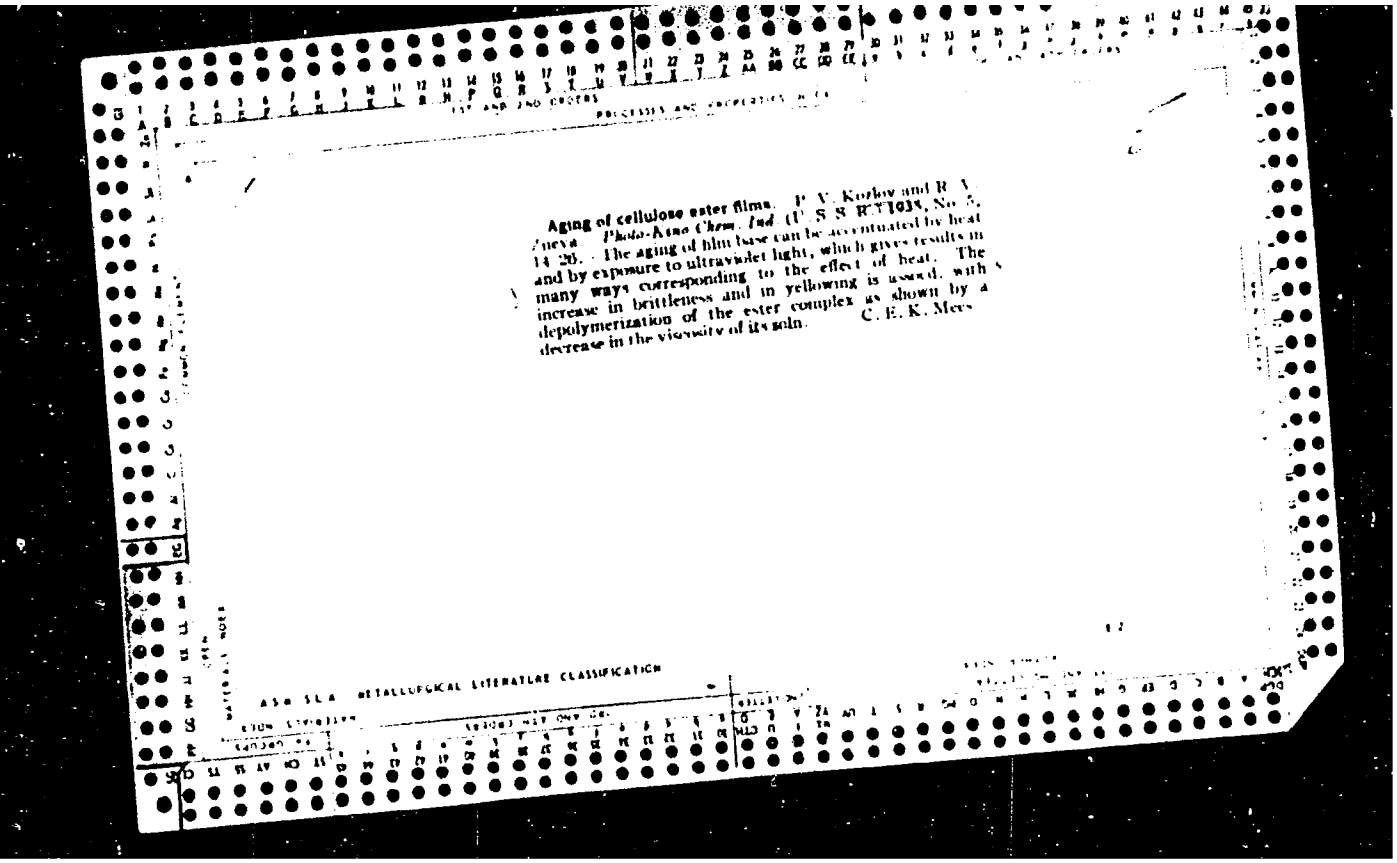
C. E. K. Mees



Mechanism of adhesion of the emulsion to the film support. P. V. Kuzkov and E. Podgoudetzki. *IXth Congr. intern. phot., Paris* **1935**, 253-62. When the substratum is coated on the support the latter swells greatly and is superficially dissolved. On evapn. of the more volatile of the substratum constituents the H_2O and gelatin remain in the form of a thin layer of gel, which adheres to the swollen and partially dissolved surface of the support. The simultaneous drying of the gel surfaces then leads to a stronger adhesion of the gelatin, by virtue of its cohesion, to the support. K. and P. have found that the rates of drying at these 2 surfaces should be equal. The importance of this condition can be demonstrated by an expt. in which film support, after being caused to swell superficially by a prolonged immersion in alc., is coated directly with photographic emulsion; on drying, the emulsion adheres strongly. K. and P. thus conclude in favor of a colloidochem. theory of reciprocal action between the film support and the constituents of the substratum.

E. R. Bullock



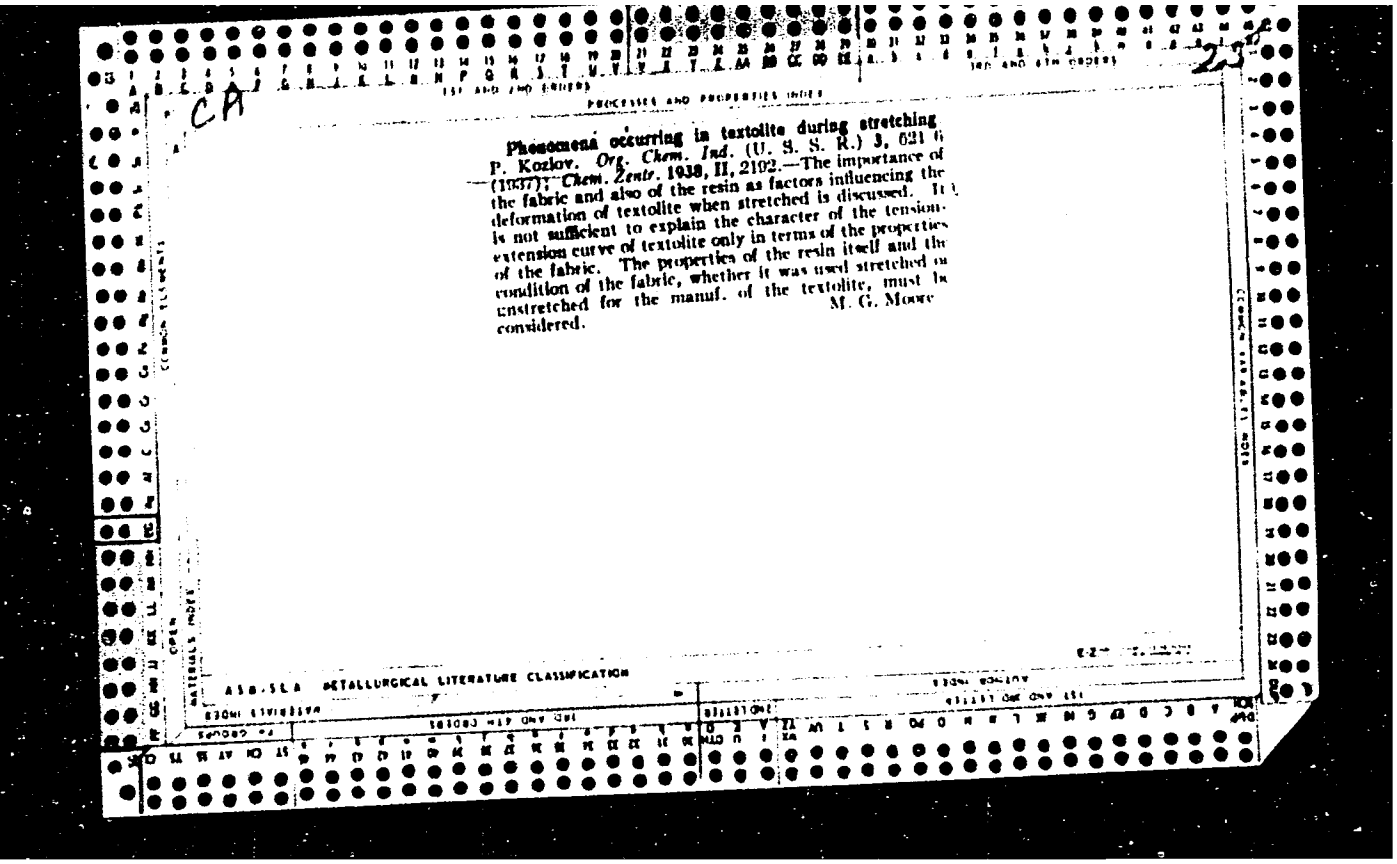


Aging of cellulose ester films. P. V. Kozlov and R. V. [illegible] *Photo-Kino Chem. Ind.* (U. S. S. R.) 1934, No. 5, 14–20. The aging of film base can be accentuated by heat and by exposure to ultraviolet light, which gives results in many ways corresponding to the effect of heat. The increase in brittleness and in yellowing is noted, with a depolymerization of the ester complex as shown by a decrease in the viscosity of its soln. C. E. K. Mees

PROCESSES AND PROPERTIES INDEX

Effect of the humidity of the air on the keeping of motion picture films. P. V. Kozlov and E. I. Ruskova. *Kino-Photo Chem. Ind.* **1937**, No. 1, 33-40. The effect of the humidity of the air on the consistency of the film during keeping was studied. The results show the behavior of films when kept under different humidities and temps. and the following deductions are made: (1) The optimum relative humidity of the air for film keeping should be between 65 and 70%. (2) These conditions hardly change the normal moisture content of the film which must be 3%, nor do they change the other qualities of the film in any way (consistency of surface, mech. properties). W. R. H.

METALLURGICAL LITERATURE CLASSIFICATION

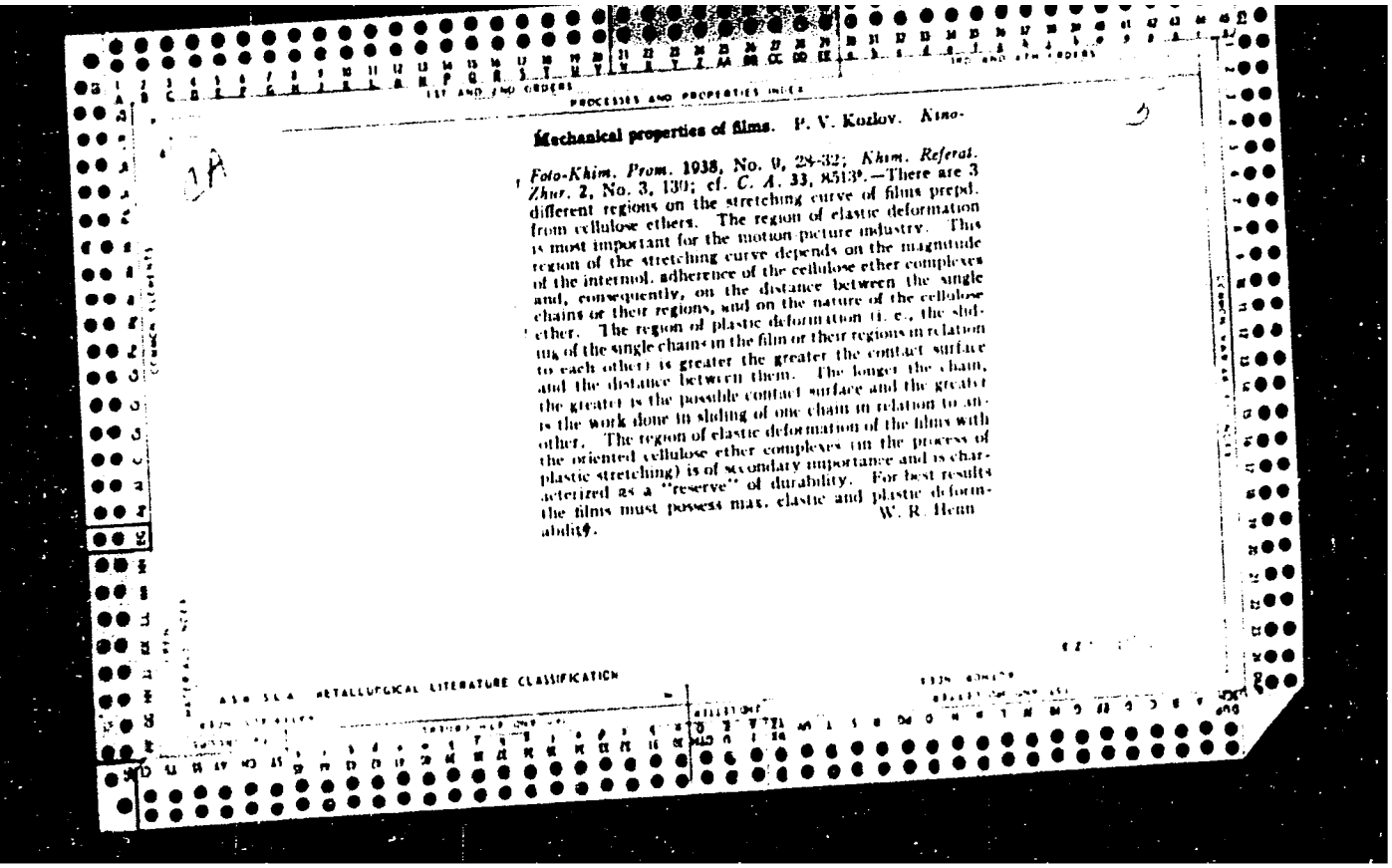


CA

PROCESSES AND PROPERTIES INDEX

Phenomena occurring in textolite during stretching. P. Kozlov. *Org. Chem. Ind.* (U. S. S. R.) **3**, 621 (1937); *Chem. Zentr.* **1938**, II, 2102.—The importance of the fabric and also of the resin as factors influencing the deformation of textolite when stretched is discussed. It is not sufficient to explain the character of the tension-extension curve of textolite only in terms of the properties of the fabric. The properties of the resin itself and the condition of the fabric, whether it was used stretched or unstretched for the manuf. of the textolite, must be considered. M. G. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

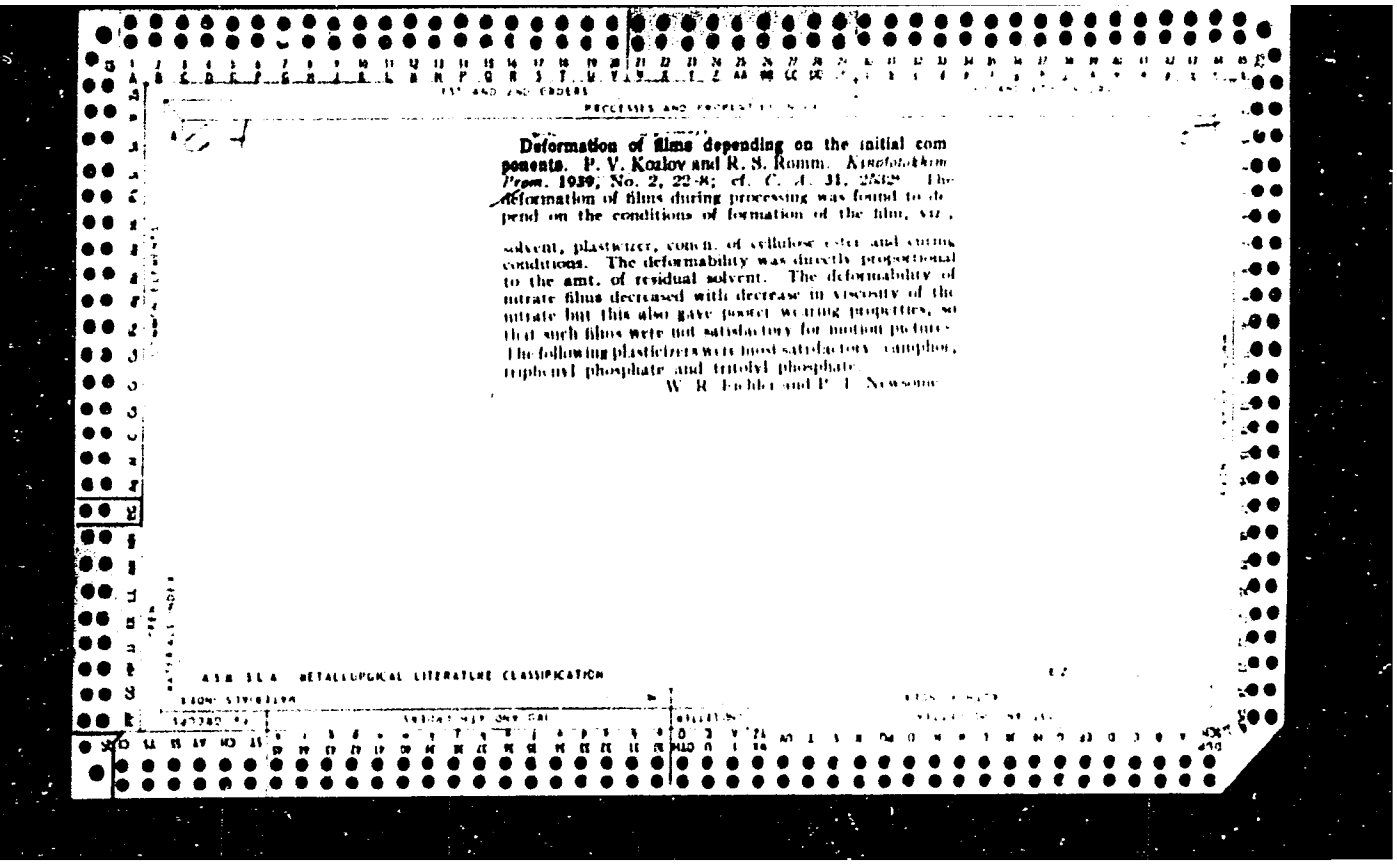


PROCESSES AND PROPERTIES INDEX

Mechanical properties of films. P. V. Kozlov. *Kino-Foto-Khim. Prom.* 1938, No. 9, 28-32; *Khim. Referat. Zhur.* 2, No. 3, 130; cf. *C. A.* 33, 8513⁹.—There are 3 different regions on the stretching curve of films prepd. from cellulose ethers. The region of elastic deformation is most important for the motion picture industry. This region of the stretching curve depends on the magnitude of the intermol. adherence of the cellulose ether complexes and, consequently, on the distance between the single chains or their regions, and on the nature of the cellulose ether. The region of plastic deformation (i. e., the sliding of the single chains in the film or their regions in relation to each other) is greater the greater the contact surface and the distance between them. The longer the chain, the greater is the possible contact surface and the greater is the work done in sliding of one chain in relation to another. The region of elastic deformation of the films with the oriented cellulose ether complexes (in the process of plastic stretching) is of secondary importance and is characterized as a "reserve" of durability. For best results the films must possess max. elastic and plastic deformability.

W. R. Henn

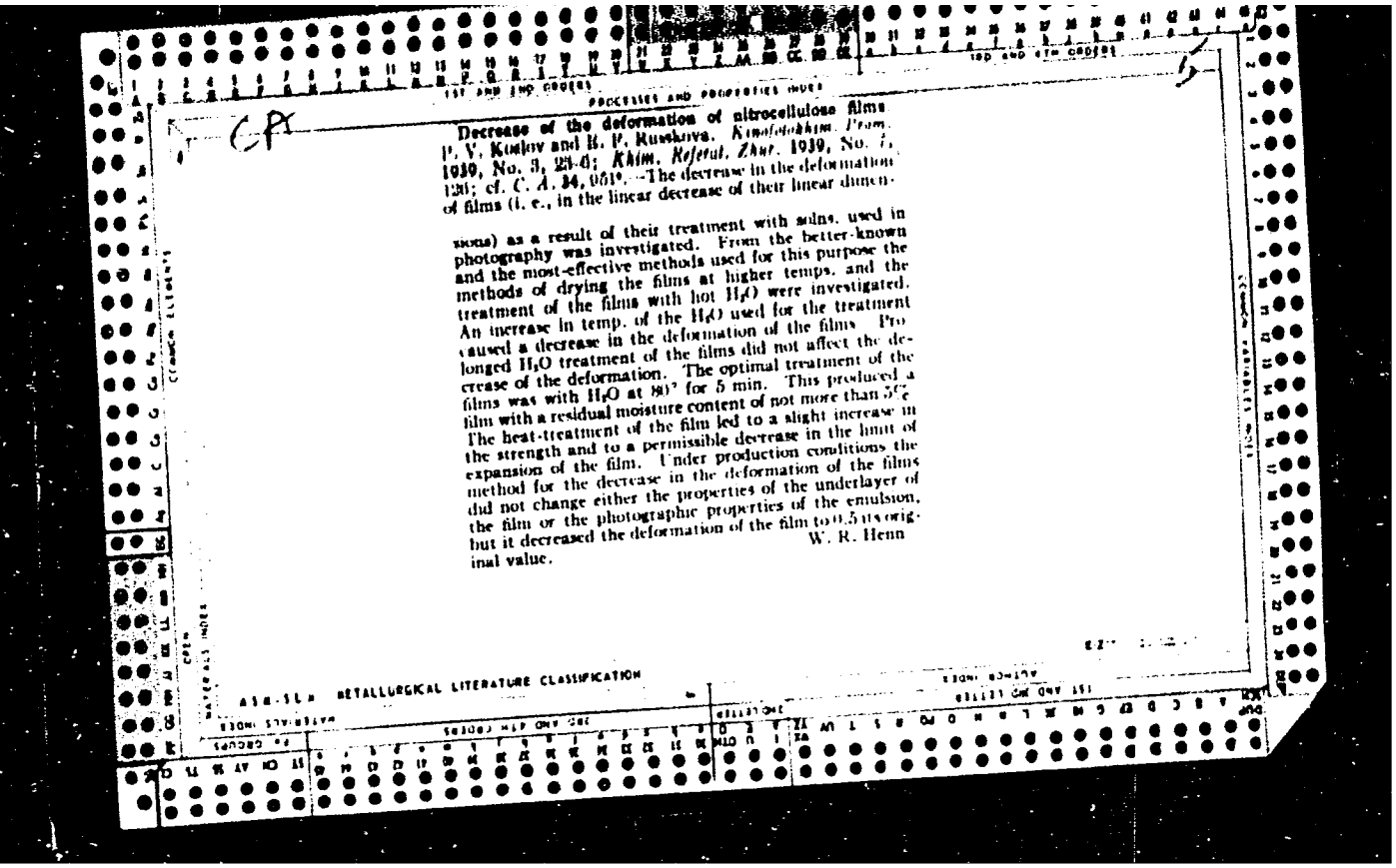
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Deformation of films depending on the initial components. P. V. Kozlov and R. S. Romm. *Kinofotokhim Prom.* 1939, No. 2, 22-8; cf. *C. A.* 31, 2502. The deformation of films during processing was found to depend on the conditions of formation of the film, viz., solvent, plasticizer, concn. of cellulose ester and coating conditions. The deformability was directly proportional to the amt. of residual solvent. The deformability of nitrate films decreased with decrease in viscosity of the nitrate but this also gave poorer wearing properties, so that such films were not satisfactory for motion pictures. The following plasticizers were most satisfactory: camphor, triphenyl phosphate and tritolyl phosphate.

W. R. Fuchs and P. I. Newsome

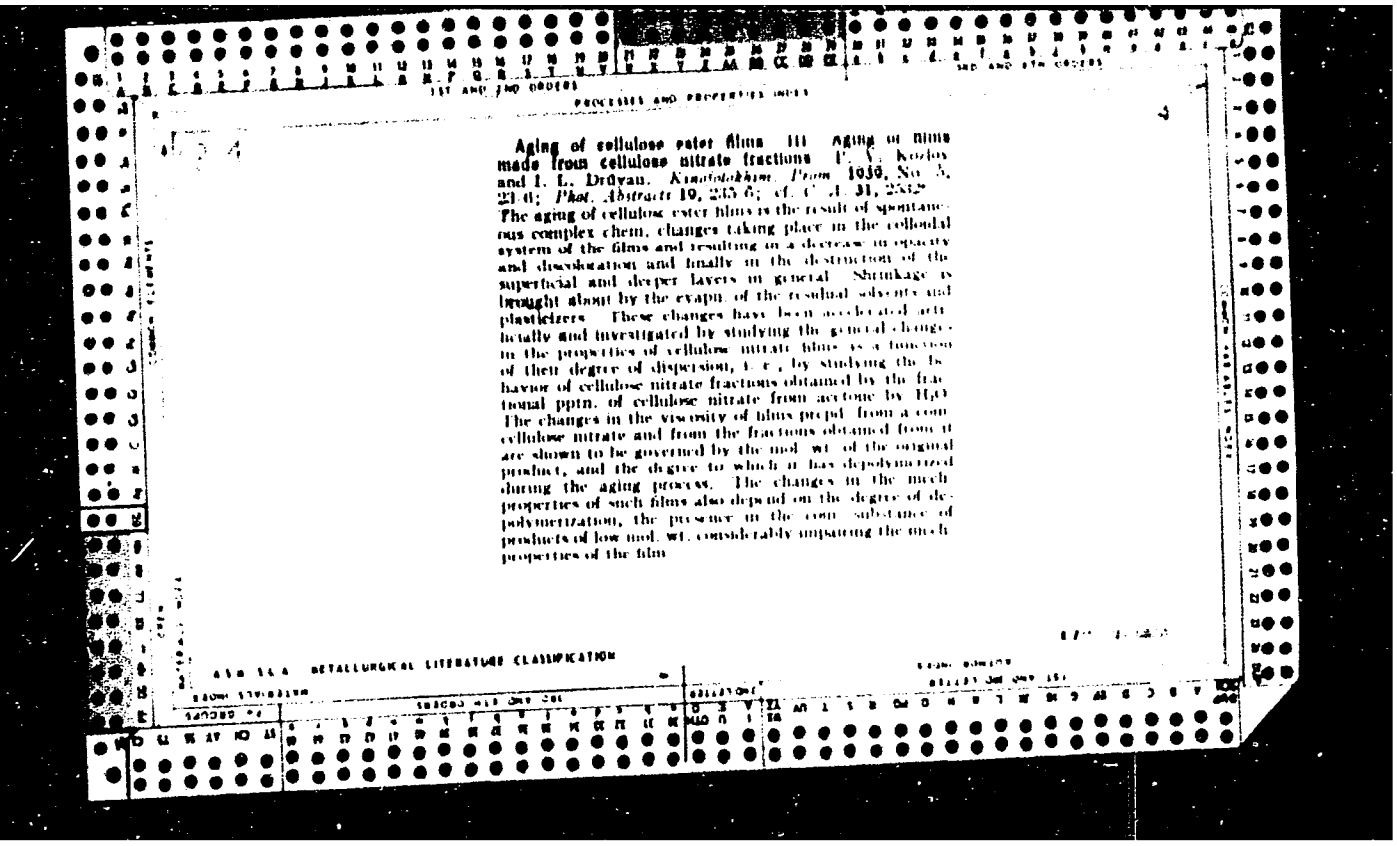
A S M S L A METALLURGICAL LITERATURE CLASSIFICATION



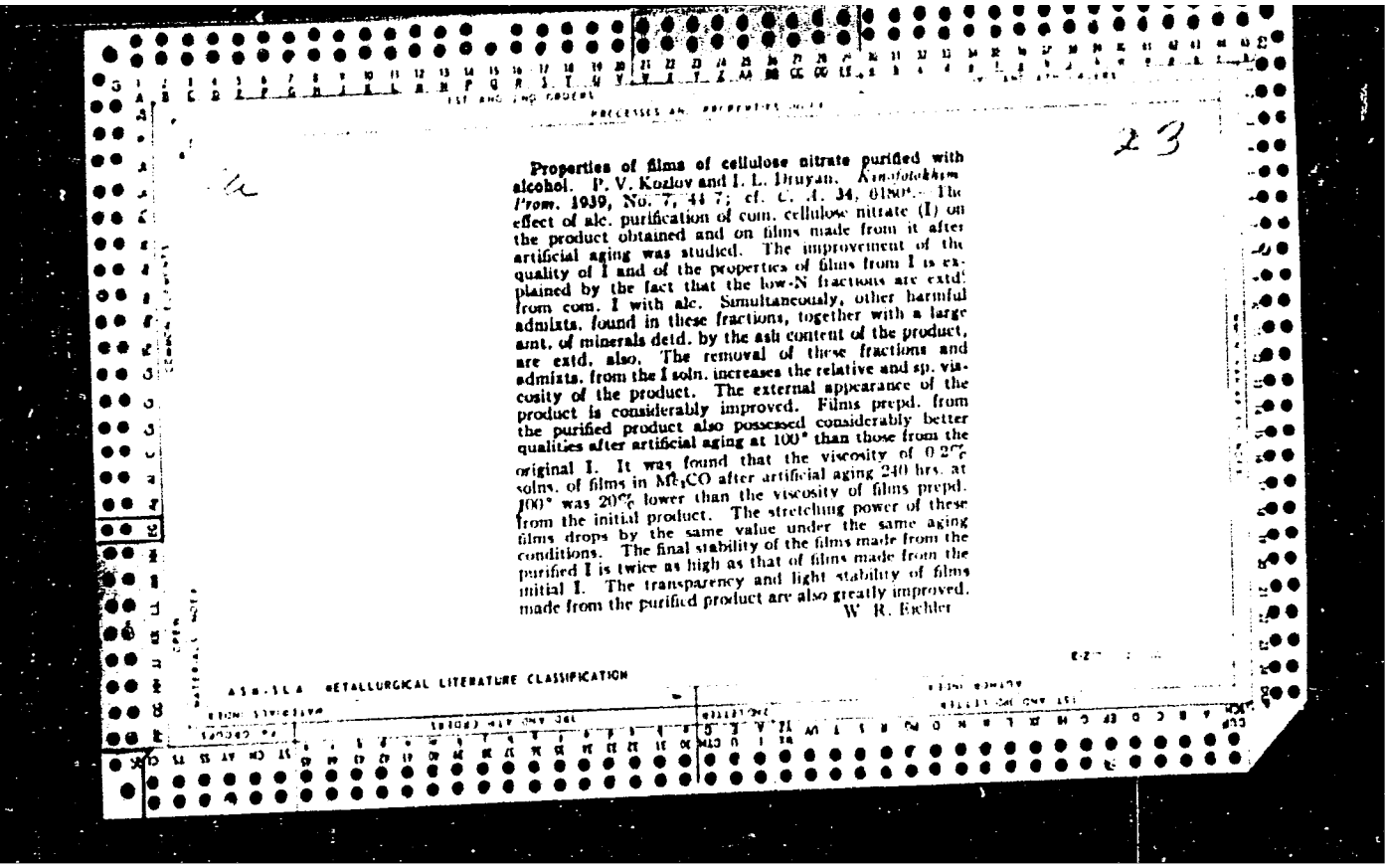
CA

Decrease of the deformation of nitrocellulose films P. V. Kuntov and E. P. Rusakova. *Kinofotokhim. Prom.* 1930, No. 3, 23-6; *Khim. Referat. Zhur.* 1930, No. 7, 120; cf. *C. A.* 34, 6610.—The decrease in the deformation of films (i. e., in the linear decrease of their linear dimensions) as a result of their treatment with solns. used in photography was investigated. From the better-known and the most-effective methods used for this purpose the methods of drying the films at higher temps. and the treatment of the films with hot H_2O were investigated. An increase in temp. of the H_2O used for the treatment caused a decrease in the deformation of the films. Prolonged H_2O treatment of the films did not affect the decrease of the deformation. The optimal treatment of the films was with H_2O at 80° for 5 min. This produced a film with a residual moisture content of not more than 5%. The heat-treatment of the film led to a slight increase in the strength and to a permissible decrease in the limit of expansion of the film. Under production conditions the method for the decrease in the deformation of the films did not change either the properties of the underlayer of the film or the photographic properties of the emulsion, but it decreased the deformation of the film to 0.5 its original value.

W. R. Henn

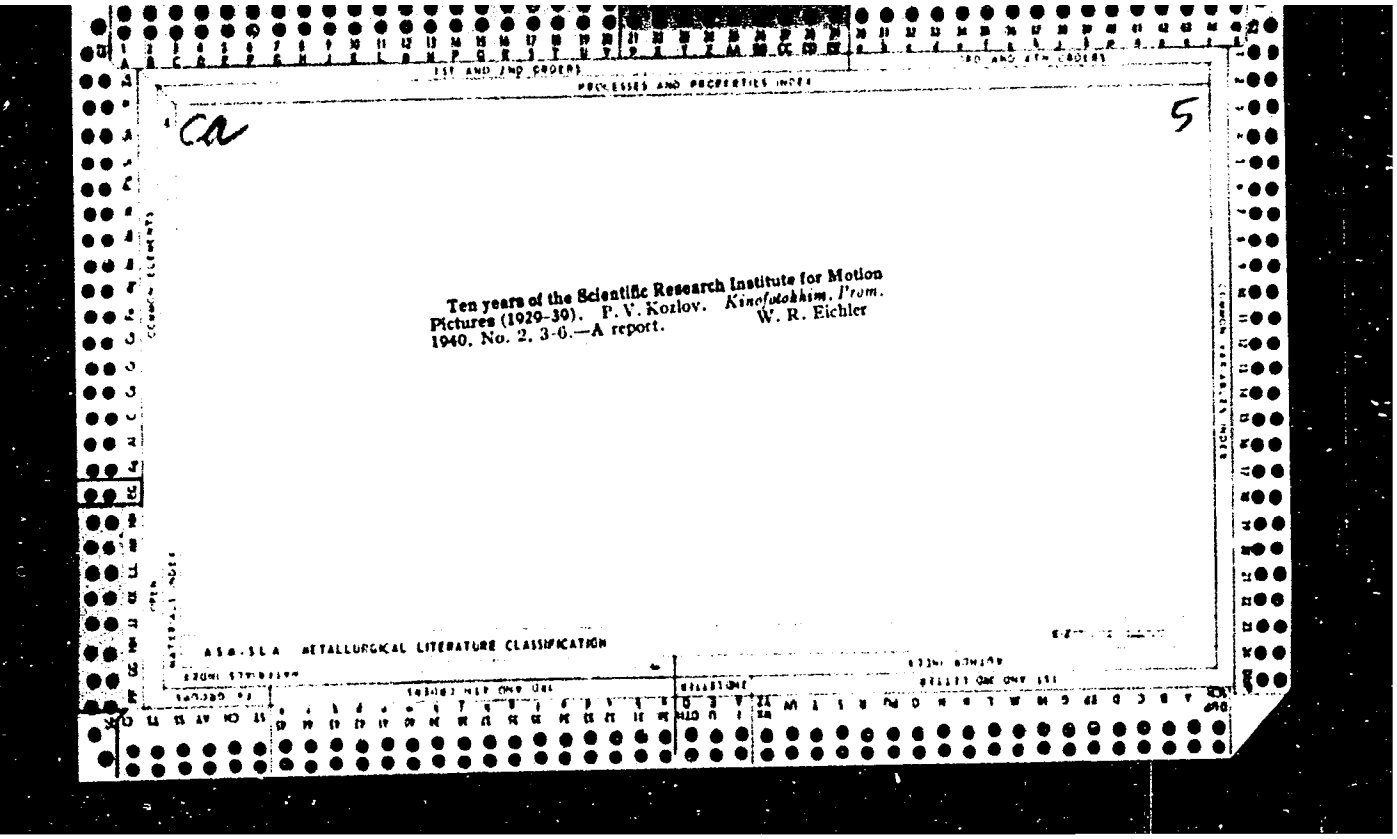


Aging of cellulose ester films. III. Aging of films made from cellulose nitrate fractions. P. V. Kozlov and I. L. Drûvan. *Kauchuk i Rezina. Prom.* 1936, No. 5, 21-6; *Plast. Abstracts* 19, 255-6; cf. C. A. 31, 2515. The aging of cellulose ester films is the result of spontaneous complex chem. changes taking place in the colloidal system of the films and resulting in a decrease in opacity and discoloration and finally in the destruction of the superficial and deeper layers in general. Shrinkage is brought about by the evapn. of the residual solvents and plasticizers. These changes have been accelerated artificially and investigated by studying the general changes in the properties of cellulose nitrate films as a function of their degree of dispersion, i. e., by studying the behavior of cellulose nitrate fractions obtained by the fractional pptn. of cellulose nitrate from acetone by H_2O. The changes in the viscosity of films prepd. from a com. cellulose nitrate and from the fractions obtained from it are shown to be governed by the mol. wt. of the original product, and the degree to which it has depolymerized during the aging process. The changes in the mech. properties of such films also depend on the degree of depolymerization, the presence in the com. substance of products of low mol. wt. considerably impairing the mech. properties of the film.



Properties of films of cellulose nitrate purified with alcohol. P. V. Kozlov and I. L. Druyan. *Kinofotokhim Prom.* 1939, No. 7, 44-7; cf. C. A. 34, 6180⁸. The effect of alc. purification of com. cellulose nitrate (I) on the product obtained and on films made from it after artificial aging was studied. The improvement of the quality of I and of the properties of films from I is explained by the fact that the low-N fractions are extd. from com. I with alc. Simultaneously, other harmful admixts. found in these fractions, together with a large amt. of minerals detd. by the ash content of the product, are extd. also. The removal of these fractions and admixts. from the I soln. increases the relative and sp. viscosity of the product. The external appearance of the product is considerably improved. Films prepd. from the purified product also possessed considerably better qualities after artificial aging at 100° than those from the original I. It was found that the viscosity of 0.2% solns. of films in Me_2CO after artificial aging 240 hrs. at 100° was 20% lower than the viscosity of films prepd. from the initial product. The stretching power of these films drops by the same value under the same aging conditions. The final stability of the films made from the purified I is twice as high as that of films made from the initial I. The transparency and light stability of films made from the purified product are also greatly improved.

W. R. Fichler

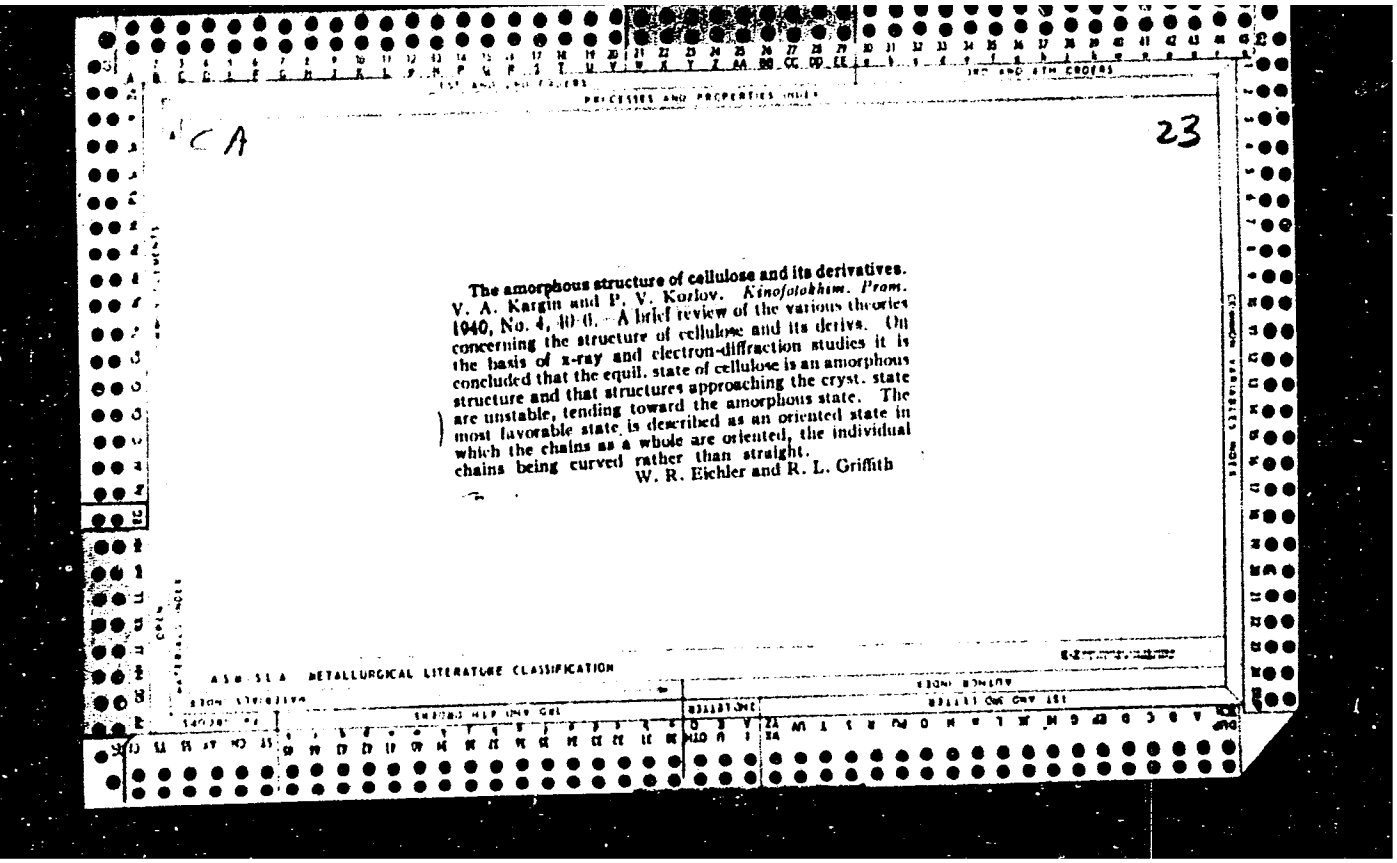


Ca

5

Ten years of the Scientific Research Institute for Motion Pictures (1929-30). P. V. Kozlov. *Kinofotokhim. Prom.* 1940, No. 2, 3-6.—A report. W. R. Eichler

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

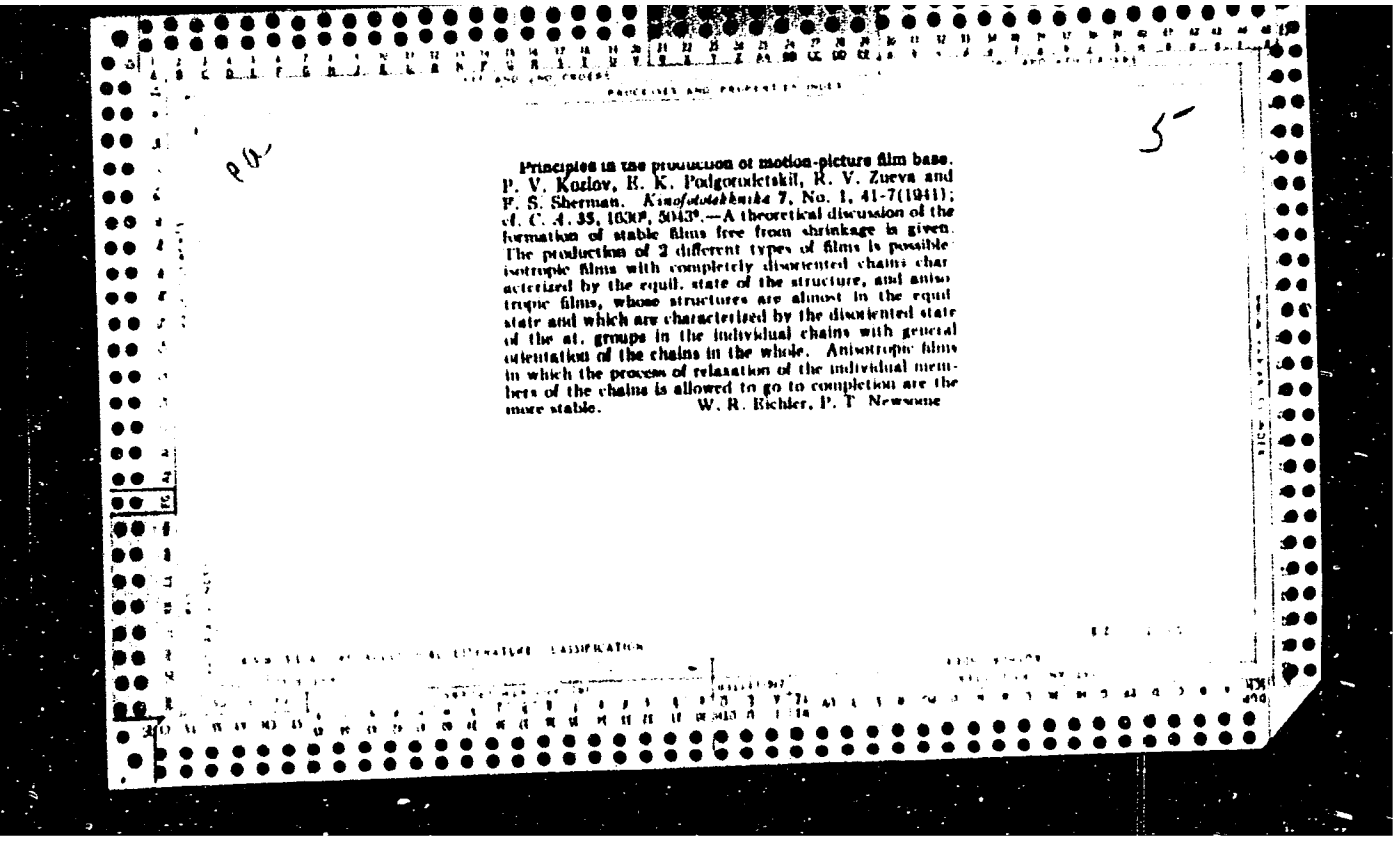


ACA

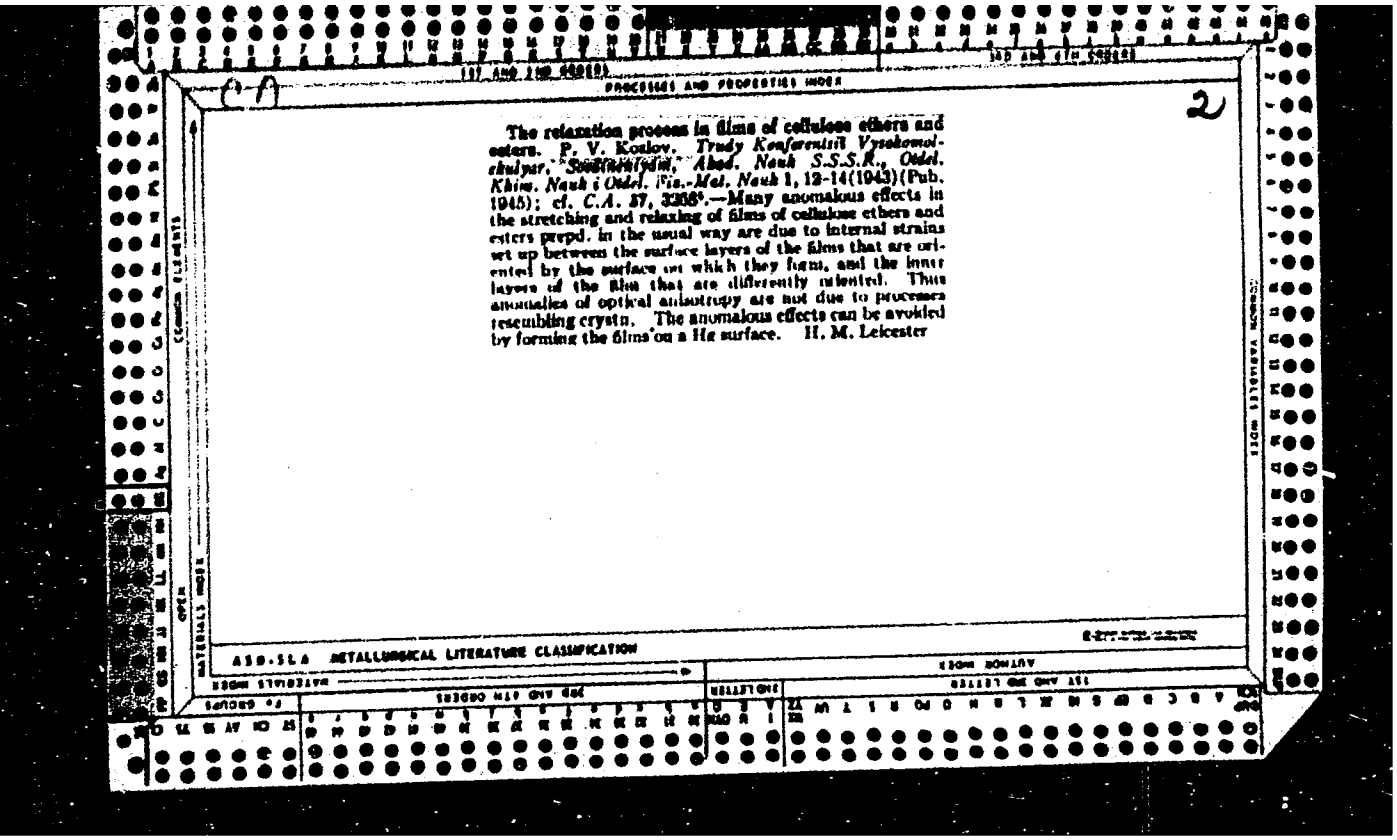
23

The amorphous structure of cellulose and its derivatives. V. A. Kargin and P. V. Kozlov. *Kinofotokhim. Prom.* 1940, No. 4, 40-6. A brief review of the various theories concerning the structure of cellulose and its derivs. On the basis of x-ray and electron-diffraction studies it is concluded that the equil. state of cellulose is an amorphous structure and that structures approaching the cryst. state are unstable, tending toward the amorphous state. The most favorable state is described as an oriented state in which the chains as a whole are oriented, the individual chains being curved rather than straight.
W. R. Eichler and R. L. Griffith

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Principles in the production of motion-picture film base. P. V. Kozlov, E. K. Podgoruletskii, R. V. Zueva and F. S. Sherman. *Kinofotokhimiia* 7, No. 1, 41-7(1941); cf. C. A. 35, 1630⁸, 5043⁹.—A theoretical discussion of the formation of stable films free from shrinkage is given. The production of 2 different types of films is possible: isotropic films with completely disoriented chains characterized by the equil. state of the structure, and anisotropic films, whose structures are almost in the equil. state and which are characterized by the disoriented state of the at. groups in the individual chains with general orientation of the chains in the whole. Anisotropic films in which the process of relaxation of the individual members of the chains is allowed to go to completion are the more stable. W. R. Richler, P. T. Newsome



The relaxation process in films of cellulose ethers and esters. P. V. Kozlov. *Trudy Konferentsii Vysokomol. shulyar., Soobshcheniya, Akad. Nauk S.S.S.R., Otdel. Khim. Nauk i Otdel. Fiz.-Mat. Nauk* 1, 12-14(1943)(Pub. 1945); cf. *C.A.* 37, 3366⁹.—Many anomalous effects in the stretching and relaxing of films of cellulose ethers and esters prepd. in the usual way are due to internal strains set up between the surface layers of the films that are oriented by the surface on which they form, and the inner layers of the film that are differently oriented. Thus anomalies of optical anisotropy are not due to processes resembling crystn. The anomalous effects can be avoided by forming the films on a Hg surface. H. M. Leicester

Structure and properties of cellulose ester films. II. Structure change of cellulose nitrate films during their relaxation. V. A. Kargin, P. V. Kozlov, and R. V. Zueva (*J. Phys. Chem. Russ.*, 1943, 17, 318—325).—When cellulose nitrate films (from $COMe_2$) were stretched and then released, a part (about [illegible]) of their birefringence disappeared rapidly (some hr. at room temp., and some sec. at 100—150°) but the rest of it remained for days. The orientation shown by *X*-rays was permanent at room temp. but disappeared at 100—150°. Stretched and then released benzylcellulose films lost their birefringence completely after heating at 100°; no orientation as shown by *X*-rays occurs in these films. It is concluded that relaxation of stretched films takes place in two distinct stages.

J. J. B.

KOZLOV, P. V.

"Physicochemical Fundamentals of the Production Technology of Ether-Cellulose Films." Sub 29 Dec 47, Moscow Inst of Fine Chemical Technology imeni M. V. Lomonosov *Dr. Technical Sci.*

Dissertations presented for degrees in science and engineering in Moscow in 1947

SO: Sum No. 457, 18 Apr 55

KOZLOV, P.V.; ZUYEVA, P.V.

Structure and properties of films made from ether cellulose. (MIRA 11:6)
Trudy NIKFI no.7:5-12 '47.

1. Laboratoriya tekhnolgii plenok Nauchno-issledovatel'skogo kino-foto-instituta, Moskva.
(Photography--Films)

KOZLOV, P.V.; FRIDMAN, I.M.

Physical and mechanical properties of multilayer films. Trudy NIKFI no.7:184-190 '47. (MIRA 11:6)

1. Laboratoriya restavratsii i konservatsii kinofil'mov Nauchno-issledovatel'skogo kino-foto-instituta, Moskva.
(Cinematography--Films)

Kozlov, P.V.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 28/47

Authors : Kozlov, P. V., and Russkova, E. F.

Title : Effect of molecular weight on nitrocellulose conversion temperatures

Periodical : Dok. AN SSSR 99/1, 105-108, Nov 1, 1954

Abstract : The mechanical properties of pure nitrocellulose were investigated in relation to the molecular weight of the product. The very same properties were also studied after the introduction of low-molecular substances into this polymer. The temperatures leading to the conversion of nitrocellulose from vitreous state into high-elastic and viscous-flowing states was determined. Results show that nitrocellulose, having the most rigid chains in comparison with other polymers and being elastified by a low-molecular substance, can be converted into all-three mentioned physical states which are characteristic for amorphous-liquid linear polymers. Four USSR references (1949-1954). Table; graphs.

Institution : The All-Union Scientific Research Motion Picture-Photo Institute

Presented by: Academician P. A. Rebinder, March 22, 1954

KOZLOV, P.V.; KOROSTYLEV, B.N.

Investigating the inner inhomogeneity of the microstructure of triacetylcellulose films. Soob.o mauch.rab.chl.VKHO no.3:57-59 '55. (MIRA 10:10)

(Cellulose acetates)

KOZLOV, P.V.; KOROSTYLEV, B.N.; BURDYGINA, G.I.

Effect of the type of solvent on the structural heterogeneity of cellulose triacetate films. Trudy LIKI no.3:248-253 '55.
(MLRA 9:8)

1. Kafedra tekhnologii proizvodstva kinofotomaterialov.
(Cinematography--Films) (Photographic chemistry)

KOZLOV, P.V., doktor khimicheskikh nauk, professor.

Film which doesn't burn. Nauka i zhizn' 23 no.6:23-24 Je '56.
(MLRA 9:9)

(Cinematography--Films)

KOZLOV, P.V.

KOROSTYLEV, B.N., kand.tekhn.nauk [translator]; SPASOKUKOTSKIY, N.S., kand. khim.nauk [translator]; KRUPENIN, L.K., kand.tekhn.nauk, [translator]; KOZLOV, P.V., doktor tekhn.nauk, red.; CHEL'TSOV, V.S., kand.khim.nauk, red.; SERDYUKOV, I.V., red.; SMIRNOVA, N.I., tekhn.red.

[Photographic materials and their processes; a collection of translations] Fotograficheskie materialy i protsessy ikh obrabotki; sbornik perevodov iz inostrannoi periodicheskoi literatury. Moskva, Izd-vo inostr. lit-ry, 1957. 319 p. (MIRA 11:5)
(Photography)

KOZLOV, P.V.

KOZLOV, P.V., professor.

Ninth conference on high-molecular-weight compounds. Khim. prom. no.2: 123-124 Mr '57. (MIRA 10:6)
(Macromolecular compounds)

KOZLOV, P.V., professor.

Ninth conference on high-molecular compounds (polymers). Khim. nauka i prom. 2 no.3:380-381 '57. (MLRA 10:8)
(Polymers--Congresses)

KOZLOV, P. V.

AUTHORS: Borits, A. M., and Kozlov, P. V. 72-12-7/14

TITLE: The Lifting of the Basin of a Tank Furnace Without Dismounting of the Brickwork (Pod"yem basseyna vannoy pechi bez razborki kladki).

PERIODICAL: Stekło i Keramika, 1957, Nr 12, pp. 19-19 (USSR).

ABSTRACT: In the glass melting department of the electric lamp works Lemberg (L'vov) it was necessary to lift the basin of a glass melting furnace by 86 cm. The gabarite measurements of the basin amounted to 10 x 5,5 x 4 m. An investigation of the furnace showed that the furnace was in order and that it was not necessary to repair it. The total weight amounted to 60 tons. The dismounting and reconstruction of the furnace would have taken 14 days. In order to save time and money the authors suggested to lift the furnace as a whole by means of 4 locomotive-lifting jacks (see figure). Metal plates were put under the lifting jacks and two lifting binder under the longitudinal carriers of the basin. Two men worked at each lifting jack. During the lifting which took 6 hours the lifting height and steadiness of lifting was constantly checked. When the furnace was lifted by 1 m the lifting was stopped. During this time the iron concrete columns were pieced on to cement by means of fire-bricks.

Card 1/2

. The Lifting of the Basin 72-12-7/14
of a Tank Furnace Without Dismounting of the Brickwork.

The precise height was obtained by fillings of sheet steel. After 24 hours the furnace was let down to the new columns which took 8 hours. Simultaneously with the lifting times an overhaul of the regenerators, burners, and other parts was carried out. The lifting of the furnace was carried out within 2 days, and material and working power up to 150,000 roubles were saved.
There is 1 figure.

ASSOCIATION: Electric Lamp Works, L'vov (L'vovskiy elektrolampovyy zavod).

AVAILABLE: Library of Congress.

Card 2/2

Kozlov, P.V., Professor

AUTHOR: Kozlov, P.V., Professor 26-12-12/49

TITLE: Problems of High-Molecular Compounds (Problemy vysokomolekulyarnykh soyedineniy)

PERIODICAL: Priroda, 1957, No 12, pp 57-59 (USSR)

ABSTRACT: The author gives an account of the 9th Conference on High-Molecular Compounds convened by the AN, USSR, the Ministry of Higher Education of the USSR and the Moskva State University imeni M.V. Lomonosov. About 1,500 scientists and engineers participated in the conference, among them delegates from Communist satellite countries and from Israel. In his opening speech, Academician V.A. Kargin described the development of research and production in the field of polymers, pointing out the need for new methods of research and processing in connection with the utilization of high-molecular compounds and their products. In six sections of the conference 187 discourses and reports were heard, dealing with the synthesis of polymers, their chemical properties and modification, molecular structure and solutions, formation and mechanics, aging and destruction. The conference proved that considerable progress had been made in scientific research and industrial processing of high-molecular substances since the first conference

Card 1/2

Problems of High-Molecular Compounds 26-12-12/49

in 1943.

ASSOCIATION: Moskva State University imeni M.V. Lomonosov (Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova)

AVAILABLE: Library of Congress

Card 2/2

Kozlov, P.V.

KOZLOV, P.V., prof.

The ninth conference on high molecular weight compounds (polymers). Vest.Mosk.un.Ser.mat.,mekh., astron.,fiz.,khim. 12 no.2:243-246 '57. (MIRA 10:12)

(Moscow--Macromolecular compounds)

KOZLOV, Pavel Vasil'yevich; MEZENTSEV, Vladimir Andreyevich; PETROVA, S., red.; PASTUKHOVA, A., red.; TROYANOVSKAYA, N., tekhn.red.

[Wonderful story; the first step toward meeting the needs of the people] Chudesnaia byl'; novyi shag k udovletvoreniiu potrebnostei naroda. Moskva, Gos.izd-vo polit.lit-ry, 1958. 66 p. (MIRA 12:5)

(Synthetic products)

KARGIN, V.A.; KOZLOV, P.V.; PLATE, N.A.; KONOREVA, I.I.

Method of obtaining graft polymers from starch and styrene and investigation of their properties. Vysokom.soed. 1 no.1:114-122 Ja '59. (MIRA 12:9)

1. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V.Lomonosova, Kafedra vysokomolekulyarnykh soyedineniy.
(Styrene) (Starch) (Polymers)

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)

KOZLOV, P.V.; KABANOV, V.A.; FROLOVA, A.A.

Some regularities in the development of uniaxial deformation in the crystalline and vitreous films obtained from polyethylene-terephthalate. Vysokom.soed. 1 no.2:324-329 F '59.
(MIRA 12:10)

1. Moskovskiy gosuniversitet im. M.V.Lomonosova.
(Polymers) (Terephthalic acid)

KOROSTYLEV, B.N.; KOZLOV, P.V.

Relaxation processes in cellulose ester films. Vysokom. soed. 1 no.6:793-798 Je '59. (MIRA 12:10)

1.Vsesoyuznyy nauchno-issledovatel'skiy kino-foto institut, Moskva.
(Cellulose) (Films (Chemistry))

KOZLOV, P.V.; RUSSKOVA, Ye.F.

Properties of the copolymers of ethylene glycol with terephthalic and sebacic acids. Vysokom. soed. 1 no.6:918-924 Je '59.
(MIRA 12:10)

1.Vsesoyuznyy nauchno-issledovatel'skiy kino-foto institut.
(Ethylene glycol) (Terephthalic acid) (Sebacic acid)

KOZLOV, P.V.; IOVLEVA, M.M.; PLATE, N.A.

Obtaining polystyrene-acrylic acid graft polymers and investigating some of their properties. Vysokom.soed. 1 no.7:1100-1105 Jl '59. (MIRA 12:11)

1. Moskovskiy gosudarstvennyy universitet.
(Styrene) (Acrylic acid)

KOZLOV, P.V.; IOVLEVA, M.M.; SHIRYAYEVA, L.L.

Thermodynamic investigation of copolymer solutions from ethylenic glycol, and terephthalic and sebatic acids. Vysokom.soed. 1 no.7: 1106-1111 Jl '59. (MIRA 12:11)

1. Moskovskiy gosudarstvennyy universitet.
(Polymers--Thermal properties)

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

Eighth Mendeleev conference and polymer science in U.S.S.R. Vysokom. soed. 1 no.7:1112-1125 Jl '59. (MIRA 12:11)
(Chemistry--Congresses)

USMANOV, Kh.U.; MIKHAYLOV, N.V.; KOZLOV, P.V.

Tashkent All-Union Conference on the Chemistry and Physics of Cellulose. Vysokom. soed. 1 no.9:1439-1450 S '59.
(MIRA 13:3)
(Tashkent--Cellulose--Congresses)

KOZLOV, P.V.; LI PAN-GUN [Li P'ang-t'ung]; BAKEYEV, N.F.

Spherulite structure of polymers. Part 1: Degradation of polymer spherulites under bombardment by fast electrons. Vysokom.soed. 1 no.12:1848-1852 D '59. (MIRA 13:5)

1. Moskovskiy gosudarstvennyy universitet. Khimicheskiy fakul'tet.
(Polymers) (Electrons) (Spherulites)

AUTHOR: Kozlov, I. V. SOV/77-4-1-1/22

TITLE: The Use of Polymers in Photography (Primeneniye polimerov v fotografii)

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1959, Vol 4, Nr 1, pp 3-11 (USSR)

ABSTRACT: The author mentions the decisions of the Plenary Session of the Central Committee in May 1958 on a stepped-up development of the Soviet chemical industry and the production of synthetic materials. He outlines the use of polymers in photography, past and present, mainly with respect to film base and dope. Upon a general discussion on polymers and their properties, the author states that since about 1933 the bulk of Soviet sub-standard film was produced on an acetate base. But, as compared with nitrocellulose films, the acetate-base photographic material has two principal shortcomings: 1) reduced mechanical stability; 2) increased shrinkage properties. The use of cellulose tri-

Card 1/3

acetate with a 62.5%-content of combined acetic acid was not satisfying either, since these films were of an increased brittleness. The introduction of plasticizers gave the molecule chains more flexibility, but research is continuing towards a more perfect film material. Related problems, the solution of which is being attempted in the USSR as well as abroad, include an understanding of the mechanism of plasticizing of cellulose triacetates and the products of their partial saponification, the selection of suitable plasticizers, and the understanding of the dissolving mechanism of the cellulose triacetates, especially those that are made by the method of heterogeneous acetylation. The author describes American and West German research and intermediate results in this field. He concludes that considerably improved films may eventually result from the combined efforts of the researchers.

The Use of Polymers in Photography SOV/77-4-1-1/22

There are 30 references, 18 of which are Soviet, 9 English and 3 German.

SUBMITTED: October 27, 1958

Card 3/3

23(SOV/77-4-3-1/16

AUTHOR: Kozlov, P.V.

TITLE: The Use of Polymers in Photography
II. The Use of Polymers in the Photographic Layer of Cinematographic Photo Materials and Their Chemico-Photographic Processing

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1959, Vol 4, Nr 3, pp 161-171 (USSR)

ABSTRACT: This article is a continuation of an article which appeared in this journal (1959, Vol 4, Nr 1, pp 3-11). It was concerned with the use of polymers for the bases of photosensitive layers. The present article is a survey of achievements in the use of polymers for the photosensitive layers of color films, mostly based on West-German, American and other foreign sources. The author first discusses the possibilities of substituting both natural and synthetic polymers for gelatine, as photographically-active and protective com-

Card 1/5

SOV/77-4-3-1/16

The Use of Polymers in Photography. II. The Use of Polymers in the Photographic Layer of Cinematographic Photo Materials and Their Chemico-Photographic Processing

ponents in photographic emulsions and layers, starting from the assumption that the further study of the photographic activity of gelatine can serve particularly well as a guide to the selection of suitable polymers. On the basis of recent research, he deals generally with the problem of using polyvinyl alcohol as a substitute. He concludes that in view of the close molecule packing of the chains of polyvinyl alcohol, it would be better to use its derivatives or any other soluble polymers instead of gelatine. In this connection, he points to research, which consider the joint use of polyvinylpyrrolidone and polyvinyl alcohol. The author also mentions the efforts made to overcome the shortcomings of synthetic polymers, when used as gelatine substitutes. Such deficiencies are their photographic inactivity, and their incapability of changing

Card 2/5

The Use of Polymers in Photography. II. The Use of Polymers in the Photographic Layer of Cinematographic Photo Materials and Their Chemico-Photographic Processing

to a gel-like state at the lowering of temperature. As additives intended to supply these properties, authors recommend reducing agents of the aldehyde type (p-dimethyl-amino benzaldehyde) and substances of the type of α -naphthol. The studies of chemical and, most recently, optical sensitization of photographic synthetic polymer emulsions, the author says, deserve mentioning. In the following section of the article the two main trends in the search of synthetic polymers, which are intended for color photography based on the subtractive color process are discussed. One of these is the study of polymer dyes in the usual three-layered color photo materials, whereas the other is based on the effort to create, with the aid of synthetic polymers, a new technological process of single-layered color photo film

The Use of Polymers in Photography. II. The Use of Polymers in the Photographic Layer of Cinematographic Photo Materials and Their Chemico-Photographic Processing

production. As to the first, the author quotes one of the recent foreign achievements [References, 20-22] in the introduction of colorants (as side-chains) into the molecular chains of synthetic polymers. Discussing the second trend and pointing to the difficulty of providing suitable color separation and eliminating the effect of a sensitivity zone of optically sensitized silver halide [Reference 23], the author gives a survey - based on foreign sources - of the polymers fit for this special purpose [References 24-26]. The last section of the article is concerned with the use of polymers in other photographic processes. Here the author first discusses the suitability of using certain soluble synthetic polymers [Reference 27] for emulsions intended to record nuclear phenomena. Then he deals with the

The Use of Polymers in Photography. II. The Use of Polymers in the Photographic Layer of Cinematographic Photo Materials and Their Chemico-Photographic Processing

role of polymers in photomaterials intended for single-stage photographic reversal [References 28-39]. Towards the end of the article, a survey of polymeric film-forming substances is given [Reference 28]. There are 41 references, 28 of which are Soviet, 9 German and 4 English.

KOZLOV, P.V.; BRAGINSKIY, G.I.; ROMANENKO, V.P.

Effect of some phthalates on the deformation of cellulose acetate. Trudy LIKI no. 5:153-158 '59. (MIRA 13:12)

1. Kafedra tekhnologii proizvodstva kinofotomaterialov Leningradskogo instituta kinoinzhenerov.
(Cellulose acetates) (Phthalic acid)
(Plasticizers)

SOV/20-125-1-51/67

5(3)
AUTHORS: Kozlov, P. V., Kabanov, V. A., Frolova, A. A.

TITLE: A Study of the Deformation of Crystal Films From Polyethylene Terephthalate (Issledovaniye deformatsii kristallicheskikh plenok iz polietilentereftalata)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 118-121 (USSR)

ABSTRACT: The authors chose polyethylene terephthalate for their experiments since its temperature of vitrification ($\sim 80^{\circ}$) and melting point ($\sim 265^{\circ}$) largely exceeds room temperature. For this reason all intermediate stages of recrystallization and orientation resulting from deformation are attained by gradual temperature increase, beginning with room temperature. The experiments were made with samples of two different degrees of crystallization, which had been produced by crystallizing an amorphous polyethylene terephthalate film heated at 115° and 150° for thirty minutes. These samples were then deformed (in % of the initial length) by means of a device at various temperatures and various velocities. The radiograph of the neck-like part of a sample deformed at room temperature is shown in a figure. Such a deformation renders the polymer

Card 1/4

A Study of the Deformation of Crystal Films From Polyethylene Terephthalate

amorphous. The destruction of the crystals at 80-90° cannot be accompanied by recrystallization, and the intermediate structures are easily fixed during the deformation. With increasing temperature of deformation the orientation of the amorphous neck-like material is gradually improved, but crystallization is not brought about before the range of vitrification temperature has been attained. Deformation of crystal films above the temperature of vitrification renders the processes of recrystallization more and more perfect. For the purpose of obtaining crystals which are accurately oriented with respect to the mechanical field, the amorphous film is to be deformed at a low temperature and then heated in deformed state beyond the temperature of vitrification. Under these circumstances the structure is not mechanically destroyed during crystallization. Further, the authors investigated the dependence between tension and deformation which holds for crystallized polyethylene terephthalate films. The results of the experiment, which was made within a wide temperature range and at deformation velocities differing by the tenfold, are illustrated in a diagram. The pertinent curves pass through maxima of excess tension at moderate temperatures, which in-

A Study of the Deformation of Crystal Films From Polyethylene Terephthalate

dicate the nature of relaxation of the deformation. Similar curves of deformation-tension are also obtained for amorphous polymeric kinds of glass within the range of forced elasticity which confirms Yu. S. Lazurkin's assumption concerning the molecular mechanism of the deformation of crystalline polymers and amorphous polymeric kinds of glass. In the paper under review the authors proved by the direct structural method that the deformation of crystalline polymers passes through the stage in which the sample is rendered amorphous. By use of polymers with a high temperature of vitrification it is possible to separate the stage of "amorphization" from that of recrystallization. The authors thank Academician V. A. Kargin for valuable advice. There are 5 figures and 9 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

PRESENTED: July 12, 1959, by V. A. Kargin, Academician
Card 3/4

5.3830
~~5(4), 5(3)~~

SOV/20-129-4-36/68

AUTHORS: Kozlov, P. V., Yendrykhovskaya, A., Kargin, V. A., Academician

TITLE: Investigation of the Temperature-dependent Transformations in Synthetic Polymers With Rigid Chains

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 4, pp 844-846 (USSR)

ABSTRACT: The authors investigated polyurea as a typical synthetic polymer with rigid chains. It was produced by polymerization on the boundary of two phases. Phosgene dissolved in benzene was emulsified with hexamethylenediamine dissolved with water. A 7% solution of sodium oleate served as emulsifier. If the 15% hexamethylenediamine solution is saturated with sodium chloride and soda, an amorphous powder with high molecular weight is formed, which is not soluble in any organic solvent with the exception of cresol and formic acid and has a highly ordered structure (Fig 1). The investigation of the temperature-dependent properties was carried out by means of dynamometric scales, a direct dependence of the deformation on temperature being found. Between 230-300° chemical decomposition already occurs. In order to reduce the temperature at which polyurea is

Card 1/3

Investigation of the Temperature-dependent Transformations in Synthetic Polymers With Rigid Chains

transformed, it was plastified according to two methods: a) by the addition of a polymer with elastic chains (copolymer of caprolactam with hexamethylenediamine and adipic acid), b) by swelling in cresol. Figure 1 shows the influence exerted by temperature on polyurea plastified by copolymer. With the addition of 75% copolymer, two processes may be observed: First, transition to the viscous state occurs, after which vitrification follows at a certain temperature. The behavior of polyurea swelled in cresol is shown in figure 3. Also in this case the viscous state occurs with an increase in temperature. On the basis of these results the authors point out the following two possibilities: 1) Hardening of polymers with elastic chains by the admixture of polymers with rigid chains, and 2) reduction of temperature by plastification in order to make working with polymers with rigid chains possible. There are 3 figures and 5 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

67268

SOV/20-129-4-36/68

Investigation of the Temperature-dependent Transformations in Synthetic Polymers With Rigid Chains

SUBMITTED: September 1, 1959

Card 3/3

5.3931

67926

~~5(4)~~ SOV/20-129-5-36/64

AUTHORS: Iovleva, M. M., Kozlov, P. V., Kargin, V. A., Academician

TITLE: The Solubility of Grafted Copolymers on the Basis of Polystyrene and Acrylic Acid

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 5, pp 1093-1095 (USSR)

ABSTRACT: Since grafted polymers often feature the thermodynamic properties of their initial components (Refs 1-3) the authors investigated whether in this case actual components in the sense of Gibb's phase rule are concerned. They determined the number of the phases and the degrees of freedoms in a system consisting of the copolymer of polystyrene with 5 or 22% acrylic acid [+], benzyl alcohol [+], and methyl alcohol. Methyl alcohol was added to the solutions of the copolymer of different concentrations in benzyl alcohol, and the beginning of turbidity was determined by means of a photoelectric colorimeter. Two phases were observed: Solution of methyl alcohol in benzyl alcohol and solution of the copolymer in benzyl alcohol. The phase diagram (Fig 1) shows that the critical concentrations at which turbidity occurs, are on a straight line and that the copolymer

Card 1/2

67926

SOV/20-129-5-36/64

The Solubility of Grafted Copolymers on the Basis of Polystyrene and Acrylic Acid

behaves like a single component. This may also be seen from a comparison with the usual phase diagrams of the system polystyrene - ethyl laurate - n-butyl alcohol. The authors mention S. P. Papkov. There are 1 figure and 11 references, 8 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: September 1, 1959

Card 2/2

KOZLOV, Pavel Vasil'yevich; ZHERDETSKAYA, N.N., red.; PANKRATOVA, M.A., tekhn.red.

[Polymers in cinematography and photography] Polimery v kinematografii i fotografii. Moskva, Gos.izd-vo "Iskusstvo," 1960. 176 p. (MIRA 13:12)

(Polymers) (Photography--Equipment and supplies)
(Motion pictures--Equipment and supplies)

KOZLOV, P.V.; IOVLEVA, M.I.; LI PAN-TUN [Li P'ang-t'ung]

Spherulite structure of polymers. Part 2: Macrospherulites of polymers. Vysokom. soed. 2 no.2:284-286 F '60. (MIRA 13:11)

1. Moskovskiy gosudarstvennyy universitet Khimicheskiy fakul'tet.
(Polymers) (Spherulites)

KOZLOV, P.V.; BAKEYEV, N.F.; LI PAN-TUN; KAFTANOVA, A.S.

Spherulite structure of polymers. Part 3: Study of the microspherulite structure of polymers by etching. Vysokom. soed. 2 no. 3:421-426 Mr '60. (MIRA 13:11)

1. Moskovskiy gosudarstvennyy universitet, Khimicheskiy fakul'tet.

(Polymers) (Spherulites)

KOZLOV, P.V.; BETESTNEVA, 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))

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))

83823

S/190/60/002/005/013/015
B004/B067

15.8108 also 2209

AUTHORS: Kozlov, P. V., Makaruk, L., Fomin, V. N., Ol'khovskiy, V. I.

TITLE: Studies in the Field of Polycarbonates. I. Effect of the Molecular Weight on the Transition Temperatures of Polycarbonates

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 5, pp. 770-777

TEXT: The authors wanted to study the influence exerted by the molecular weight on the thermomechanical properties and the transition temperatures of polycarbonates. The polymers obtained by V. N. Kotrelev at the Nauchno-issledovatel'skiy institut plastmass, Moskva (Scientific Research Institute of Plastics, Moscow) by phosgenating 2,2-bis-(4'-oxyphenyl)propane in homogeneous and heterogeneous media were used. They were dissolved in methyl chloride and fractionally precipitated by means of methanol. Fig. 1 shows the intrinsic viscosity as a function of the concentration for polymers with molecular weights of 20,000 and 235,000. As is shown

Card 1/3

83823

Studies in the Field of Polycarbonates. I. Effect of the Molecular Weight on the Transition Temperatures of Polycarbonates

S/190/60/002/005/013/015
B004/B067

by Fig. 2, polymers synthesized in a heterogeneous medium have an anomalous distribution of molecular weights. The thermomechanical properties and the transition temperatures were studied for fractions with molecular weights of from 5,000 to 220,000 (Figs. 3-5, Table). The low-molecular fractions showed no softening point but passed directly from the vitreous into the viscous state. After crystallization, their transition temperature was 70°C higher. In polymers with higher molecular weight and a polymerization degree of 40, the chains became flexible on heating. These products became highly elastic. A further temperature increase, however, led to hardening as a result of crystallization (Fig. 6). In low-molecular polymers it occurred at lower temperatures than in high-molecular ones. The polymers having the highest molecular weight showed the typical behavior of amorphous polymers. According to their molecular weight, polycarbonates have the properties of both crystallizing and amorphous polymers. As to the flexibility of the chains, they hold an intermediate position between polyisobutylene and polyvinyl chloride, although polycarbonate products are characterized by high strength and hardness. This contradiction is explained by a specific steric structure of the large polycarbonate

Card 2/3

83823

Studies in the Field of Polycarbonates. I. Effect of the Molecular Weight on the Transition Temperatures of Polycarbonates

S/190/60/002/005/013/015
B004/B067

molecules, by strong intermolecular interaction, and by the assumption of secondary structural formations in polycarbonate products. The authors thank V. A. Kargin for a discussion. There are 6 figures, 1 table, and 18 references: 8 Soviet, 2 US, 1 British, and 5 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: February 2, 1960

Card 3/3

83706
S/190/60/002/006/011/012
B015/B064

15.8108 also 2209

AUTHORS: Makaruk, L., Kozlov, P. V., Kargin, V. A.

TITLE: Investigation in the Field of Polycarbonates. II. Electron Microscopic Examination of the Structure of Polycarbonates

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No 6, pp. 931-936

TEXT: Electron microscopic examinations were made of the secondary structure of 2,2-bis-(4'-oxyphenyl)-propane polycarbonate. Basing on the data of the method of experimenting and the results obtained, the authors discuss the concept of flexible and rigid molecule chains and, among other things, they indicate that differentiation should be made between two types of links of polymer chains, i.e. the chemical and the kinetic chain link of polymer molecule chains. The examinations were made with a YEM-100 (UEM-100) electron microscope. High-molecular polycarbonate fractions were used (molecular weight 83000 and 230000) whose secondary structure was produced in three ways: 1) by evaporating the solvent from very dilute polycarbonate solutions (chlorobenzene, benzene), 2) by separation from

Card 1/3

83706

Investigation in the Field of Polycarbonates. II. Electron Microscopic Examination of the Structure of Polycarbonates

S/190/60/002/006/011/012
B015/B064

dilute solutions (toluene, m-xylene, ethylbenzene and cyclohexanol) in the cooling of the solutions, and 3) by precipitating the polycarbonates with methanol from dilute solutions in methylene chloride. Figs. 1-12 show the structure. In the two first-mentioned ways of production, polycarbonates with a strongly asymmetrical, fibrous structure are obtained. This structure is due to a linkage of the primarily formed structure of the chain packets, and undergoes no morphological change no matter whether the chains of the packets are crystalline or amorphous. This is in agreement with the findings of the author in a previous paper (Ref. 1), and apparently explains the specific character of the mechanical properties of these polymers, especially the high impact strength; the elasticity may be ascribed to the fibers of the polycarbonates. On precipitating with methanol, a spherical structure that is characteristic of colloidal systems occurs. This structure is unstable, and in the case of heating the fiber structure typical of polycarbonates is formed. There are 12 figures and 7 references: 4 Soviet and 3 German.

Card 2/3

83706

Investigation in the Field of Polycarbonates. II. Electron Microscopic Examination of the Structure of Polycarbonates

S/190/60/002/006/011/012
B015/B064

ASSOCIATION: Moskovskiy gosudarstvennyy universitet Khimicheskiy fakul'tet (Moscow State University, Department of Chemistry)

SUBMITTED: February 27, 1960

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Card 3/3

IOVLEVA, M.M., KOZLOV, P.V.; KARGIN, V.A.

Thermodynamic study of the interaction between graft copolymers and the solvent. Vysokom.soed. 2 no.6:937-941 Je '60.

1. Moskovskiy gosudarstvennyy universitet.
(Polymers) (Styrene) (Acrylic acid)

YESIPOVA, N.G.; LI PAN-TUN [Li P'ang-t'ung]; ANDREYEVA, N.S.; KOZLOV, P.V.

Investigation of the spherulite structure of polymers. Part 4: X-ray study of macrospherulites of polyethylene sebacate. Vysokom. soed. 2 no.7:1109-1118 Jl '60. (MIRA 13:8)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova. (Spherulites--Spectra) (Sebacic acid)

ZHBANKOV, R.G.; ZUYEVA, R.V.; KOZLOV, P.V.; SAVEL'YEVA, L.V.

Molecular interactions in polymers. Part 1: Application of infrared spectroscopy to the study of acetylcellulose fibers. Vysokom. soed. 2 no.8:1270-1279 Ag '60. (MIRA 13:9)

1. Institut fiziki AN BSSR i Nauchno-issledovatel'skiy kino-fotoinstitut.

(Cellulose--Spectra)

88544

S/190/60/002/010/019/026
B004/B054

5-3830

AUTHORS: Kozlov, P. V., Iovleva, M. M., Khakimova, A. Kh., and Zezin, A.

TITLE: Preparation of Some Grafted Copolymers by Ozonization

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10, pp. 1575-1579

TEXT: The authors studied the grafting of monomers on ozonized polymers: 1) Polystyrene with a molecular weight of 200,000 was ozonized by a method described (Ref. 6), and allowed to react with vinyl acetate either a) in the benzene - water interface, or b) by heating to 88°C. Method a) produced a grafting of 6-7% vinyl acetate, method b) a grafting of 20% vinyl acetate on the polymer (Table). The molecular weight of the polyvinyl acetate side chains was between 8,000 and 12,000. Fig. 1 compares the intrinsic viscosity of the copolymer with that of polystyrene. The decrease in viscosity is explained by a lower solubility of the polymer. 2) Polyethylene terephthalate was ozonized for different periods (1.5 to 6 hours), and allowed to react with acrylic acid at 80°C. The grafted

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Card 1/2

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Preparation of Some Grafted Copolymers by Ozonization

S/190/60/002/010/019/026
B004/B054

copolymer contained 53% of acrylic acid. 3) Polyisobutylene with a molecular weight of 331,000 was ozonized for 4.5 hours, and then heated with styrene for 3 - 4 hours at 110°C. The turbidimetric titration of the reaction mixture with methanol dissolved in toluene (Fig. 2) yielded three maxima: a) precipitation of the copolymer, b) and c) precipitation of various polystyrene fractions. A 30% grafting was established by bromination. There are 2 figures, 1 table, and 15 references: 9 Soviet, 3 US, 1 Belgian, and 2 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 9, 1960

Card 2/2

S/190/60/002/010/020/026
B004/B054

AUTHORS: Kozlov, P. V., Iovleva, M. M., Khakimova, A. Kh., Zezin, A., and Klushina, A.

TITLE: Solubility of Some Grafted Copolymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 10, pp. 1580-1585

TEXT: The authors studied the grafted copolymers from starch and polystyrene (1 : 15), polyethylene terephthalate and polyacrylic acid, polystyrene and polyacrylic acid, and the copolymers from polyisobutylene and polystyrene, as well as polystyrene and polyvinyl acetate, which have common solvents. For starch with polystyrene, and polystyrene with polyacrylic acid, the phase diagrams were taken by precipitation with methanol from benzyl alcohol solution (Fig. 1). There is only a limited solubility range (3 - 4%), and the other part of the diagram area represents a heterogeneous phase. In polyethylene terephthalate with polyacrylic acid dissolved in benzyl alcohol, and polyisobutylene with polystyrene dissolved in cyclohexane, two phases are formed when cooling their

Card 1/3

solutions; thus, phase diagrams could be taken on the basis of the equilibrium concentration of the two layers at different temperatures (Fig.2). Also here, the authors observed a wide range of heterogeneity. In polystyrene with polyvinyl acetate, the phase diagram was also determined by precipitation with methanol from benzyl alcohol, and compared with that of polystyrene (Fig. 3). Also here, the solubility of the copolymer is much restricted. Thus, grafting always effected a decrease in solubility of the copolymer as compared with the components. An investigation of the integral swelling heat of polystyrene in benzene, polystyrene with polyvinyl acetate in benzene, polystyrene with polyvinyl acetate in the mixture of hydrogenated monomers (ethyl benzene and ethyl acetate), and a mechanical mixture from polystyrene and polyvinyl acetate in this mixture yielded an increase in the swelling heat for the copolymers (Table). As in the previously studied copolymers from polystyrene with polyacrylic acid, grafting effects a loosening of the structure, and a variation of the energy- and entropy component of the swelling and solution of the copolymer acting unfavorably on the solubility. The authors thank V. A. Kargin for his interest and discussion. There are 3 figures, 1 table, and 9 references: 7 Soviet, 1 US, and 1 British.

Solubility of Some Grafted Copolymers

S/190/60/002/010/020/026
B004/B054

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: June 9, 1960

Card 3/3

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

AUTHORS: Berestneva, G. L., Barabanov, L. G., Kirichenko, E. M., Mikhaylov, G. P., Nordbak, K. I.

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. 2, No. 11, 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 spherulites could be observed in polyethylene terephthalate films, and at which the films remain transparent and elastic. The textural heterogeneity 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 tan δ = f(T) at 1000 cps

Card 1/5

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

S/190/60/002/01/024/027
B004/B060

frequency f in the temperature range of 20° ... 200°C. An ... measuring bridge of the type MJE-1 (MLE-1) was used ... measurements. Silver electrodes were applied onto the samples. The ... investigated comprised ... amorphous, nonstretched film, (Fig.1, curve 1) ... attained at 60°C (below the vitrification temperature), and 2) a film which was ... heated at 80°C (vitrification temperature) which was additionally ... heated for 10 min at the optimum crystallization temperature of 170°C (Fig.1). The diagrams were constructed with rising and dropping temperature. At 1) and 2) the diagrams exhibit the ... characteristic of amorphous structure. In contrast therewith, for 3) a characteristic of the crystal structure was observed in the ... of the ... tan $\delta = \varphi(t^{\circ})$, 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 $\tan \delta = \varphi(t^{\circ})$ on the polymer structure (as found by G. P. Mikhaylov and B. I. Sazhin) to

Card 2/3

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.

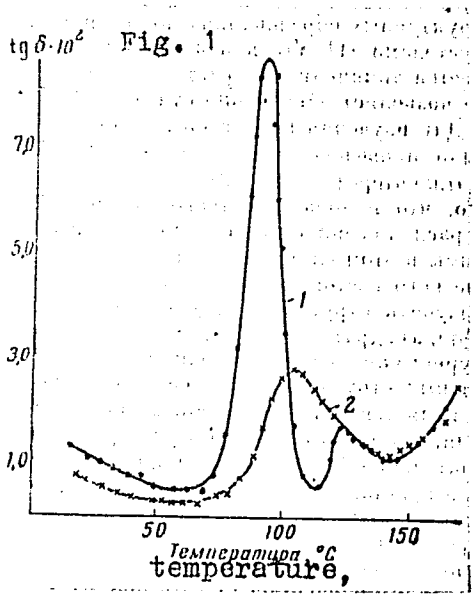
ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy kino-fotoinstitut (All-Union Scientific Research Institute of Motion Pictures and Photography). Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: July 1, 1960

Card 3/5

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

Card 4/5

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

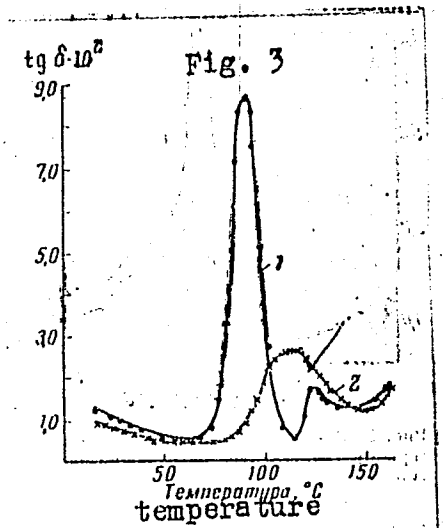


Fig. 3

Legend to Fig.3:
tan $\delta = \varphi(t^{\circ})$ 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.

Card 5/5

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))