"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ya. L.

"State of the Ear, Throat and Nose in Cases of Epidemic Grippe," Klin. Med., 26, No. 6, 1948.

Otorhinolaryngol Clinic and Propaedeutic Clinic of Internal Diseases, State Pediatric Med. Inst.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

Gotlib, Ya. L.

ARONOVICH, G.D.;GOTLIB, Ya.L.

Oto-neurologic examination of patients with tuberculous meningitis treated with streptomycin. Vest. otorinolar., Moskva 14 no. 5: 46-51 Sept-Oct 1952. (CLML 23:3)

1. Professor for Aronovich; Candidate Medical Sciences for Gotlib.
2. Of the Department for Nervous Diseases (Head — Prof. G. D. Aronovich) and the Department for Diseases of the Ear, Throat, and Nose (Head -- Prof. D. M. Rutenburg), Leningrad Pediatric Medical Institute and of the Tuberculosis Division, Hospital imeni Kuybyshev.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ya. L.

Application of magnet in otolaryngology. Vest. otorinolar., Moskva 15 no. 4:77 July-Aug 1953. (CIML 25:1)

1. Candidate Medical Sciences. 2. Of the Clinic for Diseases of the Ear, Throat, and Nose (Head -- Prof. D. M. Rutenburg), Leningrad Pediatric Medical Institute.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ya.L. kandidat meditsinskikh nauk

Diagnostic value of esophagoscopy in esophageal cancer. Vest. khir. 75 no.6:100-103 Jl '55. (MLRA 8:10)

1. Iz kafedry bolezney ukha, nosa i gorla (zav.--Prof. D.M. Rutenburg) Leningradskogo pediatricheskogo meditsinskogo instituta. Leningrad, 11, ul. Rakova, d.15, kv.102.

(ESOPHAGUS, neoplasms
diag.,esophagoscopy)
(ESOPHAGOSCOPY,
value in diag. of esophageal cancer)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

Name: GOTLIB, Yakov L'vovich

Dissertation: Data on the study of functions of certain analyzers in cases of nutritional disturbances (clinical and experimental study)

Degree: Doc Med Sci

Affiliation: /Not indicated/

Defense Date, Place: 7 May 56, Council of Leningrad Pediatrics Med Inst

Certification Date: 16 Mar 57

Source: BMVO 13/57

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, YA. L.

EXCERPTA MEDICA Sec 11 Vol.11/8 O.R.L. Aug 58

1326. MORPHOLOGICAL PECULIARITIES IN CELLS OF COCHLEAR AND VESTIBULAR ANALYSORS DUE TO SALICYLATE (Russian text) - Gotlib Ya. L. Leningrad - VESTN. OTO-RINO-LARING. 1957, 6 (31-35) Illus. 3

Salicylate produces an elective effect on the functions of the cochlear and vestibular analysors. Clinically it is manifested by sensation of noise in the ears, a decrease of the acuity of hearing and auditory vertigo. Histological changes in the cells are expressed by hyperchromatosis of nuclei or the whole cell. The entire length of the analysors is affected by this type of degenerative change. Morphological changes are more pronounced in the central sections, especially in cells of the cochlear analysors.

(XI, 1*)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

EXCERPTA MEDICA Sec 5 Vol 12/10 General Path Oct 59

3169. MORPHOLOGICAL CHANGES IN THE CELLS OF THE CENTRAL COCHLEAR AND VESTIBULAR ANALYSORS IN VARIOUS ACUTE AND CHRONIC NUTRITIONAL DISTURBANCES (Russian text) - Gotlib Y. L. - ARKH. PATOL. 1959, 21/2 (55-62) Illus. 3

The experiments were carried out in guinea-pigs; 34 animals were subjected to acute total famine (with and without supply of water) for 3-10 days, 10 animals received an insufficient amount of food for 39-78 days. The cellular changes are very polymorphous: in the cochlear analysor they are more marked than in the vestibular analysor, and in the nucleus of the tuberculum acusticum they are more evident than in the central nucleus. The most marked changes of Snesarev's type were found in the tuberculum acusticum only. In the vestibular analysor the cellular changes were most evident in Schwalbe's nucleus, less in Bechterew's nucleus and only very slight in Deiter's nucleus. The dystrophic changes were severe in the cortical cells of the cochlear and vestibular analysor both quantitatively and qualitatively. The different reaction of the various cells of the analysors is explained by their phylogenetic difference, older formations are considered to be more resistant to damage than younger ones.

Brandt - Berlin (V, 2, 11)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ya.L., doktor med.nauk

Histochemical investigation (ultraviolet microscopy) of the cells of the auditory and spatial analyzers during nutrition disturbances. Zhur. ush., nos. i gorl. bol. 20 no.4:36-39 Jl-Ag '60. (MIRA 14:6)

1. Iz kafedry bolezney ukha, nosa i gorla (zav. - prof. D.M. Rutenburg) Leningradskogo pediatricheskogo meditsinskogo instituta.
(NERVOUS SYSTEM) (HUNGER) (MICROSCOPY)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

LAKOTKINA, O.Yu., kand. med.nauk; GOTLIB, Ya.L., doktor med. nauk

Importance of determining C- reactive protein in acute and chronic tonsillitis. Zhur., ush., nos. i gorl. bol. 23 no.5: 19-23 S-O'63 (MIRA 17:3)

1. Iz Leningradskogo nauchno-issledovatel'skogo instituta bolezney ukha, gorla, nosa i rechi (dir. - prof. I.A. Lopotko, nauchnyy rukovoditel' - deystvitel'nyy chlen AMN SSSR prof. V.I. Voyachek).

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ye.A., inzhener; POYGIN, A.V., inzhener; SHENDEREY, A.I., inzhener.

Checking the quality of welded joints of tubes of heating surfaces. Elek.Sta. 27 no.11:41-43 N '56. (MIRA 10:1)
(Gamma rays--Industrial applications) (Boilers)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ye.A., inzhener; POIGIN, A.V., inzhener; SHENDERKY, A.I., inzhener.

Experience in welding pipes. Elek.sta. 28 no.9:78-79 S '57. (MIRA 10:11)

(Pipe--Welding)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ye.A., inzh.; REZNIK, G.V., inzh.

Modernizing the TS-17M tractor for welding in an atmosphere of carbon dioxide. Svar.proizv. no.5:34-35 My '62. (MIRA 15:12)

1. Trest "Yuzhteploenergomontazh."
(Electric welding—Equipment and supplies)
(Protective atmospheres)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ye.A., inzh.; POLYAKOVA, R.B.k inzh.; YASHCHENKO, Ya.V., inzh.

Welding of pipes made with EI-695R and EP-17 make austenite steels. Teploenergetika 9 no.11:63-67 N '62. (MIRA 15:10)

1. Yuzhteploenergomontazh, Vsesoyuznyy institut po proyektirovaniyu organizatsiy energeticheskogo stroitel'stva i Kiyevskiy politekhnicheskiy institut.
(Pipe, Steel—Welding)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ye.G., inzh.

Experience in the industrial education of workers in oil fields. Bezop.truda v prom. 4 no.9:18 S '60. (MIRA 13:9)

1. Neftepromyslovoye upravleniye Abinneft'.
(Oil fields--Safety measures)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, YE.V.

Translation from: Referativnyy zhurnal. Metallurgiya, 1957, Nr 1, p 222 (USSR) SOV/137-57-1-1661

AUTHORS: Miller, S. V., Gorlanova, N. M., Glushkov, L. A., Bessonova, A. P., Gotlib, Ye. V., Saknyn', A. V., Cherepanova, K. A.

TITLE: Results and Goals of the Scientific Work on Labor Hygiene in Electrolytic Shops of Aluminum Plants (Itogi i zadachi nauchnoy raboty v oblasti gigiyeny truda v elektroliznykh tsekhakh alyuminiyevykh zavodov)

PERIODICAL: V sb.: Vopr. gigiyeny truda, professional'noy patologii i toksikologii v prom-sti Sverdl. obl., Sverdlovsk, 1955, pp 121-127

ABSTRACT: The unsatisfactory sanitary working conditions in electrolytic shops of Al plants are characterized by the presence in the atmosphere of Fe compounds, the amounts of which near the baths (B) and in working passages exceed the permissible concentrations by 200-600%. The dust content in the atmosphere during the preparation of B attains 30-60 mg/m^3. The radiant-heat flux during the period of B preparation amounts to 2-4 cal/cm^2 per min, but it may attain 9-10 cal/cm^2 for short periods of time. The jumps and drops in air temperatures close to B's and in the passages is

Card 1/2

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SOV/137-57-1-1661

Results and Goals of the Scientific Work on Labor Hygiene (cont.)

10-20°C higher than those termed permissible by sanitation standards. During the cold-weather period, when the air is changed 10-13 times per hour, the temperature falls below 0°C. All these conditions bring about a chronic Fe poisoning ["F." in the Russian text. Transl. note], koniotic changes in the lungs, and an increase of the over all incidence of sickness. For the improvement of sanitary conditions it is recommended that the leakage of heat and harmful gases into the air from the electrolytic B be minimized by means of decreasing the leakages in the exhaust-ventilation hoods, reducing the time required for B preparation through the mechanization of the process of continual intake of alumina into the B underneath the crust instead of batch loading. Measures were outlined for sanitary protection of the atmosphere on the lands covered by a plant and neighboring residential areas from harmful discharge of dust, tarry substances, etc.

B. T.

Card 2/2

USCOMM-DC-61131

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Ye.V., kandidat meditsinskikh nauk

Evaluation of the effectiveness of protectiv metallized clothing in the electrolysis shop of an aluminum factory. Gig. i san., 21 no.7:48-51 Jl '56. (MLRA 9:9)

1. Iz kafedry obshchey gigiyeny Sverdlovskogo meditsinskogo instituta.

(INDUSTRIAL HYGIENE
in electrolysis shop of aluminum factory, evaluation of protective metallized clothing)
(CLOTHING
protective metallized for workers in electrolysis shop of aluminum factories)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, YE. V; MILLER, S. V. ;BESSONOVA, A. P. ; GLUSHKOV, L.A.; GORLANOVA, N. M.; SAKYN', A. V.; STONIN-BAKHUREV, I. M.; FILATOVA, A. S. ;SURIS, V. G.; GRUKUS, G.D.

"Sanitary labor conditions in the electrolytic shops of aluminum plants and the essential health-protection measures."

report submitted at the 13th All-Union Congress of Hygienists, Epidemiologists, and Infectionists, 1959.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

VOL'KENSHTEYN, M.V.; GODZHAYEV, N.M.; GOTLIB, Yu.A.; PTITSYN, O.B.

Kinetics of biosynthesis. Biofizika 8 no.1:3-8 '63.
(MIRA 17:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

37927

24.4500

S/181/62/004/005/015/055
B125/B104

AUTHORS: Gotlib, Yu. B., and Salikhov, K. M.

TITLE: Diffusion theory of the passage through a potential barrier in an external alternating field

PERIODICAL: Fizika tverdogo tela, v. 4, no. 5, 1962, 1166-1173

TEXT: The diffusion of a plane dipole rotator in a periodic potential field with two potential wells under the action of an external sinusoidal electric field is investigated. The frequency dependence for the complex polarization of the system is obtained with the aid of perturbation theory. In the case of high potential barriers where $U_0/kT > 1$, there are two Debye-type dispersion ranges: In the h-f range $\omega\tau \gg 1$, the dipole moves inside the two potential wells, and the polarizability is given by

$$\alpha(\omega) \cong \frac{\mu^2}{3kT}\left\{\frac{1}{1+i\omega\tau} - \frac{\sqrt{\omega\tau/2}\,(1+i)}{\alpha(1+i\omega\tau^2}\right\}$$

which still holds for $\omega\tau > 1$. During the transition to the steady state ($\omega \to 0$) and at high but still finite potentials U_0, the particles are always uniformly distributed on both

Card 1/2

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

potential wells. The relation

$$\alpha(\omega)=\frac{\mu^2}{3kT}\left\{\left(1-\frac{1-\cos 2a}{2a^2}\right)+\frac{1-\cos 2a}{2a^2}\frac{1}{1+i\omega\tau_1}\right\}+0\left(e^{-\frac{U_0}{kT}}\right), \quad (21)$$

holds for the l-f range $\omega\tau \ll 1$, where $(\mu^2/3kT)(1-((1-\cos 2a)/2a^2))$ is the steady contribution of polarization inside the well. The l-f relaxation time corresponding to the passage through the barrier (i.e., to the diffusion between the potential wells) is $\tau_1 \sim abre^{U_0/kT}$. Hence, the continuous-diffusion method can be replaced by the two-position model. The present approximate formulas are verified by numerical computations for $U_0 = 5kT$ with $a = b = \pi/4$. The results agree well with those obtained by the steady-flow method. There are 2 figures. The most important English-language reference is: Debye, W. Ramm. Ann. Phys., 28, 28, 1937.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad (Institute of High-molecular Compounds AS USSR, Leningrad)

SUBMITTED: December 21, 1961

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu. Ya.

USSR

Theory of the relaxation spectrum of a polymeric chain. Yu. Ya. Gotlib and M. V. Vol'kenshtein. *Zhur. Tekh. Fiz.* 23, 1038-48(1953).—On the basis of the model of Kargin (*C.A.* 43, 7205e) the dynamic behavior of a high polymer in soln. was calcd. Polydispersion causes an expansion and change in form of the distribution function of relaxation time, whereas the Gaussian distribution of mol. wts. has practically no effect. 19 references. A. P. K.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB YU. YA.

USSR.

3219. Absorption of ultrasound in solutions of polymers. YU. YA. GOTLIB AND M. V. VOL'KENSHTEIN. *Dokl. Akad. Nauk SSSR*, 89, *No.* 5, 821–4 (1953) *In Russian.* English translation, *U.S. National Sci. Found. NSF-tr-116.* 534.23

An expression is derived for α, the coeff. of absorption of ultrasound in a solution of a polymer, assuming the latter to be a succession of spherical segments each containing 20–40 atoms, joined by quasi-elastic bonds. Values of α calculated from this expression agree with the experimental ones of Mikhailov and Shugalova (following abstract) to within an order of magnitude, which is very satisfactory in view of the assumptions made.

R. C. MURRAY

BB

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

USSR/ Physics

Card 1/1 Pub. 22 - 14/63

Authors : Gotlib, Yu. Ya.; Vol'kenshteyn, M.B.; and Byutner, E.K.

Title : Anisotropy of the Polarizability of chain molecules

Periodical : Dok. AN SSSR 99/6, 935-938, Dec 21, 1954

Abstract : An analytical derivation of the polarizability of a chain molecule containing a number of equal links characterized by a symmetrical voltage of the inner rotation ($V(\varphi)=V(-\varphi)$), is presented. The matrix and tensor method was used for the computations. Five references; 3-USSR (1942-1953). Table.

Institutions: The Leningrad State Pedagogical Institue im. A.I. Gertsen; The Institute of the High Molecular Compounds of the Acad. of Scs. of the USSR

Presented by: Academician A.F. Ioffe, September 18, 1954

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, YU. YA.:

Gotlib, Yu. Ya.: "The theory of double ray refraction in polymers." Min Education RSFSR. Leningrad State Pedagogical Inst imeni A. I. Gertsen. Chair of Theoretical Physics. Leningrad, 1956. (Dissertation For the Degree of Candidate in Physicomathematical Science.

Knizhnaya letopis'
No 34, 1956. Moscow.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

USSR / Optics Gotlib, Yu. Ya. K

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10353

Author : Bazhenov, N.M., Vol'kenshteyn, M.V., Gotlib, Yu.Ya., Rosenshteyn, L.D.
Inst : Not Given
Title : Photoeleastic Effect in Polystyrol and Its Halogen Derivatives.

Orig Pub: Zh. tekhn. fiziki, 1956, 26, No 8, 1730-1737

Abstract: The photoelastic effect (PE) was measured in polystyrol (I) (130000), polyparachlorostyrol (II) poly- 2.5 dichlorostyrol (III) (60000), polyorthochlorostyrol (IV) (80200), poly-3.4 dichlorostyrol (V) (30000), polyorthoiodostyrol (VI) (20000) and polyparaiodostyrol (VII) (32000). The numbers in the parentheses represent the molecular weights. The PE was studied in tension of thin films by constant load and at temperatures above the vitrification temperature. With the aid of a setup with a polarization microscope, simultaneous measurements were made of the elongation $\Delta l/l$, the birefringence, Δ n, and the true load σ. The PE in vitrified films was measured in a photoelectric

Card : 1/3

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USSR / Optics

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10353

setup. The time dependences of $\Delta l/l$, Δ n, and the photoelastic coefficient $\mathcal{E} = \Delta n/\sigma$ were obtained. The tension curves have a characteristic S-shape form with a relative saturation, this being due to the presence of a labile lattice in the block linear polymer. The step-like character of the tension of I discloses the damage to the lattice structure and formation of new labile nodes. $\mathcal{E}$ rapidly reaches its maximum value and diminishes only slightly upon further tension. $\mathcal{E}_{max}$ is practically independent of σ_{init} over a wide range of σ_{init} (for II: 2 -- 18 x 10^6 dyne/cm^2). The average values of $\mathcal{E}_{max}$ were used to find the effective anisotropic polarizabilities of the chain $\Delta\alpha$ (Treloire, L. Physics of Elasticity of Rubber , IL, 1953): I -- 140, II -- 210, III -- 170, IV -- 130, V -- 340 x 10^{-25} cm^3. In accordance with the theory (Gotlib Yu. Ya., Volkenshteyn, M.V., Byutnor, E.K., Dokl AN SSSR, 1954, 99, No 6, 935), the known value of η (the average cosine of the angle of internal rotation about the bond C-C in I) and the value of $\Delta\alpha$ were used to determine $\mu = \overline{\cos^2 \psi'}$ (ψ' is the angle of

Card : 2/3

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

K

USSR / Optics

Abs Jour: Referat Zhur-Fizika, 1957, No 4, 10353

rotation of the phenyl ring), after which these values of μ and η were used to calculate $\Delta\alpha$ for II -- VII. Satisfactory agreement with experiment was obtained for II and V, which indicates a similarity in the conditions of internal rotation in I, II, and V. For II and IV, which contain chlorine in the ortho position, the calculated values of $\Delta\alpha$ are greater than those observed, this being due to the greater resistance to rotation of the suspended weight.

Card : 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya., VOLKENSHTEYN, M. V., BAYZHENOV, N. M., ROSENSHTEYN, L. D., BYKOV, M. V.

"The photoelastic effect and the free rotation of linear polyamides," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Karpov, Inst.

B-3,084,395

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

PA - 2797

AUTHOR: GOTLIB, Yu.Ya. SREDNYAYA, V.

TITLE: Internal Rotation in Polymer Chains and its Physical Properties. The Average Anisotropy of the Molecules of Linear Polymers with Symmetric Potential of Damped Internal Rotation. (Vnutrenneye vrashcheniye v polimernykh tsepyakh i ikh fizicheskiye svoystva. V.Srednyaya anizotropiya molekul lineynykh polimerov s simmetrichnym potentsialnom zatormozhennogo vnutrennego vrashcheniya, Russian)

PERIODICAL: Zhurnal Tekhn. Fiz., 1957, Vol 27, Nr 4, pp 707 - 718 (U.S.S.R.)
Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: The fundamental problem of the molecular theory of double refraction in the case of the deformation of block polymers is the determination of the correlation between the magnitude of the photoelastic coefficient B and the composition of the polymer chains. In the present paper the method for the computation of the anisotropy of the chains is investigated with a symmetric potential of internal rotation. The problem consists in the computation of $A_{\parallel}(h)$ and $A_{\perp}(h)$ for chains of the type ($-CH_2-CX_2-$) possessing a fixed angle of valence α and damped internal rotation. h denotes a vector, connecting the beginning and the end of the chain. A denotes anisotropy. A position coordinate system $\xi^{(n)}, \eta^{(n)}, \zeta^{(n)}$ is connected with every pair of C atoms C-C. The exact computation is carried out and

Card 1/2

PA - 2797

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

Internal Rotation in Polymer Chains and its Physical Properties.

the formulae for $A_{\parallel}(h)$, $A_{\perp}(h)$, and ΔA are deduced. These formulae show that the average anisotropy ΔA and the photoelastic coefficient B are very complicated functions of $\bar{\alpha}_{uv}$ (tensor of polarization) η ($\cos\varphi = \eta$) and γ ($\cos^2\varphi = \gamma$). φ denote the angle of internal rotation. It is shown that the modification of $\eta = \cos\varphi$ from zero to 0,7 leads to a rapid increase of ΔA in comparison to the value of ΔA in the case of a free interlinked chain with the same value of $(\alpha_{\zeta\zeta} - \alpha_{\xi\xi})$. The influence of the selection of reversing isomeres is relatively small both with respect to the absolute value of ΔA if η is given, as to the rapid change of $\Delta A(\eta)$.
(1 table and 9 citations from Slav publications)

ASSOCIATION: Pedagogical Institute Gerzen, Leningrad

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress.

Card 2/2

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

20-1-24/64

AUTHOR: GOTLIB, Yu. Ya.

TITLE: On the Problem of the Computation of the Photoelastic Coefficient for Polymers.
(K voprosu o vychislenii fotoelasticheskogo koeffitsienta dlya polimerov. Russian).

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol 114, Nr 1, pp 57 - 60 (U.S.S.R.)

ABSTRACT: In the domain of small uniaxial deformations there is valid for the photoelastic coefficient $B = \Delta n/t$ the mathematical interrelationship $B = (2\pi/27)((\bar{n}^2 + 2)^2/\bar{n})\Delta A$, with $\Delta n = n_1 - n_2$. n_1 and n_2 are the refractive coefficients for the light polarized in the direction of the deformation and at right angle to this direction, respectively. We furthermore have $\bar{n} = (1/2)(n_1 + n_2)$, and ΔA is the mean anisotropy of the polymeric chain in the system of coordinates connected with the chain itself. t denotes the stress with respect to the unit of actual cross section of the sample.

The paper under review permits to draw the following conclusions: The equation listed above is suited for any arbitrary polydispersive Gauss nets consisting of chains with retarded inner rotation (also if the fluctuation of the inner nodes of the net is taken into account). The author of the paper under review bases himself on the theory of the mechnaical properties of the Gauss nets.

Card 1/2

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20-4/64

On the Problem of the Computation of the Photoelastic Coefficient for Polymers.

Then the present paper proceeds to investigate the amount of the double refraction of rays in the unit cube of a block polymer, with the course of the computation being followed step by step. The thus obtained expressions contain the following result that is of very great importance for further computations: The photoelastic coefficient of an arbitrary isotropic Gauss net does not depend on the structure of the net himself. Finally the paper under review expresses the photoelastic coefficient by the mean anisotropy of a single chain. (No reproduction).

ASSOCIATION: Leningrad State Pedagogic Institute "A.I. Gertsen".
PRESENTED BY: IOFFE, A.F., Member of the Academy, on 23 November 1956
SUBMITTED: 15 November 1956
AVAILABLE: Library of Congress

Card 2/2

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

AUTHOR: Gotlib, Yu. Ya. 57-28-4-23/39

TITLE: The Internal Rotation in Polymeric Chains and Their Physical Properties (Vnutrenneye vrashcheniye v polimernykh tsepyakh i ikh fizicheskiye svoystva). VIII. The Average Optical Anisotropy of the Molecules of Linear Polymers With Asymmetrical Additions (VIII. Srednyaya opticheskaya anizotropiya molekul lineynykh polimerov s asimmetrichnymi priveskami)

PERIODICAL: Zhurnal Tekhnicheskoy Fiziki, 1958, Vol. 28, Nr 4, pp. 801-812 (USSR)

ABSTRACT: A chain of the type (-CH_2-CHR-) is investigated here. Many linear polymers belong to this type: polystyrene, polyvinylchloride, polyvinylacetate and others. The method of calculation is chiefly similar to that in references 1 and 2. The occurrence of alternating members of different types H_2C-C and RHC-C in the chain, however, leads to a number of essential complications in the calculation (especially in that of syndiotactic polymers). The chains with R-groups

Card 1/3

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on one side of the parent chain (isotactic polymers) and the chains with a regular sequence of the R-groups (syndiotactic polymers) are separately investigated. The dependence of the average optical anisotropy of the chain $\Delta\alpha$ on the parameters of the retarded internal rotation is determined. The applicability of the obtained theoretical results for the experimental data in the case of polyvinylchloride is discussed. Polyvinylchloride is a polymer with comparatively small asymmetrical additions and here the dipole-interaction between the dipoles C - Cl may play an important part. The radiographic data for polyvinylchloride indicate a predominant succession of the Cl-atoms at both sides of the parent chain (syndiotactic polymer). It is stated that the values of the parameters of internal rotation which were obtained from the theory of double refraction are in good agreement with those from the data for dipole moments. Professor M. V. Vol'kenshteyn devoted his attention to this work.

There are 1 figure and 10 references, 9 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy pedagogicheskiy institut im. Gertsena (Leningrad State Institute for Pedagogics imeni Gertsen)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

SOV/58-59-9-20143

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 9, p 97 (USSR)

AUTHOR: Gotlib, Yu.Ya.

TITLE: The Theory of Double Refraction in Polymers

PERIODICAL: Uch. zap. Leningr. gos. ped. in-ta im. A.I. Gertsena, 1958, Vol 141, pp 121 - 169

ABSTRACT: The author develops a theory of double refraction for block polymers consisting of chains with a deferred internal rotation. It is shown that the correlation between double refraction and stress for an arbitrary Gaussian network does not depend on the network structure (polydispersion, functionality, etc.) but rather is determined by the average anisotropy of the individual chains. The tensor of the average polarizability, and the average anisotropy of a macromolecular chain in a molecular system of coordinates ΔA, are expressed in terms of the linear and quadratic functions of the cosines of the angles between the unit vectors of the local systems of coordinates that are associated with the individual links, the corresponding formulae being suitable for Gaussian chains with arbitrary conditions of internal rotation. The

Card 1/2

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The Theory of Double Refraction in Polymers

SOV/58-59-9-20143

author develops a method of averaging the quadratic functions of the cosines of the angles between the unit vectors of various local coordinate systems for chains with independent rotations in adjacent links. For chains with a symmetric potential of deferred internal rotation, Δ A turns out to be a function dependent on the polarizability tensor of the individual link, on the magnitude of the valence angle, and on the average cosine, as well as the average square of the cosine, of the angles of the internal rotation in the chain. Results are obtained for iso- and syndiotactic chains of the $(-CH_2-CHR-)_n$ type on the assumption that isomers turned through an angle of $0 \pm 120^\circ$ exist. A comparison is made with the experiment involving polyethylene, polyvinyl chloride and polysterene.

Yu.Ya. Gotlib

Card 2/2

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

VOL'KENSHTEYN, Mikhail Vladimirovich. Prinimali uchastiye: BIRSHTEYN, T.M.; GOTLIB, Yu.Ya.; PTITSYN, O.B., BRESLER, S.Ye., prof., doktor khim.nauk, otv.red.; FRENKEL', S.Ya., red.izd-va; ZENDEL', M.Ye., tekhn.red.

[Configuration statistics of polymer chains] Konfiguratsionnaia statistika polimernykh tsepei. Moskva, Izd-vo Akad.nauk SSSR, 1959. 466 p. (MIRA 12:8)

(Polymers)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ye.

Infrared dichroism and the structure of stereospecific polymers.
Vysokom. soed. 1 no.3:474-481 Mr '59. (MIRA 12:10)

1.Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Polymers) (Dichroism)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

VOL'KENSHTEYN, M.V.; GOTLIB, Yu.Ya.; PTITSYN, O.B.

Theory of high elasticity of rubbers. Vysokom.soed. 1 no.7:1058-1062 Jl '59. (MIRA 12:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Rubber, Synthetic)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

VOL'KENSHTEYN, M.V.; GOTLIB, Yu.Ya.

Entropy elasticity of a polymer containing anisotropic rigid particles. Vysokom.soed. 1 no.7:1063-1069 Jl '59. (MIRA 12:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Polymers)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

SOV/51-7-3-3/21

AUTHOR: Gotlib, Yu. Ya.

TITLE: Theory of the Vibrational Spectra of Polymers. I. The Band Structure in the Vibrational Spectra of Spiral Polymer Chains.

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, Nr 3, pp 294-300 (USSR)

ABSTRACT: The author studied the structure of the optical band in the vibrational spectrum of a regular spiral polymer chain. This structure is produced by splitting of the line corresponding to vibrations of individual monomer groups. The splitting is due to the interaction between individual monomers in the polymer chain. In the discussion the author uses the phase relationships between vibrations in neighbouring groups, which are not related to the nature of the groups and the type of vibrations, but are due to the periodic spiral structure of the polymer chain. The optical band splits up into two components I_Z and I_{XY} (known as the parallel and perpendicular components), which are polarized along the polymer spiral axis and in a plane at right angles to this axis respectively. In the I_{XY} component the band intensity is mainly due to two or three internal lines. In the I_Z component the line at the edge of the band is the most intense. The distribution of intensities in the

Card 1/2

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

SOV/51-7-3-3/21

Theory of the Vibrational Spectra of Polymers. I. The Band Structure in the Vibrational Spectra of Spiral Polymer Chains

case of very long polymer chains agrees with the selection rules suggested by Higgs (Refs 2 and 9). Formulae for the intensities of bands of chains made up of parallel and anti-parallel oscillators follow, as a special case, from the authors expressions. Acknowledgment is made to M.V. Vol'kenshteyn for his advice. The paper is entirely theoretical. There are 2 figures and 13 references, 4 of which are Soviet, 8 English and 1 translation into Russian.

SUBMITTED: December 24, 1958

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu. Ya., PTITSYN, O. B. and BIRSHTEIN, T. M. (USSR)

Mikrotaktichnost polimerov i metody ee issledovaniya
The microtacticity im polymers and methods of its investigation
IUPAC S II:388-95

report presented at the Intl. Symposium on Macromolecular Chemistry, Moscow, 14-18 June 60.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, YU. YA.

PHASE I BOOK EXPLOITATION SOV/4983

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simposium po makromolekulyarnoy khimii, SSSR, Moskva, 14-18 iyunya 1960 g; doklady i avtoreferaty. Sektsiya II. (International Symposium on Macromolecular Chemistry Held in Moscow, June 14-18; Papers and Summaries) Section II. [Moscow, Izd-vo AN SSSR, 1960] 559 p. 5,500 copies printed.

Sponsoring Agency: The International Union of Pure and Applied Chemistry, Commission on Macromolecular Chemistry

Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemists interested in polymerization reactions and the synthesis of high-molecular compounds.

COVERAGE: This is Section II of a multivolume work containing papers on macromolecular chemistry. The papers in this volume treat mainly the kinetics of various polymerization reactions initiated by different catalysts or induced by radiation. Among the research techniques discussed are electron paramagnetic resonance spectroscopy and light-scattering interpolation. There are summaries in English, French and Russian. No personalities are mentioned. References follow each article.

Mihail, R., and J. Herscovici (Rumania). On the Mechanism of the Formation Reaction of Stereoregular Polymers 302

Simon, A., and G. Ghymes (Hungary). On the Kinetics of a Reaction on Zeigler Catalysts 310

Wichterle, O., M. Marek, and I. Trekoval (Czechoslovakia). Kinetics of the Polymerization of Isobutylene on a Heterogeneous Catalyst 322

Boček, V. (Czechoslovakia). Heterogeneous Catalysts for the Polymerization of Alpha Olefins 330

Veselý, K., I. Ambrož, R. Vilim, and O. Hamřík (Czechoslovakia). The Effect of Donor Type Impurities on the Polymerization of Propylene. Catalyzed by the System Titanium Trichloride-Triethyl-aluminum 337

Dolgoplosk, B.A. (USSR). Study of the Factors Leading to the Degradation of Chain Structure During the Ionic Polymerization of Dienes 346

Yerusalimskiy, B.L., Wang Fo-sung, and A.P. Kavunenko (USSR). Study of the Interaction of Organomagnesium Compounds With Salts of Heavy Metals and the Use of Organomagnesium Compounds and Their Complexes to Stimulate Polymerization 355

Santo, I., and K. Gal (Hungary). The Effect of Organic Inner Complexes of Some Metals of Variable Valence on the Kinetics of the Polymerization of Vinyl Compounds 366

Bresler, S.Ye., M.I. Mosevitskiy, I. Ya. Poddubnyy, and Shih Kuang-i (USSR). Study of Some Details of the Mechanism of Polymerization Under the Action of Complex Catalysts 372

Tsvetkov, V.N., S.Ya. Magarik, N.N. Boytsova, and M.G. Okuneva (USSR). Stereospecificity and the Optical Properties of Polymers 378

Birshteyn, T.M., Yu. Ya. Gotlib, and O.B. Ptitsyn (USSR). The Microtacticity of Polymers and Methods of Study 388

Abkin, A.D., A.P. Shevnker, M.K. Yakovleva, and L.P. Mezhirova (USSR). On Carbonium and Carbanion Polymerization Mechanisms Under the Effects of Gamma Radiation 410

Kargin, V. A., and V.A. Kabanov (USSR). Polymerization Processes in Insoluble Molecular Dispersions 455 31

Nachaček, Z., Y. Mejzlík, and Y. Pác (Czechoslovakia). Kinetics of the Polymerization of Formaldehyde 253

Vesely, K. (Czechoslovakia). On the Mechanism of Ionic Polymerization 262

Zlámal, Z., and A. Kazda (Czechoslovakia). On the Role of Nonpolar Compounds in the Cationic Polymerization of Isobutylene 272 45

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S/051/60/009/003/002/011
E201/E691

AUTHOR: Gotlib, Yu. Ya.

TITLE: A Theory of the Vibrational Spectra of Polymers. II. Twisting Skeletal Vibrations in Syndiotactic Polymer Chains.

PERIODICAL: Optika i spektroskopiya, 1960, Vol. 9, No. 3, pp. 319-325

TEXT: The author derives equations of motion for skeletal twisting vibrations of plane syndiotactic chains in the case when the mass centre of the side group does not coincide with the skeletal carbon atom. Frequencies of two infrared-active skeletal twisting vibrations are calculated. Vibration forms are deduced and expressions are obtained for intensities in the zero approximation of the valence-optical method. The theory is used to discuss the experimental results relating to polyvinyl chloride, polyvinylidene chloride and polyacrylonitrile and their force constants are calculated. Acknowledgment is made to M.V. Vol'kenshteyn for his advice. There are 2 figures and 11 references: 3 Soviet, 7 English and 1 translation into Russian.

SUBMITTED: December 23, 1959

Card 1/1

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, YU. YA., YELYASHEVICH A. M., PTITSIN, S. R., BIRSHTEYN, G. M., VOLKENSHTEYN, M. V., and GODZHAYEV, N. M. (USSR)

"Statistic Thermodynamic and Kinetic Model Theory of Biosynthesis."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 Aug 1961

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

16 6100 1344, 1103, 1327

20118
S/181/61/003/002/016/050
B102/B204

AUTHORS: Vol'kenshteyn, M. V., Gotlib, Yu. Ya., and Ptitsyn, O. B.

TITLE: The kinetics of cooperative processes

PERIODICAL: Fizika tverdogo tela, v. 3, no. 2, 1961, 420-428

TEXT: The solution of the kinetic equations describing the cooperative processes occurring in changes of state (e.g. in fluids) is connected with considerable mathematic difficulties, if the state parameters change continuously with the coordinates and the momenta of the interacting particles. However, it is mostly sufficient to investigate two or more discrete values of the parameters of state, which simplifies calculations considerably. The authors now developed a method permitting solution of the kinetic equations for cooperative systems by means of discrete state parameters by successive approximations. The interrelation between this method and others (e.g. as developed by N. N. Bogolyubov) is discussed; the present method is suited for studying cooperative kinetic processes of the structural change in liquids and solids. Such chemical processes are considered to be cooperative as occur on a certain matrix; in

Card 1/12

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heterogeneous catalysis, e.g. the catalyst plays the role of such a matrix. The synthesis of albumens and nucleic acids, e.g. occurs only on matrices with the participation of ferments. It may be assumed that in biosynthesis, the cooperative processes play the main part. Here a system is investigated which consists of N correlated subsystems; the probability of the change of a state of a subsystem is assumed to depend not only on its state but also on the state of the neighboring subsystems. Thus, the probability of a change in state (transition), depends only on states and not on the transition of the neighboring subsystems, so that only a single transition need be investigated. For the state distribution function $F(\alpha_1, \alpha_2, \ldots \alpha_N) = F\{\alpha\}$ the kinetic equation

$$\frac{dF\{\alpha\}}{dt} = -F\{\alpha\} \sum_j \sum_{\alpha'_j \neq \alpha_j} w_{\alpha_j \to \alpha'_j}(\{\alpha\}, \alpha'_j) +$$

$$+ \sum_j \sum_{\alpha'_j \neq \alpha_j} F(\alpha_1, \alpha_2, \ldots \alpha_{j-1}, \alpha'_j, \alpha_{j+1}, \ldots \alpha_N)\, w_{\alpha'_j \to \alpha_j}(\{\alpha\}, \alpha'_j), \quad (1)$$

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holds, where w denote the transition probabilities. The partial distribution functions of n-th order, which depend on the state n of the subsystem are introduced with

$$F^{(n)}(\alpha_{i_1}, \alpha_{i_2}, \ldots \alpha_{i_n}) = \sum_{(k \neq i_1, i_2, \ldots i_n)} \cdots \sum_{\alpha_k} F\{\alpha\}. \qquad (2)$$

and finally one obtains for the partial distribution functions

$$\frac{dF^{(1)}(\alpha_i)}{dt} = -\sum_{\alpha_{i_1} \ldots \alpha_{i_s}} F^{(s+1)}(\alpha_i, \alpha_{i_1}, \alpha_{i_2}, \ldots \alpha_{i_s}) \times$$
$$\times \sum_{\alpha_i'} w_{\alpha_i \to \alpha_i'}(\alpha_i, \alpha_i', \alpha_{i_1}, \ldots \alpha_{i_s}) + \sum_{\alpha_{i_1} \ldots \alpha_{i_s}} \sum_{\alpha_i'}$$
$$F^{(s+1)}(\alpha_i', \alpha_{i_1}, \alpha_{i_2}, \ldots \alpha_{i_s}) w_{\alpha_i' \to \alpha_i}(\alpha_i', \alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}),$$

$$\frac{dF^{(2)}(\alpha_i, \alpha_k)}{dt} = -\sum_{\alpha_{i_1} \ldots \alpha_{i_{k-1}}, \alpha_{i_{k+1}} \ldots \alpha_{i_s}} F^{(s+1)}(\alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}) \times \qquad (5)$$
$$(k = 1, 2, \ldots s)$$
$$\times \sum_{\alpha_i'} w_{\alpha_i \to \alpha_i'}(\alpha_i, \alpha_i', \alpha_{i_1}, \ldots \alpha_{i_s}) - \sum_{\alpha_{i_1} \ldots \alpha_{i_{k-1}}, \alpha_{i_{k+1}}, \alpha_{i_s}, \alpha_{j_1} \ldots \alpha_{j_l}}$$

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$$F^{(s+l_k+1)}(\alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}) \sum_{\alpha'_{i_k}} w_{\alpha_{i_k} \to \alpha'_{i_k}}(\alpha_{i_k}, \alpha'_{i_k}, \alpha_i,$$

$$\alpha_{i_1}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}) + \sum_{\alpha_{i_1}, \ldots \alpha_{i_{k-1}} \alpha_{i_{k+1}}, \ldots \alpha_{i_s}} \sum_{\alpha'_i} F^{(s+1)}(\alpha'_i, \alpha_{i_1}, \ldots \alpha_{i_s}) \times$$

$$\times w_{\alpha'_i \to \alpha_i}(\alpha'_i, \alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}) + \sum_{\alpha_{i_1}, \ldots \alpha_{i_{k-1}}, \alpha_{i_{k+1}}, \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}} \sum_{\alpha'_{i_k}}$$

$$F^{(s+l_k+1)}(\alpha_i, \alpha_{i_1}, \ldots \alpha_{i_{k-1}}, \alpha'_{i_k}, \alpha_{i_{k+1}}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}) \times$$

$$\times w_{\alpha_{i_k} \to \alpha_{i_k}}(\alpha'_{i_k}, \alpha_{i_k}, \alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l})$$

$$\frac{dF^{(s+1)}(\alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s})}{dt} = -F^{(s+1)}(\alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}) \times$$

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$$\times \sum_{\alpha'_i} w'_{\alpha_i \to \alpha'_i}(\alpha_i, \alpha'_i, \alpha_{i_1}, \ldots \alpha_{i_s}) - \sum_{k=1}^{s} \sum_{\alpha_{j_1} \ldots \alpha_{j_l}} F^{(s+l_k+1)}(\alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}) \sum_{\alpha'_{i_k}} w_{\alpha_{i_k} \to \alpha'_{i_k}}(\alpha_{i_k}, \alpha'_{i_k}, \alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}) + \sum_{\alpha'_i} F^{(s+1)}(\alpha'_i, \alpha_{i_1}, \ldots \alpha_{i_s}) w'_{\alpha'_i \to \alpha_i}(\alpha'_i, \alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}) + \sum_{k=1}^{s} \sum_{\alpha_{j_1} \ldots \alpha_{j_l}} \sum_{\alpha'_{i_k}} F^{(s+l_k+1)}(\alpha_i, \alpha_{i_1}, \ldots \alpha_{i_{k-1}}, \alpha'_{i_k}, \alpha_{i_{k+1}}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}) \times w'_{\alpha_{i_k} \to \alpha_{i_k}}(\alpha'_{i_k}, \alpha_{i_k}, \alpha_i, \alpha_{i_1}, \ldots \alpha_{i_s}, \alpha_{j_1}, \ldots \alpha_{j_l}). \quad (4)$$

which may be solved according to the method of successive approximations. Here the first approximation agrees with the zero-th approximation of the Bogolyubov power expansion. In first approximation,

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$F_1^{(n)}\left(\alpha_{i_1}, \alpha_{i_2}, \dots \alpha_{i_n}\right) = \prod_{k=1}^{n} F_1^{(1)}\left(\alpha_{i_k}\right)$ holds; for $F_1^{(1)}(\alpha_i)$ one obtains the system

$$\frac{dF_1^{(1)}(\alpha_i)}{dt} = -F_1^{(1)}(\alpha_i) \sum_{\alpha_{i_1}, \dots \alpha_{i_s}} \prod_{k=1}^{s} F_1^{(1)}(\alpha_{i_k}) \sum_{\alpha_i'} w_{\alpha_i \to \alpha_i'}(\alpha_i, \alpha_i', \alpha_{i_1}, \dots \alpha_{i_s}) +$$

$$+ \sum_{\alpha_i'} F_1^{(1)}(\alpha_i') \sum_{\alpha_{i_1}, \dots \alpha_{i_s}} \prod_{k=1}^{s} F_1^{(1)}(\alpha_{i_k}) w_{\alpha_i' \to \alpha_i}(\alpha_i', \alpha_i, \alpha_{i_1}, \dots \alpha_{i_s}). \quad (6)$$

From the equivalence of all subsystems one obtains as normalization condition $\sum_{p=1}^{f} F^{(1)}(\alpha_i^{(p)}) = 1$, independent of i. (6) supplies the function $F^{(1)}(\alpha)$ in first approximation; in order to obtain this function in second approximation, it is necessary to substitute

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function $F^{(z+1_{k+1})}$ in first approximation into the last equation of (4), whose solution gives $F^{(z+1)}$ in second approximation. If then $F_2^{(z+1)}$ is substituted into (3),

$$\frac{dF^{(1)}(\alpha_i)}{dt} = -\sum_{\alpha_{i_1},\ldots\alpha_{i_z}} F^{(z+1)}(\alpha_i, \alpha_{i_1}, \alpha_{i_2}, \ldots \alpha_{i_z}) \times$$
$$\times \sum_{\alpha'_i} w_{\alpha_i \to \alpha'_i}(\alpha_i, \alpha'_i, \alpha_{i_1}, \ldots \alpha_{i_z}) +$$
$$+ \sum_{\alpha_{i_1},\ldots,\alpha_{i_z}} \sum_{\alpha'_i} F^{(z+1)}(\alpha'_i, \alpha_{i_1}, \alpha_{i_2}, \ldots \alpha_{i_z}) w_{\alpha'_i \to \alpha_i}(\alpha'_i, \alpha_i, \alpha_{i_1}, \ldots \alpha_{i_z}) -$$
$$- \sum_{\alpha_k,\, k \neq i} \sum_{j \neq i} F(\alpha) \sum_{\alpha'_j} w_{\alpha_j \to \alpha'_j}(\alpha_j, \alpha'_j, \alpha_{j_1}, \ldots \alpha_{j_z}) +$$
$$+ \sum_{\alpha_k,\, k \neq i} \sum_{j \neq i} \sum_{\alpha'_j} F(\alpha_1, \alpha_2, \ldots \alpha_{j-1}, \alpha'_j, \alpha_{j+1}, \ldots \alpha_N) \times$$
$$\times w_{\alpha'_j \to \alpha_j}(\alpha'_j, \alpha_j, \alpha_{j_1}, \ldots \alpha_{j_z}), \qquad (3)$$

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

one obtains $F^{(1)}(\alpha)$ in second approximation. In order to obtain $F^{(1)}(\alpha)$ in third approximation, it is necessary to know $F_2^{(z+1_{k+1})}$ etc. This method is explained on the basis of the example of a linear cooperative system (e.g. macromolecule). The equations (10) - (12) are obtained, by means of which the distribution functions of arbitrary order may be determined.

$$\frac{dF^{(1)}(\alpha_i)}{dt} = -\sum_{\alpha_{i-1},\,\alpha_{i+1}} F^{(3)}(\alpha_{i-1},\,\alpha_i,\,\alpha_{i+1})\,w_{\alpha_i\to\alpha_i'}(\alpha_{i-1},\,\alpha_i,\,\alpha_i',\,\alpha_{i+1}) + \sum_{\alpha_{i-1},\,\alpha_{i+1}} F^{(3)}(\alpha_{i-1},\,\alpha_i',\,\alpha_{i+1})\,w_{\alpha_i'\to\alpha_i}(\alpha_{i-1},\,\alpha_i',\,\alpha_i,\,\alpha_{i+1}). \quad (10)$$

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$$\frac{dF^{(2)}(\alpha_i, \alpha_{i+1})}{dt} = -\sum_{\alpha_{i-1}} F^{(3)}(\alpha_{i-1}, \alpha_i, \alpha_{i+1}) w_{\alpha_i \to \alpha'_i}(\alpha_{i-1}, \alpha_i, \alpha'_i, \alpha_{i+1}) -$$

$$- \sum_{\alpha_{i+2}} F^{(3)}(\alpha_i, \alpha_{i+1}, \alpha_{i+2}) w_{\alpha_{i+1} \to \alpha'_{i+1}}(\alpha_i, \alpha_{i+1}, \alpha'_{i+1}, \alpha_{i+2}) +$$

$$+ \sum_{\alpha_{i-2}} F^{(3)}(\alpha_{i-1}, \alpha'_i, \alpha_{i+1}) w_{\alpha'_i \to \alpha_i}(\alpha_{i-1}, \alpha'_i, \alpha_i, \alpha_{i+1}) +$$

$$+ \sum_{\alpha_{i+2}} F^{(3)}(\alpha_i, \alpha'_{i+1}, \alpha_{i+2}) w_{\alpha'_{i+1} \to \alpha_{i+1}}(\alpha_i, \alpha'_{i+1}, \alpha_{i+1}, \alpha_{i+2}) \qquad (11)$$

и при $n \geqq 3$

$$\frac{dF^{(n)}(\alpha_i, \alpha_{i+1}, \ldots \alpha_{i+n-1})}{dt} = -F^{(n)}(\alpha_i, \alpha_{i+1}, \ldots \alpha_{i+n-1})$$

$$\sum_{p=1}^{n-2} w_{\alpha_{i+p} \to \alpha'_{i+p}}(\alpha_{i+p-1}, \alpha_{i+p}, \alpha'_{i+p}, \alpha_{i+p+1}) - \qquad 1)$$

$$- \sum_{\alpha_{i-1}} F^{(n+1)}(\alpha_{i-1}, \alpha_i, \alpha_{i+1}, \ldots \alpha_{i+n-1}) w_{\alpha_i \to \alpha'_i}(\alpha_{i-1}, \alpha_i, \alpha'_i, \alpha_{i+1}) -$$

$$- \sum_{\alpha_{i+n}} F^{(n+1)}(\alpha_i, \alpha_{i+1}, \ldots \alpha_{i+n-1}, \alpha_{i+n}) w_{\alpha_{i+n-1} \to \alpha'_{i+n-1}}(\alpha_{i+n-2}, \alpha_{i+n-1},$$

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$$\alpha'_{i+n-1},\ \alpha_{i+n}) + \sum_{p=1}^{n-2} F^{(n)}(\alpha_i,\ \alpha_{i+1},\ \ldots \alpha_{i+p-1},\ \alpha'_{i+p},\ \alpha_{i+p+1},\ \ldots,\ \alpha_{i+n-1}) \times$$

$$\times\ w'_{\alpha_{i+p}\to\alpha_{i+p}}(\alpha_{i+p-1},\ \alpha'_{i+p},\ \alpha_{i+p},\ \alpha_{i+p+1}) + \sum_{\alpha_{i-1}} F^{(n+1)}(\alpha_{i-1},\ \alpha'_i,\ \alpha_{i+1},$$

$$\ldots \alpha_{i+n-1})\, w'_{\alpha_i\to\alpha_i}(\alpha_{i-1},\ \alpha'_i,\ \alpha_i,\ \alpha_{i+1}) +$$

$$+ \sum_{\alpha_{i+n}} F^{(n+1)}(\alpha_i,\ \alpha_{i+1},\ \ldots \alpha'_{i+n-1},\ \alpha_{i+n}) \times$$

$$\times\ w'_{\alpha_{i+n-1}\to\alpha_{i+n-1}}(\alpha_{i+n-2},\ \alpha'_{i+n-1},\ \alpha_{i+n-1},\ \alpha_{i+n}). \qquad (12)$$

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

20110

The kinetics of cooperative ... S/181/61/003/002/016/050
B102/B204

The scheme of successive approximations is represented in Fig. 1. The first and second approximations are calculated. There are 2 figures and 4 references: 3 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR Leningrad (Institute of High-molecular Compounds AS USSR, Leningrad)

SUBMITTED: May 4, 1960

Card 11/12

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

S/181/61/003/011/022/056
B125/B104

AUTHORS: Gotlib, Yu. Ya., Ptitsyn, O. B.

TITLE: Theory of glass fritting as a "cooperative process"

PERIODICAL: Fizika tverdogo tela, v. 3, no. 11, 1961, 3383-3388

TEXT: A more exact "cooperative theory" of glass fritting (cf. A. J. Kovacs, J. Polymer. Sci., 30, 131, 1958; Ye. V. Kuvshinskiy, A. V. Sidorovich, Vysokomolekulyarnyye soyedineniya, 1961; M. V. Vol'kenshteyn, Yu. A. Sharonov, Vysokomolekulyarnyye soyedineniya, 1961) is presented. This theory is based on the general method developed by M. V. Vol'kenshteyn, Yu. A. Gotlib, and O. B. Ptitsyn (FTT, 3, 420, 1961) for the study of the kinetics of "cooperative processes" with the aid of partial distribution functions. By substituting $K_m = K_o (1 + \varkappa_1)^m$ (1) and $k_m = k_o(1 + \varkappa_2)^m$ (2) into the kinetic equation

Card 1/6

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

$$\frac{d\nu}{dt}=\sum_{m=0}^{s}K_m\frac{s!}{m!(s-m)!}\nu^m(1-\nu)^{s+1-m}-$$
$$-\sum_{m=0}^{s}k_m\frac{s!}{m!(s-m)!}\nu^{m+1}(1-\nu)^{s-m}, \qquad (3)$$

for the portion of empty cells in the surface layer one obtains

$$\frac{d\nu}{dt}=K_0(1-\nu)[1+\varkappa_1\nu]^s-k_0\nu[1+\varkappa_2\nu]^s. \qquad (5)$$

In the absence of cooperativity ($\varkappa_1 = \varkappa_2 = 0$), the latter relation goes over into the usual first-order reaction equation $d\nu/dt = -(1/\tau_0)(\nu-\nu_e)$ (6). The solution of Eq. (6) furnishes the exponential time function $\nu-\nu_e = (\nu_0 - \nu_e)e^{-(t-t_0)/\tau_0}$ (9) of the structural parameter ν. In the equations and formulas presented above, K_m denotes the "filling" constant, and k_m is the "evaporation" constant of a hole. The values of these constants, obtained in the absence of neighboring holes, are indicated by

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

K_o and k_o, respectively; z is the coordination number, $\tau_o = 1/(K_o + k_o)$ (7) is the relaxation time of the system, and $\nu_e = K_o/(K_o + k_o)$ is the equilibrium value of ν. In the simplest case where cooperativity has no effect on the equilibrium properties of the system (i. e., on the difference in energy between an empty and a completely filled cell), Eq. (5) will go over into the equation $d\nu/dt = -(1/\tau(\nu))(\nu - \nu_e)$ (10)

with $\tau(\nu) = \tau_o \frac{1}{(1+\kappa\nu)^2} = \tau_e \left(\frac{1+\kappa\nu_e}{1+\kappa\nu}\right)^2$ (11). Then, $\Gamma = -(dV/dt)/(V - V_e)$ will be only a function of temperature and will not be altered by isothermal annealing. If cooperativity does not vanish, Γ will be an exponential function of time.

$$\log \frac{\tau}{\tau_e} \simeq -\frac{\kappa}{1+\kappa V_e} \frac{V - V_e}{V_e}. \qquad (13)$$

is confirmed by experimental results of Ye. V. Kuvshinskiy, A. V. Sidorovich (Vysokomolekulyarnyye soyedineniya, 1961). The solution of Eq. (10) reads

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$$-\frac{t-t_0}{\tau_e}=Ei\left[-\left(z-\frac{1}{2}\right)\ln\frac{1+\varkappa v}{1+\varkappa v_e}\right]-Ei\left[-\frac{1}{2}\ln\frac{1+\varkappa v}{1+\varkappa v_e}\right]-$$
$$-Ei\left[-\left(z-\frac{1}{2}\right)\ln\frac{1+\varkappa v_0}{1+\varkappa v_e}\right]+Ei\left[-\frac{1}{2}\ln\frac{1+\varkappa v_0}{1+\varkappa v_e}\right]+\ln\frac{v-v_e}{v_0-v_e}\frac{1+\varkappa v_0}{1+\varkappa v}, \quad (17)$$

and the equation derived therefrom for $\varkappa(v-v_e)\ll 1$:

$$-\frac{t-t_0}{\tau_e}=Ei\left[-\left(z-\frac{1}{2}\right)\varkappa(v-v_e)\right]-Ei\left[-\left(z-\frac{1}{2}\right)\varkappa(v_0-v_e)\right]+$$
$$+\frac{1}{2}\varkappa(v_0-v), \quad (18)$$

furnishes the non-exponential time dependence of the portion of empty cells and, accordingly, of the volume and enthalpy of the sample in question. For slight deviations from equilibrium the following equations are obtained from Eq. (18):

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$$\frac{v-v_e}{v_0-v_e}[1+zx(v_0-v)]=e^{-\frac{t-t_0}{\tau_0}} \quad (19)$$

or

$$\frac{V-V_e}{V_0-V_e}\left[1+zx\frac{V_0-V}{V_e}\right]=e^{-\frac{t-t_0}{\tau_0}}. \quad (20)$$

In the general case ($\varkappa_1 \neq \varkappa_2$) cooperativity manifests itself not only in the kinetic properties of the system but also in its equilibrium properties. In this case, the relaxation time will be a non-exponential function of the sample volume. There are 14 references: 7 Soviet and 7 non-Soviet. The three most recent references to English-language publications read as follows: G. Vineyard. Phys. Rev., 102, 981, 1956., A. J. Kovacs. J. Polymer. Sci., 30, 131, 1958., R. Kikuchi. Ann. Phys. (USA), 10, 127. 1960.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

Theory of glass fritting as a ... S/181/61/003/011/022/056
B125/B104

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR Leningrad (Institute of High-molecular Compounds of the AS USSR, Leningrad)

SUBMITTED: June 13, 1961

Card 6/6

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

VOL'KENSHTEYN, M.V.; GODZHAYEV, N.M.; GOTLIB, Yu.Ya.; PTITSYN, O.B.

Kinetics of the reduplication of desoxyribonucleic acid. Uch. zap. AGU. Ser. fiz.-mat. i khim. nauk no.4:105-112 '61. (MIRA 16:6)
(Nucleic acids)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; KUDINSKAYA, L.V.

Theory of the vibration spectra of polymers. Part 3. Calculation and interpretation of the vibrational spectrum of polyethylene. Opt.i spektr. 10 no.3:335-342 Mr '61. (MIRA 14:8)
(Polymers—Spectra) (Polyethylene—Spectra)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

BOYTSOV, V.G.; GOTLIB, Yu.Ya.

Calculation of the C=O valence vibration frequency for cis and curled isomers of molecules of the type $ClCH_2-C(=O)R$.
Opt. i spektr. 11 no.5:691-693 N '61. (MIRA 14:10)
(Molecular dynamics)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

BIRSHTEYN, T.M.; VOL'KENSHTEYN, M.V.; GOTLIB, Yu.Ya.; PTITSYN, O.B.

Approximate method for the calculation of the optical anisotropies of macromolecules. Vysokom.soed. 4 no.5:670-677 My '62. (MIRA 15:7)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Macromolecular compounds--Optical properties)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

S/190/62/004/008/006/016
B101/B138

AUTHORS: Gotlib, Yu. Ya., Salikhov, K. M.

TITLE: Dipole - radical polarization in polymers. The "small vibration" model

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 8, 1962, 1163-1171

TEXT: The theory of relaxation time distribution is discussed for dipole - radical losses (β-relaxation) in rigid chain high polymers. The small vibration model suggested by T. Tanaka, Y. Ishida (J. Phys. Soc. Japan, 15, 261, 1960) and K. Yamafuji (J. Phys. Soc. Japan, 15, 2295, 1960) is considered for coupled dipole-oscillator systems in viscous media. The distribution function is calculated for some concrete models of coupled dipole oscillators. The disorder in equilibrium orientation of the dipoles with respect to an external electric field is shown to cause a marked drop in the parameter $\alpha_\beta = (2\varepsilon''(\omega_{max}))/\varepsilon_0 - \varepsilon_\infty$ from the level of spatially ordered chains, for which $\alpha_\beta \approx 1$. The solution of the diffusion equation is dealt with. The effect of Brownian motion on relaxation time

Card 1/2

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distribution is discussed. The simple small vibration model gives relaxation time spectra which are asymmetrical and α_ϕ values which are too "narrow" in the logarithmic scale for $\geqslant 0.7$-type spectra, whereas in dipole-radical processes, the experimental α_ϕ value is usually < 0.4. The most important English-language references are: J. J. Hermans, L. K. H. van Beek, J. Polymer Sci., 23, 211, 1957; S. H. Glarum, J. Chem. Phys., 33, 1371, 1960.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High-molecular Compounds of the AS USSR)

SUBMITTED: May 6, 1961

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

L0885

24.2100

S/181/62/004/009/019/045
B104/B186

AUTHORS: Gotlib, Yu. Ya., and Salikhov, K. M.

TITLE: Theory of dielectric polarization in amorphous polymers

PERIODICAL: Fizika tverdogo tela, v. 4, no. 9, 1962, 2461 - 2467

TEXT: For the case where the state of a molecule can be described by a discrete set $\{x_n\}$ of parameters, the authors present for the distribution function $F\{x_n\}$ an equation of motion proposed by Yu. Ya. Gotlib et al. (FTT, 3, 2, 420, 1961). An infinite system

$$\left.\begin{aligned} \frac{d\delta F^{(1)}}{dt} &= L_0^{(1)}(\delta F^{(1+s)}) + \delta L^{(1)}(F_0^{(1+s)}), \\ &\cdots\cdots\cdots\cdots \\ \frac{d\delta F^{(m)}}{dt} &= L_0^{(m)}(\delta F^{(m+s)}) + \delta L^{(m)}(F_0^{(m+s)}). \end{aligned}\right\} \qquad (3)$$

Card 1/3 REFERENCE ABSTRACT 20118

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of linked equations obtained for the partial distribution functions is solved by various approximations wherein the distribution functions of m-th order are expressed by partial distribution functions of lower order. In this manner it is possible to describe the motion of polymer chains by a system of equations of motion which is consistent with that of a 'visco-elastic' crystal with N independent atoms per unit cell. It is shown that the time spectrum of low-frequency relaxation effects on dipoles is equivalent to the long-wave branch of the spectrum for the squares of the standard frequencies of an irregular molecular crystal with complex cells; that the molecular crystal consists of N branches, each of which determines a set of damped oscillations with different phase shifts between the cells; and that this spectrum has a universal character, irrespective of the actual structure of the polymer. The experimental width of the spectrum for elastic relaxation effects on dipoles can be explained by assuming that this relaxation results from the coordinated motion of segments of polymer chains. The defect structure of real amorphous polymers induces various kinds of uncoordinated motions of the imperfect parts of the chain. The

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Theory of dielectric polarization in ... S/181/62/004/009/019/045
B104/B186

high-frequency dipole radical relaxation in polymers is related to the motion inside the cells and to the uncoordinated motions in the defects.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad (Institute of High-molecular Compounds AS USSR, Leningrad)

SUBMITTED: April 24, 1962

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

VOL'KENSHTEYN, M.V.; GODZHAYEV, N.M.; GOTLIB, Yu.Ya.

Uncoiling the double spiral in deoxyribonucleic acid (DNA). Biofizika 7 no.1:16-20 '62. (MIRA 15:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.
(NUCLEIC ACIDS)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.

Relaxation properties of cooperative systems; dielectric relaxation in an one-dimensional chain of dipoles. Ukr.fiz.zhur. 7 no.7:709-715 Jl '62. (MIRA 15:12)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.
(Polarization (Electricity)) (Dielectrics)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; KUDINSKAYA, L.V.

On the theory of "crystalline" bands in polyethylene and long-chain normal paraffins. Opt. i spektr. 13 no.4:591-593 O '62. (MIRA 16:3)
(Ethylene--Spectra) (Paraffins--Spectra)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; SOCHAVA, I.V.

On the theory of the heat capacity of linear polymers at low temperatures; vibration spectrum and heat capacity. Dokl. AN SSSR 147 no.3:580-583 N '62. (MIRA 15:12)

1. Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova. Predstavleno akademikom V.A. Fokom.
(Polymers—Thermal properties)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; SALIKHOV, K.M.

Theory of ultrasound absorption in concentrated polymer solutions. Akust. zhur. 9 no.3:301-308 '63. (MIRA 16:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.
(Absorption of sound)
(Polymers--Acoustic properties)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

L 17787-63 EWP(j)/BDS ASD Pc-4 RM/MAY

ACCESSION NR: AP3005844 S/0051/63/015/002/0216/0220

AUTHOR: Boytsov, V.G.; Gotlib, Yu.Ya.

57

TITLE: Concerning rotational isomerism in polyethylene terephthalate

SOURCE: Optika i spektroskopiya, v.15, no.2, 1963, 216-220

TOPIC TAGS: rotational isomerism, molecular fragment, absorption spectrum, polyethylene terephthalate

ABSTRACT: The purposes of the work were to substantiate the inference of rotational isomerism in a fragment of the chain of polyethylene terephthalate and to show that calculation of the vibrational frequencies of individual groupings or fragments of macromolecules allows of explaining the experimentally observed correlation between changes in the structure of these fragments and the changes in the frequencies of some modes in the spectra. The data and inferences of many investigators who have studied the infrared absorption spectra of polyethylene terephthalate and allied compounds are reviewed and cited at considerable length. It is noted that there are two possible configurations of the —OCH_2-CH_2O— group: a trans configuration (A and B in the figure shown in the Enclosure) and a convoluted configuration (A' and B'). Accordingly, the authors calculated the frequencies

Card 1/2

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

L 17787-63

ACCESSION NR: AP3005844

of the different normal modes of the subgroups and bonds comprising the —OCH_2-CH_2O— fragment for the two configurations, using the force constants deduced from data on the spectra of various low-molecular compounds. The calculations involved solving secular equations of up through the 11-th order on a "Strela" computer. The results together with the corresponding experimental data are tabulated. The calculations yielded values for the deformation vibrations of the CH_2 groups in fairly good agreement with experiment. However, the calculated results for some of the other modes (skeletal C-O vibrations and others) diverge appreciably from the experimental values, possibly owing to the fact that the influence of the atoms at the ends of the fragment was not taken into account. Nevertheless the results validate the approach and show that calculations for fragments of macromolecules can help explain the relation between isomeric transformations and alterations in infrared spectra. Orig.art.has: 1 figure and 1 table.

ASSOCIATION: none

SUBMITTED: 21Dec62 DATE ACQ: 06Sep63 ENCL: 01

SUB CODE: PH, CH NO REF SOV: 003 OTHER: 022

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.

Theory of the optical anisotropy of short or stiff chain macromolecules for the persistent chain model. Vysokom. soed. 6 no.3:389-394 Mr'64. (MIRA 17:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya., SVETLOV, Yu.Ye.

Theory of anomalous angles in flow birefringence of polym[illegible] solutions. Vysokom. soed. 6 no. 5:771-776 My '64. (MIRA 17:[illegible])

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

ACCESSION NR: AP4034954 S/0181/64/006/005/1565/1567

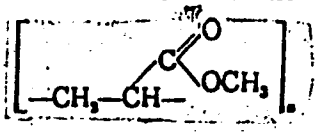
AUTHORS: Gotlib, Yu. Ya.; Darinskiy, A. A.

TITLE: Dipole radical polarization and internal rotation in polymers

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1565-1567

TOPIC TAGS: polymer, polymer chain, polymer dielectric, polar polymer, activation energy, polyvinyl chloride

ABSTRACT: Results of theoretical calculations for the magnitudes of the activation barriers U for rotation in side polar radicals are presented. Only the interaction within the chain for several possible equilibrium (iso- and sindiotactic) conformations of the primary chain of uncrystallized atactic PMA and PVA is considered. The computations show that the magnitudes of the activation barriers depend on the small deviations from equilibrium of the primary chain conformation and on the choice of the equilibrium conformation. For the coiled sindiotactic and isotactic conformations of PMA



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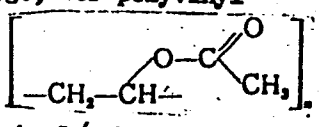
ACCESSION NR: AP4034954

the value U ≈ 10 kcal/mole was obtained. For the plane sindiotactic conformation, which is the preferred conformation for atactic polymers (e.g., for polyvinyl chloride), the value U ≈ 30 kcal/mole was obtained. For PVA



in the spiral sindiotactic and isotactic conformations U ≈ 1 kcal/mole and in the plane sindiotactic conformation U ≈ 8 kcal/mole. Orig. art. has: 2 formulas.

ASSOCIATION: Institut vy*sokomolekulyarny*kh soyedineniy, AN SSSR, Leningrad (Institute of High-Molecular Compounds, AN SSSR)

SUBMITTED: 20Jan64

ENCL: 00

SUB CODE: OC

NO REF SOV: 009

OTHER: 000

Card 2/2

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; DARINSKIY, A.A.

Dipole-radical polarization and internal rotation in polymers. Fiz. tver. tela 6 no.5:1565-1567 My '64. (MIRA 17:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; SVETLOV, Yu.Ye.

Gradient dependence of flow birefringence near the inversion point. Vysokom.soed. 6 no.9:1591-1592 S '64. (MIRA 17:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

L 12932-65 EPA(s)-2/EWT(m)/EPF(c)/EPR/EWP(j)/T Pc-4/Pr-4/Ps-4/Pt-10
WW/RM AFWL/ASD(p)-3/SSD/ASD(m)-3/ESD(t)

ACCESSION NR: AP4046601 S/0181/64/006/010/2938/2944

AUTHOR: Gotlib, Yu. Ya.

TITLE: Theory of dielectric relaxation processes in amorphous polymers at high temperatures

SOURCE: Fizika tverdogo tela, v. 6, no. 10, 1964, 2938-2944

TOPIC TAGS: dielectric relaxation, amorphous polymer, high temperature research, polymer chain

ABSTRACT: Inasmuch as existing theories of relaxation properties in amorphous states are incapable of explaining the experimentally observed character of the variation of the dipole-elastic losses with temperature, the author introduces a simple molecular model to interpret the main laws governing dielectric relaxation processes in amorphous polymers at high temperatures (above the vitrification temperature). This model is in agreement with existing notions con-

Card 1/3

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cerning molecular motion in such polymers and its use establishes the connection between the dipole elastic and dipole radical losses. This explains the main laws governing the temperature behavior of the relaxation times and the magnitude of the losses at temperatures 50--70C above the vitrification temperature. The "degeneracy" of the dipole-elastic process connected with the cooperative segmental motion is found to be the result of the fact that with increasing temperature the rate of the structural regrouping in the polymer overtakes the rate of dipole reorientation in the dipole-radical process. The degeneracy is manifest in an abrupt decrease in the temperature coefficient of relaxation time, and a decrease in the losses. Consequently, at high temperatures the process governing the over-all rate of dielectric relaxation is of the dipole-radical type. The model is based on the assumption that the reorientation of the polar groups, which is manifest in the dipole radical process, can occur only after first weakening the contacts between chains; this weakening is the result of a cooperative process with

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L 12932-65
ACCESSION NR: AP4046601

a large temperature coefficient. Orig. art. has: 1 figure and 26 formulas.

ASSOCIATION: Institut vy*sokomolekulyarny*kh soyedineniy AN SSSR, Leningrad (Institute of High Polymer Compounds AN SSSR)

SUBMITTED: 11Mar64 ENCL: 00

SUB CODE: SS, OC NR REF SOV: 019 OTHER: 005

Card 3/3

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; BUDTOV, V.P.

Theory of double refraction in solutions of polymer chains possessing kinetic flexibility. Vest. LGU 19 no.16:88-99 '64. (MIRA 17:11)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; SVETLOV, Yu.Ye.

Gradient dependence of the extinction angle in flow birefringence for the multisegment model of a polymer chain. Vysokom. soed. 7 no.3:443-448 Mr '65. (MIRA 18:7)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

BUTIOV, V.P.; GOTLIB, Yu.Ya.

Molecular weight dependence of the kinetic rigidity (internal viscosity) of a multisegment polymer chain. Vysokom. soed. 7 no.3:478-484 Mr '65. (MIRA 18:7)

1. Fizicheskiy institut Leningradskogo gosudarstvennogo universiteta i Institut vysokomolekulyarnykh soyedineniy AN SSSR.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIB, Yu.Ya.; DARINSKIY, A.A.

Dipole radical polarization and internal rotation in polymers. Potential barriers of internal rotation for polymethyl acrylate. Vysokom.soed. 7 no.10:1737-1742 O '65.

(MIRA 18:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

L 08365-67 EWT(1) IJP(c) GG

ACC NR: AR6028140 SOURCE CODE: UR/0058/66/000/005/E015/E015

41

AUTHOR: Gotlib, Yu. Ya.; Grigor'yeva, F. P.

TITLE: Investigation of certain problems in the dielectric polarization of linear cooperative systems

SOURCE: Ref. zh. Fizika, Abs. 5E103

REF. SOURCE: Uch. zap. Leningr. gos. ped. in-ta im. Gertsena, v. 266, 1965, 240-253

TOPIC TAGS: dielectric polarization, dipole interaction, kinetic equation, dispersion equation, relaxation process

ABSTRACT: The authors consider the dielectric polarization of a chain of dipoles in an alternating electric field for the case when each dipole has two possible orientation states; the probability of reversal or reorientation depends on the mutual orientation of the given dipole and its two nearest neighbors, the interaction between dipoles is asymmetrical. By solving the system of kinetic equations for the successive distribution functions, using a superposition approximation for the partial distribution functions of third and fourth order, the authors obtain an expression for the frequency dependence of the energy of the dielectric polarization of the chain and for the dispersion of the dielectric constant. The width of the relaxation-time spectrum is determined and found to agree with the experimental data for dipole-elastic

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ACC NR: AR6028140

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relaxation. The results can be used to study the dielectric polarization of dipoles in flexible lateral suspensions of chains and, in a cruder approximation, dipoles of the main chain. G. Kventsel'. [Translation of abstract]

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIBOVICH, V., inzh.

Improving the leveling and cut-off machine tool. Bud.mat.i konstr. 4 no.4:55-56 Jl-Ag '62. (MIRA 15:8)
(Concrete reinforcement)

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIBOVICH, V., inzh.

Improving the bending machine tool. Bud.mat.i konstr. 4 no.4:56 Jl-Ag '62. (MIRA 15:8)
(Concrete reinforcement)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIBOVICH, V., inzh.

Efficient method of fixing insertion pieces. Bud.mat.i konstr. 4 no.4:57 Jl-Ag '62. (MIRA 15:8)
(Precast concrete)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIIB, F.; NEGUS, N.; SHIREANU, B.; GEORGISKU, M.; IONESKU, I.; PEZAMOSKA, A.; BRUKHTER, Z.

Surgical therapy of osseous and osteo-articular tuberculosis in the Children's Surgical and Orthopedic Clinic in Bucharest. Khirurgiia 15 no.2/3:236 '62.

(TUBERCULOSIS OSTEOARTICULAR surg)

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIN, J.

YUGOSLAVIA/Cultivated Plants - Grains. M-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, 29736

Author : Gotlin, J.
Inst :
Title : Obtaining High Corn Yields.

Orig Pub : Biljna proizv., 1957, 10, No 1, 17-30 (serbo-khorv.)

Abstract : No abstract.

Card 1/1

APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2"

"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

GOTLIN,J.; ANIC,J.; VELIKONJA,N.

Influence of potassium and sodium ions on the quality and yield of several varieties of sugar beets in sand. Zemljiste biljka 11 no.1/3:451-456 '62

1. Poljoprivredni fakultet, Zagreb.

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"APPROVED FOR RELEASE: 03/13/2001 CIA-RDP86-00513R000516420010-2

NISHCHENKOVA, L.G.; BELONOGOV, K.N.; GOSTININ, V.P.; BELOVA, N.A.; NIZOV, G.A.; SELEZNEV, M.M.

Catalytic reduction of nitro derivatives with hydrogen. Part 2: Continuous reduction of sodium p-nitrophenolate on a skeletal nickel catalyst. Izv.vys.ucheb.zav.; khim. i khim. tekh. 6 no.6:952-956 '63. (MIRA 17:4)

1. Ivanovskiy khimiko-tekhnologicheskiy institut, kafedra fizicheskoy i kolloidnoy khimii.

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