FRENKEL', S.N.

Plenum of the TSENTOEP on wiring systems for lighting. Prom. energ.
12 no.4:35-36 Ap '57. (MIRA 10:5)
(Leningrad--Lighting--Congresses)

SOKOLOV, D.V., inzh.; FRENKEL', S.N., nauchnyy red.; PAKHOMOVA, M.A., red. izd-va; SOLNTSEVA, L.M., tekhn. red.

[Secondary switching in distributing equipment] Vtorichnaia kommutatsiia v raspredelitel'nykh ustroistvakh. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1958. 160 p. (Electric switchgear) (MIRA 11:8)

Frenkel, S. N.

94-1-14/24

AUTHORS: Gul', V. Ye., Mayzel', N.S., Frenkel', S.N. and Khmunin, S.F.

TITLE: The Insulation of Live Parts in Packaged and Assembled High- and Low-voltage Equipment (Izolyatsiya tokovedushchikh chastey v komplektnykh i sbornykh ustroystvakh vysokogo i nizkogo napryazheniya)

PERIODICAL: Promyshlennaya Energetika, 1958, 13 , No.1, pp. 29 - 31 (USSR)

ABSTRACT: Extensive use is now being made of prefabricated and packaged high- and low-voltage distribution equipment. In general, Soviet equipment of this kind is larger than foreign equivalents, which is wasteful in sheet steel, aluminium bus-bars, etc. Current-carrying parts are usually bare and are mounted on ceramic or plastic insulators; clearances are consequently large. By insulating these parts, the equipment could be made smaller. This short article describes appropriate materials and methods. Yu.F. Voronkov, N.S. Il'in and Ya.N. Kaplunov participated in the development of suitable insulation. After considerable experimental work, it was decided to investigate a number of polymers including p.t.f.e., poly-amide resin 548, polyvinylbutyral, butadiene-styrol rubber and silicone rubber. The most suitable material was found to be polyethylene. In the early stages of the work, films of the

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94-1-14/24

The Insulation of Live Parts in Packaged and Assembled High- and Low-voltage Equipment

material were applied to the conductors, but this was not very satisfactory. The best method proved to be hot-spraying with a special pistol. Air with powdered insulating material in suspension is heated by an acetylene flame so that the particles in molten and plastic form adhere to and build up on surfaces with which they come in contact. The equipment used to apply insulation in this way is illustrated diagrammatically. A polyethylene layer 0.9 mm thick was maintained in a humidity chamber for 24 hours and then tested for five minutes at a voltage of 5 kV/mm without breakdown. The material was also tested after exposure to heat, light, frost, vibration and water and was generally satisfactory. It is concluded that polyethylene insulation of appropriate thickness applied in this way can be used in distribution equipment for 6 - 10 kV. The work continues. There is 1 figure.

AVAILABLE: Library of Congress

Card 2/2

5(1,3) SOV/153-2-2-25/31

AUTHORS: Gul', V. Ye., Mayzel', N. S., Frenkel', S. N., Il'in, N. S., Kaplunov, Ya. N., Khmunin, S. F., Voronkov, Yu. F.

TITLE: Examination of the Use of High-molecular Substances for the Isolation of Current Conducting Rails (Issledovaniye primeneniya vysokomolekulyarnykh veshchestv dlya izolyatsii shin tokoprovodov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1959, Vol 2, Nr 2, pp 274-279 (USSR)

ABSTRACT: A number of demands is made on the isolation mentioned in the title, which could not be satisfied for a long time. In most cases a material perfect in every way proved to be unsatisfactory with regard to one single characteristic, so that the rails mentioned in the title could not be isolated. A uniform point-of-view concerning the electric break-down of high-molecular compounds is lacking at present. The authors presume that the electric field strength at which a high-molecular compound breaks down, is mainly determined by peculiarities of the chemical structure of the macromolecules, further by the structure of the material

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based upon a high-molecular compound, as well as by a number of external factors which are connected with the application of the relevant products. By confronting the values of a total polarization (electronic, ionic, and structural), it is possible to estimate the suitability of a material with a certain chemical composition. The structural polarization, first established by P. P. Kobeko, is characteristic of caoutchouc and caoutchouc-like materials. The purpose of the present paper is an attempt to use high-molecular materials of such composition and mode of application which meet all demands for isolating the rail surface. Butyl-caoutchouc, butadiene-styrene-caoutchouc, silicon-caoutchouc, polyamide-resin 548, polyvinyl-butyral, polytetrafluoro-ethylene (fluoroplast), and polyethylene were used. A device was set up for testing the resistance to electric breakdown. All requirements of GOST-864-41 were satisfied during the tests. Only the test voltage was increased to 3,500-5,000 v instead of 2,000 v. First of all the methods of application of the isolation-coating to the sample

Examination of the Use of High-molecular Substances SOV/153-2-2-25/31
for the Isolation of Current Conducting Rails

were discussed. All types of coatings were tested for heat-, frost-, light-, and ozone-resistance, and for vibration. Tables 1 and 2 show that the isolation on the basis of polymer substances, applied in molten state on a heated metal surface, differs from other isolation methods with polymers of increased electric strength. The authors propose a rational method of isolation for the conductor-rail, that is the application of molten and sprayed polyethylene particles on a heated rail surface. There are 2 tables.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova; Kafedra fiziki (Moscow Institute for Fine Chemical Technology imeni M. V. Lomonosov; Chair of Physics)

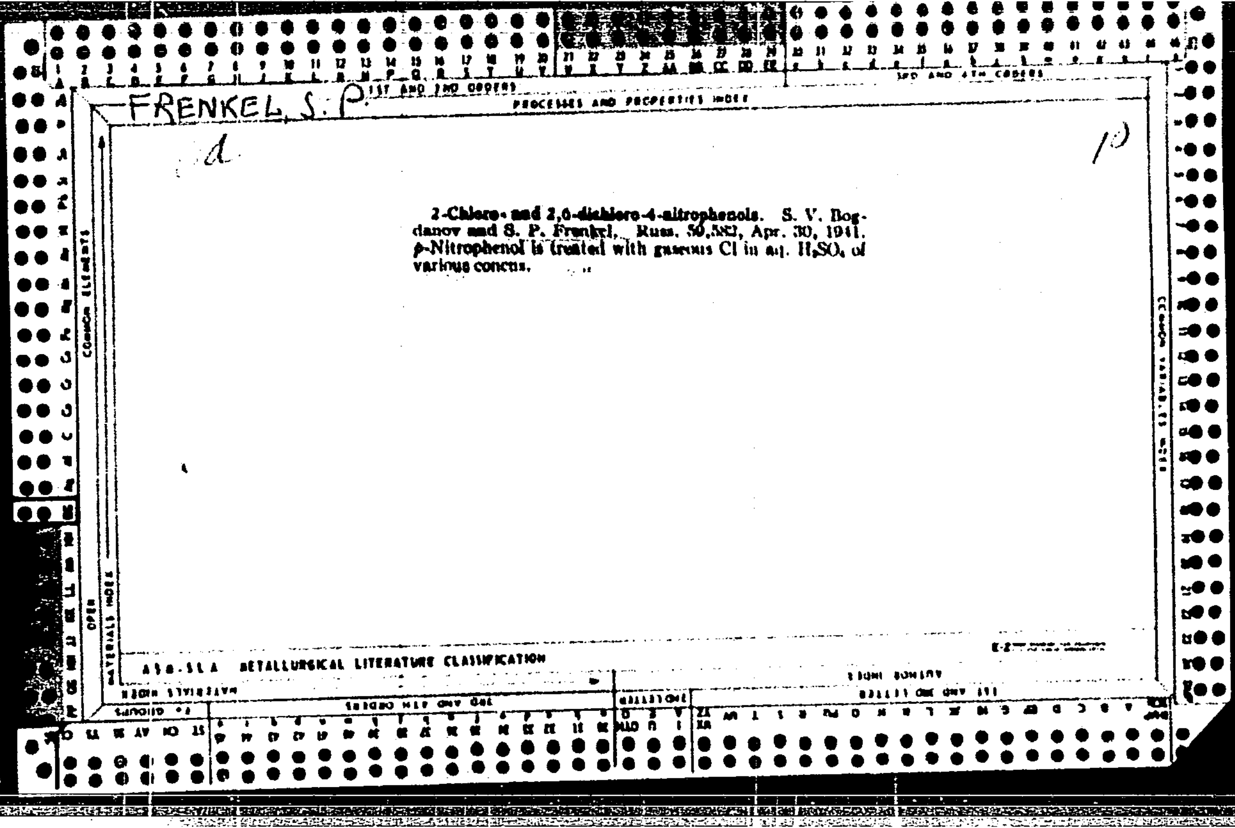
SUBMITTED: December 16, 1957

Card 3/3

SOKOLOV, D.V., inzh.; FRENKEL', S.N., inzh., nauchnyy red.; ARSEN'YEVA, Z.N., red. izd-va; GOL'BERG, T.M., tekhn. red.

[Establishment of secondary commutation in electric systems] Montazh vtorichnoi kommutatsii v silovikh elektroustanovkakh. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit. materialam, 1961. 302 p. (MIRA 14:7)

1. Russia(1917- R.S.F.S.R.) Glavnoye upravleniye po proizvodstvu elektromontazhnykh rabot.
(Automatic control) (Electric driving)



FRENKEL, S. P.

d

p

2-Chloro- and 2,6-dichloro-4-nitrophenols. S. V. Bogdanov and S. P. Frenkel. Russ. 59,582, Apr. 30, 1941. *p*-Nitrophenol is treated with gaseous Cl in aq. H_2SO_4 of various concns.

1. BUNDEL', A.A.: VAYNBERG, V.I.: DOBROLYUBSKAYA, T.S.: ZOLINSKIY, V.V.: PEKERMAN, F.M.: SMIRNOVA, R.G.: TROFIMOV, A.K.: FRENKEL', S.P.

2. USSR (600)

4. Electric Lighting, Fluorescent.

7. Development and study of luminophors based on phosphates for luminescent lamps. Izv. AN SSSR, Ser.fiz. 15 No. 6, 1951.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

1. FRENKEL', S. P.

2. USSR (600)

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7. Some problems in economizing auxiliary materials. Tabak 13 no. 5, 1952

9. <u>Monthly List of Russian Accessions</u>, Library of Congress, January 1953. Unclassified.

FRENKEL', S. P.

Improve the organization of package transportation of piece-crated cargo. Rech.transp. 19 no.1:14 Ja '60. (MIRA 13:5)

1. Starshiy inzhener-tekhnolog Gor'kovskogo porta.
(Cargo handling)

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

FRENKEL, S.R.

BC

A-4

Metabolism cage for small animals. J. A. Tsoytsky and S. R. Frenkel (Ukrain. Biochem. J., 1937, 10, 725—730).—A cage, for which quant. separation of urine and faeces is claimed, is described. R. T.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

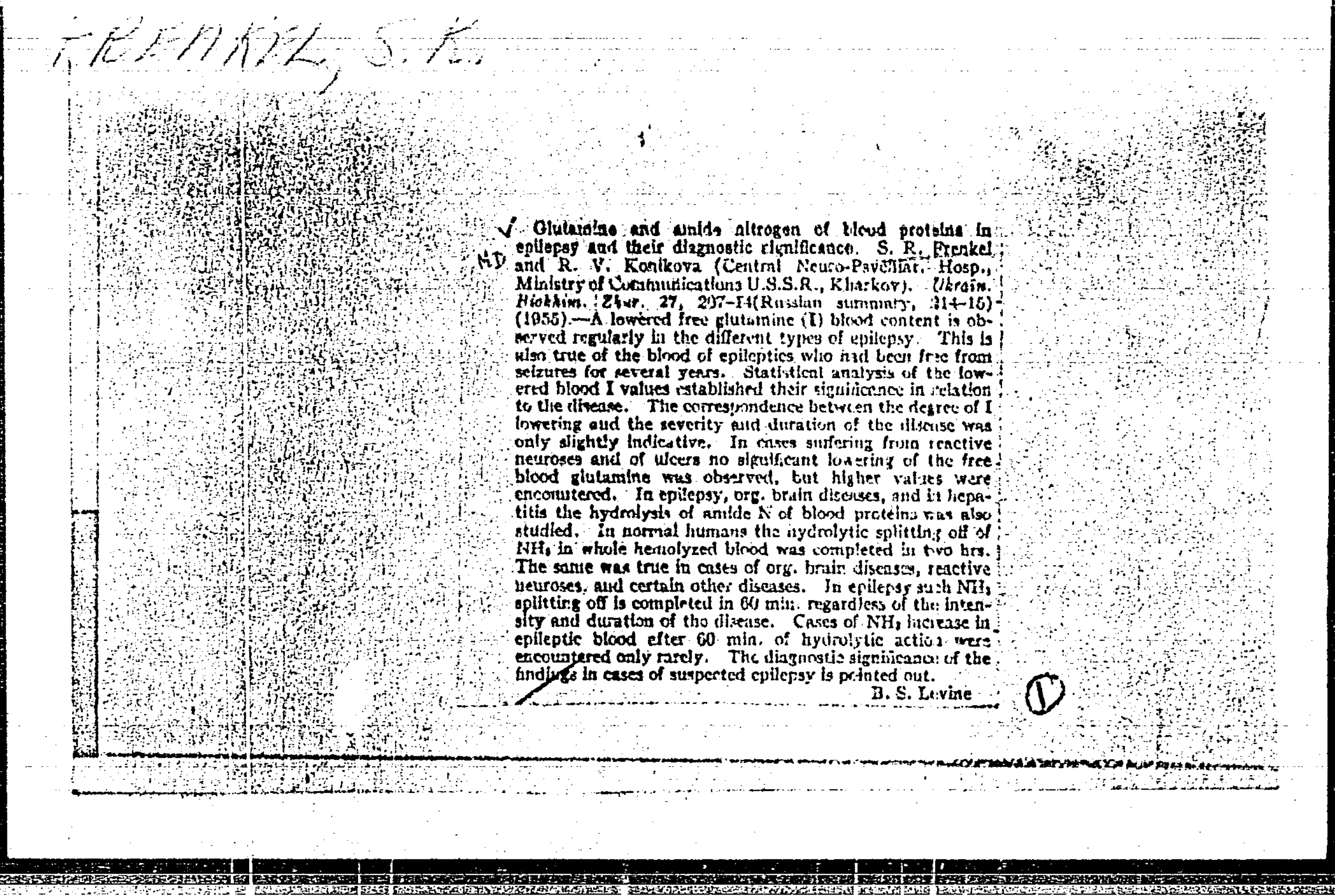
MATERIALS INDEX

OPEN

3RD AND 4TH ORDERS

Determination of adrenaline by the method of fluorescence in the presence of proteins and other substances. S. R. Frenkel (Med. Inst., Kharkov). *Ukrain. Biokhim.* ~~*Zhur.* 23, 348-58~~(in Russian, 358-9)(1951).—The fluorescent property of adrenaline offers the possibility for the development of a method for its detn. on a more specific basis than the method now generally used. The obstacles to overcome are inherent in the presence of certain protein and other substances which also emanate an intense bluish fluorescence. Attempts were made to remove such secondary fluorescent substances, without affecting the adrenaline character and content. It was found that (1) tungstic acid removed the proteins but not the other substances; the presence of tungstate in the soln. did not affect the original fluorescence of the adrenaline. (2) EtOH pptd. the blood proteins and the greater part of other secondary fluorescing substances without having any effect upon the character and fluorescence of adrenaline. (3) CCl_3-COOH (5%) destroyed the fluorescence of adrenaline, without destroying the adrenaline itself. (4) $(NH_4)_2SO_4$, like CCl_3COOH, does not destroy the adrenaline, but in concns. sufficient to remove the secondary fluorescing substances it destroys the fluorescence of adrenaline. (5) Adrenaline is adsorbed almost selectively on $Al(OH)_3$ and can be appropriately eluted free from interfering substances in its normal fluorescent state. (6) The degree of fluorescence emanated is in proportion to the adrenaline concn.

B. S. Levine



FRENKEL, S. R.

✓ **Glutamine and amide nitrogen of blood proteins in epilepsy and their diagnostic significance.** S. R. Frenkel and R. V. Konikova (Central Neuro-Psychiat. Hosp., Ministry of Communications U.S.S.R., Kharkov). *Ukrain. Biokhim. Zhur.* 27, 207-14 (Russian summary, 314-15) (1955).—A lowered free glutamine (I) blood content is observed regularly in the different types of epilepsy. This is also true of the blood of epileptics who had been free from seizures for several years. Statistical analysis of the lowered blood I values established their significance in relation to the disease. The correspondence between the degree of I lowering and the severity and duration of the disease was only slightly indicative. In cases suffering from reactive neuroses and of ulcers no significant lowering of the free blood glutamine was observed, but higher values were encountered. In epilepsy, org. brain diseases, and in hepatitis the hydrolysis of amide N of blood proteins was also studied. In normal humans the hydrolytic splitting off of NH_3 in whole hemolyzed blood was completed in two hrs. The same was true in cases of org. brain diseases, reactive neuroses, and certain other diseases. In epilepsy such NH_3 splitting off is completed in 60 min. regardless of the intensity and duration of the disease. Cases of NH_3 increase in epileptic blood after 60 min. of hydrolytic action were encountered only rarely. The diagnostic significance of the findings in cases of suspected epilepsy is pointed out.

B. S. Levine

MD

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FRENKEL, S.R.

"Modifications in the Adrenal Glands in the Course of Intoxication by Nitrochlorobenzene," by S. R. Frenkel, Biochemical Laboratory, Ukraine Central Institute of Labor Hygiene, and Occupational Diseases (director, Docent I. I. Semernin), *Farmakologiya i Toksikologiya*, Vol 20, No 2, Mar/Apr 57, pp 63-67

Experiments were conducted on male and female rats in which intoxication was induced by single subcutaneous administrations of nitrochlorobenzene in doses of 500-600 milligrams per kilogram of body weight. The effect of the intoxication on the adrenal system was determined by a comparative analysis of the content of free adrenalin and adrenalin loosely bonded with proteins in the systems of normal and intoxicated animals. The analysis revealed a sharp diminution in the synthesis of adrenalin by the glands and an increase in the expenditure of the adrenalin after the intoxication. The complete absence of adrenalin in the glands found in a number of cases can be regarded as a result of the functional exhaustion of the glands after the intoxication by nitrochlorobenzene. (U)

[illegible]

FRENKEL', S.R.

Simple constant-pressure gasometer and its utilization for physiological and toxicological experiments. Biul.eksp.biol. i med. 48 no.10:104-106 O '59.
(MIRA 13:2)

1. Iz biokhimicheskoy laboratorii Ukrainskogo instituta gigiyeny truda i profzabolevaniy (dir. - dots. I.S. Semernin), Khar'kov. Predstavlena deystvitel'nym chlenom AMN SSSR V.N. Chernigovsim.
(GASES)

FRENKEL', Semen Shmulevich, frezerovshchik; RADZEVICH, Sergey Sergeyevich, nauchnyy red.; KOPTEVSKIY, D.Ya., red.; ROGACHEV, F.V., red.; RAKOV, S.I., tekhn. red.

[Handbook for the young milling-machine operator] Spravochnik molodogo frezerovshchika. Moskva, Vses. uchebno-pedagog. izd-vo Trudrezervizdat, 1958. 459 p. (MIRA 11:9)
(Milling machines)

FRENKEL', Semen Shmul'yevich; PASTUKHOV, V.M., nauchnyy red.; ROGACHEV, P.V., red.; SOROKINA, S.L., red.; DORODNOVA, L.A., tekhn. red.

[Laboratory exercises and problems on milling work] Laboratornye raboty zadachi po frezernomu delu. Moskva, Vses. uchebno-pedagog. izd-vo Proftekhizdat, 1961. 180 p. (MIRA 15:3)
(Milling machines) (Technical education)

FRENKEL', Semen Shmul'yevich; RODZEVICH, S.S., nauchnyy red.;
BOBROVA, T.L., red.; TOKER, A.M., tekhn. red.

[Manual for young milling machine operators]Spravochnik molodogo frezerovshchika. Izd.2., perer. i dop. Moskva, Proftekhizdat, 1962. 459 p. (MIRA 15:12)
(Milling machines) (Metal cutting)

F.ENKEL, Stanislav; HRAB[illegible], Jiri; [illegible], [illegible]

Role of scale lymph and bron[illegible] [illegible] in the diagnosis of pulmonary [illegible]. [illegible] 50 [illegible]

1. I [illegible] Chirurgical [illegible], [illegible] [illegible]

FRENKEL', S. V. (Engr)

""Experience of Manufacturing and Installing Plug Busbars Conductors," a paper read at the Conference on New Designs for Busbar Conductors, Elektrichestvo, No.4, pp 88, 89, 1950

Translation W-23653, 23 Aug 52

FRENKEL', S.YA., SHALTYKO, L.G., KORZHAVIN, L.N., PRYKOV, L.M.

Use of active media for shaping and strengthening synthetic fibers.

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

CA FRENKEL, S. Ya.

Advances in the study of the structure of starch. S. Ya. Frenkel. *Uspekhi Khim.* 19, 490-517(1950).—A crit. review with 84 references. N. Thon

1. FRENKEL', S. Ya.

2. USSR (600)

4. Proteins

7. Measurement of the molecular weight of proteins by the method of light scattering in solutions. Biokhimiia 17 no. 5. '52.

9. <u>Monthly Lists of Russian Accessions</u>, Library of Congress, February 1953, Unclassified

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

FRENKEL, S. Ya.

Fortschritte Auf Dem Gebiet Der Untersuchungen Uber Den Bau Der Starke.
Berlin, Akademie Verlag, 1953.

Translation from the Russina: "Uspekhi v oblasti Isucheniya Stroyeniya Krakhmalo."

"Literaturverzeichnis": p. 61-63.

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

FRENKEL', S. YA.

Defended his Dissertation for Candidate of Physical-Mathematical Sciences, Institute of High Molecular Compounds, Academy of Sciences, USSR, Leningrad, 1953

Dissertation: "Investigation of the Molecular Weight Distribution in Rubberlike Polymers"

SO: Referativnyy Zhurnal Khimiya, No. 1,. Oct. 1953 (W/29755, 26 Apr 54)

Enzymic synthesis of the caide bonds under pressure. S. E. Bresler and S. Ya. Frenkel (Inst of High Mol Compds., Acad. S[illegible]ingrad). *Biokhimiya* 18, 688-95(1953).—Under pressure of 6-8 thousand atms it is possible to convert the amylolytic reaction into a process of synthesis. α-1,4-Glucoside was thus synthesized by two methods described. Unlike the case of protein synthesis, no high mol. products could be obtained. Because of the loss of dextrinogenic activity, amylases are ineffective as catalysts in the interpolymerization of dextrin mols.

B. S. Levine

Frenkel, S. Ya.

5679. Investigation by means of an ultracentrifuge of the molecular weight distribution of polymers. S. E. Bresler and S. Y. Frenkel.—*Zhur. Tekh. Fiz.*, 1953, 23, 1502–20; In English: *Rubb. Chem. Technol.*, 1957, 30, 487–506. A method is given for studying molecular weight distribution of linear polymers in general. It involves fractionating the polymer into a series of narrow fractions and investigating each with the ultracentrifuge; plotting the distribution functions of sedimentation constants for each fraction and subsequent summation of curves to build up the distribution function of the sedimentation constants of the whole polymer; discovery of a general functional relation between sedimentation constants and molecular weights for a given series of polymer homologues; and construction of the distribution function of molecular weights of the polymer. 38321

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FRENKEL, S. YA.

USSR.

The molecular-weight distribution of polymers. S. E. Bresler, I. Ya. Poddubnyi, and S. Ya. Frenkel. *Zhur. Tekh. Fiz.* 23, 1521-40(1953).—~~Three samples of~~ rubber were selected: 2 butadiene polymers with plasticity 0.3 and 0.20 and 1 low-mol. (plasticity 0.5) butadiene-styrene copolymer (Buna-S). A mol.-wt. distribution was obtained by fractional pptn. by methanol from benzene solns. The fractions were dried in a vacuum and weighed. Their mol. wts. were detd. by osmometry, viscometry, and diffusion of light. The resulting step curve of distribution was smoothed out and compared to the curve obtained from ultracentrifuge data by the method described in the preceding abstract. The latter gives more details about the distribution curve. The calcn. of corrections, included in the method, is given in detail. S. Pakswer

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FRENKEL, S. Ya.

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(6)

The molecular weight of plasteins. S. E. Bresler, K. S. Makarov, and S. Ya. Frenkel (Inst. High-Mol. Compds., Acad. Sci. U.S.S.R., Leningrad). *Biokhimiya* 19, 88-95 (1954).—Sedimentation and diffusion consts. and mol. wts. of two plasteins were detd. The plasteins proved to be polydispersed low-mol. peptides with an av. mol. wt. of about 500. The presence of high-mol. fractions in plastein compns. reported by others are explainable on the basis of secondary aggregation. Plasteins contain no heavy-mol. fractions. The formula of Gutfreund and Ogston (*C.A.* 43, 6259*f*) yielded correct sedimentation consts. for low-mol. polypeptides. Calcn. of mol. wt. on the basis of distribution in the diffusion layer close to the bottom of the tube can be made with the aid of the barometric Boltzmann formula.

B. S. Levine

10-15-54

FRENKEL, S, YA

62

✓Investigation of nonfractionated polymers with an ultracentrifuge. S. Ya. Frenkel. *Zhur. Tekh. Fiz.* 24, 2160-82(1954).—Distribution functions obtained on a nonfractionated sample are compared with distributions obtained by the method of equiv. Gaussian distributions (e.g.d.) (cf. *C.A.* 49, 3020*h*). The method proposed in this paper is rapid if the functional dependence of the sedimentation const. on the mol. wt. is known; however e.g.d. is the only possible method if several chem. compds. are present.

S. Pakswer

USSR/ Chemistry Linear polymers

Card : 1/1 Pub. 118 - 1/7

Authors : Frenkel, S. Ya.

Title : Study of linear polymers with the help of an ultracentrifuge

Periodical : Usp. fiz. nauk 53/2, 161 - 243, June 1954

Abstract : Study of linear polymers by the method of an ultracentrifuge is described. The polymers were considered with respect to four characteristic parameters. The four parameters are as follow: 1. A mean molecular weight; 2. A degree of the polydispersion determined by the manner of distribution of molecular weights; 3. A degree of the branching; and 4. An elasticity of the polymeric chains. Kirkwood's, Riseman's Debaye's, Bueche's, Flory's Fox's and theories of some other authorities were taken into account during the studies and derivation of the results. 126 references. Diagrams; tables; graphs.

Institution : ....

Submitted : ....

FRENKEL, S.YA.

Enzymic activity of fragments of protein of low molecular weight and the problem of the reactive center of enzymes. S. E. Bresler, M. V. Glikina, and S. Ya. Frenkel. *Doklady Akad. Nauk S.S.S.R.* 96, 565-7 [illegible].—Cryst. trypsin in 0.5-1% soln. was autolyzed in borate buffer at pH 8.5 at 37° for 3.5 hrs., the process being followed by detn. of amino N. The product was ultracentrifuged in a diaphragm cell whose construction prevented convectional mixing. The centrifuging was continued 6-8 hrs. at 65,000 r.p.m.; after acidification to pH 3 and examn. of a specimen taken from the upper part of the cell (free from protein macromols.) showed that the products were substances of relatively low mol. wt. (2000-3000). This material had protease activity which was only reduced from that of the original enzyme by a factor of 10-20. A control run, in which whole trypsin was treated similarly, also showed a weak activity in the fraction of low mol. wt taken from the upper part of the ultracentrifuge cell; this, however, was several times weaker than that found for the autolyzed specimen. A specimen of myogen was hydrolyzed by combined action of trypsin and chymotrypsin to the extent of 5-6%, after which the product was ultracentrifuged as above. In this case the control gave no enzymic activity, while the hydrolyzed specimen (fractions of low mol wt.) showed a reduction of enzymic activity by only 4-fold. Thus, the specific catalytic activity is preserved to a considerable extent even in small fragments of the protein enzymes. Hence the active enzymic center can be pictured as a relatively small area of the molecule of the protein.

G. M. Kosolapoff

FRENKEL, S. Ya.

The investigation of the reaction mechanism of polymerization by the [measurement of the] distribution of the molecular weights in the products. S. E. Bresler and S. Ya. Frenkel. *Zhur. Tekh. Fiz.* 25, 2103-78(1955); cf. [illegible]—H polymers, which are not identified, were sepd. into the components of various mol. wt. by an oil ultracentrifuge at 40,000 r.p.m. (100,000 × g). The temp. during the runs never rose more than 0.5° and was between 15 and 18°. The diffusion coeff. was detd. in an app. where the temp. could be kept const. to ±0,003°, and the viscosity was measured in a suitable viscometer. The reference value for all values is the sp. vol. of polystyrene in Me Et ketone of 0.91 cc./g.

Werner Jacobson

✓ **Study of the protein reserve of the soya by the ultracentrifuge method.** V. L. Kretovich, T. I. Smirnova, and S. Ya. Frenkel (A. N. Bakh Inst. Biochem., Moscow). *Biokhimiya* 21, 832-7(1956).—The albumin and globulin prepns. of soya cotyledons were lyophilized and then studied analytically with the aid of the ultracentrifuge. The albumin fraction consisted of a homogenous protein and a comparatively low mol. polydispersed admixt. The sedimentation const. of this component S_4 was 1.98 ±0.003 *S*. The mol. wt. of the basic component was 16,000; and of the low mol. admixt. 5,000. The globulin fraction consisted of 2 sedimentation components having sedimentation coeffs. 14.0 and 8.0 *S*. The mol. wt. of the components was 350,000 and 126,000, resp. In the presence of cysteine the component S_1 had a longitudinal diameter for which S = 10.7 and its mol. wt. was 245,000. The origin of the diameter was detd. by the formation of certain highly labile bonds; when NaCl was added to the proteins dissolved in water in the presence of cysteine the protein reverted to its original state.

B. S. Levine

FRENKEL', S. Ya.

USSR/Chemistry of High Molecular Substances. F

Abs Jour: Ref Zhur - Khimiya, No. 8, 1957, 27064.

Author : Bresler, S.Ye., Dolgoplosk, B.A., Krol', V.A., Frenkel', S.Ya.

Inst :

Title : Reactions of Free Radicals in Solutions. V. Destruction of Polymer Molecules under Influence of Free Radicals.

Orig Pub: Zh. obshch. khimii, 1956, 26, No. 8, 2201 - 2209.

Abstract: The reactions of free radicals (forming in the result of dissociation of alkylpenyltriazenes and of dinitryl of aziisobutyric acid) with natural rubber, synthetic polyisoprene and divinyl polymer were studied in a wide range of concentrations. The reactions of these polymers

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High Polymer Inst, Acad Sci USSR

USSR/Chemistry of High Molecular Substances. F

Abs Jour: Ref Zhur - Khimiya, No. 8, 1957, 27064.

with S_2Cl_2 were studied also. The polymer destruction takes place in all cases, the decomposition of the polymer chains occurs without any order, and the probability of a rupture at any monomer link of the polymer is the same. It is established that intramolecular vulcanization does not take place at the action of free radicals on polymers under the conditions, under which the reactions have been carried out. In the opinion of the authors, the destruction proceeds in two stages: 1/ tearing an H-atom away from the polymer with the formation of the polymer radical and 2/ dissociation of the polymer radical with the formation of the diene grouping on the end of the chain and of the allyl radical. The authors arrive at the conclusion

Card 2/3

FRENKEL, S. Ya, POPOV, A. G., OSHMYUSKAYA, A. T., SAMINSKIY, E. M., and BRESLER, S. E.

"Thermal destruction of avrious acrylic polymers," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, MOscow, Polymer Research Inst.

B-3,084,395

BRESLER, S. A., and FRENKEL, S.Y.

"Scattering ractions on metal organic systems," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow, Polymer Research Inst.
B-3,084,395

FRENKEL, S. Ya

GORBACHEVA, L.B.; BRESLER, S.Ye.; FRENKEL', S.Ya.

Morphological changes in proteins and denaturation phenomena. Biokhimiia 22 no.1/2:70-83 Ja-F '57. (MIRA 10:7)

1. Institut biokhimii im. A.N.Bakha (Moskva) i Institut vysokomalekulyarnykh soyedineniy Akademii nauk SSSR (Leningrad).
(BLOOD PROTEINS,
morphol.changes & phenomena of denaturation (Rus))

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

Frenkel, S. Ya.

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Polymerization of p-tert-butylphenolmethacrylate. S. E. Bresler, T. V. Sheremeteva, S. Ya. Frenkel, and M. G. Zhenevskaya (Inst. Macromol. Compds., Leningrad). *Zhur. Fiz. Khim.* 31, 108-16(1957)(English summary). Tests were made to det. the polymerization rate of the p-tert-butylphenylmethacrylate at 70-120°, with mol.-wt. detn. of the polymer obtained under different polymerization conditions, in order to increase the polymerization depth and to relate the polymer properties to the polymerization conditions. A comparison of the polymerization curves and the mol. wt. distribution indicated the importance of secondary reactions of the macromol. radicals, which can result in random [illegible] would assure a sufficiently rapid viscosity rise. The chain structure can, therefore, [illegible] by selecting suitable [illegible]

M. Sternberg

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

FRENKEL', S. Ya.

with S. Ye. Bresler "Considered the configuration of the individual globular protein to be metastable"

report presented at the 10th All-Union Conf. on Highly Molecular Compounds, Biologically Active Polymer Compounds, Moscow, 11-13 June 1958. (Vest. Ak Nauk SSSR, 1958, No. 9, pp. 111-113)

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

FRENKEL', S. Ya.

AUTHOR: Samsonova, T.I., Frenkel', S.Ya. 69-20-1-10/20

TITLE: Hydrodynamic Characteristics and Polydispersity of Some Ethyl-cellulose Specimens (Gidrodinamicheskiye kharakteristiki i polidispersnost' nekotorykh obraztsov etiltsellyulozy)

PERIODICAL: Kolloidnyy Zhurnal, 1958, Vol XX, # 1, pp 67 - 79 (USSR)

ABSTRACT: For investigation of the technical properties of high polymers it is important to know their average molecular weight and the degree of polydispersity. These properties are sufficiently known for nitro- and acetyl-cellulose, but for ethyl-cellulose the corresponding values are not available. It is the purpose of the investigation represented in the article to supply these values. The technical ethyl-cellulose is not homogeneous according to chemical composition and degree of polymerization. For investigation specimens of industrial ethyl-cellulose were used, which were purified from mineral admixtures by passing a 1% solution through activated coal. In fig. 1, the diffusion factors, the sedimentation constants the characteristic viscosities in two solvents, the oxidation conditions, and the ethoxyl number of the different specimens

Card 1/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

69-20-1-10/20

Hydrodynamic Characteristics and Polydispersity of Some Ethylcellulose Specimens

are represented. The average molecular weight is calculated by combining different hydrodynamic parameters. The difference of the diffusion factors D_{2m} and D_A is an indication of a considerable polydispersity of the specimens. The polymers under investigation are relatively low-molecular. Their molecular weight does not surpass $70 : 10^3$. In oxidation the molecular weight is reduced, i.e. oxidation leads to the destruction of the polymer chain. In the analysis of the polydispersity of the specimens by the method of equivalent Gauss distributions it is assumed that the sedimentation diagrams form a Gauss curve. This is true (Fig. 2), but modifications in the low- and high-molecular branches are present. The hydrodynamic characteristics are shown in fig. 7 and 8, where the logarithmus of the sedimentation constant lg s_0 and the logarithmus of the characteristic viscosity lg $[\eta]$ are dependent on the logarithmus of the molecular weight lg M. It is shown that

$$[\eta] = (2.82 \cdot 10^{-5} M) \text{ deciliter/gram} \quad \text{and}$$

$$s_0 = (4.6 \cdot 10^{-2} M^{1-0.63}) \text{ Svedberg units}$$

Card 2/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

69-20-1-10/20

Hydrodynamic Characteristics and Polydispersity of Some Ethylcellulose Specimens

For both ethyl-cellulose solutions in ethyl-acetate the Staudinger formula is valid. If the pyran rings are considered as the kinetic elements of the chain, the effective length of an ethyl-cellulose link equals 25 angstrom, which is only of that of nitro-cellulose. This is an indication of the higher elasticity of the ethyl-cellulose molecules and corresponds well with its macroscopic properties (relative stretching of ethyl-cellulose films 30%, but nitro-cellulose only 5-8%). Fig. 9 shows the dependence of the logarithmus of diffusion lg D on the logarithmus of the molecular weight lg M. In table 3 the values of this function are represented. The dependence of the mechanical properties of ethylcellulose films on molecular weight is shown in table 4, where the average molecular weights M, the rupture resistance F and the relative stretching ε of the specimens is represented. It is evident that the mechanical properties deteriorate with the reduction of the molecular weight.

Card 3/4 There are 11 figures, 4 tables, and 21 references, 8 of which are Soviet, 8 English, 3 Swedish, 1 American, and 1 German.

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

69-20-1-10/20

Hydrodynamic Characteristics and Polydispersity of Some Ethylcellulose Specimens

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

SUBMITTED: January 31, 1957

AVAILABLE: Library of Congress

Card 4/4

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

SOV-69-58-4-2/18

AUTHORS: Bresler, S.Ye., Os'minskaya, A.T., Popov, A.G., Saminskiy, Ye.M., Frenkel', S.Ya.

TITLE: The Thermal Degradation of Polymethylmethacrylate (Termicheskaya destruktsiya polimetilmetakrilata)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol XX, Nr 4, pp 403-416 (USSR)

ABSTRACT: The production of high-temperature macromolecular compounds made the study of the thermal degradation of polymers necessary. In the article, the kinetics of degradation of polymethylmethacrylate is investigated. Two types of PMMA were used in the experiments, one high-molecular with $M_0 = 3,700,000$ and one low-molecular with $M_0 = 250,000$. Figure 2 shows that the degradation reaches 36 % at temperatures lower than 300° C in the low-molecular compound, and 5-10 % in the high-molecular PMMA. The degradation at temperatures higher than 300° C is represented by Figure 3. In the course of 1-1.5 hours it increases 15-30 times. The activation energy during the process is 53 kcal/mole, which indicates a rupture of the internal C - C bonds. Figure 5 shows that at a degradation of 50 %, the molecular weight is reduced 20 times. The principal cause for the reduction of the molecular weight is not the chain

Card 1/3

SOV-69-58-4-2/18

The Thermal Degradation of Polymethylmethacrylate

depolymerization. The rupture of C - C bonds leads to the formation of new chain endings at which depolymerization sets in. The influence of oxygen on degradation was studied in PMMA powder of 0.1 mm grain size and a sample of massive PMMA of 5 mm in diameter. Molecular oxygen breaks the kinetic chains and reacts with free radicals. In this reaction, peroxides and hydroperoxides are formed which initiate new chains. Table 1 shows that in the presence of oxygen an internal rupture of molecular chains takes place which is, however, not accompanied by noticeable depolymerization. The influence of the monomer on the degradation has been studied on a polymer block of 5x5x8 mm which has been inclosed, together with the monomer, in a glass flask. The flask was kept at 120° C for 1 day. Figure 11 shows that the monomer inhibits degradation by combining with the free radicals without being polymerized during this reaction. Table 2 shows that at temperatures of 180-280° C, an equilibrium is established between polymerization and depolymerization. In the presence of oxygen the monomer inhibits the degradation of PMMA by directing the reaction to polymerization. The degradation

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

of PMMA may be inhibited generally by introduction of small amounts of non-polarizable compounds of the vinyl-series (p-methoxyphenylmethacrylamide, p-ethoxyphenylmethacrylamide, diphenylmethacrylamide, etc.) capable of producing radicals of low activity that act as traps for microradicals. There are 10 graphs, 1 diagram, 3 tables, and 20 references, 6 of which are Soviet, 10 English, and 4 German.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad (Institute of High-Molecular Compounds of the USSR Academy of Sciences, Leningrad)

SUBMITTED: October 21, 1957

Card 3/3

1. Acrylic resins--Temperature factors

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

FRENKEL', S.Ya.

KRETOVICH, V.L.; SMIRNOVA, T.I.; FRENKEL', S.Ya.

Fractionation of glycinin by ultracentrifugation [with summary in English]. Biokhimiia 23 no.1:135-139 Ja-F '58. (MIRA 11:3)

1. Institut biokhimii im. A.N.Bakha AN SSSR, Moskva i Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.
(PROTEINS, determination,
glycinin, ultracentrifugation (Rus)
(SOY BEAN,
same)

KRETOVICH, V.L.; SMIRNOVA, T.I.; FRENKEL', S.Ya.

Submolecular structure of glycinin and conditions of its reversible association [with summary in English]. Biokhimiia 23 no.4:547-557 Jl-Ag '58. (MIRA 12:3)

1. Institute of Biochemistry (Moscow) and Institute of Higher Molecular Compounds (Leningrad), Academy of Sciences of the U.S.S.R., Moscow.

(GLOBULIN,
glycinin, submolecular structure in reversible assoc. (Rus))

SISAKYAN, N.M., MELIK-SARKISYAN, S.S., FRENKEL,' S.Ya.

Certain physicochemical properties of chloroplast proteins. [with summary in English]. Biokhimiia 23 no.5:723-736 S-O '58
(MIRA 11:11)

1. Institut biokhimii imeni A.N. Bakha. AN SSSR (Moskva) i Institut vysokopolimernykh soyedineniy AN SSSR (Leningrad).
(PROTEIN, determ.
in chlorophasts (Rus))
(CHLOROPHYLL,
chloroplasts, determ. of proteins (Rus))

AUTHORS:	Savitskaya, M. I., Frenkel', S. Ya.	76-32-5-17/47

TITLE: The Fractional Composition and Some Hydrodynamic Properties of Polyphenylmethacrylamide (Fraktsionnyy sostav i nekotoryye gidrodinamicheskiye kharakteristiki polifenilmetakrilamida)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp. 1063-1067 (USSR)

ABSTRACT: The investigation intended for the explanation of the influence of the relatively short chains on the brittleness of the above mentioned polymers showed that a wide distribution of the molecular weight with a maximum at 250000 is existing and that therefore the brittleness of the aryl derivatives of the N-substituted amides of metacrylic acid depends on the presence of strongly aromatic nuclei (benzene) in the side chains. From the mentioned experimental part can, among others, be seen that an oil centrifuge according to Svedberg (4000 revs./min) with an optical system according to Fil'pot-Svensson (Ref 5) was used, that the diffusion coefficient was measured on a Lamma apparatus and that the diffusion constant was calculated according to Boltzman-Gralen (Ref 9). The difference of the obtained results from the theory by Flori-Mandel'kern is ex-

Card 1/3

The Fractional Composition and Some Hydrodynamic Properties of Polyphenylmethacrylamide 76-32-5-17/47

plained by the fact that molecules of the poly-N-phenylmethacrylamide do not swell so much in acetone as the side ramifications (phenyl groups) are steric hindrances to a solid block packing and a coagulation to compact nodes is not possible. From the results can also be seen that the polymer consists of similar, not ramified chains, as otherwise the fractionating would take place less according to the molecular weight than according to the ramification. Finally the authors mention that the poly-N-phenylmethacrylamide is a polydisperse high-molecular product with 50% of $M > 350000$ being present, and with the majority of the assumable molecules having at least $M = 250000$.
There are 4 figures, 1 table, and 13 references, 5 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut vysokomolekulyarnykh soyedineniy, Leningrad (Leningrad Institute of High-Molecular Compounds, AS USSR)

Card 2/3

The Fractional Composition and Some Hydrodynamic Properties of Polyphenylmethacrylamide 76-32-5-17/47

SUBMITTED: January 14, 1957

1. Polymers--Properties 2. Polymers--Fractionation
3. Benzenes--Properties 4. Centrifuges--Applications

Card 3/3

KOROTKOV, A.A.; SHIBAYEV, L.A.; PYRKOV, L.M.; ALDOSHIN, V.G.; FRENKEL',
S.Ya.

Synthesis and study of hybrid polymers. Styrene and isoprene block-polymers obtained by catalytic polymerization in a solution under the action of butyllithium. Vysokom. soed. 1 no.3:443-454 Mr '59. (MIRA 12:10)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Styrene) (Isoprene)

CHETYRKINA, G.M.; ALDOSHIN, V.G.; FRENKEL', S.Ya.

Physicochemical studies of poly-para-carbethoxyphenylmethacrylamide. Part 1: Abnormal dependence of the characteristic viscosity of polypara-carbethoxyphenylmethacrylamide on the molecular weight. Vysokom.soed. 1 no.8:1133-1142 Ag '59. (MIRA 13:2)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Viscosity) (Acrylamide)

BRESLER, S.Ye.; KUSHNER, V.P.; FRENKEL', S.Ya.

Structure of globular proteins and their interaction with the external environment. Biokhimiia 24 no.4:685-696 Jl-Ag '59. (MIRA 12:11)

1. Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR, Leningrad.

(PROTEINS)

5(3) SOV/79-29-8-69/81

AUTHORS: Pyrkov, L. M., Bresler, S. Ye., Frenkel', S. Ya.

TITLE: Investigation of Secondary Reactions in Processes of Radical Polimerization According to the Formation of "Hybrid Polymers"

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2750-2760 (USSR)

ABSTRACT: The authors continued their previous investigation of hybrid polymers (Ref 1) and in the present paper established directly the existence of secondary reactions of different types which include the interaction of macroradicals among one another as well as the interaction of radicals with the polymer chains. The evaluation of the hybrid polymer yield leads to the conclusion that the reaction, which the authors denote as an inter-chain exchange or macromolecular recombination, is less probable than an increase in the branches of the diene chains instead of an interaction of the free radicals with double bonds. The behavior of the newly formed radical after destruction - apart from reaction conditions - is determined by the tendency characteristic of the given radical to stabilize due to recombination or by other means. The more probable, e.g., the recombination typical of polystyrene, the greater is the probability of an exchange

Card 1/2

Investigation of Secondary Reactions in Processes of SOV/79-29-8-69/81
Radical Polimerization According to the Formation of "Hybrid Polymers"

between the chains. Hybrid polymers forming in model systems are subject to polydispersion to the highest degree with regard to their amount and composition, so that it is impossible to determine exactly the rate constants of the corresponding secondary reactions. The data of systems in which the polimerization of the vinyl compound (styrene) took place in the presence of the diene polymer (divinyl caoutchouc) confirmed the data of several authors on the basic possibility to produce industrial graphted polymers with a "diene backbone" and vinyl side chains by this simple process (Ref 16). The diagrams given in the experimental part illustrate the results obtained. There are 11 figures and 16 references, 6 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR (Institute of High Polymer Compounds of the Academy of Sciences, USSR)

SUBMITTED: July 14, 1958

Card 2/2

SAMSONOV, Georgiy Vasil'yevich; FRENKEL', S.Ya., otv.red.; ROTENBERG,
A.S., red.izd-va; ZAMARAYEVA, R.A., tekhn.red.

[Sorption and chromatography of antibiotics] Sorbtsiia i khromatografiia antibiotikov. Moskva, Izd-vo Akad.nauk SSSR, 1960.
175 p.. (MIRA 13:11)
(SORPTION) (CHROMATOGRAPHIC ANALYSIS) (ANTIBIOTICS)

IOFFE, Boris Veniaminovich; Prinimali uchastiye: TATARSKIY, V.B., prof.; FRENKEL', S.Ya., starshiy nauchnyy sotrudnik; RYSKIN, Ya.I., nauchnyy sotrudnik; SVERDLOVA, O.V., mladshiy nauchnyy sotrudnik; RAVDEL', A.A., red.; SHEYNINA, G.A., red.; ERLIKH, Ye.Ya., tekhn.red.

[Refractometric methods in chemistry] Refraktometricheskie metody khimii. Leningrad, Gos.nauchno-tekhn.izd-vo khim.lit-ry, 1960. 382 p. (MIRA 14:2)

1. Leningradskiy universitet (for Tatarskiy). 2. Institut vysokomolekulyarnykh soyedineniy AN SSSR (for Frenkel'). 3. Institut khimii silikatov AN SSSR (for Ryskin).
(Refractometry)

PHASE I BOOK EXPLOITATION SOV/4983

International symposium on macromolecular chemistry. Moscow, 1960.

Mezhdunarodnyy simpozium 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.

45

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

FRENKEL, S. Ya., PYRKOV, L. M.

"Interchain exchange reactions in radical polymerization."

report presented at the International Polymer Symposium, (IUPAC), Moscow, USSR, 14-18 June 1960.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

S/629/60/000/003/009/011
D202/D305

AUTHOR: Frenkel', ~~S. Ya.~~

TITLE: A study of the mechanism of the polymerization process by the method of molecular weight distribution

SOURCE: Vsesoyuznoye khimicheskoye obshchestvo imeni D. I. Mendeleyeva. Uspekhi khimii i tekhnologii polimerov, sb.3, Moscow, Goskhimizdat, 1960, 160-183

TEXT: The author gives the principles of this method (MWD) which was developed both by Western and Soviet-bloc workers, including the author himself, and discusses some typical examples of its application. As the polydisperseness of plymers is due to the statistical nature of the polymerization process, governed by the laws of probability, the study of the polymerization mechanism consists of determining and subjecting to mathematical analysis the factors which cause the chain growth and its termination. These affect other reactions as well, such as the process initiation, the migration of active centers, etc. The fundamental equation of this method:

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

81606

S/190/60/002/02/05/011
B004/B061

5.3831

AUTHORS: Bresler, S. Ye., Pyrkov, L. M., Frenkel', S. Ya.

TITLE: Equilibrium Sedimentation of Block Copolymers in the Density Gradient

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 2, pp. 216-220

TEXT: The authors used the method developed by M. Meselson et al. (Ref. 1) for determining the molecular weight of polymers by means of an ultracentrifuge, to analyze polystyrene, polyisoprene, and their block- and grafted copolymers. The drop in concentration was calculated from Svedberg's equation (Ref. 4). Table 1 gives the density of the solvents (butylchloride and dichloroethane) and the polymers. The experiments were carried out at 30°C with a Svedberg ultracentrifuge (54,000 rpm). The parameters of the Svedberg equation found are given in Table 2. Fig. 1 shows the equilibrium of the solvent mixture that occurred after three hours in the centrifuge, Fig. 2, the sedimentation of polystyrene, and

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81606

Equilibrium Sedimentation of Block Copolymers in the Density Gradient

S/190/60/002/02/05/011
B004/B061

Fig. 3, the sedimentation of the block copolymers. The distribution curve (Fig. 4) of this sedimentation was obtained with a УИМ-21 (UIM-21) measuring microscope and by graphical integration. The grafted polymer gathered in a belt in the middle of the sedimentation bulb, whilst the homopolymers gave a Boltzmann distribution on the bottom of the "meniscus". Preliminary data on the composition of the copolymers obtained by the "live-chain" method allow high chemical homogeneity to be concluded. There are 4 figures, 2 tables, and 6 references: 2 Soviet, 1 British, and 3 US.

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

SUBMITTED: August 31, 1959

Card 2/2

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

ALDOSHIN, V.G.; SAVITSKAYA, M.N.; FRENKEL', S.Ya.

Some physicochemical characteristics of high molecular weight polyacrylamide. Vysokom. soed. 2 no. 3:347-353 Mr '60.
(MIRA 13:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Acrylamide)

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

FRENKEL', S.Ya.

Average hydrodynamic molecular weights and polydispersity criteria of nonfractionated polymers. Vysokom.soed. 2 no.5: 731-744 My '60. (MIRA 13:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Polymers)

FRENKEL, S.Ya. (Leningrad)

The rigidity, from sizes, and hydrodynamic properties of macromolecules. Kem tud kozl MTA 14 no.1:63-123 '60. (EEAI 9:12)

1. A Szovjetunio Tudomanyos Akademiajanak Nagymolekulaju Vegyuleteket Kutato Intezete, Leningrad.
(Macromolecular compounds) (Hydrodynamics)

5.3831

68848

AUTHORS: Frenkel', S. Ya., Topchiyev, A. V., Krentsel', B. A., Gol'dfarb, Yu. Ya.

S/076/60/034/02/010/044
B010/B015

TITLE: Investigation of the Polydispersity of Polymers by the Method of the Unestablished Sedimentation Equilibrium. II. Investigation of Polyisobutylene Obtained With a Complex Organometallic Catalyst

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 2, pp 327-334 (USSR)

ABSTRACT: The investigation results of the previous paper (Ref 1) were completed by determining the sedimentation coefficients S, diffusion coefficients D, and characteristic viscosities $[\eta]$ on 5 polyisobutylene samples in n-heptane at 20° and at 1 atm. The values of measurement obtained for these hydrodynamic characteristics are given (Table 1). Three of the samples showed a noticeable polydispersity. The molecular weights were calculated according to the formulas:

$D([\eta]M)^{1/3} = 2,56\cdot10^{-5}$ $S([\eta]M^2)^{1/3} = 2,47\cdot10^{-16}$

(Table 2), and it was found that $S = 2.57\cdot10^{-2}\,M_{SD_{2m}}^{1/2}$ Svedberg units; $D = 2.63\cdot10^{-4}\,M_{SD_{2m}}^{1/2}$ cm²/sec, and $[\eta] = 7\cdot10^{-6}\,M_{S[\eta]}$ hold

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Card 1/3 for the unfractionated samples, i.e. for the dependence of the

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

68848
S/076/60/034/02/010/044
B010/B015

Investigation of the Polydispersity of Polymers by the Method of the Unestablished Sedimentation Equilibrium. II. Investigation of Polyisobutylene Obtained With a Complex Organometallic Catalyst

characteristic viscosity $[\eta]$ on the mean molecular weight $M_{S[\eta]}$ the simple Staudinger equation is obtained. The values for M_w and M_z were taken from reference 1, and indicated together with those for M_{SD} and $M_{S[\eta]}$, as well as M_0 (Table 3). A simple method is suggested for the correlation of the hydrodynamic values of measurement with the direct values of measurement for M_z and M_w, and it is pointed out that a similarity to the distribution function, given by Wesslau (Ref 7) for some of the low-pressure polyethylenes, may be observed. If all conditions remain the same, the molecular weight of polyisobutylene increases with the duration of the polymerization reaction. This fact indicates a successive prolongation of the linear chains. The growing of molecules on catalysts of the Ziegler-Natta type is assumed to be comparable with the "growing of a tree". The degree of polymerization depends on the duration τ of the growing process and the rate of growth v. The values τ and v are determined by the properties of the ternary system monomer - catalyst - solvent. Studies in connection with the Krämer-Lansing distribution function lead to the con-

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APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4"

68848

Investigation of the Polydispersity of Polymers by the Method of the Unestablished Sedimentation Equilibrium. II. Investigation of Polyisobutylene Obtained With a Complex Organometallic Catalyst

S/076/60/034/02/010/044
B010/B015

clusion that the samples investigated exhibit rather a high dispersity. It is doubted that the free radicals play an essential part in the process investigated. There are 5 figures, 3 tables, and 12 references, 6 of which are Soviet.

4

ASSOCIATION: Akademiya nauk SSSR Institut vysokomolekulyarnykh soyedineniy (Academy of Sciences of the USSR, Institute of High-molecular Compounds). Institut neftekhimicheskogo sinteza (Institute of Petroleum-chemical Synthesis)

SUBMITTED: April 21, 1958

Card 3/3

VILENSKAYA, R.M.; FRENKEL', S.Ya., red.; ALEKSEYEVA, V.P., bibliogr.red.;
KUZ'MIN, A.A., vedushchiy red.; SIL'CHENKOVA, V.V., tekhn.red.

[Bibliographic index of works of scientific personnel of the Institute of High Molecular Weight Compounds of the Academy of Sciences of the U.S.S.R., 1949-1959] Bibliograficheskii ukazatel' rabot nauchnykh sotrudnikov Instituta vysokomolekuliarnykh soedinenii AN SSSR, 1949-1959 gg. Sost.R.M.Vilenskaia. Pod red. S.IA. Frenkelia. Leningrad, 1961. 103 p. (MIRA 14:2)

1. Akademiya nauk SSSR. Institut vysokomolekulyarnykh soyedineniy.
(Bibliography--Macromolecular compounds)

FRENKEL, S. YA., KARYAKIN, A. V., KARYAKINA, T. I. (USSR)

"On the Mechanism of the Reversible Association and Dissociation of Glycinin."

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

FRENKEL', S.Ya; ORN, P. [HORN, P.]

Structure of globular proteins andtheir interaction with the external medium. Part 3: Effect of disulfide bonds on the conformation and solubility of serum albumin. Vysokom.soed. 3 no.4:541-548 Ap '61.
(MIRA 14:4)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR i TSentr issledovaniya makromolekul, Strasburg, Frantsiya.
(Albumin)

FRENKEL', S.Ya., kand.fiziko-matematicheskikh nauk

Molecular weights and polydispersity of polymers. Zhur.VKHO 6
no.4:435-442 '61. (MIRA 14:7)
(Polymers) (Molecular weights)

BRESLER, S.Ye.; SHAMPAN', M. [Champagne, M.]; FRENKEL', S.Ya.

Study of enzymatically active trypsin I fragments. Biokhimiia 26 no.5:909-915 S-O '61. (MIRA 14:12)

1. Institute of High Molecular Compounds, Academy of Sciences, of the U.S.S.R., Leningrad.

(TRYPSIN)

KUSHNER, V.P.; FRENKEL', S.Ya.

Structural transformations during reversible inactivation of trypsin. Dokl. AN SSSR 141 no.2:481-484 N '61. (MIRA 14:11)

1. Institut tsitologii AN SSSR i Institut vysokomolekulyarnykh soyedineniy AN SSSR. Predstavleno akademikom V.A.Engel'gardtom.
(TRYPSIN)

"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

32355
S/190/62/004/001/018/020
B145/B147

15.8330 2409,2209,1436

AUTHORS: Aldoshin, V. G., Frenkel', S. Ya.

TITLE: Selective interaction in polymer chains. I. Hydrodynamic properties and solubility of the 9 : 1 methyl methacrylate - methacrylic acid copolymer

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 1, 1962, 116-123

TEXT: The 9 : 1 methyl methacrylate - methacrylic acid copolymer was studied by viscosity measurements and by determining sedimentation constants. The results were evaluated to obtain information on the conformation of the polymer in various solvent mixtures. The measurement of the concentration dependence of the intrinsic viscosity of non-fractionated polymer solutions (molar weight $\sim 2 \cdot 10^6$) in a mixture of dichloroethane and dimethyl formamide (DMFA) has shown that the intrinsic viscosity rises gradually with increasing DMFA content, but exhibits a jump around 90-100% DMFA. In pure DMFA, the η_{sp}/c curve takes a course characteristic of a slightly ionized polyelectrolyte. The polymer is insoluble in pure dichloroethane and swells linearly by a factor of 10.
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Selective interaction in ...

It dissolves immediatly when a few drops of DMFA are added. These results are ascribed to the occurrence of carboxyl-carboxyl hydrogen bonds between chains, which are split by the ionizing effect of DMFA on the carboxyl groups. On the other hand, it is also assumed that hydrogen bonds are contained in the chains. In inert solvents, e.g., dichloroethane, these bonds effect a concentration of the individual chains of the polymer to a rigid coil. When DMFA is added, a cooperative splitting of hydrogen bonds takes place, accompanied by ionization of the carboxyl groups. In a 4 : 1 mixture of acetone and water (pH = 10), the molecules associate under the action of water on the hydrophobic links of the polymer chain, which results in a sharp increase of intrinsic viscosity with concentration. A curve with a maximum was obtained for the concentration dependence of the intrinsic viscosity of a polymer solution in a 4 : 1 mixture of DMFA and water (pH = 11). The intrinsic viscosity in this case is lower than in pure DMFA, which is ascribed to the effect of water on the methyl methacrylate links. The measurement of the concentration dependence of intrinsic viscosity in dimethyl formamide of three copolymer fractions, obtained by fractional precipitation, indicates that only the fraction with the highest molecular weight ($4.82 \cdot 10^6$) behaves like a polyelectrolyte

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Selective interaction in ...

This means that in fractional precipitation splitting takes place with respect to both the molecular weight and composition (content of methacrylic acid). This also explains the relatively high value of a (1.4) obtained from the relation $[\eta] \cdot M^{a}$. The molecular weight M was calculated from Flory's formula. S. Ye. Bresler is thanked for interest. The fractionation of the polymer was carried out by S. Ya. Lyubina at the laboratory of V. N. Tsvetkov. There are 7 figures and 13 references: 8 Soviet-bloc and 5 non-Soviet-bloc. The 3 references to English-language publications read as follows: V. Deal, F. Wyld, Anal. Chem., 27, 47, 1955; P. Doty, J. Polymer Sci., 23, 881, 1957; D. O. Jordan, T. Kurucsev, Polymer, 1, 193, 1960.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR (Institute of High Molecular Compounds AS USSR)

SUBMITTED: February 10, 1961

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Card 3/3

33379
S/190/62/004/002/008/021
B101/B110

15.8080 1372

AUTHORS: Aldoshin, V. G., Frenkel', S. Ya., Chetyrkina, G. M.

TITLE: Physicochemical properties of polycarbethoxyphenylmethacrylamide (PCEPMA). II Comparison of the o-and p-isomers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 2, 1962, 207-215

TEXT: The authors study the anomaly in the intrinsic viscosity of p-PCEPMA which was described in the paper Vysokomolek. soyed., 1, 1133, 1959. The monomers were synthesized according to M. M. Koton, T. A. Sokolova, G. M. Chetyrkina (Zh. obshch. khim., 27, 185, 1957). The p-polymer was obtained by heating the monomer for 24 hrs at 110 and 125°C each, then for 10 hrs at 140°C in the presence of t-butylperoxide 0.3%. 21 fractions were precipitated from a 1% acetone solution by means of a 2:1 acetone-water mixture. The molecular weight (M) of fraction 1 was $2.31\cdot10^6$, $[\eta] = 3.44$ in dimethylformamide, M of fraction 21 was $0.093\cdot10^6$, $[\eta] = 0.25$. The

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Physicochemical properties ...

o-polymer was obtained by heating the monomer for 24 hrs at 60, 80, 100, 120°C each, and for 10 hrs at 140°C in the presence of 0.2% t-butylperoxide + 0.1% benzoyl peroxide. 13 fractions were separated from a 3% solution in dichloroethane by means of a 1:1 methanol dichloroethane mixture. Fraction 1: $M = 24.00 \cdot 10^6$, $[\eta] = 3.10$ in dimethylformamide; fraction 13: $M = 0.026 \cdot 10^6$, $[\eta] = 0.31$. The authors determined the functions $\log [\eta] = \varphi(\log M)$ and $\log S_0 = \psi(\log M)$, S_0 is the sedimentation coefficient with infinite dilution in dimethyl formamide (Fig. 1). The macromolecules of the o-polymer behaved like the usual statistical coils (linear functions). This is explained by H bonds within the monomer according to the structure:

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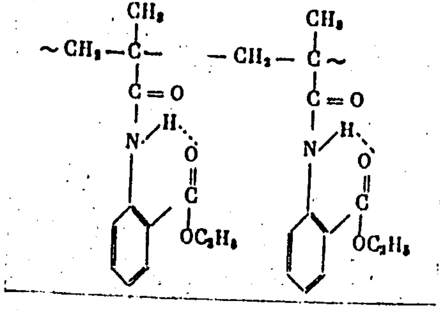

In the p-polymer the functions of $[\eta]$ are nonlinear. The value of the slope of the curves for M $2 \cdot 10^6$ asymptotically approaches 2 and 0 which is characteristic of rod-like particles. The authors assume a cylindrical conformation with a comparatively large cross section and a length proportional to M. The rigidity is caused by interchain H bonds in α-helices of the polypeptide type.

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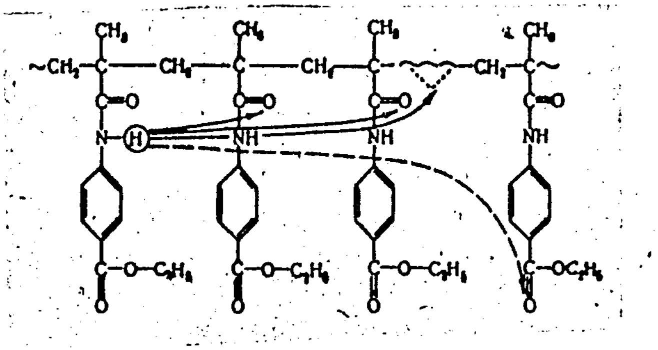
Physicochemical properties ...



The fractionation data were analyzed on the basis of the change in the molecular weight distribution (MWD) between the value of the Flory function with $M_w : M_2 = 2$ (rupture of the kinetic chains due to disproportionation) and $M_w : M_n = 3/2$ (recombination). M_w, M_n and M_z were calculated not graphically but directly from the equations $M_n = 1/\sum W_i/M_i$; $M_w = \sum W_i M_i$;

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Physicochemical properties ...

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$M_z = \sum W_i M_i^2 / \sum W_i M_i$. $M_z : M_w : M_n \approx 3:2:1$ was obtained for the p-polymer. For the o-polymer this ratio was approximately 4:3:2. The MWD here has recombination character and is displaced by an order of magnitude along the M axis as compared with the "most probable MWD" of Flory. V. Ye. Eskin is mentioned. There are 4 figures, 2 tables, and 15 references: 10 Soviet-bloc and 5 non-Soviet-bloc. The three references to English-language publications read as follows: P. J. Flory, Principles of Polymer Chemistry, Cornell Univ. Press, Ithaca, N. Y., 1953; T. Svedberg, K. O. Pedersen, The Ultracentrifuge, Oxford, 1940; C. Booth, L. Beason, J. Polymer Sci., 42, 81, 93, 1960.

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

SUBMITTED: February 8, 1961

Fig. 1. $\log [\eta] = f(\log M)$ and $\log S_0 = \psi(\log M)$ for p-PCEPMA in dimethylformamide.

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33383
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15 9300

AUTHORS: Bresler, S. Ye., Pyrkov, L. M., Frenkel', S. Ya.,
Layus, L. A., Klenin, S. I.

TITLE: Molecular conformation, and hydrodynamic and mechanical properties of 4:5 styrene - isoprene bulk copolymer

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 2, 1962, 250-255

TEXT: The authors studied the hydrodynamic and mechanical properties of hybrid polymers on the basis of the selective solubility of one type of blocks in the corresponding solvent to make a quantitative estimate of the conformation changes of macromolecules dependent on the solvent, and to measure the mechanical properties of the resulting films. They investigated 4:5 styrene - isoprene bulk copolymer (BCSI) made with butyl lithium and consisting of four polystyrene (PS) and five polyisoprene (PI) blocks. The molecular weight determined in methyl ethyl ketone was $M = 77,000$, that of PS: $M \approx 10,000$, that of PI: $M \approx 7500$. Solvents used were: benzene, toluene, heptane, octane, and methyl ethyl ketone. 0.1 mm thick films were obtained from 1 g/100 ml of solutions in heptane

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Molecular conformation, and...

and methyl ethyl ketone on Hg surface at 25°C and 20 mm Hg. The diffusion coefficients were determined at 0.05% concentration by a Tsvetkov diffusometer. The sedimentation coefficients were determined by a Svedberg ultracentrifuge. The molecular weight was calculated according to Svedberg: $M = (S_0 RT)/\left[D(1-\bar{v}\varrho)\right]$ (2), and Flory and Mandel'kern, $2.5 \cdot 10^6 = \left[\eta_0 N/(1-\bar{v}\varrho)\right]\left[S([\eta]/M^2)^{1/3}\right]$ (3), where N = Avogadro's number; ϱ = density, and η_0 = viscosity of the solvent. (3) presupposes conformation of statistical nodes of macromolecules, the linear dimensions being proportional to $M^{1/2+\varepsilon}$ (ε = small parameter). The coincidence of different mean weights in different solvents indicates weak polydispersity. The absence of a relation between M_W and M_{SD} and the mean hydrodynamic weights $M_{s\eta}$ and $M_{D\eta}$ demonstrates the unsuitability of the model of statistical nodes. The PI blocks keep the octane-insoluble PS blocks in solution. Therefore, they form small pearls threaded on the polyisoprene string. In methyl ethyl ketone, it is vice versa. Flory's theory does not apply to this case. There is no relationship between "viscous" and

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Molecular conformation, and...

"diffusion" inertia radii for selective solvents. It follows that, in these solvents, the molecules are converted from statistical nodes into half-stiff particles, to which Fig. 2б, в does not apply but Fig. 2г according to Schlick and Levy (see below). Films obtained from octane, heptane, and hexane solutions of BCSI with evaporation of the solvent are rubberlike, nontransparent, and highly elastic. Films from methyl ethyl ketone remind of plasticized PS. Films (A) obtained from heptane would resume their old shape when the loading ends, the more solid films (B) from methyl ethyl ketone to a smaller extent. (A) has: E ≈ 10 kg/cm^2 like rubber. (B) has E ≈ 200 kg/cm^2. Films from benzene are mechanically similar to (B). Blocks with globules "remember" their conformation on transition into the film (A) may be regarded as polyisoprene with chemically bound, glassy filler, (B) as PS with chemically bound plasticizer. "Tempering" occurs during film formation; during "annealing", the globules develop, and the properties of the film correspond to those of film obtained from benzene. There are 3 figures, 2 tables, and 9 references: 7 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: F. M. Merrett, J. Polymer. Sci, 24, 467, 1957. S. Schlick, M. Levy, J. Phys. Chem., 64, 883, 1960.

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Molecular conformation, and...

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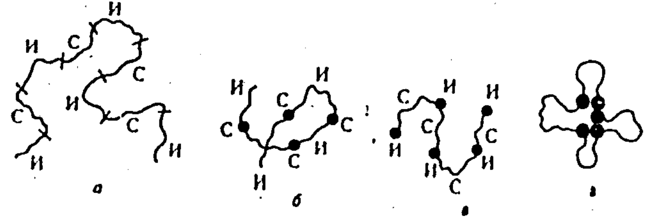
SUBMITTED: February 10, 1961

Fig. 2. Diagram of the conformation of BCSI molecules in various solvents.

Legend: (a) Benzene (good solvent for both types of blocks); (б) octane; (в) methyl ethyl ketone; (г) structure to be suggested in selective solvents ("unsoluble" blocks aggregated); С = styrene blocks; И = isoprene blocks.

Fig. 2



Card 4/4

FRENKEL', S.Ya.

Theory of heterophase polymerization. Part 1: Molecular weight distribution in the suspension polymerization of a water soluble monomer. Vysokom.soed. 4 no.3:393-402 Mr '62. (MIRA 15:3)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
(Polymerization)

PRYKOV, L.M., SOROKIN,A.YA., FRENKEL', S.YA.

Application of the principle of active media to produce high-strength fibers from polyvinyl alcohol.

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

34997
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B124/B101

15.8070

AUTHORS: Smeytek, P., Frenkel', S. Ya.

TITLE: Selective interactions in polymer chains. II. Effect of hydrogen bonds on the copolymerization kinetics of methyl methacrylate and methacrylic acid

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 3, 1962, 429-432

TEXT: The benzoyl-peroxide-initiated photopolymerization of a 10:1 mixture of methyl methacrylate (MMA) and methacrylic acid (MA) was studied in bulk and in benzene using varying concentrations of the monomer components. Each experiment was performed twice: with the pure components and with 5 - 20% dimethyl formamide (DMF) added. A [illegible] -250 (SVDSh-250) mercury lamp was used as the light source. The course of the polymerization was determined by measuring the dielectric losses by a method described in Vysokomolek. soyed. 4, 419. 1962 and, simultaneously, the free-radical concentration was measured with an epm spectrometer. When the mixture with DMF is bulk-polymerized, the gel effect is retarded and captured free radicals are recorded but at the end of the process. Without DMF, viscosity
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Selective interactions ...

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increases rapidly and the polymer formed is precipitated. When 33 and 50% solutions in benzene are polymerized, neither gel effect is established nor are free radicals captured; the viscosity of the system is rather low and no precipitate forms. When 10% DMF are added, the rate of polymerization decreases by ~1/3, and the reaction takes place more uniformly as compared with mass polymerization. When, however, a 20% solution in benzene is used, viscosity rapidly increases again, the polymer formed precipitates out, and, from a 10% conversion on, captured free radicals are detected, the concentration increase of which is nearly linear with time. All these effects are neutralized by the addition of 20% DMF which leads to a considerable decrease of the polymerization rate. DMF was shown to be ineffective in the polymerization of pure MMA which leads to the conclusion that the effect of DMF is due to its selective interaction with the carboxyl-containing links. Thus, the formation of interchain hydrogen bonds significantly affects the polymerization mechanism the action of which results in the precipitation of the polymer and the capture of free radicals. With moderate concentrations of benzene, the system can be homogeneous, but at high concentrations (80%), it begins to act as a precipitant promoting "vulcanization" of the copolymer due to intercarboxylic hydrogen

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Selective interactions...

bond formation yielding heterogeneous systems. DMF transforms the system into another consisting of homogeneous phases cleaving the hydrogen bonds and ionizing the carboxylic groups. The overall rate of polymerization falls due to the enhanced mobility of the free radicals. The heterogeneous character of the ionizing system in the absence of DMF may be the cause of the increase in MA content in the heavy fractions of the copolymer. There are 4 figures and 5 references: 4 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: R. J. Abraham, H. W. Melville, D. W. Ovenall, D. H. Whiffen, Trans. Faraday Soc., 54, 1133, 1958.

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

SUBMITTED: March 3, 1961

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"APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000413620010-4

35294

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B117/B138

5.4100
15.8050

AUTHORS: Tsvetkov, V. N., Klenin, S. I., Frenkel', S. Ya., Fomicheva, O. V., Zhuze, A. G.

TITLE: Hydrodynamic properties of poly-β-vinyl naphthalene macromolecules in benzene

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 4, 1962, 540-545

TEXT: Diffusion constants, sedimentation coefficients and intrinsic viscosity of 10 fractions of poly-β-vinyl naphthalene (P-β-VN) in benzene were studied. The Mark - Kuhn - Houwink relations in this solvent were found to have the form $D = 3.5 \cdot 10^{-4} \cdot M_{S,D}^{-0.57}$ for the diffusion coefficient, and $[\eta] = 6.6 \cdot 10^{-5} \cdot M_{S,D}^{0.71}$ for the intrinsic viscosity. The molecular weight $M_{S,D}$ was determined from Svedberg's equation. The hydrodynamic behavior of P-β-VN, which is determined by viscosity and diffusion, is completely normal and confirms the universal character of the empirical constant $A = \eta_0 D(M[\eta])^{1/3} T^{-1}$. It's mean value was $(3.1 \pm 0.1) \cdot 10^{-10}$ erg/degree. This

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Hydrodynamic properties of ...

corresponded to the value of this constant determined for other polymers and again confirmed the usual correlation of hydrodynamic properties of P-β-VN during translation and rotation. The estimate of the relation between dimensions of P-β-VN molecules in benzene and their dimensions during free rotation $(\overline{h}^2)_\Theta^{1/2}(\overline{h}^2)_f^{1/2}$, which characterizes the hardness of the molecular structure, made by means of the previously determined swelling parameter (Ref. 9: V. Ye. Eskin, K. Z. Korotkina, Vysokomolek. soyed., 2, 272, 1960) $\alpha^3 = ([\eta]/[\eta]_\Theta) = 1.2$, produced a mean value of 2.6. ($(\overline{h}^2)_\Theta^{1/2} = (\overline{h}^2)_D^{1/2}/\alpha$ are undisturbed dimensions of the macromolecule). This amount, which slightly exceeds the corresponding values for most of the linear polymers, showed (e. g. in comparison with polystyrene) that the substitution of the benzene ring by naphthalene increases the thermodynamic hardness of the macromolecule. It was found that the dependence of the diffusion coefficient D on the concentration of one of the P-β-VN fractions with $M = 3.5 \cdot 10^6$ is only slight in CCL_4 and more marked in benzene. This confirms that the dependence on the concentration is mainly determined by the thermodynamic interaction between polymer and solvent. (Ref. 13: V. N. Tsvetkov, S. I.
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Hydrodynamic properties of ...

Klenin, Zh. tekhn. fiziki, 29, 1393, 1959). The quantity $A = \eta_0 D(M[\eta])^{1/3} T^{-1}$, calculated for the fraction investigation in CCl_4, amounted to $3.50 \cdot 10^{-10}$ erg/degree, and was thus close to the mean value of the constant A. There are 4 figures and 2 tables. Two English-language references are: P. Debye, A. Bueche, J. Chem. Phys., 16, 573, 1948; P. J. Flory, Principles of Polym. Chem., New York, 1953.

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

SUBMITTED: March 10, 1961

Card 3/3

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