S/076/62/036/005/006/013
B101/B110

Electrochemical evolution of...

(2) Oscilloscopic measurement of the potential by an ƎHO-1 (ENO-1) oscilloscope, synchronously connected with a sawtooth pulse generator, showed no change of the polarization curve for n-type Si, and an increase of the potential by 0.35 v for p-type Si. (3) The oscillograms for current insertion are equal for both types at $I_o = 10^{-4}$ a/cm$^2$. At $I_c = 10^{-3}$ a/cm$^2$, the curve for p-type Si shows a distinct peak 2 v high. (4) The anodic charging curves for Si polarized at -0.5 v show a retardation of the potential at $I_c \geqslant 5 \cdot 10^{-5}$ a/cm$^2$. This suggests the formation of a surface compound from Si and H at -0.5 v. Two processes are possible for H$_2$ evolution: (A) $Si + e^-_{val} + H^+ \rightarrow SiH$; $SiH + e^- + H^+ \rightarrow Si + H_2\uparrow$. The second reaction is much retarded for p-type Si. (B) Hydrogen forms dipoles with outward-directed negative poles on the Si surface. With n-type Si, the negative charge of the surface is compensated by the positive charge of the surface barrier, and further hydrogen adsorption is restricted. With p-type Si, the positive pole of the dipole is a hole. As p-type with p-type Si, the positive pole of the dipole is a hole. As p-type dipoles do not reach into the body of the semiconductor the formation of

Card 2/3

Electrochemical evolution of...            S/076/62/036/005/006/013
                                           B101/B110

further dipoles and further hydrogen adsorption is possible. There are
4 figures.

SUBMITTED:    July 27, 1960

Card 3/3                                                              X

YEFIMOV, Ye.A.; YERUSALIMCHIK, I.G.; SOKOLOVA, G.P.    (Moscow)

State of the surface of anodically polarized silicon in hydro-
fluoric acid solutions. Zhur. fiz. khim. 36 no.6:1219-1221
Je'62                                        (MIRA 17:7)

40044

S/076/62/036/008/005/011
B101/B144

24,7700

AUTHORS:      Yefimov, Ye. A., and Yerusalimchik, I. G.

TITLE:        Effect of the bichromate ion on the anodic dissolution of
              germanium

PERIODICAL:   Zhurnal fizicheskoy khimii, v. 36, no. 8, 1962, 1791 - 1794

TEXT:  Proceeding from observations made by F. Beck, H. Gerischer (Z.
Electrochem., 63, 943, 1959), the behavior of p- and n-type Ge
(resistivity 1.0 ohm.cm, diffusion length 0.5 mm) in 0.1 N $H_2SO_4$ was
studied in the presence of 0.15 - 0.03 M $K_2Cr_2O_7$ at room temperature.
Results: (1) With p-type Ge, the potential of anodic dissolution increased
in the presence of the bichromate by ~0.2 v for the whole range
investigated (0 - 1.6 ma/cm$^2$).  (2) With n-type Ge, the potential of
anodic dissolution increased whereas the saturation current dropped to
nearly one-half.  Exposure of the Ge electrode to light eliminated the
bichromate effect.  (3) On thin Ge electrodes with p-n junction a small
bichromate effect with reverse bias and a reduction of the saturation
Card 1/2

Effect of the bichromate ion...

S/076/62/036/008/005/011
B101/B144

current with open p-n circuit were observed.   Conclusion: The $Cr_2O_7^{2-}$ anion is adsorbed on the positively charged Ge surface.   Since the valence electrons of the ion are drawn to the oxygen atoms, the $Cr^{6+}$ center attracts electrons and repels holes.  This inhibits the anodic dissolution and reduces the saturation current.  On exposure to light, this effect is compensated by the intense generation of holes on the surface.  There are 3 figures.

SUBMITTED:    December 8, 1961

Card 2/2

*JERUSALIMCHIK    I. G.*

PHASE I BOOK EXPLOITATION                    SOV/6448

Yefimov, Yevgeniy Aleksandrovich, and Josif Grigor'yevich Yerusalimchik

Elektrokhimiya germaniya i kremniya (Electrochemistry of Germanium
 and Silicon) Moscow, Goskhimizdat, 1963. 180 p. Errata slip
 inserted. 5000 copies printed.

Ed.: A. T. Kochnev; Tech. Ed.: V. V. Kogan.

PURPOSE: The book is intended for scientific workers, engineers,
 and technicians working in the semiconductor industry. It may
 also be useful to advanced students specializing both in semi-
 conductor engineering and in electrochemistry.

COVERAGE: The book is a generalization of investigations carried out
 by Soviet and non-Soviet scientists in a new area of physical
 chemistry, the electrochemistry of semiconductors such as germanium
 and silicon. It offers a systematic outline of the structure of
 the electric double layer at the semiconductor-electrolyte inter-
 face and the kinetics of the anodic dissolution of germanium and

Card 1/8

Electrochemistry of Germanium and Silicon                SOV/6448

silicon and provides data on other electrochemical reactions
occuring on germanium and silicon electrodes. A special chapter
has been devoted to a discussion of electrochemical operations
performed in the production of semiconductor devices. The authors
thank Ye. N. Paleolog, Candidate of Chemical Sciences, for his
valuable comments. Each chapter is accompanied by references.

TABLE OF CONTENTS:

Card 2/5

YEFIMOV, Ye.A.; YERUSALIMCHIK, I.G. (Moscow)

Effect of electrical and structural inhomogeneities on the
process of anodic dissolution of germanium. Zhur. fiz. khim.
38 no.3:589-592 Mr '64.                              (MIRA 17:7)

ACCESSION NR: AP4033398 S/0076/64/038/003/0589/0592

AUTHOR: Yefimov, Ye. A. (Moscow); Yerusalimchik, I. G. (Moscow)

TITLE: Effects of electric and structural heterogeneities on the anodic dissolution of germanium.

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 3, 1964, 589-592

TOPIC TAGS: germanium, anodic dissolution, polarization, anodic polarization, hole, electric heterogeneity, structural heterogeneity

ABSTRACT: The purpose of this investigation was to find the cause of the discrepancies between the theoretically calculated limiting current for the anodic dissolution of germanium and the much greater experimentally observed current. Since the ordinary single crystals of germanium are not strictly homogenious, specially grown crystals of n-germanium with $\rho = 3$ ohm·cm and length of the order of 0.7 mm, containing a minimum amount of impurities and the density of dislocations of 50 disloc./cm$^2$ and also germanium with the same electric and physical parameters but having a density of dislocations $\sim 6 \cdot 10^4$ disloc./cm$^2$ were used for this investigation. The anodic polarization curves were obtained by the potentio-

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ACCESSION NR: AP4033398

static method in 0.1 N $H_2SO_4$ (Fig. 1). The experimental results show that the increase of the limiting current during the anodic dissolution of germanium is associated with an additional generation of holes on some parts of the electrode surface. A higher concentration of Cu and Ni on such parts of the electrode may lead to the formation of the high resistance micro regions where the acceptor impurities compensate for the main part of donor impurities or it may lead to segregation of Cu and Ni into a separation phase, primarily at the places of disruption of the crystal lattice. In the areas of germanium on which the conductivity is close to the bulk conductivity, the limiting current due to holes is much greater than on bulk n-germanium. Upon increase of anodic polarization these zones may completely change the type of conductivity. The p-regions which occur at the n-germanium electrolyte interface will carry a large fraction of current, thus individual areas of the electrode surface dissolve more rapidly than others. A segregation of Cu and Ni in a separate phase in the germanium crystal may be produced due to break-through and local generation. This was verified by measuring the photoelectric potential as a function of the potential of germanium electrode in 0.1 N $H_2SO_4$. "The authors express their gratitude to L. I. Kolesnik and Yu. A. Kontsevoy for their help and valuable suggestions during discussion of the results." Orig. art. has: 2 figures.

Card  2/4

ACCESSION NR: AP4033398

ASSOCIATION: None

SUBMITTED: 14Jan63                                          ENCL: 01
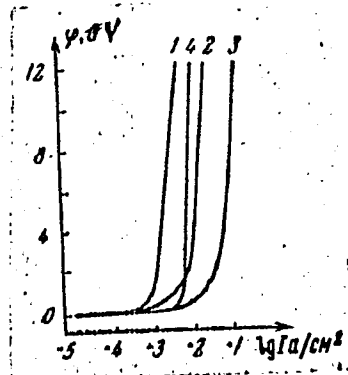
SUB CODE: IC                    NO REF SOV: 005              OTHER: 004

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Fig. 1. Anodic polarization curves obtained
by the potentiostatic method in 0.1 N $H_2SO_4$
with n-germanium electrodes. Resistivity of
germanium was 3 ohm·cm.
1)     = 0.7 mm, 50 disloc./$cm^2$
2)   L = 0.7 mm, $6 \cdot 10^4$ disloc./$cm^2$
3)   L = 0.03mm, $10^7$ disloc./$cm^2$
4)   L = 0.03mm, (specimen 2 after removal
of Cu & Ni impurities



Card 4/4

ACCESSION NR: AP4033404                 S/0076/64/038/003/0720/072 3

AUTHORS: Yefimov, Ye.A.; Yerusalimchik, I.G.; Gorgoraki, Ye.I.

TITLE: Reduction of persulfate ion at a germanium cathode

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 3, 1964, 720-723

TOPIC TAGS: persulfate ion reduction, reduction, germanium cathode, n type germanium, p type germanium

ABSTRACT:  Because of the contradictory data given in literature on the reduction of persulfate ion at germanium electrode, this reaction was studied by the potentiostatic polarization method and also via measurement of the photoelectric potential of the germanium electrode.  This permitted determination of the magnitude of the curvature of the energy zone on the electrode surface.  Electrodes from n- and p-type germanium with specific resistance of 1.5 ohm. Xom and diffusion zone length of 0.7 mm were used.  A series of experiments were made on a degenerated polycrystalline germanium which does not have semiconductor properties and also using electrodes with p-n transition.  Polarization curves taken in 0.001 N $K_2S_2O_8$

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ACCESSION NR: AP4033404

on n- and p-degenerated germanium show that under given conditions the reduction process does not depend on the type of electrode conductivity and that a limiting current of $\sim 0.35$ ma/cm$^2$ is the normal specific current for persulfate ion diffusion to the electrode surface.  The addition of an indifferent electrolyte to a 0.001 N $K_2S_2O_8$ solution decreases somewhat the inhibition of the electrochemical reaction.  It was found that on increasing the concentration of the persulfate ion in the solution, the polarization curves for p- and n-germanium begin to differ and at $\varphi = -0.2$ to $-0.1$v the rate of reaction increases.  With increase of the concentration of ammonium persulfate the photopotential increases and the value of the potential of flat zone is displaced toward the more positive potentials for the p- and n-type germanium electrodes.  Since the polarization curves on n- and p-germanium corresponds to potentials $-0.2$ to $-0.1$v, it was concluded that in both cases the reaction is inhibited.  On the basis of the lack of limiting current for the diffusion of electrons in the p-germanium it was assumed that electrons of the valence zone take part in the reduction or the rate of surface recombination at the electrolyte boundary is very great.
Orig. art. has: 7 figures.

Card  2/3

ACCESSION NR: AP4033404

ASSOCIATION: None

SUBMITTED: 14Jan63          DATE ACQ: 15May64          ENCL: 00

SUB CODE: GC, GP          NR REF SOV: 003          OTHER: 002

Card 3/3

YEFIMOV, Yu.A.; YERUSALIMCHIK, I.G.; GORGORAKI, Ye.I.

Photoelectric potential of a germanium electrode as dependent
on the composition and concentration of electrolytes. Zhur.
fiz. khim. 38 no.5:1271-1273 My '64.                    (MIRA 18:1)

1. Submitted Jan. 14, 1963.

YEFIMOV, Ye.A.; YERUSALIMCHIK, I.G.; SOKOLOVA, G.P.  (Moskva)

Electrochemical behavior of the silicon electrode in solutions
of oxidation agents.  Zhur. fiz. khim. 38 no.9:2172-2175  S '64.

(MIRA 17:12)

YEFIMOV, Ye.A.; YERUSALIMCHIK, I.G. (Moscow)

Reduction of organic compounds on the germanium cathode. Zhur.
fiz. khim. 38 no.12:2868-2874 D '64.

(MIRA 18:2)

YEFIMOV, Ye.A.; YERUSALIMCHIK, I.G.

Electrochemical processes on an arsenic electrode. Elektro-
khimiia 1 no.9:1133-1137 S '65.                    (MIRA 18:10)

YERUSALIMCHIK, Kh.I., prof., doktor med.nauk

Involvement of the nervous system in nonpenetrating wounds of the
heart and pericardium. Voen.-med.zhur.  no.9:26-29 S '59.
(MIRA 13:1)

(HEART, wds. & inj.)
(NERVOUS SYSTEM, pathol.)

YERUSALIMCHIK, Kh.I.     (Moskva)

Disturbance of cerebral circulation due to infarction of the
myocardium (cerebrocardiac syndrome). Kh.I.Erusalimchik.
Kaz. med. zhur. no.1:16-20     Ja-F'61                (MIRA 16:11)

YERUSALIMCHIK, Kh.G., prof.

Difficulties in the diagnosis of compression of the spinal cord
and its roots in tuberculous spondylitis; clinical and anatomical
parallels. Sov.med. 23 no.6:55-62 Je '59.     (MIRA 12:9)

1. Iz kliniki nervykh bolezney (dir. - prof.I.N.Filimonov) II
Moskovskogo meditsinskogo instituta imeni N.I.Pirogova.
               (TUBERCULOSIS, SPINAL compl.)
               (SPINAL CORD dis.)

YERUSALIMOV, M. Ye.

231726

USSR/Electricity - Insulators .
                    X Ray Tests

Oct 52

"A New Method for Prophylactic Tests of Equip-
ment Insulators," Docent I. K. Fedchenko, Cand
Tech Sci, M. Ye. Iyerusalimov

"Elektrichestvo" No 10, pp 45-49

Discusses a method for X-ray tests of mastic-
filled equipment insulators which was developed
in the High-Voltage lab, Kiev Polytech Inst. Es-
tablishes the optimum conditions for penetration
of the complex structure porcelain-mastic-hetinax

/The latter is a laminated plastic made from
paper and synthetic bakelite resin/. Submitted
22 Nov 51.

231726

231726

IERUSHLIMOV, M.Ye.

IERUSALIMOV, M. Ye.; FEDCHENKO, I. K.

Electric Lines

Controlling the condition of high voltage lead-ins, Elek. sta. 24, No. 1, 1953.

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

IERUSALIMOV, M. Ye.

| | | |
|---|---|---|
| Subject | : | USSR/Electricity |

AID P - 2424

Card 1/1    Pub. 26 - 23/33

Authors   : Ierusalimov, M. E., Kand. Tech. Sci., and Fedchenko, I.K., Kand. Tech. Sci.

Title     : On co-ordination of transmission line insulation

Periodical : Elek sta  5,  54-55,  My 1955

Abstract  : The authors criticize M. M. Nekrasov's article appearing in the No 12, 1953 issue of this journal on co-ordination of insulation of transmission lines. They maintain that Nekrasov's suggestions if applied would aggravate the situation. The article is accompanied by an answer from Nekrasov.

Institution: None

Submitted  : No date

*Iyerusalimov, M. Ya.*

FEDCHENKO, I.K., doktor tekhnicheskikh nauk, professor; IYERUSALIMOV, M.Ya., kandidat tekhnicheskikh nauk, dotsent; ANDRIYASHEV, K.Ya., inzhener; MARKEVICH, V.P., inzhener.

X ray examination of high-voltage insulators. Elektrichestvo no.8: 78-79 Ag '56.                                                    (MLRA 9:10)

1.Kiyevskiy ordena Lenina politekhnicheskiy institut (for Fedchenko, Iyerusalimov. 2.Kiyevenergo (for Andriyashev, Markevich).
(Electric insulators and insulation) (X rays--Industrial applications)

8(3)

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 3,
pp 12-13 (USSR)

AUTHOR: Fedchenko, I. K., and Iyerusalimov, M. Ye.

TITLE: Investigation Into the Cause of Deterioration of High-Voltage Porcelain
Insulators on the Oil Circuit Breakers (Issledovaniye prichin razrusheniya
farforovykh izolyatorov vysokogo napryazheniya na maslyanykh vyklyuchatelyakh)

PERIODICAL: Izv. Kiyevsk. politekhn. in-ta, 1957, Vol 22, pp 380-393

ABSTRACT: At Kiyevenergo (Kiyev Power System) substations, cracks in bushing
porcelain insulators of VMD-35 oil circuit breakers were detected. The
cracks started at the support flange and spread upward over the porcelain. By
using the x-ray flaw-detection method, it was found that the mortar used for
fastening the porcelain penetrated inside the bushing and filled a part of the
hollow space between the "getinaks" core and the porcelain wall. The cement
belt extended over the flange by 2-12 cm; in some bushing insulators, the

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8(3)                                                SOV/112-59-3-4366

Investigation Into the Cause of Deterioration of High-Voltage Porcelain Insulators . . .

cement layer reached the level of the first insulator rib. The cement belt
inside the insulator crowded out the insulating compound and caused cracking
of the porcelain because the temperature coefficient of expansion for cement
is considerably higher than that for porcelain. Computations have shown that
with the maximum permissible temperature $+80^\circ C$ of the current-carrying tube
and the temperature $+35^\circ C$ of the ambient air, the tensile stress on the internal
surface of the porcelain may go as high as $234 \ kG/cm^2$, which considerably
exceeds the permissible value. Bushing tests on other oil circuit breakers
made by conventional methods (measurement of $tg\delta$, high-voltage test) did not
detect the cement-belt faulty insulators. Roentgenoscopy of 32 insulators
helped to detect 20 faulty insulators with cement between the porcelain bushing
and the "getinaks" insulation. Insulator roentgenoscopy was made by means of
a portable x-ray outfit in a housing $70 \times 30 \times 30$ cm, weighing 40 kg. The
insulator roentgenoscopy was performed with a voltage 60 kv on the x-ray tube.


Card 2/3

8(3)

SOV/112-59-3-4366

Investigation Into the Cause of Deterioration of High-Voltage Porcelain Insulators . . .

the maximum tube current 5 ma, at a focal length of 30 cm, and with an exposition of 3 minutes. The x-ray-outfit transformer was supplied from a 220 v line. The roentgenoscopy of 6 bushings of one circuit breaker took less than one hour. Bibliography: 8 items.

N.V.N.

Card 3/3

IYERUSALIMOV, M.Ye.; RYTSLIN, A.M.; MORGIN, P.I.

Radiomateriology of high-voltage insulation used in power systems.
Izv. KPI 22:394-396 '57.                                        (MIRA 11:3)
          (Electric insulators and insulation--Testing)
                    (Radiology, Industrial)

IYERUSALIMOV, M.Ye.

Shifting electric power-transmission lines of 10-110 kv.
on wooden supports to an increased voltage rating. Izv. KPI
26:441-453 '57.                                        (MIRA 11:6)

1.Kafedra tekhniki vysokikh napryazheniy Kiyevskogo politekhni-
cheskogo instituta.
                        .    (Electric lines)

FEDCHENKO, I.K., doktor tekhn. nauk prof.; IYERUSALIMOV, M.Ye., kand. tekhn. nauk dots.

Characteristics of the electric strength of large spark gaps at constant high voltage. Izv. vys. ucheb. zav.; energ. 2 no.7: 33-40 Jl '59.                                                          (MIRA 13:1)

1.Kiyevskiy ordena Lenina politekhnicheskiy institut.
        (Electric spark)

IYERUSALIMOV, M.Ye., kand. tekhn. nauk

Improvement of the checking operation of line suspension
insulators before their installation. Energ. i elektrotekh.
prom. no.2:48-50  Ap-Je '63.                    (MIRA 16:7)

1. Kiyevskiy politekhnicheskiy institut.
                (Electric lines—Overhead)

LITVINOV, L.N., kand.tekhn.nauk; SOLOV'YEV, A.I., inzh.; IERUSALIMOV, Ye.P.,
    inzh.

    Driving piles without a pile driver using the UR-1250 diesel
    hammer.  Transp. stroi. 13 no.2:17-18  F '63.   (MIRA 16:3)
                    (Piling (Civil engineering))

PONOMARENKO, A.V., ispolnyayushchiy obyazannosti dotsenta; VINOGRADOV, P.V.; starshiy nauchnyy sotrudnik; MIKHAYLOV, K.G., agronom-entomolog; IYERUSALIMSKAYA, K.P., studentka

Controlling soil pests in checkrowed corn fields. Zashch. rast. ot vred. 1 bol. 5 no.4:24-27 Ap '60.                (MIRA 13:9)

1. Rostovskiy universitet (for Ponomarenko, Iyerusalimskaya).
2. Zernogradskaya selektsionnaya stantsiya (for Vinogradov).
3. Sal'skiy nablyudatel'nyy punkt (for Mikhaylov).
        (Corn (Maize))—Diseases and pests)

BEZRUK, V.M.; KOTYLEV, Yu.L.; GROT, A.I.; ZNAMENSKIY, A.I.; IERUSALIMSKAYA, M.F.; GERBURT-GEYBOVICH, A.V., redaktor; KOVALIKHINA, N.F., tekhnicheskiy redaktor

[Building roads on saline soils and shifting sands] Stroitel'stvo dorog na zasolennykh gruntakh i podvizhnykh peskakh. Moskva, Avtotransizdat, 1953. 202 p.                                              (MLRA 7:8)

1. Moscow. Dorozhnyy nauchno-issledovatel'skiy institut.
         (Road construction)

YERUSALIMSKAYA, M. F.

USSR/Agriculture - Soil testing instruments

Card 1/1       Pub. 123 - 8/17

Authors    :  Yerusalimskaya, M. F.

Title      :  The simplest salt measuring device

Periodical :  Vest. AN Kaz. SSR, 11, 61-66, Nov 1954

Abstract   :  A simple device for measuring the salinity of soil quickly (5-6
              minutes) is described.  The device operates on the electrolysis
              principle.  Three USSR references (1932-1953).  Graphs; table;
              illustration.

Institution :  .....

Presented by :  Active Member of the Acad. of Sc. of the Kaz. SSR M. I. Goryaev

YERUSALIMSKAYA, M.F., inzhener

Quality of soil packing in earth embankments.  Avt.dor.18 no.5:
11-12 S'55.                                          (MLRA 9:1)
                    (Embankments)

YERUSALIMSKAYA - M. F.

IYERUSALIMSKAYA, M.F.

Effect of the degree of salinity on the hydrating capacity of soils. Izv.AN Kazakh.SSSR.Ser.gor.dela, met., stroi. i stroimat. no.10:81-90 '56.                                                              (MIRA 10:1)
        (Alkali lands)  (Hydration)  (Kazakhstan--Road construction)

KHARCHENKO, V.A.; IYERUSALIMSKAYA, M.F.

Northern Kazakhstan soils as a road building material. Izv. AN Kazakh. SSR. Ser. gor. dela, met., stroi. i stroimat. no.3:114-136 '57.                                                       (MIRA 10:11)
(Kazakhstan--Solonets soils)   (Road construction)

IYERUSALIMSKAYA, M.F.

Soil-cement road beds to be constructed in northern Kazakhstan regions. Trudy Inst. stroi. i stroimat. AN Kazakh. SSR 2:72-77 '59.                                                              (MIRA 12:10)
(Kazakhstan--Roads, Soil-cement)

IYERUSALIMSKAYA, M.F.

Road construction in Kazakhstan.  Avt. dor. 24  no.7:7-8 Jl '61.
(MIRA 14:7)

(Kazakhstan--Road construction)

YERUSALIMSKAYA, S.M.

Method of counting thrombocytes. Vrach. delo no.9:132-133
(MIRA 16:10)
S:63.

1. Gorodskaya klinicheskaya bol'nitsa Sovetskogo rayona g.
Kiyeva.          (BLOOD PLATELETS)

Permeability a production and gas formation by yeasts in liquid cultures ... make. Clinical Hosp ... Yeast proliferation ... between ... bacteria (1 to ... of the cells divide ... of the cells divide ... mation also ... with peaks when new ... are most numerous but with a slight decline just before ... rising ... Yeast strain XII has a rest stage of ... appear ... features and approx 80 ... in agar ... plant cultures

Julian F. Smith

YERUSALIMSKIY, A.L.

Etiology and pathogenesis of malignant tumors (hypothesis of
"local crisis of reproduction").  Vrach. delo no.2:101-104 F '61.
(MIRA 14:3)

(CANCER)

YERUSALIMSKIY, A.L. [deceased]; KAZ'MIN, S.D.

   Effect of some antitumoral preparations on the kinetics of
   chain reactions. Ukr.khim.zhur. 31 no.5:521-524  '65.
                                                (MIRA 18:12)
   1. Submitted October 22, 1964.

YERUSALIMSKIY, A. M.

Motorcycles. Leningrad, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1945.
295 p. (55-16231)

TL440.I3

YERUSALIMSKIY, A.M.; IVANOV, A.A., inzhener, otvetstvennyy redaktor;
POLYAKOV, V.S., kandidat tekhnicheskikh nauk, glavnyy redaktor;
TISHKOVA, M.V., tekhnicheskiy redaktor

[Theory, construction and calculations for motorcycles] Teoriia,
konstruktsiia i raschet mototsikla. Izd. 2-e, ispr. i dop. Moskva,
Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1947. 414 p.
        (Motorcycle industry)                        (MLRA 8:2)

YERUSALIMSKII, A. M.

Graficheskaia gramota rabochego-izobretatelia.  Leningrad, Mashgiz, 1950.
63 p. diagrs.

Graphic record of a worker and inventor.

DLC:  T339.I3

SO:  Manufacturing and Mechanical Engineering in the Soviet Union, Library
of Congress, 1953.

ARANOVSKIY, M.G.; ORLENKO, N.I.; SHTUKIS, L.S.; IYERUSALIMSKIY, A.M., dotsent,
    redaktor.

[Drafting in machine construction]  Chertezhnoe khoziaistvo v mashinostroenii.
Leningrad, Nauchno-tekhn. izd-vo mashinostroit. lit-ry [Leningradskoe otd-nie]
1953.  103 p.                                                    (MLRA 6:10)
             (Machinery--Drawing)  (Drawing-room practice)

YERUSALIMSKIY, A.M.; TSVETKOV, A.T., redaktor; GAVRILOV, S.G., tekhniche-
skiy redaktor

[Descriptive geometry] Nachertatel'naia geometriia. Moskva, Gos.
izd-vo tekhniko-teoret. lit-ry, 1954. 304 p.          (MLRA 8:4)
        (Geometry, Descriptive)

BYERUSALIMSKIY, A.M.

FEDORENKO, Viktor Alekseyevich; SHOSHIN, Aleksandr Ivanovich;IYERUSALIMSKIY,
A.M., professor, redaktor; GOFMAN, Ye.I., redaktor izdatel'stva;
SOKOLOVA, L.V., tekhnicheskiy redaktor

[Machinery drawing handbook] Spravochnik po mashinostroitel'nomu
chercheniiu.  Pod red.  A.M.Ierusalimskogo. Izd. 4-oe, ispr. i dop.
Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit.  lit-ry, 1956.
208 p.                                                      (MLRA 10:4)
          (Machinery--Drawing)

VYSOTSKAYA,N.N.; IERUSALIMSKIY,A.M.; NEVEL'SON,R.A.; FEDORENKO,V.A.;
GOFMAN,Ye.K., redaktor; PUGACHEV,A.A., inzhener, retsenzent;
POL'SKAYA,R.G., tekhnicheskiy redaktor

[Technical projections for articles made of sheet metal] Tekhni-
cheskie razvertki izdelii iz listovogo materiala. Pod obshchei
red. A.M.Ierusalimskogo. Moskva, Gos.nauchno-tekhn.izd-vo
mashinostroitel'noi lit-ry, 1955. 230 p.                (MLRA 9:1)
                        (Sheet-metal work)

IYERUSALIMSKIY, A.P.

Information on a conference in Novosibirsk on the control of diseases with a natural focus.  Zhur. mikrobiol. epid. i immun. 32 no.5:157-158 My '61.                                    (MIRA 14:6)
                    (COMMUNICABLE DISEASES—CONGRESSES)

YERUSALIMSKIY, A.S., doktor ist. nauk, otv. red.; AYZIN, B.A.,
kand. ist. nauk, red.; GALKIN, I.S., doktor ist. nauk, red.;
GOROSHKOVA, G.N., kand. ist. nauk, red.; SMIRIN, M.M., doktor
ist. nauk, red.; TARTAKOVSKIY, B.G., red. izd-va; KOVICHKOVA,
N.D., tekhn. red.

[German labor movement in the modern period]Germanskoe rabo-
chee dvizhenie v novoe vremia; sbornik statei i materialov.
Moskva, Izd-vo Akad. nauk SSSR, 1962.  405 p.    (MIRA 15:10)

1. Akademiya nauk SSSR. Institut istorii.
          (Germany—Labor and laboring classes)

IYERUSALIMSKIY, B.

Machine for over-all mechanization of housing construction.
NTO 2 no.9:28-29 S '60.
(MIRA 13:9)

1. Zamestitel' nachal'nika Spetsial'nogo konstruktorsko-tekhni-
cheskogo byuro; chlen soveta nauchno-tekhnicheskogo obshchestva
zavoda No.5 Glavtonnel'metrostroya Ministerstva transportnogo
stroitel'stva.
(Building machinery)

YERUSALIMSKIY, B. G., SPIVAK, P. Ye.

"Measuring the Neutron Mulitplication Factor for Thermal Fission of Uranium and Plutonium," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

... of scintillation counters in radiometric apparatus
for the oil industry.   B. G. Brandschtedt and D. F. Hey-
...   ...   ...   ... R. ... Panchini ... ...
... Energy. Semen Du  ... ... 1955. 181-93(Pub.
1956)(Engl. translation).—See C.A. 50, 650f.   B. M. R.
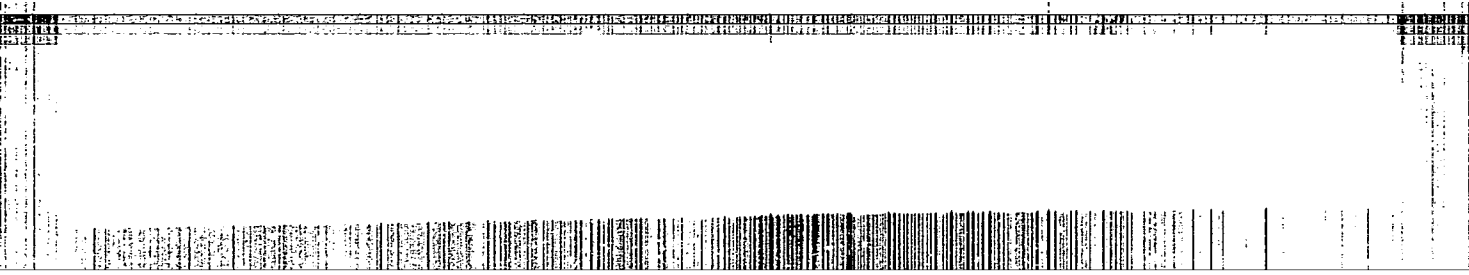
*YeRUSAlimsKiY, B. L.*

USSR/Chemistry - Reaction processes

Card 1/1     Pub. 151 - 14/37

Authors    : Dolgoplosk, B. A.; Yerusalimskiy, B. L.; Krol', V. A.; and Romanov, L. M.

Title      : Reaction of free radical in solutions.  Part 2.- Relative activity of free radicals during reaction with isopropyl benzene, cyclohexene and polymers

Periodical : Zhur. ob. khim. 24/10, 1775-1782, Oct 1954

Abstract   : Data regarding the relative activity of numerous free radicals, which are distinguished by their entirely different reactivity characteristics, were obtained by studying the products of thermal decomposition of diazoamino compounds in solution. A series of free radical activities was established in the reaction of separation of the H-atom from various compounds. The reason why allyl, crotyl, benzyl and tertiary-butyl free radicals do not react with isopropyl benzene, is discussed. The effect of low-active radicals (allyl, benzyl and anil) on the structure-formation of natural rubber, is explained. Twelve references: 4-USA; 5-German: 2-USSR and 1-English (1895-1953). Tables.

Institution : Acad. of Sc. USSR, All-Union Scientific Research Institute of Synthetic Rubber and Institute of High Molecular Compounds

Submitted  : March 2, 1954

YERUSALIMSKIY, B. W.

/The inhibition mechanism of radical chain reactions.

YER... SADIMIRAY B. L.

Reactivity of free radicals and the role of the polar factor. B. A. Dolgoplosk, B. L. Erussalimskii, L. A. Kaul, and L. M. Romanov. *Voprosy Khim. Kinetiki, Katalizai Reaktsionnoi Sposobnosti, Akad. Nauk S. S. S. R., Otdel. Khim. Nauk* 1955, 510-20.— The yields of BH and RR in radical reactions of RN:NNHPh in *tert*-PrPh or cyclohexene indicate the order of descending radical reactivity at Me, Et, $C_6H_5$, Et, Pr, Bu, $Me_3CCN$, iso-Pr, *tert*-Bu, allyl, $MeCH$-$CHCH_3$, $PhCH_2$, and $Me_3C$. A similar series is obtained in the yield of final products in reactions of these radicals with benzene solns. of rubber, or in thermal treatment of rubber in vulcanization. The following yields of tridimensional vulcanizate were obtained with: diphenyltriazene 70-90%; diaminobenzene 65-85%; methylphenyltriazene 13-44%; isopropylbenzene hydroperoxide 18-24%; $Et_2O_2$ 11-60%. Benzylphenyltriazene, allylphenyltriazene, and butylphenyltriazene gave 0%.        G. M. Kosolapoff

YERUSALIMSKIY, B. L.

... ... ... ... in solution.  Polimerizatsiya do-
... ... ... ... ether    M. Romanov, B. L.
Doklad... Akad Nauk
S.S.S.R   105.   (1955).   C.A. 49. 12 .
The reaction of C—C bond rupture was studied with the
free-radical interaction with polyisobutylene as an example.
For the source of free radicals were used methyl-, ethyl-,
propyl-, isopropyl-, and tert-butyltriazenes and the dinitrile of
azobutyric acid, which decompose by heating with the
formation of the corresponding free radicals.  During the
reaction the starting viscosity of polyisobutylene solution
was decreased by free radicals in the following order: Me >
Et > Pr > tert-Bu.
                                      W. M. Sternberg

YERUSALIMSKIY, B.L., DOLGOPLASK, B. A., MILOVSKAYA, E. B., and KOVURENKO, A. P.

"Free radicals and unsaturated compounds in polymerization," 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

491

AUTHORS:      Yerusalimskiy, B. L.; Dolgoplosk, B. A.; and Kavunenko, A. P.

TITLE:        Reactions of Free Radicals in Solutions.  Part 9. Dimethyldiphenyltetrazene and tetramethyltetrazene as Sources of Free Radicals with Reaction Center on a Nitrogen Atom (Reaktsii svobodnykh radikalov v rastvorakh. IX. Dimetildifeniltetrazen i tetrametiltetrazen kak istochniki svobodnykh radikalov s reaktsionnym tsentrom na atome azota)

PERIODICAL:   Zhurnal Obshchey Khimii, 1957, Vol. 27, No. 1, pp. 267-270 (U.S.S.R.)

ABSTRACT:     This report presents for the first time data obtained during the study of free radicals with the reaction center on a nitrogen atom. It was established that RNR type radicals are highly active in reactions leading to the separation of the H-atom from the carbon molecule, additional reactions to the vinyl double bond and are capable of exciting the polymerization process.  Using dimethyldiphenyltetrazene as an example, the authors established the monomolecular nature of tetrazene decomposition during heating in a solution.  The activation energy of this reaction was calculated from kinetic data by the Arrhenius equation and fixed at 33 kcal/mol.  The ability of free radicals with a reaction center

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Reactions of Free Radicals in Solutions. Part 9

on a nitrogen atom to excite the polymerization process was
verified on a styrene-dimethyldiphenyltetrazene system (See Fig.2).
The ability of alkylnitrous radicals to react with saturated and
unsaturated hydrocarbons was determined by studying the products
of thermal decomposition of tetramethyltetrazene in isopropyl-
benzene and in alpha-methylstyrene. Tetramethyltetrazene appears
to be of high thermal stability; at $130^\circ$ it decomposes in the
solution at a slow rate. The constant of the decomposition rate
at $145^\circ$ in isopropylbenzene at a 0.7 mol% concentration is 0.56·
$10^{-4}$ sec$^{-1}$. The complete absence of dimethylamine in the products
of tetramethyltetrazene decomposition in alpha-methylstyrene indi-
cates that the free dimethylnitrous radicals do not become dis-
proportionated.
One table, 2 graphs. There are seven references, of which 1 is
Slavic.

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Reactions of Free Radicals in Solutions. Part 9      492

ASSOCIATION:     Academy of Sciences USSR, Institute of High Molecular Compounds
                 (Institut Vysokomolekulyarnykh Soyedineniy Akademii Nauk SSSR)

PRESENTED BY:

SUBMITTED:       February 17, 1956

AVAILABLE:

Card 3/3

*YERUSALIMSKIY, B.L.*

AUTHORS          Dolgoplosk, B.A.   Romanov L.M.,                    20-4-27/60
                 Yerusalimskiy, B.L.   and Bogomol'nyy, V.Ya.

TITLE            The Use of Catalysts based on Magnesium Halogen Alkyls
                 and Titanium Tetrachloride in the Production of Amorphous
                 and Crystalline Polymers from α-Olefins and Dienes
                 (Katalizatory na osnove magniygalogenalkilov i chetyrekh-
                 khloristogo titana dlya sinteza amorfnykh i kristalliches-
                 kikh polimerov iz α-olefinov i dienov.)

ABSTRACT         The production of polymers from aliphatic compounds of the
                 ethylene series on the basis of polymerization by free
                 radicals is only possible for the first representative
                 of this series, namely ethylene. The interaction of the
                 free radicals with the ethylene homologues leads to the
                 formation of low-molecular products due to the rupture
                 reactions in the first stages of the process. Ziegler
                 and his collaborators used the reaction between organo-
                 aluminum compounds and titanium tetrachloride for
                 initiating the ethylene polymerization.  Further in-
                 vestigations in this field furnished the possibilities
CARD 1/ 4        of initiating the olefin polymerization under formation

20-4-27/60

The Use of Catalysts based on Magnesium Halogen Alkyls and Titanium
Tetrachloride in the Production of Amorphous and Crystalline Polymers
from α-Olefins and Dienes

seide. The thus obtained polyethylene possesses $/\eta/ = 2{,}55$
melting point 130 - 138°C, ultimate strength 335 kg/cm²
and relative extension 730 %. These indices are analogous
to those of polyethylene which is obtained by means of
the ordinary Ziegler catalyst. Of great interest are data
which were obtained by the authors from the polymerization
of propylene. It was proved by the authors that on this
occasion in the presence of magnesium chloroethyl and
tetrachlorotitanium about the same quantities of an
amorphous and a crystalline (isotactic) polymer-form
develop. At the same time a fraction was isolated which
is insoluble in boiling hexane and whose crystallizability
was spectroscopically and X-ray structurally proved. In
the case of the polymerization of isoprene various polymer
forms were also isolated. The simultaneous production of
cis-1,4-polyisoprene and trans-1,4-polyisoprene or of
the amorphous and the isotactic polyisoprene directly

CARD 3/4          prove that in the system coexist various catalytic

YERUSALIMSKIY B.L

AUTHORS:    Dolgoplosk, B. A., Ierusalinskiy, B. L.,    62-58-4-13/32
Tinyakova, Ye. I.

TITLE:    Generation of Free Radicals in Solutions and Their
Reactions in Model Systems (Generirovaniye svobodnykh
radikalov v rastvorakh i ikh reaktsii v model'nykh
sistemakh).    Report    of the Conference on Chemical
Sciences of the AS USSR on October 3o, 1957 (Doklad
na sessii otdeleniya khimicheskih nauk Akademii nauk
SSSR, 3o oktyabrya 1957)

PERIODICAL:    Izvestiya Akademii Nauk SSSR,Otdeleniye Khimicheskikh
Nauk, 1958, Nr 4, pp. 469-481 (USSR)

ABSTRACT:    The present paper gives the final results of the work
of the authors with - in the field of oxidation - and
reduction initiation of radical processes and the in=
vestigation of a number of reactions of free radicals.
Corresponding to their action the oxidation and reduc=
tion systems are given in 3 groups (Ref. 1): To the
first kind belong systems in which the reaction takes
Card 1/3    place between the reducing agent and the oxidizing agent

Generation of Free Radicals in Solutions and Their Reactions in
Model Systems.    **Report**    of the Conference on Chemical Sciences
of the AS USSR on October 30, 1957

by forming a radical (see formulae 1,2,3). The detailed
description of the first type (system with peroxides)
follows. Also systems in which also metal salts with
varying valence take part (as oxidizing agents) also
belong here. The systems of the second kind are of
interest in theoretical and practical respects (second
type). Among them is also a system which acts with hy=
droquinone taking part. This system was utilized indu=
strially (initiation of polymerizations in emulsions).
There is still a number of other systems in which the
reactions take part between the oxidizing agent and the
reducing agent by formation of 2 radicals. Those systems
belong to the third kind which have a participation of
the diazoamino compounds. 2. Systems with participation
of ethylenediamine and polyethylenepolyamine. 3. Systems
with participation of sulfur and oxygen (as oxidizing
agents). After classification of the systems according
to their mechanisms the report deals with the different
reactions of alkyl- and heteroradicals with various mo=

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62-58-4-13/32

Generation of Free Radicals in Solutions and Their Reactions in
Model Systems.    **Report**    of the Conference on Chemical Sciences
of the AS USSR on October 30, 1957

nomers and polymers on which occasion a break of the
bonds C-H, C=C, C - C and S - S is formed.
Finally the part played by the cell in the heat stabi=
lity of polymers was investigated.
There are 2 tables and 44 references, 40 of which are
Soviet.

ASSOCIATION:    Institut vysokomolekulyarnykh soyedineniy Akademii
nauk SSSR (Institute for High-Molecular Compounds, AS
USSR)

SUBMITTED:    December 23, 1957

AVAILABLE:    Library of Congress

1. Chemical conference—Report . 2. Free radicals—Solu-
tions—Reactions   3. Free radicals—Solutions—Generation

Card 3/3

AUTHORS:    Milovskaya, Ye. B., Yerusalimskiy, B.L.,    SOV/20-120-2-31/63
            Dolgoplosk, B. A.

TITLE:      The Reactions of Free Radicals in Solutions (Reaktsii
            svobodnykh radikalov v rastvorakh) The Interaction of Free
            Radicals With Internal and External Double Bonds (Vzaimodeyst-
            viye svobodnykh radikalov s vnutrennimi i vneshnimi dvoynymi
            svyazyami)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 2, pp. 336-338
            (USSR)

ABSTRACT:   This paper discusses data which characterize the relative ac-
            tivity of the internal and external double bonds in the re-
            action of interaction with free radicals. The first part of
            this paper discusses the interaction of the free methyl radical
            with hydrocarbons and polymers. The intensity of this inter-
            action was estimated indirectly by comparing the decrease of
            methane (produced according to the reaction $R. + LH \longrightarrow RH + L.$),
            with the yield of $CH_4$ when the process takes place in a sat-
            urated hydrocarbon. The internal double bond is by far less
            capable for the addition of free radicals than a double bond
            of the vinyl type. The investigation of the interaction of free
            methyl radicals with polymers led to the same conclusion. In
            swollen polystyrene containing 10% isopropylbenzene the methane

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The Reactions of Free Radicals in Solutions.                 SOV/20-120-2-31/63
The Interaction of Free Radicals With Internal and External Double Bonds

yield amounts to only 9% of the theoretical value, whereas the
yield in pure isopropylbenzene amounts to 49%. Transition to
very viscous media leads to a decrease of the rôle of effective
radical reactions. The second part of this paper deals with the
interaction of the free dimethylcyanomethyl radical with 2-
butene. The addition of this radical to an internal double bond
is realized only to a very insignificant extent. Under the
conditions of the experiments discussed in this paper these
radicals have a tendency to recombine. Finally the experimental
part is discussed. The authors describe the decomposition of
methyl-phenyltriazene in several media and also the products
of the decomposition of azoisobutyric acid in 2-butene. There
are 2 tables and 4 references, 2 of which are Soviet.

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

PRESENTED:     December 24, 1957, by B. A. Kazanskiy, Member, Academy of
               Sciences, USSR

Card 2/3

The Reactions of Free Radicals in Solution.                SOV/20-120-2-31/63
The Interaction of Free Radicals With Internal and External Double Bonds

SUBMITTED:      June 20, 1957

1. Free radicals—Chemical reactions    2. Methyl radicals—Chemical
reactions    3. Polymers—Chemical reactions    4. Hydrocarbons
—Chemical reactions

Card 3/3

SOV/2o-12c-4-26/67

AUTHORS:      Dolgoplosk, B. A., Yerusalimskiy, B. L., Milovskaya, Ye. B.,
              Belonovskaya, G. P.

TITLE:        The Cell Effect and the Thermal Stability of Polymers
              (Effekt kletki i termostabil'nost' polimerov)

PERIODICAL:   Doklady Akademii nauk SSSR, 1958, Vol. 12o, Nr 4, pp. 783-785
              (USSR)

ABSTRACT:     A great number of organic substances are known whose thermal
              stability is much weaker in the solution or melt than in
              the solid state. The  most typical examples are compounds
              with unstable bindings (peroxides, azo- and diazo-compounds)
              which begin to decompose only at their melting temperature,
              At the same time they decompose much quicker in solutions
              and at a much lower temperature (Table 1). According to the
              authors' opinion the following experimental results render
              it possible to relate the mentioned phenomenon to a rapid
              increase of the cell effect (= reaction of the primary re-
              combination of the free radicals) in viscous and solid media.
              As was proved already earlier the thermal decomposition of
              methyl-phenyl triazene in a  medium of hydrocarbons leads

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SOV/2o-12o-4-26/67

The Cell Effect and/the Thermal Stability of Polymers

to the formation of methane and methyl-aniline (Ref 5). It
is most probable that the latter forms as a result of
recombination of the radicals which are released at the moment
of decomposition in the "cell". The authors proved that in
the case of decomposition of methyl-phenyl triazene in systems
of hydrocarbon polymers the methane yield decreases with in-
creasing viscosity of the medium. At the same time it was
proved that the yield of the product of primary recombination,
namely of the methylaniline increases (Table 2). The above
mentioned data give evidence as to a considerable influence
of the viscosity of the medium on the efficiency of inter-
action in the cell. The results obtained render possible the
discussion of a possible influence of the state of aggrega-
tion on the thermal stability of those substances that contain
unstable bindings (Table 1) as well as of the polymers that
have a high fusing temperature. The difference in behavior
of such compounds in solid state and in solution (or melt)
may be explained by means of the particularly important part
played by the cell effect in solid state. Polyparaxylylene
decomposes only after having been melted (at $425^\circ$). In the
Card 2/4         solution this is the case already at $302^\circ$. These polymers

SOV/20-120-4-26/61

The Cell Effect and the Thermal Stability of Polymers

are apparently "overheated"; only after surpassing the temperature of vitrification they undergo a destructive de- composition when the viscosity of the system decreases con- siderably. Hence we may conclude that the thermal stability of polymers with a high melting temperature displays ab- rupt jumps in connection with the transition from solid state into an elastic one and from the elastic state into the solution. From the above mentioned it may be concluded that the task of increasing the thermal stability of carbon atom chain polymers in vitrified state consists above all in increasing their melting temperature. A high thermal stability of rubber-like polymers can apparently only be reached by the stability of the skeleton bindings of the main chain. There are 3 tables and 8 references, 2 of which are Soviet.

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

PRESENTED:  January 6, 1958, by V. A. Kargin, Member, Academy of Sciences, USSR

Card 3/4

The Cell Effect and the Thermal Stability of Polymers    SOV/2o-12o-4-26/67

SUBMITTED:    January 4, 1958

1. Polymers--Thermodynamic properties   2. Polymers--Decomposition
3. Polymers--Molecular structure   4. Free radical--Chemical effects

Card 4/4

YERUSALIMSKIY, B. L.

82044
S/062/60/000/02/08/012
B003/B066

5.3200

AUTHORS: Dolgoplosk, B. A., Yerusalimskiy, B. L., Kuren'gina, T. N., Tinyakova, Ye. I.

TITLE: Reactions of Free Radicals in Solutions. 15th Report. Destruction Mechanism of Polymers by Free Radicals

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 2, pp. 311 - 316

TEXT: The authors investigated the destruction of polyisobutylene dis- solved in ethyl benzene under the action of disulfides, benzoyl peroxide, isopropyl benzene-hydroperoxide, triazenes, dimethyl-diphenyl-tetrazene, iron- and cobalt naphthanate. The destructive effect of the individual agents may be seen from the diagrams in Figs. 1, 2, and 3. The following conclusions may be drawn from the investigations and pertinent papers by other authors: The destructive effect is most intense in such free radicals as are especially active in the reaction of H-separation. The destruction takes place in such a manner that first a H-atom is separated from the polymer chain and, secondly, the C-C bonds of the polymer radical

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Reactions of Free Radicals in Solutions.           S/062/60/000/02/08/012
15th Report. Destruction Mechanism of Polymers   B003/B066
by Free Radicals

thus formed are spontaneously freed. The authors mention a paper by
L. M. Romanov (Ref. 2). There are 3 figures and 14 references: 8 Soviet,
4 American and British, and 2 German.

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

SUBMITTED:   June 19, 1958

Card 2/2

VAN FO SUN [Wang-Fo-sung]; DOLGOPLOSK, B.A.; YERUSALIMSKIY, B.L.

Polymerization of isoprene induced by organomagnesium compounds.
Vysokom. soed. 2 no.4:541-545 Ap '60.          (MIRA 13:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.
          (Isoprene)               (Magnesium organic compounds)
                    (Polymerization)

S/062/60/000/03/04/007
B008/B006

AUTHORS:      Van Fo-sun, Dolgoplosk, B. A., Yerusalimskiy, B. L.

TITLE:        Reactions of Organo-metallic Compounds With Salts of
              Heavy Metals. 1. Interaction of Ethyl Magnesium Bromide
              With Halides of Titanium and Cobalt

PERIODICAL:   Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh
              nauk, 1960, No. 3, pp. 469-473

TEXT: An investigation of the interaction of ethyl magnesium bromide
with titanium trichloride and titanium tetrachloride in the presence of
acceptors for free radicals was carried out. As such, nitrogen oxide,
styrene, and α-methyl styrene were used. The experiments were carried
out in the apparatus schematically shown in Fig. 1. Data on the inter-
action of magnesium ethyl bromide and titanium tetrachloride at 20°C in
the presence of the above acceptors are given in Table 1. Data on the
interaction of ethyl magnesium bromide and titanium trichloride at
100°C in the presence of nitrogen oxide and α-methyl styrene are listed
in Table 2. Also, the interaction of ethyl magnesium bromide and cobalt

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Reactions of Organo-metallic Compounds With
Salts of Heavy Metals. 1. Interaction of
Ethyl Magnesium Bromide With Halides of
Titanium and Cobalt

S/062/60/000/03/04/007
B008/B006

chloride in the presence of the three above-mentioned acceptors in the
temperature range -20°C - 40°C was investigated (Table 3). The data
given in Tables 1 to 3 allow the assumption that the reaction of ethyl
magnesium bromide with titanium- and cobalt salts - at least at the
temperatures applied in the experiments - does not proceed via radical
stages. It was seen in the experiments that the total yields of ethane
and ethylene, and their proportion are not affected by the presence of
the above acceptors. The authors mention a paper by N. V. Kondyrev and
D. A. Fomina (Ref. 1), and one by Yu. V. Koryakin (Ref. 11). There are
1 figure , 3 tables, and 12 references, 4 of which are Soviet.

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

SUBMITTED:   July 14, 1958

Card 2/2

84511.

15.9201     2109, 2209, 1372

S/190/60/002/004/012/020
B004/B056

AUTHORS:     Van Fo-sun, Dolgoplosk, B. A., Yerusalimskiy, B. L.

TITLE:     Polymerization of Isoprene Under the Influence of
           Organomagnesium Compounds

PERIODICAL:     Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 4,
                pp. 541-545

TEXT:     The authors report on the polymerization of isoprene in cumene
carried out by means of ether-free butylmagnesium chloride, bromide,
iodide, dibutylmagnesium, and mixtures of butylmagnesium iodide and
dibutylmagnesium, as well as of phenylmagnesium chloride and diphenyl-
magnesium at 90°C and a concentration of the monomeric isoprene of
60 mole%. Results are given in Table 1: yield, 4 - 50%; duration of the
reaction, 20 - 40 hours; ratio between monomer and organomagnesium
compound, 1 : 0.007 - 1 : 0.044; vitrification temperature, -3 to -10°C;
intrinsic viscosity, 0.75 - 0.95; degree of unsaturation, 77 - 83%;
content of 3,4-bonds, 93 - 98% (determined by means of infrared

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Polymerization of Isoprene Under the
Influence of Organomagnesium Compounds

84511

S/190/60/002/004/012/020
B004/B056

spectroscopy by Ye. I. Pokrovskiy at the authors' institute). The
polyisoprene obtained in this way was perfectly soluble in benzene,
probably because of intramolecular cyclization of the polymer chain. It
mainly contained 3,4-bonds, so that the vitrification temperature is
considerably increased in comparison to 1,4-polyisoprene. The kind of the
halogen and radical of the organomagnesium compound did not affect the
structure of the polymer. Fig. 1 shows the infrared spectrum of a
polyisoprene sample. By adding complexing reagents, such as diethyl ether
or triethylamine, the polymerization is retarded with an increase in the
concentration of the reagents (Fig. 2, Table 2). Besides, a decrease in
3,4-bonds to 83 - 88% occurs (Table 3). In the experimental part, the
authors describe the synthesis of ether-free organomagnesium compounds in
cumene at 130 - 140°C, as well as in paraffin hydrocarbons in sealed
ampoules at 135°C. There are 2 figures, 3 tables, and 5 references:
1 Soviet, 1 US, 1 British, and 2 German.

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

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84511

Polymerization of Isoprene Under the
Influence of Organomagnesium Compounds

S/190/60/002/004/012/020
B004/B056

SUBMITTED:      December 18, 1959

X

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S/062/60/000/009/014/021
B023/B064

AUTHORS:       Yerusalimskiy, B. L., Kavunenko, A. P., and Dolgoplosk, B. A.

TITLE:         Reactions of the Free Radicals in Solutions. Communication
               17. Effect of the Viscosity of the Medium on the Primary
               Recombination of Free Radicals

PERIODICAL:    Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh
               nauk, 1960, No. 9, pp. 1672-1674

TEXT: The authors investigated in how far the methane- and methyl aniline
yields depend on the molecular weight and concentration of the polymer in
the case of thermal splitting of methyl-phenyl triazene in the cumene –
polystyrene system. As is shown by a previous paper of the authors (Ref.2),
in solutions with 60% polystyrene (molecular weight 5000 to 200,000), the
reaction leads to a reduction of the methane yield as compared to the data
obtained from the use of a pure solvent. The methyl aniline yield remains,
however, the same as that obtained in the absence of the polymer. Only in
the solution of polystyrene with a molecular weight of 600,000, and a
polymer concentration of 60%, the methyl aniline yield increases, while the

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Reactions of the Free Radicals in Solutions.     S/062/60/000/009/014/021
Communication 17. Effect of the Viscosity of     B023/B064
the Medium on the Primary Recombination of
Free Radicals

methane yield decreases considerably (Table 1). Consequently, the change
of yields in methane solutions, containing polystyrene with a molecular
weight of up to 200,000, cannot be considered as a result of the increase
in viscosity of the medium. This would have certainly led to a higher
yield of the product of methyl aniline primary recombination. The reduc-
tion of the yield is more likely to be due to the difference between the
relative activity of polystyrene and that of cumene than to hydrogen
donors. This is in agreement with published data, according to which the
H atoms in polystyrene are less mobile than in cumene (Ref. 3). The
authors proved that also in systems containing considerably lower poly-
styrene concentrations, the methane yield is reduced. The amount of the
yield depends, as is shown in Table 2, on the concentration only. The
molecular weight of the polymer has no effect upon the amount of the
yield. In systems with a high viscosity, the importance of the primary
recombination of free radicals increases. This becomes obvious by the
fact that the methyl aniline yield increases. while the methane yield
decreases at the same time. There are 2 tables and 5 references:

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