"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

SUTYAGINA, A.A.; GORBUNOVA, K.M.; GLAZUNOV, M.P.

Mechanism of chemical nickel plating reaction. Dokl. AN SSSR 147 no.5:1133-1136 D '62. (MIRA 16:2)

1. Institut fizicheskoy khimii AN SSSR. Predstavlemo akademikom V.I. Spitsynym.
(Nickel plating) (Reduction, Chemical)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

ACCESSION NR: AP4020056 S/0186/64/006/001/0035/0042

AUTHOR: Gal'man, A. D.; Mafod'yeva, M. P.; Kiseleva, Ye. D.; Glazunov, M. P.; Kodochigov, P. N.; Peretrukhin, V. F.

TITLE: Precipitation of Np sup 239 from irradiated uranium by ion exchange method

SOURCE: Radiokhimiya, v. 6, no. 1, 1964, 35-42

TOPIC TAGS: precipitation, Np sup 239, irradiated uranium, ion exchange method, uranium dioxide, gamma spectrum, beta spectrum, uranium

ABSTRACT: A method was developed for precipitating Np^{239} from uranium dioxide, by irradiating it with neutron flux, using a solution of the target in 8M nitric acid with hydrazine addition, sorption in the anion exchanger AB-17 and desorption of 0.1M HNO_3. After a single filtration through the column with AB-17, Np^{239} which is practically free from fragment activity is obtained. A high degree of refinement is confirmed by study of the γ and β spectra of precipitated Np^{239}. "The authors are very grateful to Yu. A. Zolotov from whom the Np^{239} was obtained." Orig. art. has: 6 figures.

Card 1/2

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

SPITSYN, V.I.; GLAZUNOV, M.P.; KODOCHIGOV, P.N.; IONOV, V.P.

Determination of sodium in metallic tungsten by the radioactivation method. Zhur.anal.khim. 18 no.10:1272-1273 O '63. (MIRA 16:12)

1. Institute of Physical Chemistry, Academy of Sciences, U.S.S.R., Moscow.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

SUTYAGINA, A.A.; GORBUNOVA, K.M.; GLAZUNOV, M.P.

Reaction mechanism of nickel reduction by hypophosphite studied with the aid of deuterium as tracer. Part 1: Solutions without organic additives. Zhur. fiz. khim. 37 no.9:2022-2026 S '63. (MIRA 16:12)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

SUTYAGINA, A.A.; GORBUNOVA, K.M.; GLAZUNOV, M.P.

Study of the mechanism of nickel reduction by hypophosphite with the use of deuterium as tracer. Part 2: Reduction of nickel in hypophosphite solutions with organic acid salts added. Zhur.fiz.khim. 37 no.10:2214-2219 O '63. (MIRA 17:2)

1. Institut fizicheskoy khimii AN SSSR.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

ACCESSION NR: AP4019504 S/0075/64/019/003/0293/0296

AUTHOR: Kodochigov, P. N.; Glazunov, M. P.

TITLE: Determining the individual radioisotopes in a mixture by beta-radiation

SOURCE: Zhurnal analiticheskoy khimii, v. 19, no. 3, 1964, 293-296

TOPIC TAGS: radioisotope, determination, analysis, qualitative analysis, quantitative analysis, beta spectrum, Fermi-Curie, energy distribution plot

ABSTRACT: A method is suggested which permits quantitative determination of the individual radioisotopes in a mixture without their chemical separation. The well known method for analysing gamma-spectra obtained on the scintillating spectrometer (T. S. Elleman, J. E. Howes, Jr., D. N. Sunderman. Internat. J. Appl. Radiation and Isotopes 12, 142 (1961)) is used. The beta-spectra of the mixture of the two radioelements X and Y and of X and Y individually, are obtained under the same conditions. Then the spectra are arbitrarily divided into two parts (fig. 1). The following relationship obtains:

$$M = A_x + A_y,$$
$$N = B_x + B_y$$

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

ACCESSION NR: AP4019504

$$\frac{B_x}{A_x} = f_x,$$

$$\frac{B_y}{A_y} = f_y,$$

where M and N are the total impulse count or area corresponding to sections I and II of the spectrum of the mixture. A_X, B_X and A_Y, B_Y are the total number of impulses of radioisotopes X and Y in sections I and II. The above equations are resolved:

$$A_x + B_x = \frac{f_x + 1}{f_y - f_x}(Mf_y - N),$$

$$A_y + B_y = \frac{f_y + 1}{f_x - f_y}(Mf_x - N)$$

$$\frac{A_x + B_x}{A_y + B_y} = \frac{f_x + 1}{f_y + 1} \cdot \frac{\frac{N}{M} - f_y}{f_x - \frac{N}{M}}.$$

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ACCESSION NR: AP4019504

Equations 2 and 3 express the impulse count of X and Y entering into the original mixture and equation 4 determines their relative count in the mixture. A graph is drawn (fig. 2), based on equation 4, from which the investigated mixture can be rapidly determined. Experimental data obtained by analysing mixtures of Zr^{95} and Nb^{95} show that the accuracy is relatively high, the maximum error was 5.3%. By combining the Fermi-Curie beta-energy distribution plot "Beta- i gamma-spektroskopiya" (Beta and gamma-spectroscopy). Pod red. K. Zirbana. Per. c angl. Fizmatgiz, M, 1959, str. 135-139; B. S. Dzhelepov, L. N. Zydryanova, Vliyaniye elektricheskogo polya atoma na beta-raspad. (Effect of electric field of the atom on the beta-decay) Izd-vo AN SSSR, M.--L., 1956 for identifying radioelements in a mixture of unknown composition with the present method for determining the relative content of known radioelements in a 2-component mixture, it is possible quantitatively to analyze mixtures of radioisotopes of unknown composition. Orig. art. has: 2 figures, 1 table and 4 equations.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of physical chemistry, AN SSSR)

Card 3/5

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

ACCESSION NR: AP4019304

SUBMITTED: 23May63 DATE ACQ: 31Mar64 ENCL: 01

SUB CODE: PH, NS NO REF SOV: 004 OTHER: 003

Card 4/5

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

USSR/Cultivated Plants - Grains. M-4

Abs Jour : Ref Zhur - Biol., No 9, 1958, 39232

Author : Glazunov, N.D.
Inst : -
Title : Valuable Varieties of Winter Wheat for the Altay.

Orig Pub : Selektsiya i semenovodstvo, 1957, No 4, 46.

Abstract : This is a brief description of the Lutescens 750 and Diamant varieties.

Card 1/1

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/020/63/148/002/005/037
B172/B102

AUTHOR: Glazunov, N. I.

TITLE: Tensor fields on an n-dimensional sphere

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 2, 1963, 264-267

TEXT: The paper gives a description of those tensor-field spaces on an n-dimensional sphere S_n in the Euclidean space E_{n+1} which are invariant and irreducible with respect to the full orthogonal group, and which have the property that every continuous tensor field on S_n can be uniformly approximated by a finite sum of fields of these spaces. In a point a of S_n a coordinate system is chosen whose (n+1)th axis is parallel to the external normal of S_n. If

$$T_{i_1,i_2,\ldots,i_k} \quad (i_j = 0,1,\ldots,n)$$

are the coordinates of a tensor in E_{n+1} with respect to this basis, and

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if $l \leq k$ is a non-negative integer, then

$$ {}_k\bar{T}_{\alpha_1,\alpha_2,\ldots,\alpha_l} = T_{\alpha_1,\alpha_2,\ldots,\alpha_l,\overbrace{0,\ldots,0}^{k-l}} $$

can be considered to be coordinates of a tensor on S_n at the point a. The tensor field ${}_k\bar{T}_{\alpha_1,\alpha_2,\ldots,\alpha_l}$, is said to be induced by the tensor $T_{i_1,i_2,\ldots,i_l}$. Law 1 holds: that every continuous tensor field on S_n can be uniformly approximated by a finite sum of induced tensor fields. The author defines admissible tensors as zero-trace Jung's tensors for which the sum of the lengths of the first two columns is less than or equal to n+1. By annulling all first-line indices fundamental tensors on S_n are obtained from admissible tensors in S_{n+1}. As a further development of law 1, law 2 holds: the number of fundamental tensor fields is complete in the sense that every continuous tensor field on S_n can be uniformly

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

approximated by a finite sum of fundamental tensors and their covariant products which, if necessary, may be multiplied sufficiently often with a metric tensor field.

PRESENTED: July 5, 1962, by I. G. Petrovskiy, Academician

SUBMITTED: July 4, 1962

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, N.I.

Tensor fields on compact uniform spaces representable by a spherical model. Dokl. AN SSSR 154 no.1:20-22 Ja'64. (MIRA 17:2)

1. Predstavleno akademikom I.G. Petrovskim.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, O.M.

Lysan gabbro-proxene-serpentinite complex in the western part of the Eastern Sayan Mountains. Geol. i geofiz. no.3:61-73 '61. (MIRA 14:5)

1. Politekhnicheskiy institut, Tomsk.
(Sayan Mountains--Rocks, Igneous)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

24.7700
~~24(2), 21(9)~~

67391

SOV/181-1-9-9/31

AUTHORS: Smirnov, L. S., Glazunov, P. A.

TITLE: The Spatial Distribution of Lattice Defects in Germanium Crystals Irradiated by Fast Electrons

PERIODICAL: Fizika tverdogo tela, 1959, Vol 1, Nr 9, pp 1376 - 1378 (USSR)

ABSTRACT: The aim of the work under review was to investigate the spatial distribution of the lattice defects due to electron irradiation by measuring the electrical conductivity in the direction of the electron beam incidence. Figure 1 shows a scheme of the experimental setup. The measurements of conductivity were made every 10 - 50 μ with a probe by the use of a PPTV potentiometer. The defect concentration was sufficiently small so that every change in conductivity was due to a change in the carrier concentration. n or p. n is proportional to the defects produced. The n distribution in the sample interior must therefore correspond to the distribution of the structural defects, if the properties of the defects do not depend on the electron energy. Surface influences can be eliminated by a corresponding choice of the sample dimensions. The dimension selected for p- and n-Ge was

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

6139

The Spatial Distribution of Lattice Defects in Germanium Crystals Irradiated by Fast Electrons SOV/181-4-9-9/31

1.0 × 3.0 × 5.0 mm (n: ρ_0 = 10 - 15 ohm.cm; p: 40 - 50 ohm.cm). Irradiation occurred at 25 - 30°C with monoenergetic electrons of 500 - 900 kev with a current density 0.6 μa/cm². Figure 2 shows the spatial distribution of the defects of a sample irradiated with 700-kev electrons. The shape of the distribution curves is very close to those calculated by Jurkov (Ref 2). Figure 3 shows the (linear) dependence of the depth of defect production on the energy of primary electrons. (All samples were irradiated along the crystallographic axis [111]) An extrapolation yields 380 ± 20 kev for the defect production energy limit. A quick regeneration of defects in the n-Ge samples was already observed at room temperature, which is in relation with the great density of dislocations in the crystal. This effect did not show in p-type germanium, as it exhibits a dislocation density which is by 2 orders of magnitude lower. Besides, the defect regeneration proceeds at the same rate, both in the interior and on the surface of the sample. Finally, the authors thank V. S. Vavilov for his interest and discussions, and L. G. Sharendo for his

Card 2/3

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

67391

The Spatial Distribution of Lattice Defects in Germanium Crystals Irradiated by Fast Electrons SOV/181-1-9-9/31

assistance in measurements. There are 3 figures and 2 Soviet references.

ASSOCIATION: Fizicheskiy institut AN SSSR im. P. N. Lebedeva Moskva (Physics Institute of the AS USSR imeni P. N. Lebedev, Moscow)

SUBMITTED: March 7, 1959

Card 3/3

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, P.D., starshiy inzh.; DANILENKO, N.M., starshiy inzh.; ZHUKOV, V.K., starshiy inzh.; ZUYEV, A.I., obshchiy red.; ZOTOVA, A.P., red.; TIKHONOVA, I.M., tekhn.red.

[Efficiency-improving suggestions from agricultural machinery operators; practices of machinery operators on collective farms and state farms and at repair and improvement stations] Ratsionalizatorskie predlozheniia mekhanizatorov sel'skogo khoziaistva; iz opyta raboty mekhanizatorov kolkhozov, sovkhozov, remontno-tekhnicheskikh i meliorativnykh stantsii Leningradskoi oblasti. Leningrad, Lenizdat, 1959. 119 p. (MIRA 13:3)

1. Leningradskoye oblastnoye upravleniye sel'skogo khozyaystva (for Glazunov, Danilenko, Zhukov). 2. Glavnyy inzhener Leningradskogo oblastnogo upravleniya sel'skogo khozyaystva (for Zuyev).
(Agricultural machinery)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, P.D.; DANILENKO, N.M.; ZOTOVA, A.P., red.; GRESNOVA, V.A., tekhn. red.

[Agricultural efficiency promoters; from work practices of machinery operators on collective and state farms of the divisions of the Section of Abricultural Machinery and land improvement stations in Leningrad Province]Ratsionalizatory sel'skogo khoziaistva; iz opyta raboty mekhanizatorov kolkhozov, sovkhozov, otdelenii "Sel'khoztekhnika" i meliorativnykh stantsii Leningradskoi oblasti. Leningrad, Lenizdat, 1962. 119 p. (MIRA 16:2)

1. Glavnyy inzhener Prigorodnogo territorial'nogo proizvodstvennogo sovkhozno-kolkhoznogo upravleniya Leningradskoy oblasti (for Glazunov). 2. Glavnyy inzhener upravleniya remonta Oblastnogo ob'edineniya "Sel'khoztekhnika" Leningradskoy oblasti (for Danilenko).
(MIRA 16:2)

(Leningrad Province--Agricultural machinery)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

ZUYEV, A.I.; GLAZUNOV, P.D.; DANILENKO, N.N.; KISELEV, I.N.;
STRELKOV, M.N.; IOFINOV, S.A., prof., red.;
CHAPSKIY, O.U., red.; BARANOVA, L.G., tekhn.red.;
FRIDMAN, Z.L., tekhn. red.

[Concise manual for the agricultural machinery operator]
Kratkii spravochnik mekhanizatora sel'skogo khoziaistva.
[By] A.I.Zuev i dr. Moskva, Sel'khozizdat, 1963. 583 p.
(MIRA 17:1)

(Agricultural machinery)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, [illegible]

PRIKHOTKO, A F

24(7) p 3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/5/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased), Reporent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabelkana, V.A., Doctor of Physical and Mathematical Sciences, Kormitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Miljanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Babushkin, A.A., B.A. Grozdev, and P. Ya. Glazunov. Spectrophotometric Equipment for the Continuous Absorption Analysis and Registration of Gas Concentration 360

Arkhangel'skaya, V.A., B.I. Vaynberg, and T.K. Ramunova Simple Method of Determining the Passing of Some Optical Materials in Schumann's Spectrum Region 363

Grudinkina, N.P. Spectrophotometric Determination of Water Purity 364

Ovechkin, G.V. Condensed Discharge Through a Capillary as a Powerful Source of Continuous Spectrum in Spectral Studies 365

Yakovlev, S. Ya. A Wedge-shaped Black Body as a Source of Radiation for Spectrophotometric Measurements 368

Card 23/30

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

PHASE I BOOK EXPLOITATION SOV/5150

SOV/5-58-6 (11)

Akademiya nauk SSSR. Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo. Issledovaniya po analiticheskoy khimii

Spektrofotometricheskiye i kolorimetricheskiye metody analiza (Spectrophotometric and Colorimetric [illegible] Its: Trudy, vom. 8 (11) Izd-vo AN SSSR, 1958.

Resp. Ed.: I. P. Alimarin, Corr. Mem. [illegible]
Ed. of Publishing House: V. M. [illegible]

PURPOSE: The publication is intended for [illegible] chemists and geochemists.

COVERAGE: This collection of 23 articles [illegible] Transactions of the [illegible] Geochemistry and Analytical [illegible] Science USSR. The general [illegible] spectrophotometric and [illegible] Lovibond tintometer [illegible] absorption analysis, the [illegible] organic analysis, the [illegible] spectrophotometric [illegible] colorimetric method of [illegible] metric method of determining [illegible] the character of oil [illegible] acoustical method of gas analysis, [illegible] spectrophotometric gas analyzer. [illegible] are given at the end of each article.

[illegible]

Mazura

Avilov, V. P. Spectrophotometric [illegible] of the [illegible] Absorption Indicators 247

Fishbeynshteyn, G. V. Developing Methods of Infrared Spectral [illegible] of the Distillation Products of Raw Benzene and the Light Fractions of Shale, Natural Gasoline, and Oil [illegible]

Kozlova, M. M., N. I. Gerasimov, N. G. Pravedina and L. V. [illegible] Applying the Spectrophotometric Method to the Analysis of the Lower Alkals of Sericite Ores 263

Shabalinskiy, P. V., Ya. I. Gerlovin, and M. [illegible]. Photometric Optical-Acoustical Method of Gas Analysis 272

Sabadashin, A. A., B. A. Gvozdev, and P. Ya. [illegible]. Photoelectric Attachment for a Spectrograph for Absorption Analysis [illegible]

Tsibenko, A. M., Ch. G. Chalyanskiy, and A. I. Finkel'shteyn. Automatic Spectrophotometric Gas Analyzer [illegible]

Fisher, A. M., and A. I. Finkel'shteyn. Instrument for the Photometric Determination of a Potassium Phase Under Industrial Conditions 272

Ziman, Y. G., V. V. Kalinov, and S. A. Senkaft. Statistical Study of Instrument Errors in Working with Photoelectric Colorimeters FEK and FEK-M 279

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SM/sov/sal
5-27-60

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, P. Ya. and KUZUMIN, M. G.

"Obtaining Electron-impulse Radiation in a Straight Accelerator Tube"

Truly Transactions of the First Conference on Radioaction Chemistry, Moscow, Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscow

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

SHEKHTMAN, Ya.L., RADZIYEVSKIY, G.B., ZOTIKOV, A.A., GLAZUNOV, P.Ya.

Time-intensity factor in the bilogical action of fast electrons [with summary in English]. Biofizika 3 no.3:312-319 '58 (MIRA 11:6)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.
(RADIATION--PHYSIOLOGICAL EFFECT)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

BABUSHKIN, A.A.; GVOZDEV, B.A.; GLAZUNOV, P.Ya.

Photoelectric apparatus added to the spectrograph for the purpose of absorption analysis. Trudy kom. anal. khim. 8:258-265 '58. (MIRA 11:8)

1. Institut fizicheskoy khimii Akademii nauk SSSR.
(Absorptiometer) (Spectrograph)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

5(4)

AUTHORS: Pikayev, A. K., Glazunov, P. Ya. SOV/62-59-6-34/36

TITLE: Action of Hard X-Rays on the System $KJ-KJO_3-H_2O-CHCl_3$ (Deystviye zhestkikh rentgenovskikh luchey na sistemu $KJ-KJO_3-H_2O-CHCl_3$)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 6, pp 1137 - 1139 (USSR)

ABSTRACT: The action of hard X-rays on aqueous solutions of potassium iodide and potassium iodate was investigated. The solutions are saturated with chlorine containing hydrocarbons. In an acid medium a reaction occurs between KJ and KJO_3, which leads to separation of iodine. By radiolysis of aqueous solutions of the chlorine derivatives of hydrocarbons, large quantities of HCl are produced (Refs 1-7). Thus with respect to the system mentioned in the title, the radiation-chemical stability of the chlorine containing hydrocarbons present in the solution may be determined from the amount of the iodine separated. The X-ray target attachment and the ionization control chamber, by means of which the measurements were carried out, are schematically given in figure 1. The maximum intensity of the X-rays was 1 Mev, the

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APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

Action of Hard X-Rays on the System $KJ-KJO_3-H_2O-CHCl_3$ SOV/62-59-6-34/36

dose was measured with a ferrosulphate dosimeter, the X-ray intensity was controlled in an ionization chamber. The iodine separated by the radiation was determined by sodium thiosulphate. It could be seen that the quantity of the iodine separated increased with an increase in the integral dose (in the range of $1.0.10^{17}-1.5.10^{18}$ ev/ml) (Fig. 2). Experiments with CCl_4 and CH_3Cl_3 showed a smaller increase. Experiments with a lower dose range showed no dependence of the iodine separation on the intensity of the dose. In the two-phase system (chloroform in aqueous solution of potassium iodide and potassium iodate) an increase in the quantity of the separated iodine with an increase in the concentration of KJ and KJO_3 could be observed. It is assumed that the separation of J is mainly due to the action of the atomic H which is formed by the radiation of the system. There are 2 figures, 1 table, and 7 references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

Card 2/3

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

Action of Hard X-Rays on the System $KI-KIO_3-H_2O-CHCl_3$ SOV/62-59-6-34/36

SUBMITTED: December 15, 1958

Card 3/3

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77091
SOV/62-59-12-35/43

AUTHORS: Pikayev, A. K., Glazunov, P. Ya.

TITLE: Brief Communication. Investigation of Radiolytic Oxidation of Divalent Iron With Doses of 10^{21} ev/ml·sec

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniy khimicheskikh nauk, 1959, Nr 12, pp 2244-2245 (USSR)

ABSTRACT: The results are given of the radiolytic oxidation of divalent iron with accelerated electrons with an initial energy of 0.9-1.0 mev, with doses of 10^{21} ev/ml·sec. To determine the yield of the oxidation of divalent iron, a 3×10^{-3}M solution of Mohr salt in 0.8N H_2SO_4 with addition of 10^{-3}M NaCl was used. The trivalent iron was determined spectrophotometrically. The value of the molar extinction coefficient of Fe^{+3} in 0.8N H_2SO_4 at 304 mμ was assumed to be 2,170 (at 24°). The change in the molar extinction

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

Brief Communication. Investigation of Radiolytic Oxidation of Divalent Iron With Doses of 10^{21} ev/ml·sec

77091
SOV/62-59-12-35/43

coefficient with temperature (0.7% per 1 degree) was taken into account in the calculations. All solutions were irradiated in a glas cell with a glass membrane. A high-voltage linear accelerating tube was used as the source of electron pulse radiation. The apparatus used in experiments is shown in Fig. 1. The value of the energy absorbed by the ferrous sulfate solution was determined with platinum wire soldered into the cell, using the ballistic galvanometer. The results of the experiments are shown in Table 1. There is 1 table; 1 figure; and 5 references, 1 Soviet, 3 U.S., 1 U.K. The U.S. and U.K. references are: Keene, J. P., Radiation Res., 6, 424 (1957); Hutchinson, F., Radiation Res., 9. 13 (1958); Schuler, R. H. , Allen, A. O., J. Chem. Phys., 24, 56 (1956); Sutton, H. C., Rotblat, Nature, 180, 1332 (1957).

Card 2/5

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

Brief Communication. Investigation of Radiolytic Oxidation of Divalent Iron With Doses of 10^{21} ev/ml·sec

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SOV/62-59-12-35/43

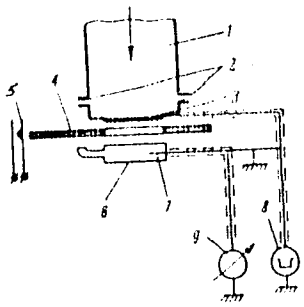

Fig. 1. Diagram of the apparatus: (1) lower part of the accelerating tube; (2) insulation; (3) outlet beryllium window (250 μ thick); (4) aluminum curtain shutter; (5) contacts for transmitting synchronizing light pulse to release mechanism of the modulator; (6) glass cell with membrane; (7) platinum wire; (8) oscillograph with a delaying record; (9) ballistic galvanometer.

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Table 1. The yield of oxidation of divalent iron with doses of $\sim 10^{21}$ ev-sec.

NUMBER OF PULSES	AVERAGE CURRENT IN SOLUTION PER PULSE (NO. OF ELECTRONS)	ENERGY OF ELECTRONS IN mev	CALCULATED DOSE PER PULSE IN ev	OPTICAL DENSITY OF THE IRRADIATED SOLUTION OF MOHR SALT AT λ = 304 nm	$G(Fe^{3+})$, mole / 100 ev
10	$1,28 \cdot 10^{11}$	0,85	$10,88 \cdot 10^{16}$	0,050	16,7
10	$1,35 \cdot 10^{11}$	0,85	$11,48 \cdot 10^{16}$	0,055	16,8
10	$1,25 \cdot 10^{11}$	0,85	$10,63 \cdot 10^{16}$	0,071	15,1
10	$1,61 \cdot 10^{11}$	0,85	$13,69 \cdot 10^{16}$	0,088	14,2
15	$1,32 \cdot 10^{11}$	0,85	$11,22 \cdot 10^{16}$	0,122	15,3
20	$1,30 \cdot 10^{11}$	0,85	$11,9 \cdot 10^{16}$	0,156	15,1
20	$1,43 \cdot 10^{11}$	0,85	$12,16 \cdot 10^{16}$	0,196	15,1
21	$1,30 \cdot 10^{11}$	0,85	$11,05 \cdot 10^{16}$	0,160	13,9
20	$1,39 \cdot 10^{11}$	0,85	$11,82 \cdot 10^{16}$	0,167	16,6
20	$8,85 \cdot 10^{11}$	0,95	$8,41 \cdot 10^{16}$	0,114	15,6
20	$8,85 \cdot 10^{11}$	0,95	$8,41 \cdot 10^{16}$	0,171	15,6
30	$9,6 \cdot 10^{11}$	0,95	$9,12 \cdot 10^{16}$	0,254	16,0
50	$1,01 \cdot 10^{11}$	0,95	$9,6 \cdot 10^{16}$	0,3.9	15,8

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APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

Brief Communication. Investigation of Radiolytic Oxidation of Divalent Iron With Doses of 10^{21} ev/ml·sec

77091
SOV/62-59-12-35/43

ASSOCIATION: Institute of Physical Chemistry of the Academy of Sciences, USSR (Institute fizicheskoy khimii Akademii nauk SSSR)

SUBMITTED: May 5, 1959

Card 5/5

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, P. Ya.; BALADIN, A. A.; SPITSYN, V. I.; DOBROSELSKAYA, N. P.; VERESHCHINSKIY, I. V.

"Influence Du Rayonnement Radioactif D'un Corps Solide Sur Ses Proprities Catalytiques."

report submitted for Catalysis 2nd Intl. Cong., Paris, 4-9 Jul. 60.

Institute de Chemie Physique, Moscow, U.R.S.S.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

PIKAYEV, A.K.; GLAZUNOV, P.Ya.

Radiolytic reduction of tetravalent cerium at dose rates up to 1.23 eV/ml.sec. Izv.AN SSSR Otd.khim.nauk no.5:940-942 My '60. (MIRA 13:6)

1. Institut fizicheskoy khimii Akademii nauk SSSR.
(Cerium) (Radiation)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

86483

S/062/60/000/011/014/018
B013/B076

Q1 6100

AUTHORS: Pikayev, A. K., Glazunov, P. Ya.

TITLE: Effect of Solution Concentration on the Radiation Yield in Oxidation of Bivalent Iron With Strong Doses of Radiation

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1960, No. 11, pp. 2063 - 2064

TEXT: In this brief report, mention is made of the investigation of the effect of strong radiation doses upon the size of $G(Fe^{3+})$ with varying concentrations of Mohr's salt. The strong radiation doses were as previously (Refs. 2-4), produced with the aid of pulsating electron radiation. The initial electron energy amounted to 0.6-0.7 Mev. Experiments and measurements of the doses of radiation were carried out by methods described earlier (Refs. 3 and 4). The dependence of $G(Fe^{3+})$ on the concentration of the solution can be seen in the figure. Curve 1 shows this dependence at a dosis of $\sim 10^{21}$ ev/ml·sec and Curve 2 at a dosis of

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86483

Effect of Solution Concentration on the Radiation Yield in Oxidation of Bivalent Iron With Strong Doses of Radiation

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B014/B076

35.10^{22} ev/ml.sec. Each value of $G(Fe^{3+})$ represents an average of 8-12 measurements. Experiments have shown that an increase of the dosis will lead to a contraction of the concentration range in which $G(Fe^{3+})$ will not depend upon the concentration of the initial solution. The results determined show that the phenomena connected with the competition of reactions: radical-radical and radical-dissolved substance, will show up more markedly with a strong dosis. It is noted that with a low concentration of the solution and with a strong dosis the reaction $HO_2 + HO_2 \rightarrow H_2O_2 + O_2$ probably plays a substantial part. The course of this reaction obviously leads to a reduction of $G(Fe^{3+})$. There are 1 figure and 5 references: 3 Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

SUBMITTED: April 27, 1960

Card 2/2

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

Glazunov, P. Ya.

82534

S/181/60/002/007/009/042
B006/B070

21.5300
24.7700

AUTHORS: Vavilov, V. S., Batakovich, V. M., Turkov, E. Ya., Glazunov, P. Ya.

TITLE: The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

PERIODICAL: Fizika tverdogo tela, 1960, Vol. 2, No. 7, pp. 1431-1433

TEXT: A determination of the minimum kinetic energy of electrons, necessary for the production of stable structural defects in crystals, is of importance for the possible application of semiconductors as particle counters, and for transformation of nuclear radiation energy. To obtain new data on defect formation, the authors investigated it in p-type silicon by bombarding rectangular single crystals oriented at different angles relative to the incident beam of 500-kev electrons. Before their radiation, the samples had a homogeneous resistivity ρ of 100 ohm·cm

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82534

The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

S/181/60/002/007/009/042
B006/B070

Bombardment and the subsequent measurement of potential distribution were done at room temperature. The crystals were water-cooled during the bombardment. Measurements of the Hall effect showed that the carrier mobility changed only slightly as a result of bombardment. To investigate the depth distribution of the defects produced, a comparison was made between the potential distribution curves along the direction of the incident beam for irradiated and unirradiated samples. Fig. 1 shows the curves $\varphi(x)$ for three samples bombarded in the directions ⟨111⟩, ⟨110⟩, and ⟨100⟩, respectively, x denoting the depth of penetration of the electron beam. The maximum depth of penetration for which a change in φ could be established, was 0.6 mm irrespective of the orientation. On bombardment in the ⟨111⟩ direction, the surface of the sample showed a larger change in resistivity than for the other two directions. Further, the experimental and theoretical values of the minimum electron energy are compared. Two theoretical values are investigated.

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82534

S/181/60/002/007/009/042
B006/B070

The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

E'_{min} = 280 kev (Ref. 5) and E''_{min} = 145 kev (Ref. 2 and the present paper). A comparison with the experiments of the authors (Fig. 2) shows that there is a much better agreement with the E''_{min} curve. For E''_{min} = 145 kev, the rate of defect formation is $A_d(0) \simeq 2.9$ cm^{-1}, and the rate of removal of the holes is $A_p(0) \simeq 1.4 \cdot 10^{-5}$ cm^{-1}. Hence, $A_p/A_d \simeq 5 \cdot 10^{-6}$ is the average number of trapped carriers corresponding to the theoretically calculated value of defect concentration. The effects observed are finally discussed. The authors thank T. M. Kepylova for her calculations. There are 2 figures and 10 references: 7 Soviet and 3 US.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR, Moskva (Institute of Physics im. P. N. Lebedev of the AS USSR, Moscow)

Card 3/4

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

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82534

The Effect of Fast Electron Bombardment on the Electrical Conductivity of Silicon and the Dependence of the Rate of Defect Formation on the Orientation of the Crystal Relative to the Electron Beam

S/181/60/002/007/009/049
B006/B075

SUBMITTED: December 21, 1959

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Card 4/4

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

68615

~~5(4)~~ 5.4500(B)

AUTHORS: Glazunov, P.Ya., Pikayev, A.K.

S/020/60/130/05/027/061
B004/B014

TITLE: Investigation of the Radiolytic Oxidation of Divalent Iron With Strong Radiation Doses

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 5, pp 1051-1054 (USSR)

ABSTRACT: The authors describe a circuit designed for strong radiation doses with pulses of 1-5 μsec. The circuit of the pulse instrument is illustrated in figure 1. Discharge in the moderator is effected by a high-voltage thyratron that is controlled by means of a blocking oscillator. The remote starting of the modulator was accomplished via an IS-50 flash-tube and an FEU-19 photoelectronic multiplier. The dark current was suppressed by a special circuit which controlled the cathode of the electron gun via an artificial line by means of a positive blocking potential and a decoupler of the type DiTs-27. Electronic radiation was measured with the help of an integrator and a scaler of the type PS-10000 (Fig 2). The following data were obtained for rectangular pulses: duration of 5 μsec, 100-120 ma, doses of up to 10^{23} ev/ml.sec with an energy of 0.9 mev. The

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

Investigation of the Radiolytic Oxidation of Divalent Iron With Strong Radiation Doses

S/020/60/130/05/027/061
B004/B014

formation of Fe^{3+} in a solution of $FeSO_4$ in 0.8 N H_2SO_4 was spectroscopically determined. The values of $G(F^{3+})$ are listed in table 1. These values notably decrease with a dose increase above 10^{22} ev/ml.sec and become lower than the values obtained by the authors in an earlier paper (Ref 2). The authors give the reactions produced by water radiolysis. The drop of $G(Fe^{3+})$ is explained by the greater probability of recombination of the radicals H and OH with a strong radiation dose as a result of overlapping of the tracks of ionized particles. There are 2 figures, 1 table, and 6 references, 3 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

PRESENTED: September 28, 1959, by V.I. Spitsyn, Academician

SUBMITTED: September 25, 1959

Card 2/2

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

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50004
S/020/60/131/05/034/069
B011/B117

AUTHORS: Spitsyn, Vikt. I., Academician, Afanas'yeva, N. A., Pikayev, A. K., Kolli, I. D., Glazunov, P. Ia.

TITLE: Radiation Method of Synthesis for Some Derivatives of Phosphonitryl Chloride

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 131, Nr 5, pp 1106-1108 (USSR)

TEXT: The authors investigated the possibility to synthetize the butyl phosphonitryl ether by radiation of a mixture consisting of tetrameric phosphonitryl chloride and n-butyl alcohol with a high-energy electron flux at room temperature. An electron accelerator giving up to 1.0-1.2 Mev (Ref 14) was used as the radiation source. The solutions were irradiated in glass cells equipped with a thin glass membrane. n-Butyl alcohol was cooled and stirred with air saturated with n-butanol vapor. The course of the reaction was checked with an Ostwal'd viscosimeter and by checking the chlorine content in the resulting compounds. It was found that, for both chlorine atoms in tetrameric phosphonitryl chloride, butoxy radicals are substituted. Then, the authors described a typical experiment in order to obtain butyl phosphonitryl ether. With radiation using 0.6 Mev electrons and a current of 3mA in the solution for six hours and with an integral dose of $1.5 \cdot 10^{22}$ ev/ml at a maximum temperature of 30°, a

Card 1/3

viscous brown liquid with a disagreeable smell remained, when n-butanol had been distilled off. Its analytical data corresponded to phosphonitryl ether of n-butyl alcohol. The yield was nearly twice as much as compared to the yields, obtained with methods according to reference 9, i.e. 45%. Table 1 shows the results of viscosity measurements of the irradiated 5% solutions of the tetramer in n-butyl alcohol as well as of chlorine determinations in the products obtained. Figure 1 shows the characteristic changes of viscosity of a 5% solution of the tetramer in butanol as a function of the integral radiation dose. The authors come to the conclusion that the character of the radiolytic reaction mentioned is complicated. The rapid decrease of the chlorine content and the reduction of viscosity at the very beginning of radiation are probably due to a substitutional chain reaction. The substance dissolved is probably exposed chiefly to the action of hydrogen atoms forming when n-butyl alcohol is being radiolysed. By reaction with atomic hydrogen, the ring of the tetramer is split. Mono- and diseric radicals are formed, and chlorine atoms are split off as HCl (see schemes (1) - (5)). Hydrogen atoms resulting from the reactions (4) and (5) react again with the tetramer, and so on. If radiation is further prolonged, an inverse reaction between HCl and the butoxy derivatives due to a high HCl concentration is possible, besides ring formation (Table 1). For this reason, a maximum

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appears on the curve (Fig 1); the second maximum is apparently due to the suppression of the inverse reaction. The method mentioned in the title has several advantages as compared to current-type procedures. When a 2% solution of phosphonitryl chloride trimer in absolute dioxane was irradiated, ($PNCl_4O_2$) - a substitution product of one dioxane molecule for one chlorine atom of phosphonitryl chloride - was obtained (Table 2). This compound is highly resistant to hydrolysis. Its structure is being further studied. There are 1 figure, 2 tables, and 14 references, 3 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR). Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: January 16, 1960

Card 3/3

GLAZUNOV, P. Ia.

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/020/60/132/02/45/067
B004/B007

AUTHORS: Spitsyn, Vikt. I., Academician, Pirogova, G. N., Pikayev, A. K., Glazunov, P. Ya.

TITLE: The Action of High-energy Electrons on Complex Compounds of Platinum

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 2, pp. 406-408

TEXT: The authors investigated the action of a beam of accelerated electrons on the solid platinum compounds $K_2[PtCl_6]$, $(NH_4)_2[PtCl_6]$, $K_2[PtCl_4]$, $(NH_4)_2[PtCl_4]$, $[Pt(NH_3)_4]Cl_2 \cdot H_2O$, cis- and trans-$[Pt(NH_3)_2 \cdot Cl_2]$. The synthesis of these compounds and their analyses are given in Table 1. A 1-Mev accelerating tube served as radiation source. The irradiation cell is shown in Fig. 1. The experiments were carried out in dry argon at constant temperature (90-95°C for the chloroplatinites, 145-150°C for the other compounds), at which no decomposition as yet occurs without irradiation. The metallic platinum separated as a result of irradiation was gravimetrically determined. Table 2 gives the initial metallic platinum yield in atoms/100 ev for the individual compounds.

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

The Action of High-energy Electrons on Complex Compounds of Platinum

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B004/B007

The steric configuration influences the stability of the compounds. Figs. 2 and 3 show the course taken by the reduction. After the adsorption of a certain total dose, the reduction stops. The authors ascribe this to the oxidizing action of the atomic chlorine formed. Complexes containing reducing components (NH_3 or NH_4^+) are more intensely decomposed. The reduction of aqueous solutions of platinum compounds is effected with lower doses, probably because of the simultaneous action of radiolysis products of water. There are 3 figures, 2 tables, and 7 references, 5 of which are Soviet.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences, USSR)

SUBMITTED: February 9, 1960

Card 2/2

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

TAUBMAN, A.B.; YANOVA, L.P.; MASLOVSKAYA, R.S.; GLAZUNOV, P.Ya.

Mechanism of gas formation in the radiolysis of organic compounds, and its relation to their state of aggregation. Dokl.AN SSSR 134 no.2:397-399 S '60. (MIRA 13:9)

1. Institut fizicheskoy khimii Akademii nauk SSSR. Predstavleno akademikom P.A.Rebinderom.
(Radiation) (Gases)

APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

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B004/B056

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AUTHORS: Pikayev, A. K., and Glazunov, P. Ya.

TITLE: Radiolytic Reduction of Tetravalent Cerium in the Presence of Monovalent Thallium With High Radiation Doses

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 4, pp. 902 - 905

TEXT: The aim of the present work was to study the effect of strong radiation doses on the course of radiolytic processes in aqueous solutions. The authors give an account on radiation-chemical processes in sulfuric acid solutions of Ce^{4+} and Tl^{+} at radiation doses of up to 10^{23} ev/ml.sec. Irradiation was done by monoenergetic electron pulses (0.8 Mev) in a glass cell with a glass membrane approximately 60μ thick glass membrane and having a volume of 7 ml (thickness of the fluid layer: 5 mm). The resulting quantity of Ce^{3+} was determined spectrophoto-

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Radiolytic Reduction of Tetravalent Cerium in the Presence of Monovalent Thallium With High Radiation Doses

S/020/60/135/004/032/037
B004/B056

metrically. The molar extinction coefficient of Ce^{4+} in 0.8 N H_2SO_4 at 320 mμ was assumed to be 5580, according to Ref. 4. Tl^{3+} was determined indirectly by the addition of Fe^{2+} and by spectroscopic determination of iron oxidized to Fe^{3+} by Tl^{3+} and Ce^{4+}. The Ce^{4+} content of the solution had been ascertained before. This method was satisfactory up to doses of 10^{22} ev/ml.sec. When doses are higher, determination becomes less accurate because of the low Tl^{3+} concentration. $G(Ce^{3+})$ was determined in air-saturated 0.8 N H_2SO_4 which contained 2.10^{-4} M Ce^{4+} and 10^{-2} M Tl^{+}. A decrease of $G(Ce^{3+})$ was observed with increasing dose rate (Fig. 1). At a constant dose ($4.5 \cdot 10^{22}$ ev/ml.sec) and a constant Ce^{4+} concentration (2.10^{-4} M), $G(Ce^{3+})$ increased in proportion to the logarithm of Tl_2SO_4

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concentration. The following was found for $G(Tl^{3+})$: At about 10^{21} ev/ml.sec: 1.5 ± 0.15 ions/100 ev; at 5.10^{22} ev/ml.sec: 0.4 ± 0.2 ions/100 ev. The reactions for the radiolytic process are written according to Ref. 5: $H_2O \rightsquigarrow H, OH, H_2, H_2O_2$ (0); $Ce^{4+} + H \longrightarrow Ce^{3+} + H^+$ (1); $2Ce^{4+} + H_2O_2 \longrightarrow 2Ce^{3+} + 2H^+ + O_2$ (2); $Tl^+ + OH \longrightarrow Tl^{2+} + OH^-$ (3); $Ce^{4+} + Tl^{2+} \longrightarrow Ce^{3+} + Tl^{3+}$ (4), with the conclusion: $G(Ce^{3+})_{Tl^+} = G_H + G_{OH} + 2G_{H_2O_2}$ (5), where $G(Tl^{3+}) = G_{OH}$ (6).

(G_H, G_{OH}, $G_{H_2O_2}$ are the yields in water radiolysis products). For the case of low doses the following relation is written according to Refs. 5,

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6: $G(Fe^{3+}) = 3G_H + G_{OH} + 2G_{H_2O_2}$ (7); $G(Ce^{3+}) = G_H - G_{OH} + 2G_{H_2O_2}$ (8); equations 5, 7, and 8 give: $G(Ce^{3+})_{Tl^+} - G(Ce^{3+}) = 2G_{OH}$ (9); $3G(Ce^{3+})_{Tl^+} - G(Fe^{3+}) = 4G_{H_2O_2} + 2G_{OH}$ (10). Substitution of $G(Fe^{3+})$, $G(Ce^{3+})$ and $G(Ce^{3+})_{Tl^+}$, measured at 5.10^{22} ev/ml.sec, in equations 9 and 10 gave negative $G_{H_2O_2}$ values for all Tl^+ concentrations. The conclusion is drawn that in the case of strong doses, side reactions of Tl^{2+} and Tl^{3+}, chiefly with H_2O_2 take place. This also explains the deviation of Ce^{4+} reduction from linearity in the presence of Tl^+ and at strong doses. As a consequence of increased concentration, heavier competition of radical - radical and radical - solute interactions, as well as intensi-

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Radiolytic Reduction of Tetravalent Cerium in the Presence of Monovalent Thallium With High Radiation Doses

S/020/60/135/004/032/037
B004/B056

fication of the side reactions occur. There are 4 figures and 10 references: 6 Soviet, 3 US, and 1 French.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR)

PRESENTED: June 25, 1960 by V. I. Spitsyn, Academician

SUBMITTED: June 22, 1960

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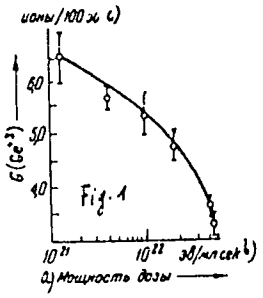

Legend to Fig. 1: a) dose rate; b) ev/ml.sec; c) ions/100 ev

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[illegible]
S/[illegible]
B[illegible]

24.7700 (1043,1164,1385)

AUTHORS: Smirnov, L. S., Glazunov, P. Ya.

TITLE: Volume distribution of lattice defects in germanium crystals irradiated with fast electrons

SOURCE: Tashkentskaya konferentsiya po mirnomy [illegible] atomnoy energii. Tashkent, 1959. Trudy [illegible] Tashkent, 1961, 153 - 155

TEXT: The determination of defect concentrations in Ge crystals was based on the relation between the defect concentration and the concentration of additional acceptor centers. The variation in the conductivity of irradiated crystals was studied by taking the potential distribution (Fig. 1) with a probe at intervals of 10 - 50 μ. The defect concentration was so low that it did not affect mobility and the entire variation in conductivity was due to variation in carrier concentrations. The n- and p-type germanium samples had dimensions of 1.0 3.0 6.0 mm, and ρ_0 = 10 - 15 ohm-cm and 40 - 50 ohm-cm, respectively. The samples were irradia-

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S/6[illegible]/[illegible]/[illegible]/[illegible]
B104/B1[illegible]

Volume distribution of [illegible]

ted by 0.5 mm thick copper electrodes. To avoid edge effects, the samples were surrounded by Ge bars during irradiation. At [illegible] °C, the samples were irradiated with monoenergetic electrons (between 500 and 900 kev) with amperage not exceeding 0.6 μa. The shape of the curves for the defect distribution in the depth of samples was in good agreement with those calculated by B. Ya. Yurkov. Maximum depth of defects d depends linearly on electron energy. At E 480 kev, d = 0.1 mm; at E 780 kev, d = 0.4 mm. 380 ± 20 kev is obtained by extrapolation as limit energy for the formation of lattice defects. On n-type Ge samples, fast recovery of defects was observed even at room temperature. It is suggested that this is due to higher dislocation density ([illegible] cm^{-2}). In p-type germanium, electrical conductivity is stable at room temperature. The defects have a low diffusion coefficient. The same types of defect are formed on the surface and inside the crystal. The authors thank V. S. Vavilov for interest and discussions and L. G. Sharendo for assisting with measurements. There are 3 figures and 1 Soviet reference.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute imeni P. N. Lebedev AS USSR)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

GLAZUNOV, P.Ya.

3428
S/081/62/000/009/019/075
B158/B101

54600

AUTHORS: Topchiyev, A. V., Polak, L. S., Chernyak, N. Ya., Glushnev, V. Ye., Glazunov, P. Ya., Vereshchinskiy, I. V., Syrkus, N. P., Breger, A. Kh., Vaynshteyn, B. I.

TITLE: Radiation-heat cracking of hydrocarbons

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 9, 1962, 74 - 75, abstract 9B515 (Sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR. v. I". M., Gostoptekhizdat, 1961, 206-210)

TEXT: The low overall yield of radiolysis products from hydrocarbons at room temperature points to the absence of a chain reaction at that temperature. To examine the possibilities of a chain reaction in radiation cracking, n-heptane was irradiated by Co^{60} γ-rays at high temperatures. The samples were irradiated in 15 ml bulbs made of molybdenum glass with a wall thickness of 0.1 mm. The amount of liquid heptane was 0.25 ml and the pressure in the ampoules on vaporization 2.5 T/275 atm. To prevent local preheating of the walls, the bulb was rotated twice a second. The

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B158/B101

Radiation-heat cracking of hydrocarbons

radiation dose output calculated on 1 ml of liquid n-heptane was $2 \cdot 10^{13}$ Mev/sec. It is shown that radiation-heat cracking of n-heptane occurs at considerably lower temperatures than purely thermal cracking which needs a temperature of ~500°C. The yield of liquid unsaturated hydrocarbons from radiation-heat cracking increases from 1.8 at room temperature to 340 at 450°C. The total radiation-chemical yield of low molecular hydrocarbons is 2000 at 400°C, being therefore ~10^3 times as great compared with the radiation-chemical yield of the same products at 200°C. By combining the radiation effect with temperature it is possible to obtain products which offer industrial interest at levels of yield which would be acceptable in practice. Possible sources of radiation for radiation-heat cracking are considered. [Abstracter's note: Complete translation.]

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S/638/61/001/000/052/056
B125/B104

AUTHORS Vereshchinskiy, I. V., Glazunov, P. Ya.

TITLE Radiolysis of protoporphyrin solutions

SOURCE Tashkentskaya konferentsiya po mirnomy ispolizovaniyu atomnoy energii. Tashkent, 1959. Trudy, v. 1. Tashkent, 1961, 324-328

TEXT: Sufficiently stable protoporphyrin [illegible] (produced by the method of L. A. Blyumenfel'd, S. E. Krasovitskaya, [illegible] M. Chavnyy, Sb. trudov posvyashchennyy V. V. Voroninu (Collection of transactions dedicated to V. V. Voronin), Tbilisi, AN GruzSSR, [illegible] str. 65) was irradiated with a fast electron beam. The spectra were recorded by [illegible] (SF 4) and [illegible] 2M (SF 2M) spectrophotometers. The linear electron accelerator used as electron source consisted of a vertical tube and a cascade voltage multiplier for 1.0 to 1.2 mv. The dose rate was determined by ferrosulfate dosimetry. The optical density of the solution dropped linearly to 10^9 ev/ml over a sufficiently wide range of integral doses. The radiochemical yield (0.1) of a benzene solution of protoporphyrin is about

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B125/B104

Radiolysis of protoporphyrin

double that of an n hexane solution For sufficiently stable chloroform solutions of protoporphyrin IX, the sequence of absorption bands of protoporphyrin IX was replaced by that of absorption bands with maxima at 565 and 607 mμ In addition, the solution were dichroic The absorption band intensity dropped noticeably with increasing duration of irradiation No absorption bands pointing to the existence of bands with porphyrin nuclei appeared As a result of irradiation, the molecules decompose irreversibly to low-molecular products without characteristic absorption bands in the visible The mechanism of radiolytic conversions cannot be interpreted without a knowledge of the radiochemical behavior in other solvents There are 4 figures 1 table and 7 references 3 Soviet and 4 non-Soviet The three references to English-language publications read as follows Sponer H Proceedings of the International Congress of Radiation Research; Radiation Research Supplem 1 1959; Fricke H Petersen B W Am J Roentgenol Radium Therapy 17 611 1927; Barron E S G, Johson P Radiation Research, 5, 290, 1956

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/081/62/000/004/006/087
B149/B101

AUTHORS: Pikayev, A. K., Glazunov, P. Ya.

TITLE: Investigation of certain radiochemical processes in aqueous solutions at relatively high dose rates

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 73-74, abstract 4B512 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, v. 1, 1959. Tashkent, AN UzSSR, 1961, 354-360)

TEXT: A method of obtaining and measuring single electron pulses in a linear acceleration electron tube is described. Pulse parameters: rectangular shape, duration 5 μsec, pulse current - up to 150 ma, electron energy 0.8-1.0 Mev dose rate up to 10^{23} ev/ml·sec. The action of pulsed radiation on aqueous solutions of Fe^{2+} and Ce^{4+} sulfates was studied. Starting from a dose rate of 10^{21} ev/ml·sec, $G(Ce^{3+})$ increases whereas $G(Fe^{3+})$ decreases with increasing dose rate. This effect is

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explained by overlapping of the tracks of the ionizing particles. At high dose rates owing to the increased effects based on the competition between radical - radical and radical - dissolved substance reactions, the zone of concentration in which $G(F^{3+})$ is independent of the concentration of the solution contracts. [Abstracter's note: Complete translation.]

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/081/62/000/004/007/087
B149/B101

AUTHORS: Ryabchikova G. G., Duzhenkov V. I., Glazunov F. Ya.

TITLE: Action of a fast electron beam on aqueous solutions of silver compounds

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 4, 1962, 73, abstract 4B511 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, v. 1. 1959. Tashkent, AN Uz.SSR, 1961, 361-364)

TEXT: The radiolysis of aqueous solutions of $AgNO_3$ by the action of 800 kev electrons at 8 μa maximal current was studied. The Ag^+ ion is reduced and a grayish precipitate is formed. G(Ag) is 0.55; 5.7 and 5.95 atoms Ag corresponding to 0.1; 0.5 and 1.0 M solutions respectively. The concentrations of nitrite ions and of H_2O_2 were measured. The study of the dependence of Ag yield on the dose rate shows only a slight increase in G(Ag) when the dose is changed from 10^{17} to 10^{22} ev/ml·sec.

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The possibility of the utilization of silver from fixer washes was also investigated. The solutions were irradiated with a 6 Mev electron beam (from an emerging betatron beam); the dose rate was $3.5 \cdot 10^{15}$ ev/ml·sec. Radiolysis causes precipitation of silver sulfide with traces of metallic silver. $G(Ag_2S)$ is 5.5. The complete separation of silver occurs when a dose of $1.5 \cdot 10^{21}$ ev/ml is absorbed. [Abstracter's note: Complete translation.]

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22514

S/062/61/000/004/003/008
B110/B209

5 1190 2209, 1274, 1297

AUTHORS: Balandin, A. A., Spitsyn, Vikt. I., Dobrosel'skaya, N. P., Mikhaylenko, I. Ye., Vereshchinskiy, I. V., and Glazunov, P. Ya.

TITLE: Effect of radioactive radiation of a solid body on its catalytic properties

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, no. 4, 1961, 565-571

TEXT: There are no data available on the effect of the proper radioactive radiation of solids on their catalytic properties. The authors of the present paper investigated the change of catalytic activity as a result of decay of the radioactive isotope, furthermore whether also the β-radiation of a foreign element affects the reaction to be studied, and the effect of irradiating the catalyst by a fast electron beam. The effect of the radioactive catalysts $CaCl_2$, $MgSO_4$, and Na_2SO_4, containing the β-emitters S^{35} and Ca^{45}, on the dehydration of cyclohexanol was studied. The increased catalytic activity of radioactive catalysts, contrary to

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B116/B208

Effect of radioactive...

non-labeled catalysts, which had been previously observed by the authors, was confirmed in many cases. The catalytic activity decreases with decreasing radioactivity of the catalyst owing to decay of the isotopes S^{35} and Ca^{45}. Bombardment of the surface of the non-labeled catalyst with 600-kev electrons has no pronounced effect, contrary to the effect of β-particles of labeled S^{35} and Ca^{45} which are constituents of the catalyst. Thus not only the labeled S^{35}, but also the labeled Ca^{45} increases the catalytic activity of magnesium sulfate in the dehydration of cyclohexanol. The radioactive isotope need not be a component of the acting catalyst. It must be concluded that the increased activity of the radioactive catalysts studied is due to a continuous bombardment of the active centers of the catalyst with β-particles. The latter transfer their energy to the adsorbed cyclohexanol molecules and reduce the activation energy of the chemical reaction. It may be concluded from the decrease of the catalytic activity due to the decay of the isotope in the catalyst that the new elements resulting in the radioactive conversion do not increase the activity. Apparently, the activation of the catalyst surface takes place

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23514

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B116/B206

Effect of radioactive...

at the expense of the proper radioactive radiation. There are 8 figures, 2 tables, and 4 Soviet-bloc references.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry of the Academy of Sciences USSR). Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: January 16, 1960

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APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5"

"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

BALANDIN, A.A.; SPITSYN, V.I.; RUDENKO, A.P.; DOBROSEL'SKAYA, N.P.; MIKHAYLENKO, I.Ye.; PIROGOVA, G.I.; GLAZUNOV, P.Ya.

Apparatus for studying heterogeneous catalysis at high temperature using radioactive catalysts and ionizing radiations. Kin.i kat. 2 no.4:626-632 Jl-Ag '61. (MIRA 14:10)

1. Institut fizicheskoy khimii AN SSSR i Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Catalysis)

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[illegible]
S/[illegible]/6[illegible]/00[illegible]/00[illegible]/007/020
A05[illegible]/A129

5.2500 (1273, 1350, 1043)
21 3100

AUTHORS: [illegible], A. D., Mefodiyeva, M. P., P[illegible], A. K., [illegible], P. Ya.

TITLE: The effect of [illegible] radiation on the [illegible] state of neptunium in aqueous solutions

PERIODICAL: [illegible]

TEXT: A study was made [illegible] electrons acting upon $Np^{[illegible]}$ [illegible] as well as in $HClO_4$ (0.02 [illegible]), HNO_3 (0.[illegible]) and H_2SO_4 (0.05 [illegible]) [illegible] of $Np^{[illegible]}$ [illegible] 0.6 [illegible] H_2SO_4. The authors investigated [illegible] in their solutions as well as the [illegible] of $N[illegible]$ [illegible] the sulfuric acid [illegible] $Np^{[illegible]}$ [illegible] the $HClO_4$ [illegible] produced by heating a solution of [illegible] (Ref. 2). $Np^{[illegible]}$ [illegible] the H_2SO_4 solution was prepared [illegible] investigated [illegible] tation of the hydroxide. The [illegible] solutions was determined by [illegible] photometry. [illegible] of self-reduction of $Np^{[illegible]}$ [illegible] the concentration of which was [illegible] the irradiated solutions [illegible] relation-

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[illegible]

[illegible]

The effect of ionizing radiation [illegible]

[illegible] curves D_{980} to the standing time of the [illegible] in Fig [illegible] Fig 2 shows the difference in the accumulation of $Np^{(V)}$ when the solution is irradiated and Fig 3 is a diagram of the apparatus used for irradiating the solutions. An electron accelerator [illegible] Mev served as the source of ionizing radiation (Ref 3). The relationships of the quantity of $Np^{(V)}$ formed to the amount of irradiation [illegible] M solution of $Np^{(V)}$ in 0.86 n H_2SO_4 (curve [illegible]) and 0.001 M $Np^{(V)}$ [illegible] 0.05 n HNO_3 (curve 2) are shown in Fig 4. Using the slopes of the curves 1 and 2 (Fig 4) the initial yields of $Np^{(V)}$ could be computed. $G_{NpO_2^+}$ yield equals 3.0 for 0.86 n H_2SO_4 and 6.25 ion/100 ev for 0.05 n HNO_3. When an aqueous solution of $Np^{(IV)}$ is irradiated with fast [illegible], the oxidation of $Np^{(IV)}$ to $Np^{(V)}$ takes place, but not that of $Np^{(VI)}$. Curve 3 (Fig 4) shows the relationship of the quantity of $Np^{(V)}$ formed to the amount obtained when irradiating a 0.001 M solution of $Np^{(IV)}$ in 0.8 n H_2SO_4. Thus, the authors conclude that the most stable valency state of neptunium in the radiochemical sense is $Np^{(V)}$, i.e., the neptunoyl ion NpO_2^+. The authors calculated the value of $G_{NpO_2^+}$ and found it to be largely dependent on the nature of the acid used.

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GLAZUNOV, P. YA.

/6

SOV/6177

PHASE I BOOK EXPLOITATION

Akademiya nauk SSSR. Institut neftekhimicheskogo sintoza

Radioliz uglevodorodov; nekotoryye fiziko-khimicheskiye problemy (Radiolysis of Hydrocarbons; Some Physicochemical Problems) Moscow, Izd-vo AN SSSR, 1962. 207 p. Errata slip inserted. 5000 copies printed.

Resp. Eds.: A. V. Topchiyev, Academician, and L. S. Polak, Doctor of Physics and Mathematics; Ed.: L. T. Bugayenko; Tech Ed.: Ch. A. Zentsel'skaya.

PURPOSE: This book is intended for physical and industrial chemists interested in the properties and behavior of irradiated hydrocarbons.

COVERAGE: The book gives a systematic presentation of the results of research on the radiolysis of hydrocarbons carried out from 1957 through 1961 at the Laboratory of Radiation Chemistry, Institut neftekhimicheskogo sintoza AN SSSR (Institute of Petro-

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Radiolysis of Hydrocarbons (Cont.) SOV/6177

chemical Synthesis, Academy of Sciences USSR). Although the results were obtained for individual compounds, they may be generalized and applied to other members of the same homologous series. The following persons participated in making the experiments and in writing the text: V. G. Beryozkin, V. E. Gluzhnov, Yu. A. Kolbanovskiy, I. M. Kustanovich, V. D. Popov, A. Ya. Temkin, V. D. Timofeyev, N. Ya. Chernyak, V. A. Shakhray, E. B. Shlikhter, A. S. Shcherbakova, B. M. Negodov, A. Z. Peryshkina, N. M. Rytova, T. A. Tagina, Yu. B. Eilin, A. M. Brodskiy, V. V. Voyevodskiy, P. Ya. Glazunov, B. A. Smirnova, and Yu. L. Khait. References, mainly Soviet and English, follow individual chapters.

TABLE OF CONTENTS [Abridged]:

Foreword 3

Ch. I. Physicochemical Characteristics of Hydrocarbon Radiolysis 5

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/844/62/000/000/012/129
D290/D307

AUTHORS: Vereshchinskiy, I. V., Glazunov, P. Ya., Kustanovich, I. M. and Polak, L. S.

TITLE: Emission spectra of liquids and gases after irradiation with fast electrons

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, [illegible]

TEXT: Visible and ultraviolet emission spectra of various liquids and gases after irradiation with fast electrons (700 - 800 kev) were studied. Great care was taken to exclude any impurities with known emission spectra in this region and to prevent Cherenkov radiation entering the spectrograph. The dose rate was measured by formate dosimetry and was about 5.9 x 10^{20} ev/sec. No previously unknown radiations were detected after irradiation of air, nitrogen, methane, propane, or ethylene. Irradiation of n-pentane produced a very broad emission band at about 3000 Å extending from

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[illegible]

[illegible] of ...

[illegible] 300 Å; [illegible] slightly shorter [illegible]. The emission [illegible] is less than 1.5 [illegible] 10^{-9} of the energy [illegible]. Further experimental evidence is required before the [illegible] of emission can be established. There are [illegible] figures.

ASSOCIATION: Institut neftekhimicheskogo sinteza AN SSSR (Institute of Petrochemical Synthesis, AS USSR); Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AS USSR)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/844/62/000/000/015/129
D290/D307

AUTHORS: Pikayev, A. K. and Shamanov, P. Ya.

TITLE: Radiolytic changes in aqueous solutions of various inorganic compounds at high dose rates

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 101-113

TEXT: This paper is a continuation of earlier studies by the same authors of variations in the yields of radiolysis products of aqueous solutions of inorganic compounds at high dose rates. Aqueous solutions of ferrous ammonium sulfate in 0.8N H_2SO_4 were studied in the absence of oxygen, as well as mixtures of Ti_2SO_4 and $Ce(SO_4)_2$ and of Ce^{3+} and Ce^{4+} sulfates saturated with air, a mixture of HCOOH, $Fe_2(SO_4)_3$ and $CuSO_4$ in 0.01N H_2SO_4 saturated with air. The solutions were irradiated with pulses of fast electrons (pulse

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Radiolytic changes in ... [illegible]

[illegible] 10^{-7} sec. [illegible] - 1.5 [illegible] 10^{-3} ev [illegible]. The yields of [illegible] [illegible] [illegible] [illegible] ev/ml-sec. The authors compare the results [illegible] and attempt to explain them by the fact that [illegible] ionizing particles may overlap at high doses [illegible] lapping may lead to competition between radical [illegible] [illegible]-solvent reactions, and to an increase in [illegible] [illegible] secondary reactions. On this basis the [illegible] [illegible] mechanisms that would explain their results. There are [illegible] [illegible] and [illegible] tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry, AS USSR)

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43728

S/844/62/000/000/027/129
D244/D307

AUTHORS: Gel'man, A. D., Nefod'yeva, N. P., Pikayev, A. K. and Glazunov, P. Ya.

TITLE: Radiolysis of aqueous solutions of tetra- and hexavalent neptunium

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 167-170

TEXT: In connection with the recovery of Np from atomic reactors, the radiolytic reduction of Np^{VI} was investigated in perchloric, sulphuric and nitric acid solutions. Also investigated was the oxidation of Np^{VI} in H_2SO_4 solutions. The radiation source was an electron accelerator, the energy of electrons being up to 1.0 - 1.3 Mev. The dosage was about 4.5×10^{15} ev/ml.sec and the initial energy of electrons 0.7 to 0.8 Mev. All solutions were saturated with air. In

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solutions of Np^{VI} in $HClO_4$, H_2SO_4, and HNO_3, the reduction to Np^{V} but not to Np^{IV} took place. In 4 N HNO_3, the reduction of Np^{VI} ceased almost completely. In $HClO_4$, the formation of Np^{V} was proportional to the radiation dose (from 0.6 to 8 x 10^{13} ev/ml). $G(NpO_2^+)$ in HNO_3 solutions decreased with the increasing concentration of HNO_3. In 0.86 N H_2SO_4 solutions $G(NpO_2^+)$ increased with the dosage. Np^{IV} is oxidized to Np^{V} without the formation of Np^{VI}. In 0.8 N H_2SO_4 containing 0.001 M Np^{IV}, the formation of Np^{V} increased with the dosage. Thus the form of Np which is most stable to the radiation is Np^{V}. It is believed that the reduction of Np^{VI} in 0.86 N H_2SO_4 is due to the action of H and H_2O_2 and the oxidation of Np^{IV} is caused by the action of OH radicals and H_2O_2. There are 2 figures and 2 tables.

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D244/D307

Radiolysis of aqueous ...

ASSOCIATION: Institut fizicheskoy khimii AN SSSR (Institute of Physical Chemistry AS USSR)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/844/62/000/000/[illegible]
D423/D307

AUTHORS: Tsetlin, B. L., Rafikov, S. R., Plotnikova, [illegible] Glazunov, P. Ya.

TITLE: Radiation grafting of polymeric chains to the surface of mineral particles

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy [illegible] mii. Ed. by L. S. Polak. Moscow, [illegible] 497-500

TEXT: The work was carried out with a view to forming and grafting polymer chains to the surface of mineral powders for use in e.g. filters. The experiments were carried out with ZnO, [illegible] powders exposed to the vapor of methylmethacrylate at a temperature of 100°C, in thin-walled glass ampoules whilst the entire apparatus was rotated by an electric motor. The radiation source was a 700 kv electron accelerator. There was no evidence for the formation of grafted polymers in the control, nonirradiated experiment, [illegible] radiation intensity of 1.2×10^{18} ev/cm^3.sec and an exposure time

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Radiation grafting of ...

[illegible] weight on [illegible] of [illegible] [illegible] grafted polymer. Results [illegible] [illegible] irradiation [illegible] [illegible]. The [illegible] ship between total quantity of [illegible] intensity of radiation was shown to correspond [illegible] [illegible] for rupture of kinetic chains [illegible] [illegible] macroradicals, and confirmed the radical [illegible] [illegible] process. Experiments carried [illegible] [illegible] positive results. This is explained [illegible] [illegible] of electron semiconduction, so that the [illegible] [illegible] is an acceptor of free electrons and [illegible] [illegible] small in ZnO. There are 3 figures and [illegible]

ASSOCIATION: Institut elementoorganicheskikh [illegible] Institut fizicheskoy khimii AN [illegible] Elemental Organic Compounds, AS USSR; [illegible] Physical Chemistry, AS USSR)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/844/62/000/000/050/129
D287/D307

AUTHORS: Topchiyev, A. V., Vereshchinskiy, I. V.m Glazunov, P. Ya., [illegible], V. Ye., Polak, L. S., Ryabchikova, G. G., Si-[illegible], G. K., Timofeyev, V. D. and Chernyak, N. Ya.

TITLE: Thermal cracking of hydrocarbons induced by irradiation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 304-307

TEXT: The effect of irradiation on thermal cracking of heptane at thermal cracking temperatures was studied. The experiments were carried out in a countercurrent reactor, at constant throughput of the gas, using irradiation dosages of 7 x 10^{15} ev/sec/1 cm^3 heptane. The rate of formation of gaseous products during radiation-induced and ordinary thermal cracking at 400 - 600°C was influenced by the reaction temperature. At temperatures above 550°C the relationship between the yield of products obtained by radiation and those obtained by ordinary thermal cracking was in a 4:1 ratio and radia-

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Thermal cracking of ... S/844/[illegible]/000/000/040/[illegible]
D[illegible]/D[illegible]

[illegible] processes could therefore be carried out [illegible] temperatures (150 - 20°C) than ordinary thermal cracking [illegible] (50 - 600°C). Activation energy requirements also compared favorably (21 kcal/mole as against >60 kcal/mole for thermal cracking). The yield of gaseous and liquid unsaturated compounds increased sharply with temperature and reached >15,000 mol/100 ev at >600°C. At temperatures >800°C the radiation yield became lower. The yield of unsaturated compounds increased sharply with temperature and reached 80% (as against 50 - 55% during ordinary thermal cracking). Optimum conditions for the above process were high dosage irradiation and short contact times. There are 5 figures.

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/844/62/000/000/051/129
D287/D307

AUTHORS: Spitsyn, V. I., Vereshchinskiy, I. V., Glazunov, P. Ya., Ryabchikova, G. G. and Sibirskaya, G. K.

TITLE: High-temperature radiolysis of propane

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po [illegible] Khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, [illegible], 305-311

TEXT: Preliminary results are given of the effects of temperature on the radiolysis of propane-ethane mixtures. The purified propane-ethane mixture, prepared in the institut ispol'zovaniya [illegible] AN USSR (Institute for the Utilization of Gases, AS Ukr.SSR), freed of CH_4, olefins and C_4 hydrocarbons, and containing [illegible] propane at normal pressure, was irradiated with an optimum dosage of a few units x 10^{15} ev/cm^{3}sec, the temperature being maintained with an accuracy of $\pm$ 4°C. The radiolysis products (up to C_6 hydrocarbons) were analyzed in a chromothermograph XT-2M (KhT-2M); the weight of

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S/[illegible]/000/000/[illegible]
D[illegible]7/D 07

[illegible]high-temperature radiolysis ...

[illegible] The [illegible] were [illegible] [illegible] at [illegible]°C and rapidly thereafter. [illegible] [illegible] were investigated as thermal cracking [illegible] [illegible] at [illegible]°C, [illegible] at [illegible]°C). Principal [illegible] [illegible] were: H_2, ethylene and [illegible] [illegible] at [illegible]°C; the CH_4 content increased [illegible] [illegible] at [illegible]°C the following reaction products [illegible] [illegible] CH_4, [illegible] C_2H_4 + C_3H_6 which is [illegible] [illegible] the products obtained during thermal cracking [illegible] [illegible] on the relationship between the percent[illegible] [illegible] composition and the time of irradiation at [illegible]°C [illegible] [illegible] products are: H_2 ([illegible] mol/[illegible] ev), ethylene [illegible] [illegible] propylene [illegible] mol/100 ev). The activation energy [illegible] [illegible] of hydrogen, ethylene and propylene was calculated [illegible] [illegible] mole, i.e. it is approximately equal to that required [illegible] [illegible]. The radiolysis of propane-ethane mixtures [illegible] [illegible] reaction. There are 4 figures.

ASSOCIATION: Institut fizicheskoy khimii, [illegible] [illegible] Physical Chemistry, [illegible])

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S/844/62/000/000/086/129
D423/D307

AUTHORS: Spitsyn, V. I., Afanas'yeva, N. A., Kolli, I. D., Pikayev, A. K. and Glazunov, F. Ya.

TITLE: Radiation polymerization of phosphonitrile chloride

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 507-510

TEXT: Investigations were carried out on samples of phosphonitrile chloride deposited on aluminum subjected to various doses of 1 - 1.2 Mev electrons from an electron accelerator, at a temperature of about 130°C. Almost complete polymerization occurred with a dose of 1.7 x 10^{24} ev/g, in the presence of oxygen. Since partial volatilization of the $(PNCl_2)_3$ occurred, owing to heating by absorption of energy, similar experiments were carried out with $(PNCl_2)_4$ in the absence of oxygen, but only at very high dosages was any significant polymerization observed. Experiments were car-

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ried out in addition on the action of radiation on the reaction of n-butyl alcohol with $(PNCl_2)_4$, which does not take place under normal conditions. A typical experiment was carried out using 50 ml of a 5% solution of $(PNCl_2)_4$ in absolute n-butanol and irradiating in a glass cell for 6 hours with 0.6 Mev electrons and a dose of 1.5 x $10^{[illegible]}$ ev/ml. The temperature did not exceed 50°C. After analysis the product was found to correspond to phosphonitrile ether n-butanol. Atomic hydrogen liberated during the process was assumed to be responsible for the formation of monomer and dimer radicals and also HCl. Data obtained indicated that the chlorine content of the solution was reduced with increase of dosage. Further work was undertaken using a mixture of phosphonitrile chloride and calcium fluoride in tetrachlorethane. Analysis confirmed that mixed phosphonitrile halides were obtained, corresponding to the formula $P_4N_4FCl_7$. There are 2 tables.

ASSOCIATION: Institut fizicheskoy khimii AN SSSR, Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova, khi-

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Radiation polymerization of ... S/844/62/000/000/086/129
D423/D307

micheskoy fakul'tet (Institute of Physical Chemistry, AS USSR; Moscow State University im. M. V. Lomonosov, Faculty of Chemistry)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/844/62/000/000/106/129
D408/D307

AUTHORS: Taubman, A. B., Yanova, L. P., Maslovskaya, R. S. and Glazunov, P. Ya.

TITLE: Mechanisms of gas formation processes during the radiolysis of polymers and low-molecular weight compounds

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 625-628

TEXT: The present work is a continuation of previous investigations by the authors. Water and n-octane were irradiated with fast electrons accelerated at 700 - 750 kv; the doses were measured by the ferrous sulfate method. For both materials the quantity of gas evolved altered very slowly, and the temperature coefficients remained practically constant, within wide intervals of temperature both above and below their melting points. Since this phenomenon was also detected in earlier work when polymers were irradiated, the authors concluded that the change in the gas formation kinetics

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D408/D307

Mechanisms of gas ...

in the phase transition region is independent of the nature of the irradiated material and depends only on the conditions under which the gaseous degradation products are formed and liberated during the radiolysis. The results confirm the authors' previous conclusion that, up to the moment when new gas phase nuclei form, the radiolysis reaction is reversible. Thermomechanical curves drawn for polybutylmethacrylate specimens which had been previously irradiated with identical doses but at different temperatures indicated that destruction of the polymer chains depends not only on the direct radiation reaction, but also on internal stresses produced in the material as a consequence of the formation and delayed liberation of the gaseous radiolysis products. In some cases the formation of increased quantities of gas at higher temperatures does not aggravate the destruction of the polymer because the increased mobility of the chains enables the internal stresses to relax. There are 2 figures.

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

S/844/62/000/000/124/129
D444/D307

AUTHORS: Glazunov, P. Ya., Kolbanovskiy, Yu. A. and Timofeyev, V.D.

TITLE: Flow installation for investigation of radiation-chemical reactions

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 7[illegible]-7[illegible]

TEXT: The installation was designed for carrying out radiation-chemical reactions under flow conditions with the object of studying the kinetics and of modelling certain gas-phase radiation-chemical processes. It consists essentially of a stainless-steel, externally heated reactor of [illegible] mm internal diameter and 1 m long, provided at the window end with an inlet and a manometer with television observation. The inlet communicates with a pumping and dispensing system, which can, however, be made closed circuit for the pre-adjustment of flow and pressure. On leaving the reactor, the vapor passes to a water-cooled collecting train while the gas leaves

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Flow installation for ... S/044/62/000/000/124/129
D444/D507

via a gas meter. The [illegible] installation is mounted on a platform which is moved on rails and hydraulically lifted into the correct position with respect to the window of an electron beam accelerator. The readings of the thermocouples in the reactor are corrected for their heating by the electron beam. Either aluminum or beryllium foil windows can be used in the reactor. In spite of some defects, the installation has been successfully used for studies of radiation-thermal cracking of light hydrocarbons and petroleum fractions. There are 7 figures.

ASSOCIATION: Institut neftekhimicheskogo sintezu AN SSSR; Institut fizicheskoi khimii AN SSSR (Institute of Petrochemical Synthesis, AS USSR; Institute of Physical Chemistry, AS USSR)

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

TOPCHIYEV, A.V.; POLAK, L.S.; GLUSHNEV, V.Yo.; POPOV, V.T.; TIMOFEYEV, V.D.; GLAZUNOV, P.Ya.; RYABCHIKOVA, G.G.

Radiation-induced and thermal cracking of petroleum hydrocarbons. Neftekhimiia 2 no.2:196-210 Mr-Ap '62. (MIRA 15:6:

1. Institut neftekhimicheskogo sinteza AN SSSR i Institut fizicheskoy khimii AN SSSR.
(Cracking process) (Hydrocarbons)

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[illegible]

11600

AUTHORS: Zhabrova, G.M., [illegible], B.M., [illegible], [illegible], Yemorov, [illegible], [illegible], Kotalov, [illegible], Gordeyev, [illegible]

TITLE: Preparation of finely divided metal [illegible] by radiation

PERIODICAL: Kinetika i Kataliz, v. [illegible], no.4, [illegible], 610-613

TEXT: A possibility was investigated of [illegible] oxides in a finely divided [illegible] by irradiation [illegible] $Al(OH)_3$, $Fe(OH)_3$, Ni and Cu [illegible] with accelerated electrons [illegible] temperature of the samples during irradiation (1 to 2 [illegible]) did not exceed 40 to 50°C. Thermal [illegible] at 400 to 500°C was also carried out for comparison [illegible] irradiated materials. The decomposition of all the compounds commenced at radiation doses exceeding 10^8 rads and was [illegible] at 10^9 to 10^{10} rads. At the latter doses the compounds were almost completely

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decomposed. It was shown that the specific surface of the metals and oxides prepared by the irradiation method [illegible] cases that of the samples prepared by thermal or [illegible] pressure pyrolysis. An especially marked [illegible] was observed for the radiolysis of Cu and Ni oxalates. The surface area of the oxalate decomposition products consisting predominantly of metals was sometimes 10 or more times that of the decomposition products obtained by vacuum pyrolysis. Radiolysis of $Fe(OH)_3$ and $Fe(OH)_3$ gives dispersed oxides having considerable surface areas. $Al(OH)_3$ is an exception, Al_2O_3 produced by the radiolysis having a similar surface area to that of Al_2O_3 obtained by pyrolysis. The metals and oxides prepared by radiolysis may find application as low temperature catalysts and adsorbents. There are 2 figures and 2 tables.

ASSOCIATIONS: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics AS USSR)
Institut atomnoy energii im. I.V.Kurchatova AN SSSR (Institute of Atomic Energy imeni I.V. Kurchatov AS USSR)

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Preparation of finely ... [illegible]/003/004/001/002
[illegible]

Institut fizicheskoy khimii AN SSSR
(Institute of Physical Chemistry AS USSR)

SUBMITTED: March 15, 1962

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"APPROVED FOR RELEASE: 09/24/2001 CIA-RDP86-00513R000500020009-5

ZHABROVA, G.M.; KADENATSI, B.M.; AZIZOV, T.S.; GORDEYEVA, V.A.; GLAZUNOV, P.Ya.; GEZALOV, A.A.

Radiation method of preparation of highly dispersed metals and oxides. Izv.AN SSSR.Otd.khim.nauk no.9:1690-1692 S '62. (MIRA 15:10)

1. Institut khimicheskoy fiziki AN SSSR i Institut fizicheskoy khimii AN SSSR.
(Metallic oxides) (Colloids) (Radiation)

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