VESELOVSKIY, P.F.; SUCHKOV, Yu.D.

General case of the method for determining dielectric permeability by means of resonators. Fiz.tver.tela 4 no.10:2989-2992 O '62. (MIRA 15:12)

1. Leningradskiy politekhnicheskiy institut imeni M.I.Kalinina.
(Dielectric constant) (Electric resonators)

42318

S/190/62/004/011/001/014
B119/B186

5 4100

AUTHOR: Veselovskiy, P. F.

TITLE: Study of dielectric properties of some cellulose esters within a wide temperature range

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 11, 1962, 1617 - 1624

TEXT: The dielectric constants and the dielectric losses of cellulose diacetate (I), triacetate (II), and acetobutyrate (III) were measured in the frequency range between 0.6 kc and 1 Mc at temperatures of -150 to +225°C. For all these substances tan δ shows a maximum at about -20°C and 1 kc, which shifts toward higher temperatures with increasing frequency. At temperatures of ~100°C and over, tan δ of I increases exponentially, that of II also increases but shows, at about 200°C, a step which forms a maximum at higher frequencies. tan δ of III shows a second maximum at about 185°C; above 200°C, it rises again. ε' at 1 kc rises with temperature from ~3.75 at ~-30°C to 4.0 at ~+60°C, forms a platform up to +150°C, and rises again to ~4.25 toward +200°C. Between -150 and +75°C,

Card 1/2

Study of dielectric properties of...

S/190/62/004/011/001/014
B119/B186

dipole-radical dielectric losses occur which are assumed to be due to the orientation of the interacting $OCOCH_3$ and $OCOC_4H_9$ radicals. The internal plasticization involves only a reduction of tanδ and does not affect the most probable relaxation time of the dipole-radical losses. Therefore, as regards dielectric properties, II and III behave like amorphous polar polymers. The intrinsic vibration frequency of the polar radicals and their activation energy were determined, these being 10^{-12} to 10^{-13} sec, 10.6 and 10.4 kcal/mole for I and II; and 10^{-13} sec, 11.3 kcal/mole for III. There are 5 figures. The English-language reference is: R, Seideman, S. G. Mason, Canad. J. Chem., 32, 744, 1954.

ASSOCIATION: Leningradskiy politekhnicheskiy institut im. M. I. Kalinina
(Leningrad Polytechnic Institute imeni M. I. Kalinin)

SUBMITTED: October 10, 1960

Card 2/2

SOV/112-58-2-1874

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1958, Nr 2, pp 12-13 (USSR)

AUTHOR: Veselovskiy, P. F.

TITLE: Low-Frequency and High-Frequency Dielectric Losses in Amorphous Polymers (Nizkochastotnyye i vysokochastotnyye dielektricheskiye poteri v amorfnykh polimerakh)

PERIODICAL: Izv. Tomskogo politekhn. in-ta, 1956, Vol 91, pp 399-412

ABSTRACT: Results are presented of measuring the effect of temperature and frequency on ε and $\operatorname{tg}\delta$ of a number of polymers of homologous series of polyvinyl-spirit acetals. A conclusion is made that dielectric losses in amorphous polar polymers are due to relaxation phenomena. Dipole elastic losses are found in all the polymers investigated, while dipole-radical losses are found in all except polyvinyl acetate. As the relative concentration of styrene in the copolymer with synthetic butadien rubber increases, the relaxation time τ changes symbatically with the variation of the copolymer Tg. The relaxation time also

Card 1/2

SOV/112-58-2-1874

Low-Frequency and High-Frequency Dielectric Losses in Amorphous Polymers

changes with complicating the side radical. Plastification and cross-linking tend to displace the tgδ maximum in the opposite sides; they affect τ and Tg in the same way. All these factors create prerequisites for controlling the dipole elastic losses. Bibliography: 12 items. Leningradskiy politekhn. in-t (Leningrad Polytechnic Institute), Leningrad.

A.M.A.

Card 2/2

L 23921-66 EWT(m)/EPF(n)-2/EWP(j)/T/EWA(h)/EWA(1) IJP(c) GG/RM

ACC NR: AP6010428 (A) SOURCE CODE: UR/0020/66/167/002/0339/0341

AUTHOR: Veselovskiy, R. A.; Leshchenko, S. S.; Karpov, V. L. 31

ORG: Physicochemical Institute im. L. Ya. Karpov (Fiziko-khimicheskiy institut) B

TITLE: Some aspects of the radiation chemistry of polypropylene 15 15

SOURCE: AN SSSR. Doklady, v. 167, no. 2, 1966, 339-341

TOPIC TAGS: polypropylene, gamma irradiation, irradiation effect

ABSTRACT: Structural changes occurring in isotactic polypropylene (intrinsic viscosity of 5.3) under the influence of Co^{60} gamma irradiation were studied. The contribution of radical and ionic reactions to the cross-linking process was found to be negligible, presumably because the side methyl groups cause steric hindrance effects which do not permit the polyprolylene chain to come sufficiently close to one another. Vinylidene-type double bonds were found to be responsible for the formation of cross-linkages in polypropylene. The cross-linking is thought to result from the interaction between an excited double bond and the polymer chain, and the energy required for the excitation must be propagated along this chain. The rate of formation of vinylidene groups, determined by IR spectrometry, is much faster below the gelation dose (6.5 Mrad) than above it; this is explained by a higher rate of consumption of vinylidene groups after the gelation dose. The consumption of active oxygen-containing

UDC: 678.742.3:660.85

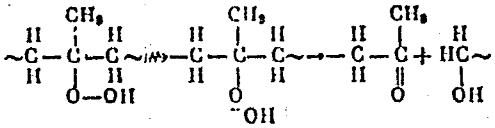
Card 1/2

L 23921-66

ACC NR: AP6010428

0

groups may be governed by the following mechanism:



$$\sim CH_2-\overset{CH_3}{\underset{O-OH}{C}}-CH_2\sim\;\rightsquigarrow\;-CH_2-\overset{CH_3}{\underset{O\cdot}{C}}-CH_2\sim\;+\;\cdot OH\;\rightarrow\;-CH_2-\overset{CH_3}{\underset{\|O}{C}}+\overset{H}{\underset{OH}{HC}}\sim$$

Thus, the decomposition of these groups follows a radial mechanism followed by the rupture of the main polymer chain. Introduction of radial acceptors into the polymer prevents such ruptures and thus shifts the start of gelation toward lower doses. The paper was presented by Academician V. A. Kargin on 26 June 1965. Orig. art. has: 2 figures, 1 formula.

SUB CODE: 07/ SUBM DATE: 14Jun65/ ORIG REF: 003/ OTH REF: 009

Card 2/2 BK

VESELOVSKIY, P. V.

"Intermolecular regulation of organic glasses and its manifestation in dielectrical losses and polarization."

report submitted for 4th All-Union Conf on Structure of Glass, Leningrad, 16-21 Mar 64.

VESELOVSKIY, S.F.

120-3-32/40

AUTHORS: Veselovskiy, S.F., Kudryakov, A.A., Shurat, V.Ye., Tantsyrev G.D.

TITLE: Preparation of Glass Diaphragms for the Inlet System in a Mass Spectrometer (Izgotovleniye steklyannykh diafragm dlya napusknoy sistemy mass-spektrometra)

PERIODICAL: Pribory i Tekhnika Eksperimenta, 1957, Nr 3, p.108 (USSR)

ABSTRACT: In mass spectroscopic analysis of substances such as free radicals which react easily with metals, it is necessary to prepare glass diaphragms through which the gas flows into the ion source. A method of preparing such diaphragms is given. The end of a Pyrex glass tube having an internal diameter of 10 mm is drawn out to a diameter of 2 mm and the end of the tube is polished. After this, the end is heated until the glass softens and it is then pierced through a plane glass slide prepared in a way described in (Ref.1). The glass slide is 30 μ thick and fuses into the tube. The seal is vacuum tight and withstands atmospheric pressure. The cap is then covered with paraffin in which a

Card 1/2

120-3-21/40

Preparation of Glass Diaphragms for the Inlet System in a Mass Spectrometer.

small hole is made with a hot needle (Fig.1). On either side of the thin cover are placed electrodes connected to an induction coil. By closing a key in the primary, a potential difference of 150 volts is applied to it from a bank of condensers having a capacity of 100 microfarads. When the glass wall is pierced by a single spark, a round aperture 10 µ in diameter is produced in the centre. The diameter can be increased to 80 µ if the discharge is repeated several times. In order to obtain bigger diameters fluoric acid may be applied to the edges of the aperture. Diameters of 100 to 500 µ can be obtained in this way. The diaphragm may be fused into the inlet system of the mass spectrometer as shown in Fig.2. V.L. Tal'roze collaborated. There are 2 diagrams, no tables and 1 Russian reference.

ASSOCIATION: Institute of Chemical Physics of the Academy of Sciences of the USSR. **(Institut khimicheskoy fiziki AN USSR)**

SUBMITTED: February 5, 1957.

AVAILABLE: Library of Congress.

Card 2/2

1. Spectrometers 2. Diaphragms-Glass-Application

VESELOVSKIY, S. F.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Veselovskiy, S. F.	"Glass Blowing"	Institute of Chemical Physics, Academy of Sciences USSR

SO: W-30604, 7 July 1954

Veselovskiy S.F.

USSR/Fitting Out of Laboratories. Instruments, Their Theory, Construction and Use. H.

Abs Jour : Referat Zhur - Khimiya, No 2, 1957, 4969

Author : Veselovskiy, S.F.

Title : Method of Sealing Together Glass of Different Expansion Coefficient

Orig Pub : Zavod. laboratoriya, 1956, 22, No 5, 613-614

Abstract : Sealing of such glasses is effected by means of successive building up on one of the tubes of several layers of intermediate glass varieties, which differ from one another, in their expansion coefficients, not more than by 8-10%, and containing gradually increasing amounts of the second kind of glass that is to be joined to the first. A detailed description is given of the technique of sealing together tubes of quartz and molybdenum glass. A formula is given for computing the coefficient of linear expansion of a glass of known chemical composition.

Card 1/1

VESELOVSKIY, S.F.

Category : USSR/General Problems - Method and Technique of Investigation A-4

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 2891

Author : Veselovskiy, S.F.
Inst : Institute of Chemical Physics, Academy of Sciences USSR
Title : Method for Fusing Glass Having Different Coefficients of Expansion.

Orig Pub : Zav. laboratoriya, 1956, 22, No 5, 613-614

Abstract : To fuse transition grades of glass, two pieces of glass are usually used having different coefficients of expansion. This article describes the technology of fusing, whereby the transition grades are produced from finely-ground powders of the types of glass to be fused, taken in different proportions. The results obtained by such fusing are described.

Card : 1/1

VESELOVSKIY, S.V.; KUDRYAKOV, A.A.; SKURAT, V.Ye.; TANTSYREV, G.D.

Preparation of glass diaphragms for mass spectrometer inlets. Prib.i tekh.eksp. no.3:106 My-Je '57. (MIRA 10:9)

1. Institut khimicheskoy fiziki Akademii nauk SSSR.
(Mass spectrometry)

1. VESELOVSKIY, S. I.

2. USSR (600)

4. Gearing, Bevel

7. Making small tooth-cutting heads for cutting spiral-toothed bevel gears.
Stan. i instr. 23 no. 9, 1952

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

VESELOVSKIY, S.I.; KOKHTEV, A.A., redaktor; SHCHERBAKOV, P.V., tekhnicheskiy redaktor.

[Efficient process of manufacturing metal slitting and cutting saws] Ratsional'naia tekhnologiia izgotovleniia proreznykh i otreznykh diskovykh frez. Moskva, Gos.izd-vo obor.promyshl, 1953.25 p.[Microfilm]
(Milling machines)

VESELOVSKIY, S. I.

Machine-Shop Practice

Efficient production of end cutters., Stan. i instr., no. 12, 1951.

<u>Monthly List of Russian Accessions</u>, Library of Congress, March 1952. Unclassified.

VESELOVSKIY, S. I.

"Multi-Profile Grinding of Thread Milling Cutters on a Relieving Lathe," Stanki I Instrument, 16, Nos. 4-5, 1945

BR-52059019

VESELOVSKIY, S. I., Engineer

"Multiposition Attachments for Manufacturing Cutters,"
Stanki I Instrument, 16, Nos. 4-5, 1945

BR-52059019

VESELOVSKIY, S. I.

Kuybyshev (-1946-)

"Cylindrical Profile G rinding of Glison Cutting Tools in a Multi-Position Attachment instead of Relieveing," Stanki I Instrument, 17, No. 1, 1946.

BR-52059019

VESELOVSKIY, S. I. Engineer

Kubyshev (-1945-)

"Multi-profile Grinding of Threads on AKhMe Dies,"
Stanki i Instrument, 16, Nos. 10-11, 1945

BR-52059019

VESELOVSKIY, S. I., Engineer

"Threading Taps with AKMYe Dies," Stanki i Instrument, 16, Nos. 10-11, 1945

BR-52059019

VESELOVSKIY, S. I. Engineer

"Multiprofile and Shape Grinding of Cutting Tools,"
Stanki I Instrument, 16, No. 9, 1945

BR-52059019

VESELOVSKIY, Sergey Ivanovich, inzh.; SHELKOV, N.I., inzh., ved. red.; RUKAVISHNIKOV, V.I., inzh., red.; SMIRNOV, B.M., tekhn. red.

[Manufacturing low-module gear tail cutters] Izgotovlenie melkomodul'nykh khvostovykh dolbiakov. Moskva, Filial Vses. in-ta nauchn. i tekhn. informatsii, 1957. 45 p. (Peredovoi nauchno-tekhnicheskii i proizvodstvennyi opyt. Tema 11. No.M-57-15/1) (MIRA 16:3)

(Metal-cutting tools)

VESELOVSKIY, Sergey Ivanovich; DOBRYNIN, I., red.

[Diamond machining of metal-cutting tools] Obrabotka instrumentov almazami. Moskva, Mosk. rabochii, 1964. 65 p. (MIRA 18:3)

VESELOVSKIY, Sergey Ivanovich; SAKHAROV, G.N., kand.tekhn.nauk, retsenzent;
ROZENBLIT, Ya.M., inzh., retsenzent; SHELKOV, N.I., inzh., red.;
KUZNETSOVA, A.G., izdat.red.; ORESHKINA, V.I., tekhn.red.

[Manufacturing various types of gear-cutting tools] Proizvodstvo
otdel'nykh vidov zuboreznogo instrumenta. Moskva, Gos.izd-vo
obor.promyshl., 1959. 158 p. (MIRA 12:10)
(Gear-cutting machines)

6-58-2-4/21

AUTHOR: Veselovskiy, ~~S. N.~~

TITLE: Municipal Parallactic Traverse (Gorodskaya parallakticheskaya poligonometriya)

PERIODICAL: Geodeziya i Kartografiya, 1958, Nr 2, pp. 13 - 18 (USSR)

ABSTRACT: In carrying out surveys in the cities of the Volga district and on the Crimean Peninsula the author used the method of traverse with short basis suggested already at the beginning of the 19th century by V. Ya. Struve. The scheme by Struve was slightly modified by the author who used a base measuring subtense bar. The equipment consists of an optic theodolite Th-40, the base measuring subtense bar, 6 supports, 18 skids, 6 girders and 6 levelling marks. This equipment is packed in 5 boxes of a total weight of 120 - 130 kg. The principle and the method of surveying is described. It can be seen from the attached table on surveying in the Volga area and on the Crimean Peninsula that the here described method meets the requirements of technical instruction for surveying in cities

Card 1/2

6-58-2-4/21

Municipal Parallactic Traverse

as to accuracy. In the case of this method costs are even smaller as with normal surveying by means of rod supports. The bar and the accessories were constructed in the laboratories of Giprokommunstroy under the direction of the mechanic I. I. Dudintsov. There are 6 figures, 4 tables, and 3 references, which are Soviet.

1. Geophysical surveying--USSR

Card 2/2

VESELOVSKIY, V., prof., doktor tekhn.nauk

Self-ignition of coal. Mast.ugl. 9 no.2:24 F '60. (MIRA 13:7)
(Coal mines and mining--Safety measures)
(Combustion, Spontaneous)

VESELOVSKIY, V.A.; SEKAMOVA, Ye.N.; TARUSOV, V.N.

Mechanism of superweak spontaneous luminescence of organisms.
Biofizika 8 no.1:125-127 '63. (MIRA 17:8)

ZHURAVLEV, A.I.; VESELOVSKIY, V.A.; KOSHCHEYENKO, N.N.

Bioluminescence. Trudy MOIP. Otd. biol. 21:19-50 '65. (MIRA 18:6)

BENEVOLENSKIY, V.N.; KOSHCHEYENKO, N.N.; VESELOVSKIY, V.A.

Chemiluminescence and toxicity of hydrogen peroxide and cysteine reaction products. Trudy MOIP. Otd. biol. 21:112-116 '65. (MIRA 18:6)

ZHURAVLEV, A.I.; VESELOVSKIY, V.A.; KOSHCHEYENKO, N.N. (Moskva)

Bioluminescence and chemiluminescence of some organic compounds.
Usp. sovr. biol. 60 no.2:178-197 S-O '65. (MIRA 18:10)

1. TSentral'nyy nauchno-issledovatel'skiy institut kurortologii i fizioterapii Ministerstva zdravookhraneniya SSSR.

L 33674-66 EWT(1) IJP(c)

ACC NR: AP6004994 SOURCE CODE: UR/0221/65/060/002/0178/0197

39

B

AUTHOR: Zhuravlev, A. I.; Veselovskiy, V. A.; Koshcheyenko, N. N.

ORG: Central Scientific Research Institute of Health Resorts and Physical Therapy of the Ministry of Health SSSR (Tsentral'nyy nauchno-issledovatel'skiy institut kurortologii i fizioterapii Ministerstva zdravokhraneniya SSSR)

TITLE: Bioluminescence and chemiluminescence of some organic compounds

SOURCE: Uspekhi sovremennoy biologii, v. 60, no. 2, 1965, 178-197

TOPIC TAGS: animal, plant, luminescence, chemiluminescence, biochemistry, free radical

ABSTRACT: The present article based on the literature discusses the physical bases of luminescence, chemiluminescence of organic compounds, the nature of luciferin-luciferase reactions, luminescence of higher plants and animals, and the importance of luminescence. The bioluminescent mechanism appears to be related to free radical reactions. Almost all types of bioluminescence and chemiluminescence require an energy substrate (electron donor), catalyst, donor acceptor (generally oxygen) and a luminescent substance (activator). The

Card 1/2

0

L 33674-66

ACC NR: AP6004994

position that bioluminescent energy is lost and cannot be utilized by the bioluminescent system itself probably also applies to chemiluminescence. Bioantioxidants increase bioluminescence by protecting the luminescent systems from autoxidation. Spectroscopically, chemiluminescence and bioluminescence are broad bands of continuous light without lines, with maxima in various regions of the visible spectrum. Orig. art. has: 4 figures.

SUB CODE: 06, 07/ SUBM DATE: none/ ORIG REF: 047/ OTH REF: 117

Card 2/2

VESELOVSKIY, V.B., dotsent

The committee on the Black and White cattle has begun its work. (MIRA 16:2)
Zhivotnovodstvo 23 no.5:76-77 My '61.

1. Sekretar' Soveta po chernopestroy porode skota pri Ministerstve sel'skogo khozyaystva RSFSR.
(Dairy cattle breeding)

IZIDINOV, S.U.; BORISOVA, T.I.; VESELOVSKIY, V.I.

Electrochemical and photoelectrochemical behavior of a
silicon electrode. Dokl.AN SSSR 133 no.2:392-395 Jl '60.
(MIRA 13:7)

1. Fiziko-khimicheskiy institut L.Ya.Karpova. Predstavleno
akademikom A.N.Frumkinym.
(Silicon)

LAZORENKO-MANEVICH, R.M.; ALADZHALOVA, N.A.; VESELOVSKIY, V.I.

Electrochemical and photoelectrochemical processes taking place on germanium of the p- and n-type in the region of cathode polarization. Dokl.AN SSSR 133 no.3:620-623 Jl '60. (MIRA 13:7)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova. Predstavleno akad. A.N.Frumkinym.
(Germanium) (Overvoltage)

MAZITOV, Yu.A.; ROZENTAL', K.I.; VESELOVSKIY, V.I.

Ionization of oxygen over palladium. Dokl. AN SSSR 148 no.1: 152-155 Ja '63. (MIRA 16:2)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Predstavleno akademikom A.N. Frumkinym.
(Oxygen) (Ionization) (Electrodes, Palladium)

VESELOVSKIY, V.

AID P - 3300

Subject : USSR/Aeronautics

Card 1/1 Pub. 135 - 6/20

Author : Veselovskiy, V., Engineer Lt. Col.

Title : Spin of a contemporary fighter aircraft

Periodical : Vest. vozd. flota, 11, 27-35, N 1955

Abstract : This is a brief popular explanation of the dynamics of established and non-established spin of high speed contemporary aircraft. Spins for various initial conditions are discussed and some figures are given. The behaviour of aircraft with swept back wings is described. Diagrams.

Institution : None

Submitted : No date

ZHURAVLEV, Aleksandr Ivanovich, kand. biolog. nauk; VESELOVSKIY, Vladimir Aleksandrovich; SOROKO, Ya.I., red.; ATROSHCHENKO, L.Ye., tekhn. red.

[Bioluminescence] Zhivoe svechenie. Moskva, Izd-vo "Znanie," 1963. 45 p. (Novoe v zhizni, nauke, tekhnike. VIII Seriia: Biologiia i meditsina, no.9) (MIRA 16:5)
(Bioluminescence)

VESELOVSKIY, V.A.; TARUSOV, B.N.

Effect of γ-rays Co^{60} on the extremely weak luminescence of the root system of barley seedlings. Vest.Mosk.un.Ser.6: Biol., pochv. 20 no.4:65-68 Jl-Ag '65. (MIRA 18:12)

1. Kaf'edra biofiziki Moskovskogo universiteta. Submitted July 24, 1964.

VESELOVSKIY, V.A.

Device for fastening scaffolds. Sbor.rats.predl.vnedr.v proizv. no.5:71-72 '60. (MIRA 14:8)

1. Magnitogorskiy metallurgicheskiy kombinat.
(Scaffolding)

VESELOVSKIY, V.B.

[The experience of leading stockbreeders of Chelyabinsk Province; the tree-year plan for the development of stockbreeding in action] Opyt peredovikov zhivotnovodstva Cheliabinskoi oblasti; trekhletnii plan razvitiia zhivotnovodstva v deistvii. [Cheliabinsk] Cheliabinskoe obl. gos. izd-vo, 1951. 151 p. (MIRA 10:2)
(Chelyabinsk Province--Stock and stockbreeding)

VESELOVSKIY, V.B.

Opyt peredovikov zhivotnovodstva Cheliabinskoi oblasti (Experience of foremost workers in livestock raising in Chelyabinsk Province). 1951. 152 p.

SO: Monthly List of Russian Accessions, Vol. 6, No. 1, April 1953

1. V. B. VESELOVSKIY

2. USSR (600)

4. Chelyabinsk Province - Swine

7. Useful book ("Practice of leading swine breeders of Chelyabinsk Province." Reviewed by N. M. Popov). Sots. zhiv. 15 no. 2. 1953.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

1. VESELOVSKIY, V. B.
2. USSR (600)
4. Agriculture
7. Experience of formost workers in livestock raising in Chelyabinsk Province, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April, 1953, Uncl.

VESELOVSKIY, V.I.

Mechanism of radiational-electrochemical processes.
Probl.fiz.khim. no.1:73-80 '58. (MIRA 15:11)

1. Laboratoriya elektrokhimii Nauchno-issledovatel'skogo fiziko-khimicheskogo instituta im. Karpova.
(Radiochemistry) (Electrochemistry)

GOCHALIYEV, G.Z.; ZALKIND, TS.I.; VESELOVSKIY, V.I.

Stationary electrochemical process in the irradiated system Pt (sulfuric acid solution) Au. Dokl. AN SSSR 146 no.1:131-134. S '62. (MIRA 15:9)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova. Predstavleno akademikom A.I. Frumkinym.
(Electrochemistry) (Radiation) (Systems (Chemistry))

38578
S/081/62/000/010/015/085
B138/B101

21.4300

AUTHORS: Zalkind, Ts. I., Miller, N. B., Gochaliyev, G. Z., Veselovskiy, V. I.

TITLE: Radiation electrochemical processes in aqueous electrolyte solutions

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1962, 62, abstract 10B416 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, 1959, v. 1. Tashkent, AN UzSSR, 1961, 347-354)

TEXT: By means of electrochemical measurements on Pt-, Au- and Hg-electrodes, a study has been made of the radiation electrochemical processes that occur in solutions of H_2SO_4, and of H_2SO_4 with additions of U(4+), U(6+), $(COOH)_2$, during Co^{60} γ radiation. From the results it is concluded that both molecular hydrogen and H atoms are ionized. (Their stationary concentration at a dose rate of $6.1 \cdot 10^{16}$ ev/cm^3 sec was assessed as $2.3 \cdot 10^{-5}$ N; this diminished with pH). On the Hg-electrode in the presence of O_2 the HO_2 radical is reduced. It was found that if the solutions of

X

Card 1/2

Radiation electrochemical processes in ... S/081/62/000/010/015/085
B138/B101

uranium salts were subjected to radiolysis, the rate of U(5+) accumulation in the mixture of U(4+) and U(6+) was twice as high as in the U(4+) solution. In the H_2SO_4 solution with $(COOH)_2$ additions, the curve for the accumulation of H_2 in dependence on the $(COOH)_2$ concentration shows a maximum at $\sim 1 \cdot 10^{-2}$ N. H_2O_2 formation begins in this same range. [Abstracter's note: Complete translation.]

Card 2/2

X

38577

S/081/62/000/010/014/085
B138/B101

11.1192

AUTHORS: Shub, D. M., Tyurikov, G. S., Veselovskiy, V. I.

TITLE: Heterogeneous sensitization of radiation chemical processes on the interface semiconductor-solution

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 10, 1962, 62, abstract 10B415 (Tr. Tashkentsk. konferentsii po mirn. ispol'zovaniyu atomn. energii, 1959, v. 1. Tashkent, AN UzSSR, 1961, 370-377)

TEXT: The sensitizing activity of oxide semiconductors (ZnO, Cu_2O, Fe_2O_3 in the form of agitated suspensions) has been studied in reactions of radiation chemical formation or decomposition of H_2O_2 in an aqueous solution of NaOH, under optical and γ radiation from Co^{60}. During the γ irradiation of the solution in the presence of a ZnO suspension (2g/100 ml of solution) the yield of the H_2O_2 formation increases 3 - 5 times. The ZnO luminescence is found to be quenched in water and the NaOH solution. This indicates a possibility of transferring the energy of electron excitation in the semiconductor to the components of the solution. In the presence

X

Card 1/2

S/081/62/000/010/014/085
B138/B101

Heterogeneous sensitization of ...

of Fe_2O_3 a considerable increase in the rate of H_2O_2 decomposition is observed under radiation. The rate of H_2O_2 decomposition reaches its maximum at an H_2O_2 concentration of $\geqslant$ 20 M. Data for the radiation electrochemical effect on a $Cu \cdot Cu_2O$ electrode are also given. [Abstracter's note: Complete translation.]

X

Card 2/2

ROZENTAL', K.I.; VESELOVSKIY, V.I. (Moscow); Prinimal uchastiye: PETROV, G.A.

Kinetics of electrochemical oxidation and reduction of H_2, O_2, and oxyhydrogen gas on a platinum electrode in electrolyte solutions. Zhur.fiz.khim. 35 no.10:2256-2264 O '61. (MIRA 14:11)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Hydrogen) (Oxygen) (Oxidation, Electrolytic)
(Reduction, Electrolytic)

RAKOV, A.A.; VESELOVSKIY, V.I. (Moscow)

Electrochemical reduction of ozone on various metals. Zhur.fiz.-khim. 35 no.10:2297-2305 O '61. (MIRA 14:11)

1. Fiziko-khimicheskiy institut imeni L.Ya.Karpova.
(Ozone) (Reduction, Electrolytic)

ROZENTAL', K.I.; VESELOVSKIY, V.I. (Moscow)

Mechanism of electrochemical evolution of oxygen on a silver cathode studied with the aid of O^{18} oxygen isotope. Zhur.fiz. khim. 35 no.12:2670-2675 D '61. (MIRA 14:12)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.
(Silver oxide) (Electrochemistry) (Oxygen—Isotopes)

39239

S/076/62/036/007/002/010
B101/B138

26.1620 (also 4919)

AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.
(. Moscow)

TITLE: Structure of the electrical double layer on oxidized silver in alkali in the region of the transition from the lower to the higher oxide

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 7, 1962, 1426 - 1431

TEXT: To find out the cause of the overvoltage which occurs in the transition region, the impedance of a silver electrode was measured in 1 N KOH the charging curve plotted, and the photoelectrochemical behavior investigated. Results: (1) High resistance and low capacitance were observed in the transition region. (2) When the polarization current is cut off, the potential shifts toward that of the system $Ag/Ag_2O/OH^-$. This potential drop consists in a quick and a slow section to the curve. (3) On illumination, $\Delta\varphi_{light}$ rises linearly with potential and falls rapidly when that of the higher oxide is reached. When the illumination stops, the original

Card 1/2

S/076/62/036/007/002/010
B101/B138

Structure of the electrical ...

potential is restored; here again, a quick and a slow process can be distinguished. Conclusions: The electrochemical and photoelectrochemical behavior of the silver electrode in alkali are connected with the semiconductor properties of the system. Due to the discharge of OH ions, oxygen is adsorbed on the lower oxide in the transition region. A barrier layer is formed which is polarized in the direction of the cutoff and determines the potential difference and the kinetics of the anodic process. The major drop in overvoltage occurs in the surface layer and in the layer of adsorbed polarized particles. The ratio of these jumps depends on the potential and the steady-state conditions of the process. There are 7 figures. The most important English-language reference is: T. P. Durkse, J. Electrochem. Soc., 106, 5, 1959.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

SUBMITTED: August 18, 1960

Card 2/2

24.7700

39588
S/020/62/145/002/016/018
B145/B101

AUTHORS: Yakovleva, A. A., Borisova, T. I., and Veselovskiy, V. I.

TITLE: Surface states of a germanium electrode during anodic dissolution

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 145, no. 2, 1962, 373-376

TEXT: The surface states of germanium of almost intrinsic conductivity (p = 42 ohm·cm) and of n- and p-type germanium of different resistivities was studied in H_2SO_4 and NaOH solutions by measuring the resistivity and capacity at a polarization of approximately 0-6 v and a-c frequencies between 100 cps and 200 kcps in the dark and with irradiated surface. Conclusions: an increase in anodic polarization reduces the number of electrons in the electrode surface, with holes being accumulated. The free carriers of the conduction and valency bands take part to a different extent in the anodic dissolution. The reaction proceeds by forming dipole groups $\cdot(Ge(OH)O^-)$ (hole acceptors) on the surface. The liberated electrons may be transferred to one of the two bands. The probability of transfer depends on the position of the complex with respect to the energy bands

Card 1/2

S/020/62/145/002/016/018
B145/B101

Surface states of a germanium...

and also on the surface concentration of the holes. This level is assumed to be a donor level which lies above the middle of the forbidden band. With weak polarizations, the reaction mainly proceeds through the conduction band. The downward shift of the Fermi level observed, and the accumulation of surface holes with increasing anode potential facilitates the electron transfer from the reacting complex and increases the portion of current conducted through the valency band. There are 3 figures. The English-language references are: W. H. Brattain, C. Garret, Bell Syst. Techn. J., 34, 129 (1955); C. G. Garrett, W. H. Brattain, Phys. Rev., 99, 376 (1955).

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute imeni L. Ya. Karpov)

PRESENTED: April 4, 1962, by A. N. Frumkin, Academician

SUBMITTED: March 30, 1962

Card 2/2

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

8C

41

Polarisation capacity and adsorption properties of the silver electrode. V. I. VESELOVSKI
(Acta Physicochim. U.R.S.S., 1939, 11, 815—836).—
The polarisation capacity of Ag has been determined
from charging curves and by measuring the effect of
adsorption of Ag' on the potential; the vals. found
by the two methods are respectively 640 and 620 µF.
per sq. cm. over the potential range corresponding
with the steady discharge of anions and the steady
evolution of H_2. The capacity in the double layer
region is 100—120 and 350—400 µF. per sq. cm. for
a smooth and an etched electrode respectively. The
zero charge of Ag is found at $E_h = 0{\cdot}046$ v., corre-
sponding with $[Ag'] = 10^{-13}$M. The p.d. between
a Ag and a Hg electrode, each at its zero charge
potential, is 0·206 v., in agreement with the difference
(0·25 v.) between the work functions of the two metals.
The effects of the formation of an oxide film, which is
present on Ag unless special precautions are observed,
F. L. U.
are discussed.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

COMMON ELEMENTS

MATERIALS INDEX

A C. S.

[illegible]

Continuous furnace for producing artificial graphite. V. Vasilovskii. *Novosti Tekhniki*, 1940, No. 16, pp. 19-20; *Khim. Referat. Zhur.* 4 (3) 114 (1941).—V. describes a continuous furnace for producing high-grade graphite constructed by himself and N. V. Pertsov. The entire process is mechanized. M.Ho.

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

C. A

Photogalvanic processes on a silver electrode. V. I. Veselovskii. *Acta Physicochim. U. R. S. S.* 14, 481-90 (1941)(in English).—See *C. A.* 35, 6507^9. R. H.

3

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

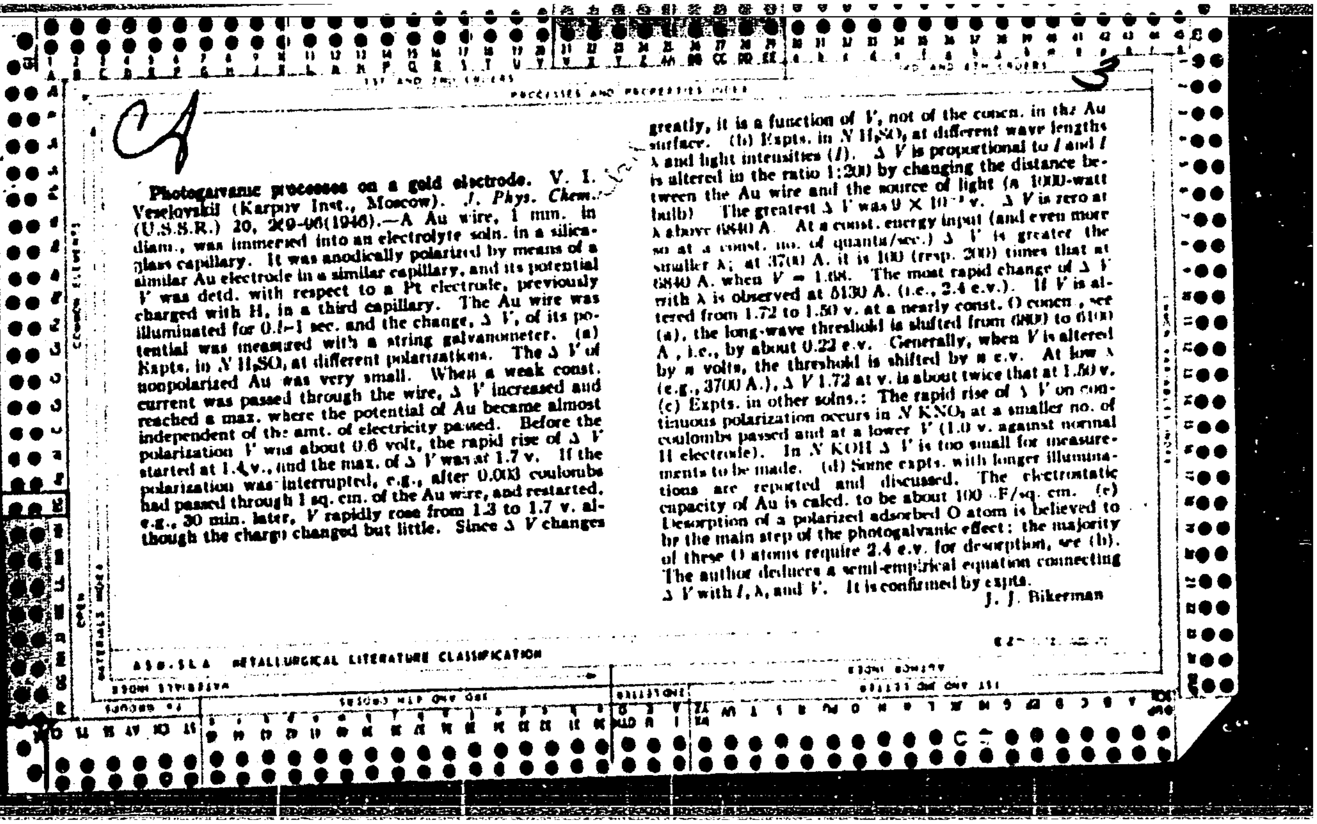
CA

3

Photogalvanic processes on silver electrodes. V. I.
Veselovskii. *J. Phys. Chem.* (U. S. S. R.) 15, 145-55
(1941); cf. *C. A.* 34, 4672^{8}.—The photogalvanic activity
of Ag covered with Ag_2O was studied and found to have a
max. in the red (not calcd. for the spectrum of equal ener-
gies) and a limit at the extreme visible red. In a 0.1 *N*
NaOH soln. with a potential corresponding to the equil.
formation of Ag_2O the Ag electrode possesses a pos. charge,
and the outer neg. cover of the double elec. layer is due to
negatively charged O. With this picture as a basis and
by taking the sign of the photogalvanic effect into con-
sideration, the most probable mechanism of this photo-
galvanic process is as follows: The light acting on the
Ag_2O surface causes its photogalvanic divorn. The elec-
trode acquires a neg. charge and the potential of the elec-
trode drops according to its polarization power in the
range of potentials. Secondary elec. phenomena may
result from the O liberated by the photogalvanic process.
These are observed in the form of more pos. values of the
potential of the electrode studied than those of the equil.
dark electrode after shutting off the light. A relation
between the measured and the true values characterizing
the photogalvanic process was found. An approxima-
tion of the quantum yield was made. W. Vanselow

Zhur. Fiz. Khim.,

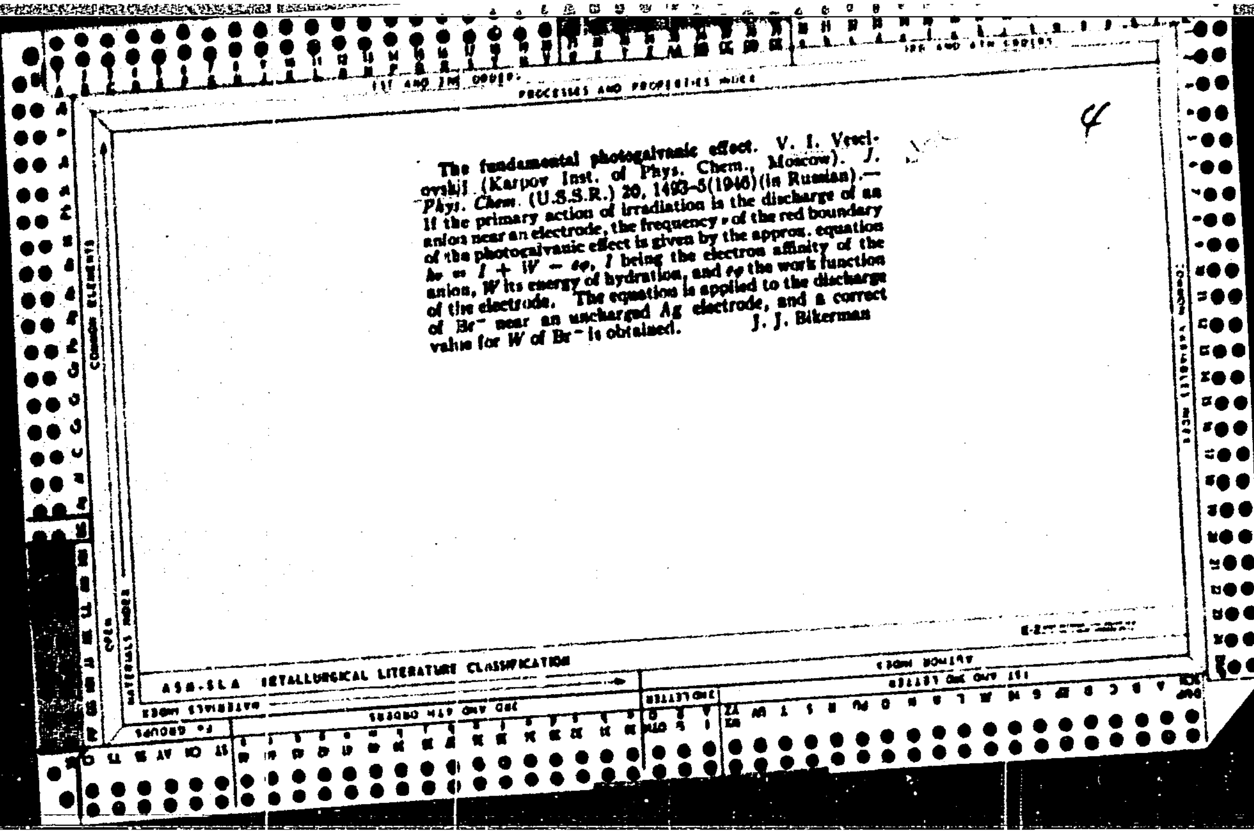
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

Photogalvanic processes on a gold electrode. V. I. Veselovskii (Karpov Inst., Moscow). *J. Phys. Chem. (U.S.S.R.)* 20, 269-96(1946).—A Au wire, 1 mm. in diam., was immersed into an electrolyte soln. in a silica-glass capillary. It was anodically polarized by means of a similar Au electrode in a similar capillary, and its potential V was detd. with respect to a Pt electrode, previously charged with H, in a third capillary. The Au wire was illuminated for 0.1–1 sec. and the change, ΔV, of its potential was measured with a string galvanometer. (a) Expts. in N H_2SO_4 at different polarizations. The ΔV of nonpolarized Au was very small. When a weak const. current was passed through the wire, ΔV increased and reached a max. where the potential of Au became almost independent of the amt. of electricity passed. Before the polarization V was about 0.6 volt, the rapid rise of ΔV started at 1.4 v., and the max. of ΔV was at 1.7 v. If the polarization was interrupted, e.g., after 0.003 coulombs had passed through 1 sq. cm. of the Au wire, and restarted. e.g., 30 min. later, V rapidly rose from 1.3 to 1.7 v. although the charge changed but little. Since ΔV changes greatly, it is a function of V, not of the concn. in the Au surface. (b) Expts. in N H_2SO_4 at different wave lengths λ and light intensities (I). ΔV is proportional to I and I is altered in the ratio 1:200 by changing the distance between the Au wire and the source of light (a 1000-watt bulb) The greatest ΔV was 9×10^{-3} v. ΔV is zero at λ above 6840 A. At a const. energy input (and even more so at a const. no. of quanta/sec.) ΔV is greater the smaller λ; at 3700 A. it is 100 (resp. 200) times that at 6840 A. when V = 1.68. The most rapid change of ΔV with λ is observed at 5130 A. (i.e., 2.4 e.v.). If V is altered from 1.72 to 1.50 v. at a nearly const. O concn., see (a), the long-wave threshold is shifted from 6800 to 6100 A., i.e., by about 0.22 e.v. Generally, when V is altered by n volts, the threshold is shifted by n e.v. At low λ (e.g., 3700 A.), ΔV 1.72 at v. is about twice that at 1.50 v. (c) Expts. in other solns.: The rapid rise of ΔV on continuous polarization occurs in N KNO_3 at a smaller no. of coulombs passed and at a lower V (1.0 v. against normal H electrode). In N KOH ΔV is too small for measurements to be made. (d) Some expts. with longer illuminations are reported and discussed. The electrostatic capacity of Au is calcd. to be about 100 μF/sq. cm. (e) Desorption of a polarized adsorbed O atom is believed to be the main step of the photogalvanic effect: the majority of these O atoms require 2.4 e.v. for desorption, see (b). The author deduces a semi-empirical equation connecting ΔV with I, λ, and V. It is confirmed by expts.

J. J. Bikerman



PROCESSES AND PROPERTIES INDEX

4

The fundamental photogalvanic effect. V. I. Veselovskii (Karpov Inst. of Phys. Chem., Moscow). *J. Phys. Chem.* (U.S.S.R.) 20, 1493-5(1946)(in Russian).— If the primary action of irradiation is the discharge of an anion near an electrode, the frequency ν of the red boundary of the photogalvanic effect is given by the approx. equation $h\nu = I + W - e\varphi$, I being the electron affinity of the anion, W its energy of hydration, and $e\varphi$ the work function of the electrode. The equation is applied to the discharge of Br^- near an uncharged Ag electrode, and a correct value for W of Br^- is obtained. J. J. Bikerman

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PA 54T44

VESELOVSKIY, V. I.

USSR/Electricity
Electrodes
Gold

Sep/Oct 1946

"Photogalvanic Processes on a Gold Electrode," V. Veselovskiy, Karpov Inst Phys Chem, Moscow, 34 pp

"Acta Physicochimica URSS" Vol XXI, No 5

Establishes relations between magnitude of photogalvanic effect on a gold electrode and amount of electricity passed; and between effect and intensity of radiation. Determines spectral sensitivity of effect, establishing its dependence on electrode potential. Discusses probable mechanism of photogalvanic process on gold electrode. Received, 26 Oct 1945.

[redacted] 54T44

1ST AND 2ND GROUPS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH GROUPS

3

Application of the photoelectrochemical method to the study of heterogeneous photosensitizers of the zinc oxide type. V. I. Veselovskii (Karpov Inst. Phys. Chem., Moscow). *J. Phys. Chem.* (U.S.S.R.) 21, 983-8(1947) (in Russian).—A Zn electrode anodically polarized in 0.1 *N* NaOH and therefore coated with ZnO is sensitive to ultraviolet. The curve of sensitivity against the wave length λ is almost coincident with that of light absorption by ZnO against λ. If the Zn/ZnO electrode is polarized to +1.5 v. against Ag/Ag_2O in 0.1 *N* NaOH and illuminated, the e.m.f. changes to −0.6 v. The *photogalvanic* current between illuminated Zn/ZnO and Ag/Ag_2O is proportional to the light intensity. The quantum yield reaches 0.5. This shows that the whole ZnO layer, not just its surface, is active. From the variations of e.m.f. and current strength the electrostatic capacity of the active system is about 30 μf./sq. cm. The above observations are used to explain the photosensitizing effect of ZnO.

J. J. Bikerman

Zhur. Fiz. Khim.,

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PA 56/49T16

USSR/Chemistry - Electrochemistry
Chemistry - Photochemical Reactions

Dec 48

"Sensitization Mechanism of the Photoelectrochemical Process on a Zn-ZnO-Electrode," V. I. Veselovskiy, Physicochem Inst imeni L. Ya Karpov, Moscow, 16 pp

"Zhur Fiz Khim" Vol XXII, No 12

Studies unusually high photogalvanic effect on an anode passivized Zn-electrode, and shows relation between mechanism of photogalvanic phenomena and mechanism of heterogeneous (pigmentary) sensitization in solutions. Also demonstrates effectiveness of photoelectrochemical method for observing anode processes, particularly in cases of passivizing metals. Submitted 8 Apr 48.
[redacted]

56/49T16

USSR/Chemistry - Electrochemistry Nov 48
Chemistry - Photochemical Reactions

"Mechanism of the Photoelectrochemical Processes on an Ag. Ag_2O-Electrode," V. I. Veselovskiy, Physicochem Inst imeni L. Ya. Karpov, Moscow, 10 pp

"Zhur Fiz Khim" Vol XXII, No 11 p.1302-11

Determines photogalvanic nature of a reactive group of atoms on an anode polarized Ag-electrode, and establishes relationship between photogalvanic current and electrode potential. Determines spectral sensitivity and red border of photoelectrochemical process on Ag-electrode, and suggests an explanation of the mechanism. Shows the specific character of

[redacted] 56/49T15

USSR/Chemistry - Electrochemistry (Contd) Nov 48

photoelectrochemical deposition of oxygen and anodal oxidation on the Ag. Ag_2O electrode, and the relation between the process and heterogeneous sensitization in a solution. Submitted 8 Apr 48.

56/49T15

VESELOVSKIY [redacted] V.I.

30727. VESELOVSKIY, V. I.

Fotoelektrokhimicheskiye protsessy na zheleze v prisutstvii perekisi vodoroda. Zhurnal fiz. khimii, 1949, vyp. 9, c. 1095-105. -- Bibliogr: 7 nazv.

3

CA

Photoelectrochemical processes on iron in the presence of hydrogen peroxide. V. I. Veselovskii. *Zhur. Fiz. Khim.* 23, 1095-1105(1949); cf. *C.A.* 43, 2858d.—Cathodically polarized or scraped Fe is not light-sensitive in *N* NaOH. Fe coated with an oxide film (about 100 A. thick) by anodic polarization or by heating in air becomes (in *N* NaOH) less noble on illumination with wave lengths λ shorter than 400 mμ. In darkness the current I_0 between this electrode and a Ag/AgO electrode is very small as long as the polarization voltage *V* is less than 0.3 v. and rapidly increases with *V* at greater anodic polarization of Fe. In light, the current I_1 is noticeable at *V* = −0.3 v., increases with *V* linearly until O evolution starts (at +0.3 v.) and increases more rapidly with *V* at *V* more than 0.3 v. At a const. I_1, *V* is raised from, e.g., 0.3 to 0.6 v. within 1 sec. (oscillograph detns.) but rapidly returns to the original value on turning off the light; the capacity *C* of the electrode seems to be about 100 during illumination and about 10 μF./sq. cm. during darkening. In *N* NaOH + 1 to 1.5% H_2O_2, oxidized Fe is light-sensitive also without polarization as long as λ is less than 400 mμ. *V* is −0.2 to −0.3 v. without, and, e.g., −0.4 to −0.6 v. in light. The light value of *V* is achieved in, e.g., 0.5 sec., and *C* is about 50 μF./sq. cm. With polarization, $I_1 - I_0$ increases with *V* linearly between −0.6 and +0.2 v. This linearity is accounted for by assuming that light decomps. a higher oxide (or an adsorption compd. of Fe oxide with O) on the electrode, that the rate of this decompn. is proportional to the degree θ of the coverage of the electrode by this oxide, and that *V* is a linear function of θ. This theory predicts that the intensity of radiation *J* and the concn. *c* of H_2O_2 affect *V* according to $V = cV_0/(c + AJ)$, *A* is const., and qual. expts. are in agreement with it. Since the quantum yield of $I_1 - I_0$ may be as high as 0.01, the substance absorbing the radiation presumably is Fe_2O_3 rather than the higher oxide present in an incomplete unimol. layer. J. J. Bikerman

c

3

Photoelectrochemical process and mechanism of liberation of oxygen at a platinum electrode. V. I. Ginzburg and V. I. Veselovskii (Karpov Inst. Phys. Chem., Moscow). *Zhur. Fiz. Khim.* 24, 266-78(1950); cf. *C.A.* 44, 9596.—The potential V of a Pt electrode in N H_2SO_4 after several anodic and cathodic polarizations was 0.90 v. referred to N H_2 electrode. If this Pt electrode was anodically polarised to V_1 v., it became photosensitive, and the light gradually lowered V back to 0.9 v. The rate of decrease of V was greater the greater V_1 (1.15-1.35 v.) and the greater the light intensity I. The photoelectrochem. c.d. i was proportional to I, and the shift of V was a linear function of log I. The light longer than 400 mμ was inactive, and the activity increased with frequency up to 254 mμ (the shortest wave used); at 254 mμ the quantum yield of the photoelectrons was 0.3% for the incident light. At a const. I, i increased with V_1 almost linearly as long as V_1 was small. The electrode capacity was approx. 300 microfarads/sq. cm. for both dark and light processes. When a Pt electrode was anodically polarised to V_1 more than 1.5 v. and its surface was then reduced cathodically, the V was for a time const. at 1.5 v. and about 0.0012 coulombs/sq. cm. were required to lower the V, showing that the Pt surface was covered with a monolayer of a higher oxide. Irradiation and cathodic polarization caused decompn. of this oxide more rapidly than either of them alone. The increase of O overvoltage on Pt with increasing c.d. showed a kink at 1.4 v. The mechanism of the photoelectrochem. effect includes liberation of an electron in Pt oxide by light, migration of this electron into the metal, and of the "electron deficiency" toward the soln., and discharge of neg. O forming a part of the higher oxide. J. J. Bikerman

GINZBURG, V.I.; VESELOVSKIY, V.I.

Electrodes

Mechanism of action of optical radiation on an anodically oxidized lead electrode
Zhur. fiz. khim. 26, No. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, September 1952, UNCLASSIFIED

VESELOVSKIY, V. I.

USSR/Chemistry - Photosensitizing Catalysts Apr 52

"The Photoelectrochemical Process in the Micro-heterogenous Sensitizing System ZnO Suspension/Solution," V. I. Veselovskiy, D. M. Shub, Phys Chem Inst imeni L. Ya. Karpov, Moscow

"Zhur Fiz Khim" Vol XXVI, No 4, pp 509-519

The ZnO photosensitizing system, which is of biol importance for clarifying the action of photosensitizers (chlorophyll), and for studying the stability of pigment-contg rubber, paints, and lacquers toward light was investigated by the

217T25

method of anodic polarography under use of a rotating Pt microelectrode. The mechanism of the process studied, which involves formation of H_2O_2 in the presence of O_2, may be interpreted as an electrochem result of the extinction of ZnO fluorescence by oxygen. The presence of an org reducing agent (glycerin) sharply increased the photoelectrochem process on ZnO. At the same time, the effectiveness of anodic oxidation of glycerin at the Pt electrode is increased when the latter is irradiated with a wave length active for a Pt.PtO electrode.

217T25

selovskiy, V. I.

The Committee on Stalin Prizes (of the Council of Ministers USSR) in the fields of science and inventions announces that the following scientific works, popular scientific books, and textbooks have been submitted for competition for Stalin Prizes for the years 1952 and 1953. (Sovetskaya Kultura, Moscow, No. 22-40, 20 Feb - 3 Apr 1954)

Name	Title of Work	Nominated by
Veselovskiy, V. I.	"Photoelectrochemical Investigations"	Ministry of the Chemical Industry

SO: W-30644, 7 July 1954

VESELOVSKIY, V. I.

CATALYSTS

Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Electrochemistry

3 Chem

The mechanism and kinetics of electrochemical oxidation by the method of anodic polarography on a platinum electrode. K. I. Rozental and V. I. Veselovskii (L. Ya. Karpov Phys.-Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 27, 1163-71(1953); cf. *C.A.* 44, 6718f.—A Pt wire (e.g., 0.5 mm. thick) rotated in a soln. (e.g., 900 r.p.m.) could be used as the electrode in polarography if it was polarized 4 times in 3 min. from the potential φ = 1.5-0.3 v. relative to the *N* H electrode. The half-wave potential *E* of such an anode was 1.3 v. in *N* $HClO_4$, *N* H_2SO_4, and *N* HNO_3, and the limiting current *I* was independent of the rotation of the electrode, i.e. was detd. by the rate of charging the electrode. In *N* H_2SO_4 + dil. Na_2SO_4, *E* was 0.7-0.8 v., i.e. the overvoltage was approx. 0.5 v.; when the concn. of SO_4^{--} increased 10 times, *I* also increased 10-fold and *E* was more anodic by 0.16 v. At $\varphi > 1.1$, current *i* decreased when φ increased, and at φ = 1.5 v. it was 0.1 that at 1.06 v. An analogous dependence of φ on *i* was observed for *N* H_2SO_4 + 0.003*M* H_2S and for *N* HNO_3 + 0.0003*M* KNO_2 (with *E* = 1.23 v.). No final explanation was available for the decrease of *i* at higher φ. In *N* HNO_3 + 0.01*M* KNO_2 and in *N* $HClO_4$ + 10^{-4}*M* H_2O_2 (*E* = 1.19 v.), a 2nd wave occurred at φ = 1.5 v.; it may be due to decompn. of a Pt peroxide. When φ of Pt was increased more rapidly (e.g., 0.032 instead of 0.004 v./sec.), *I* was greater (e.g., 4 × 10^{-6} instead of 2 × 10^{-6} amp. in *N* $HClO_4$) because $I = I_0 + C(d\varphi/dt)$, where I_0 was the fraction of current due to depolarizers, *C* the electrode capacity, and *t* time. The *I* in *N* H_2SO_4 + 0.005*M* $FeSO_4$ was independent of $d\varphi/dt$ because $Fe^{++} \rightarrow Fe^{+++}$ was an electronic reaction. The electrochem. oxidation of SO_3^{--}, NO_2^-, and H_2O_2 was detd. by reactions between these substances and the O adsorbed by Pt. J. J. Bikerman

8-31-54

VESELOVSKIY, V.I.

catalyst

Chemical Abst.
Vol. 48 No. 3
Feb. 10, 1954
Electrochemistry

The state of the electrode surface in the electrochemical liberation of oxygen and anodic oxidation. T. I. Borisova and V. I. Veselovskii (L. Ya. Karpov Phys.-Chem. Inst., Moscow). *Zhur. Fiz. Khim.* 27, 1195-1207(1953); cf. preceding abstr.—Electrochem. oxidation was mainly chem. oxidation by surface oxides, and the function of the elec. current was to re-form these oxides after their reduction. The differential capacity *C* and the resistance *R* of the surface of a wire were detd. by comparison with a capacitance and a resistance in series. (*a*) When the potential φ (against *N* H electrode) of Ag in *N* NaOH was gradually varied from −0.5 to +1.8 v. and *C* and *R* were detd. with a.c. of 5 cycles/sec., *C* showed max. at 0.0 v. (adsorption of H), 0.8 v. (formation of a surface oxide), 1.2 v. (formation of Ag_2O), and 1.5 v. (formation of higher Ag oxides; in this highest max., *C* was 455 microfarads/sq. cm.); the shallow min. at 0.6 v. corresponded to zero charge of oxidized Ag surface, and the deep min. ($C = 20$ microfarads/sq. cm.) at 1.3 v. was due to lower oxides which were poorly conducting, as *R* otherwise small, reached 10^4 ohm/sq. cm. at 1.3 v. The min. of *C* at 1.3 v. was visible also at 10^4 cycles/sec., while all the other max. and min. disappeared. The *R* decreased when frequency increased; e.g., it was 25, 10,000, and 99 at 5 cycles, and 1.2, 9.2, and 1.8 at 10^4 cycles for $\varphi =$ 0.4, 1.4, and 1.65 v., resp. (*b*) Pt in *N* H_2SO_4 had a min. of *C* (25 microfarads/sq. cm.) and a max. of *R* (3 ohm/sq. cm.) at 0.9 v., i.e. at the potential of Pt oxidized by air. A max. of *C* and shallow min. of *R* occurred at 1.6 v. (formation of a high-conducting higher oxide). This max. of *C* was visible between 2 and 20,000 cycles/sec. also in *N* $HClO_4$, but it disappeared after a strong anodic polarization of Pt. The potential of zero charge of Pt was 0.35 v. in 0.005*N* H_2SO_4. (*c*) In *N* H_2SO_4 + 0.1*M* Na_2SO_3, *C* and *R* had a high max. (110 microfarads/sq. cm., 27 ohm/sq. cm.) at 0.0 v., i.e. 0.7 v. more anodic than the equil. potential but at the φ of oxidized Pt, this showed that SO_3^{--} was oxidized by surface oxides. *C* had a min. at 1.2 v. Oxidation of HNO_2 started at 1.05 v., i.e. 0.1 v. more anodic than the equil. potential. On the contrary, *C* in *N* H_2SO_4 + 0.1*N* $FeSO_4$ had a max. at 0.77 v., i.e. at the equil. potential, because surface oxides did not participate in the reaction $Fe^{++} \rightarrow Fe^{+++}$. Oxidation of EtOH to AcH occurred at 0.7-0.9 v. and oxidation of AcH to AcOH at 1.2-1.5 v. J. J. B.

9-2-54
LJP

VESELOVSKIY, V.I.

[Radiation chemistry processes in inorganic systems. Electrochemical effect of radiation. Sensitization of radiation chemistry reactions] Radiatsionno-khimicheskie protsessy v neorganicheskikh sistemakh. Elektrokhimicheskoe deistvie izluchenii. Sensibilizatsiia radiatsionno-khimicheskikh reaktsii. Moskva, 1955. 27 p. (MIRA 14:6)

(Radiochemistry)

VESELOVSKIY, V. I.

"Radiation-Chemical Processes in Inorganic Systems," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

VESELOVSKIY, V.I.

Generation of hydrogen potential on the platinum electrode under the influence of γ-radiation. Ts. I. Zalkind and V. I. Veselovskii. Sbornik Rabot Radiatsionnoi Khim., Akad. Nauk S.S.S.R. 1955, 66-70.—Under the influence of radiation equiv [illegible] H [illegible] measured [illegible] radiation [illegible] 15 min. to the equiv [illegible] ained for extended periods of time. The polarization current quickly attained a const. value at const. voltage. Current was very nearly const. with increasing voltage in the range 0.050–0.600 v. Rotation of the electrode increased polarization current by 6–9 times. The addn. of 0.003N $H_2C_2O_4$ to the sulfuric acid soln. increased the current by a factor of 5 for both stationary and rotating electrodes. C. H. Fuchsman

1-RMF

2

5

0

1-RML

emf

RM

VESELOVSKIY, V.I.

Category : USSR/Optics - Physical Optics K-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4960

Author : Veselovskiy, V.I., Shub, D.M.
Inst : Physicochemistry Institute, USSR
Title : Mechanism of the Formation of Hydrogen Peroxide that is Photo-Sensitized by Zinc Oxide and the Fluorescent Properties of Zinc Oxide

Orig Pub : Probl. kinetiki i kataliza, 1955, 8, 53-52

Abstract : The authors sum up the results of an investigation on the mechanism of the heterogeneous reactions of the desorption of O_2 from ZnO, photo-sensitized by zinc oxide and of the formation of H_2O_2 in an aqueous solution in the presence of O_2, and the connection between the sensitizing ability of ZnO and its semiconductor and fluorescent properties. The high quantum effectiveness (up to 50% in the case of incident light) of desorption is caused by the sensitization mechanism of the process: the radiation absorbed by the entire volume of ZnO excites electrons (and holes) which migrate to the surface, causing a chemical reaction (desorption of O_2). In the H_2O_2-formation reaction, the oxygen absorbed from the ZnO captures the electrons that are excited by radiation: $O_2 + e +$

Card : 1/2

Category : USSR/Optics - Physical Optics

K-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4960

$H_2O \rightarrow OH^- + (1/2) H_2O_2 + (1/2)O_2$, and the OH^- ions of the alkali give up their electrons to ZnO, which recombine with the holes: $OH^- + e^+ \rightarrow (1/2)H_2O_2$. A single-valued connection is observed between the sensitizing ability of ZnO and its fluorescent properties: 1) frequently one observes for various specimens of ZnO a symbasic connection between the sensitizing ability and the intensity of fluorescence I; 2) the curves showing the dependence of the sensitizing ability on I and on the sintering temperature of ZnO have a similar appearance; 3) the specimens of ZnO having the maximum sensitizing ability display the maximum extinction of fluorescence by oxygen. Calculation show that in the H_2O_2-formation reaction there participate both the electrons responsible for the fluorescence, as well as the electrons participating in the radiationless transitions.

Card : 2/2

VESELOVSKIY, V.

Chem

Rus 2

8
0
0

Photoelectric investigations of oxidized chromium, nickel, and chrome nickel steels in alkaline solutions. I. B. Rabinovich and V. I. Veselovskii (State Univ., Gorky). Zhur. Fiz. Khim. 30, [illegible] (1956). The app. used is described and [illegible] with a thin layer of a steel contg. [illegible] Fe and [illegible] Cr. A 0.1N NaOH soln. was used as the electrolyte. The samples, in the shape of 5 x 50-mm. plates, were oxidized inside a quartz tube in a muffle furnace heated to [illegible] for 10 min. and cooled in the furnace. The area of the sample immersed in the electrolyte during the test was [illegible] sq. cm. and [illegible] that surface [illegible] side of the sample was illuminated. The polarization curves of the oxidized and unoxidized samples in the light and in the dark were found. The systems with the oxidized samples had high photoelec. activity. The p.d. between oxidized and unoxidized Cr was found to be 325 mv., for Ni 250 mv. The highest photogalvanic effect was found in the ultraviolet region, when the potential was just below O_2 evolution. The photogalvanic effect is that of sensitization: light is absorbed in the bulk of the oxide. The effects [illegible] Ni steel were close to the oxidized Cr effects.

W. M. Sternberg

VESELOVSKIY, V. I. (Prof.)

"The Mechanism of the Radiation-Electrochemical Processes."

report presented at Scientific Conference at the Inst. for Physical Chemistry imeni L. Ya. Karpov, Acad. Sci. USSR, Nov 1957.

BAKH, N.A., prof., otvetstvennyy red.; MEDVEDEV, S.S.; VESELOVSKIY, V.I., prof.; DOLIN, P.I., doktor khim. nauk; MILLER, N.B., kand. khim. nauk; TSETLIN, B.L., kand. khim. nauk; TRIFONOV, D.N. red. izd-va; BUGAYENKO, L.T., red. izd-va; MOSKVICHEVA, N.I. tekhn. red.

[Transactions of the First All-Union Conference on Radiation Chemistry]. Vsesoiuznoe soveshchanie po radiatsionnoi khimii. 1st, Moscow, 1957. Trudy... Moskva, Izd-vo Akad. nauk SSR, 1958. 330 p. (MIRA 11:7)

1. Chlen korrespondent Akademii nauk SSSR (for Medvedev).
(Radiochemistry--Congresses)

AUTHORS: Rozental', K. I., Veselovskiy, V. I. SOV/76-32-6-23/46

[redacted]

TITLE: The Process of the Electrochemical Oxidation of Tetravalent Uranium on the Pt-Electrode (Protsess elektrokhimicheskogo okisleniya soley chetyrekhvalentnogo urana na Pt-Elektrode)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 6, pp. 1341 - 1347 (USSR)

ABSTRACT: This work was carried out at the Laboratory of Electrochemistry of the Physical-Chemical Institute imeni L.Ya.Karpov between 1948 and 1950; the technical report is to be found at the library of this institute. At present few data are found in papers dealing with the problem mentioned in the title; among them are the papers by Betts (Ref 1) and Heal (Ref 2). The present investigation was conducted by means of a rotating Pt-microelectrode using an already earlier described method of anode polarography. From the obtained results of the experiments of the anodic oxidation of

UO^{+2}-ions in $HClO_4$-solutions as shown on the current versus voltage diagrams a wave may be seen at $E_{1/2} = 1.05$ V, as well as

Card 1/3

a current $i_d = 4.3 \mu A$ directly proportional to the concentration of the UO^{+2}-ions within the interval of from $1 \cdot 10^{-2}$ to $2 \cdot 10^{-4}$M. It was found that the value of i_d depends on the surface of the Pt-electrode, as well as that the value of i_d decreases with the retardation of the decrease of the I - E curve, so that, for instance, in the case of an increase of the velocity of the potential application to the 8-fold an increase of the limit current to the 2.5-fold takes place. In order to make use of this knowledge in the increase of the sensitivity for analytical purposes some conditions must however be taken into account. Based on the evidence obtained and on some rules it is assumed that an interaction of the UO^{+2}-ions with oxygen which is electrochemically adsorbed at the platinum takes place and that it determines the velocity of the reaction mechanism. The electrochemical redox processes which take place only due to the exchange of ion charges do, however, not need any activation energy and take a reversible course. The investigations of the anodic oxidation of UO^{+2}-ions in the presence of H_2O_2, HNO_3 and Cr^{+3}-ions, The Process of the Electrochemical Oxidation of Tetravalent Uranium on the Pt-Electrode 76-32-6-23/46

as well as HNO_3-solutions with Th^{+4}-ions showed that a change of the I-E curve occurs, where, e.g., a higher concentration of the Cr^{+3}-ions can cause the adsorption of the Cr^{+3}-ions at the Pt-surface. There are 7 figures and 9 references, 6 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im.L.Ya.Karpova, Moskva (Institute of Physics and Chemistry imeni L.Ya. Karpov, Moscow)

SUBMITTED: February 16, 1957

1. Uranium--Oxidation 2. Uranium--Electrochemistry
3. Platinum electrodes--Electrochemistry

Card 3/3

YAKOVLEVA, A.A.; BORISOVA, T.I.; VESELOVSKIY, V.I.

State of the surface and mechanism of the self-dissolution of germanium in hydrogen peroxide solutions. Zhur. fiz. khim. 36 no.11:2541-2544 N'62. (MIRA 17:5)

1. Fiziko-khimicheskiy institut imeni Karpova.

AUTHORS: Tyurikov, G. S., Rozental', K. I., Veselovskiy, V. I. SOV/76-32-7-8/45

TITLE: The Mechanism of the Electrochemical Reactions on a Mercury Cathode in Uranium Salt Solutions (Mekhanizm elektrokhimicheskikh reaktsiy v rastvorakh soley urana na rtutnom katode)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 7, pp. 1490 - 1498 (USSR)

ABSTRACT: The electrochemistry of uranium has been investigated by a great number of scientists, there are, however, a number of contradictions in publications. In a previous paper one of the authors of this paper carried out polarographic investigations on a dropping mercury electrode, as well as on a steady mercury electrode in the case of a weak polarization by alternating current; these investigations dealt with the electrochemical reactions

$UO_2^{2+} + e \rightleftarrows UO_2^{+}$ and $UO^{2+} + e \rightleftarrows UO^{+}$. The polarograms of the cathodic reduction of uranyl ions were automatically recorded on a polarograph according to Geyrovskiy, the work having

Card 1/4

The Mechanism of the Electrochemical Reactions on a Mercury Cathode in Uranium Salt Solutions SOV/76-32-7-8/45

been carried out in a hydrogen atmopshere at 25° ± 0,1°C. In the investigations concerning the influence of the concentration of H^+ ions and of the nature of the anion of the solution on the process of the cathodic reduction the author used constant uranyl ion concentrations in solutions of sulfuric acid, hydrochloric acid and $HClO_4$. The current versus voltage curves obtained showed two and three polarographic waves respectively, corresponding to the acidity of the solutions; the first wave is explained by the reversible reaction $UO_2^{2+} + e \rightleftharpoons UO_2^+$, while in the presence of three waves the second represents the irreversible reaction $U_2^+ + e + 2H^+ \longrightarrow UO^{2+} + H_2O$, and the third wave characterizes the reversible reduction of uranium from the tetra- to the trivalent state $UO^{2+} + e \rightleftharpoons UO^+$. The I - E curves of the highly acid HCl and H_2SO_4 solutions do not show a second wave, and a disproportioning reaction is assumed: $2\ UO_2^+ + H^+ \rightleftharpoons UO_2^{2+} + UO(OH)^+$. The function of the value for i_d of the first wave vs. the nature of the acid

Card 2/4

The Mechanism of the Electrochemical Reactions on a Mercury Cathode in Uranium Salt Solutions SOV/76-32-7-8/45

anion is expressed by the series

$^{i}d\ H_2SO_4 > {}^{i}d\ HCl > {}^{i}d\ HClO_4$ and it was observed that the effect of the anions extend to the various stages of the cathodic reduction. For determining the velocity of disproportioning of the UO_2^+-ions an apparatus was used, with the measuring method having an advantage as compared to that by Heal (Ref 6), viz., that the measurements were carried out directly. The technique of current measuring in the determinations carried out in the exchange reactions: $UO_2^{2+} + e \rightleftarrows UO_2^+$ and $UO^{2+} + e \rightleftarrows UO^+$, as well as the apparatus has been described in the paper by K.I.Rozental' and B.V.Ershler (Ref 11). From the results of the investigation mentioned may be seen that the electrochemical reduction of UO_2^{2+} in UO_2^+ determines the velocity of the exchange of the first reaction. It was found that the exchange current acquires various values in solutions of different concentrations; this fact is traced back to a function of the degree of dissociation of the uranium (VI)-salts vs. the pH

Card 3/4

The Mechanism of the Electrochemical Reactions on a Mercury Cathode in Uranium Salt Solutions SOV/76-32-7-8/45

of the solution. The determinations in the second exchange reaction showed a linear function of the quantity of the exchange current vs. the UO^{2+} ion concentration in the solution; this is explained by the influence of the electrochemical reduction of the tetravalent ions to trivalent ions on the velocity of the exchange. There are 9 figures, 2 tables, and 11 references, 5 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiv institut im.L.Ya.Karpova, Moskva (Moscow, Physicochemical Institute imeni L.Ya.Karpov)

1. Mercury cathodes--Electrochemistry 2. Uranium salt solutions --Electrochemistry 3. Uranium--Polarographic analysis 4. Exchange reactions

5(4)

AUTHORS: Rakov, A. A., Veselovskiy, V.I., Nosova, K.I., SOV/76-32-12-8/32
Kasatkin, E. V., Borisova, T. I.

TITLE: The Mechanism of the Joint Electrochemical Formation of Ozone, Persulfuric Acid and Oxygen on the Platinum Electrode (O mekhanizme sovmestnogo elektrokhimicheskogo obrazovaniya ozona, nadsernoy kisloty i kisloroda na platinovom elektrode)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 12, pp 2702 - 2710 (USSR)

ABSTRACT: The electrolysis is carried out in 10n sulfuric acid with a cylindrical platinum electrode refrigerated by methyl alcohol. Analyses of H_2O_2, H_2SO_5, $H_2S_2O_8$ and ozone and measurements of the general acid concentration were carried out in brief intervals. Two stages were observed (at $-50^{\circ}C$ and $0{,}5\ A/cm^2$). In the first stage oxygen was formed at a potential of 1,0 to 1,8 V, while in the second stage the potential rose to 3,0 V resulting in a high persulfuric acid yield and a low ozone yield. The transition took place within 1 to 2 minutes. By means of a rapidly revolving platinum electrode in the

Card 1/2

The Mechanism of the Joint Electrochemical Formation of Ozone, Persulfuric Acid and Oxygen on the Platinum Electrode SOV/76-32-12-8/32

Dewar flask which was filled with a freezing mixture of carbon-dioxide snow and methyl-alcohol, polarization curves were plotted at various temperatures in 10n sulfuric acid. Also in this case the jump in potential was noted, the curves differing according to whether they were plotted beginning at a low amperage and ending at a high one, or vice-versa. All showed a hysteresis loop. At a temperature of -70°C a third stage occurred in which ozone is produced abundantly at a potential of 5.5 to 7.0 V. These jumps in potential and the chemical reactions due to them are explained by the changing surface finish of the electrode and the influence of intermediate platinum compounds. There are 8 figures and 19 references, 7 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova Moskva (Physico-Chemical Institute imeni L. Ya. Karpov, Moscow)

SUBMITTED: July 10, 1957

Card 2/2

VESELOVSKIY, V, I.

"The Chemical Nature of Caustobioliths from the viewpoint of Genesis."

report to be submitted for the Symposium on the Nature of Coal, Dhanbad, India, 7-9 Feb 1959.

Inst. of Mining, Acad. Sci. USSR

VESELOVSKIY V.I.

~~DAMASKIN, B. B.~~

5(4) PHASE I BOOK EXPLOITATION SOV/2216

Soveshchaniye po elektrokhimii. 4th, Moscow, 1956.

Trudy...; [sbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.
Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.N. Frumkin (Resp. Ed.) Academician. O.A. Yesin, Professor; S.I. Zhdanov (Resp. Secretary), B.N. Kabanov, Professor, S.I. Zhdanov (Resp. Secretary); B.N. Kabanov, Professor; Ya. M. Kolotyrkin, Doctor of Chemical Sciences; V.V. Losev, P.D. Lukovtsev, Professor; Z.A. Solov'yeva; V.V. Stender, Professor; and G.M. Florianovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physiciats, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodepositon and industrial electrolysis. Abridged discussions are given at the end of each division. The majority of reports not included here have been published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

Transactions of the Fourth Conference (Cont.) SOV/2216

Card 12/34