

1/2 040 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--ON THE MECHANISM OF ELECTROHUMINESCENCE OF CU SUBX S-ZNS:MN, CU, CL  
FILMS -U-  
AUTHOR-(02)-VDOVENKOV, A.A., ZAKHAROV, V.P.

COUNTRY OF INFO--USSR

SOURCE--UKRAYIN. FIZ. ZH. (USSR), VOL. 15, NO. 5, P. 816-19 (MAY 1970)

DATE PUBLISHED----MAY 70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--ELECTROLUMINESCENCE, SEMICONDUCTOR FILM, ELECTRON MICROSCOPE,  
SEMICONDUCTOR JUNCTION, ELECTRIC FIELD, IMPACT IONIZATION, COPPER  
SULFIDE, LAMINATED STRUCTURE, ZINC SULFIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3005/1800

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CIRC ACCESSION NO--AP0133705

UNCLASSIFIED

272 040

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0133705

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE D.C. ELECTROLUMINESCENT FILMS PREPARED BY VACUUM DEPOSITION OF CU SUB2 S AND ZN:MN, CU, CL PHOSPHOR LAYERS, ARE EXAMINED, USING A SCANNING ELECTRON MICROSCOPE. THERE IS THE ONLY N,P, (OR P,P PRIME POSITIVE), JUNCTION, WHICH IS NOT ALONG TO THE CU SUB2 S-ZNS INTERFACE AND IS LOCALIZED AT A DEPTH OF ABOUT 2 MU M FROM THE ANODE (AL UPPER ELECTRODE). THE ELECTRIC FIELD IN THE REVERSE BIASED JUNCTION REACHES THE VALUE OF AN ORDER OF 10 PRIMES V-CM, SUFFICIENT FOR THE IMPACT IONIZATION MECHANISM OF ELECTROLUMINESCENCE.

UNCLASSIFIED

USSR

UDC: 621.385.6

ZHARNENKOV, S. V., ~~ZAKHAROV, V. P.~~, POPOV, A. N., MARIN, V. P.

"A Magnetron Converter Which Changes Microwave Power to DC Power"

Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obratztsy, Tovarnyye Znaki, No 17, Jun 72, Author's Certificate No 328805, Division H, filed 7 Jan 70, published 24 May 72, p 249

Translation: This Author's Certificate introduces: 1. A magnetron converter which changes microwave power to DC power. The device contains an electron source, and an interaction space which is closed in the azimuthal direction and houses a positive electrode. As a distinguishing feature of the patent, in order to improve the efficiency of microwave energy conversion, the source of electrons is closed with respect to the azimuth, and is located outside the interaction space coaxially with the central electrode. 2. A modification of the converter distinguished by the fact that the electron source is made in the form of a magnetron end gun of inverted design. 3. A modification of the converter described in point 1 distinguished by the fact that the electron source is made in the form of two magnetron end guns of inverted design.

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USSR

UDC 669.715'5'721.539.4:621.785.6/7:539.27

ZAKHAROV, V. V., NOVIKOV, I. I., YELAGIN, V. I., LEVIN, L. I.

"Effect of the Duration of the Break between Quenching and Artificial Aging on the Structure and Mechanical Properties of Sheet Al-4.2% Zn-1.9% Mg Alloy with Different Manganese, Chromium, and Zirconium Content"

V sb. Struktura i svoysva legk. splavov (Structure and Properties of Light Alloys — collection of works), Moscow, Nauka Press, 1971, pp 53-57 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 41643)

Translation: The method of measuring  $\sigma_B$  and  $\sigma_{0.2}$  and transmission electron microscopy demonstrated that the structure and strength characteristics of Al-4.2% Zn-1.9 Mg alloy have comparatively low sensitivity to the break between the quenching and artificial aging. Small additions of Mn and Cr to this alloy and additions of Zr in solid solution weakly increase the sensitivity of the strength characteristics to the break time. The large additives of Mn and Cr which are in the form of disperse secondary intermetallides strongly increase the sensitivity of the strength characteristics of the alloy to the break between quenching and artificial aging. The method of transmission electron microscopy demonstrated that obtaining low strength characteristics in the case of a small break

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USSR

ZAKHAROV, V. V., et al., Struktura i svoystva legk. splavov, 1971, pp 53-57

time arises from a reduction in the distribution density of the particles of the hardening Z-Mg phase isolated mainly on the surface of the intermetallide of aluminum and the transition metal. 2 illustrations, 1 table, and a 6-entry bibliography.

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USSR

UDC: 519.217

ZAKHAROV, V. V., TARASENKO, V. P.

"Optimum Control of an Object in the Static Mode as a Problem in Stochastic Programming"

V sb. Nelineyn. i optimal'n. sistemy (Nonlinear and Optimum Systems--collection of works), Moscow, "Nauka", 1971, pp 125-130 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V108)

Translation: Control of an object in the static mode is treated as a problem in stochastic programming. Let  $F(x,c)$  be a purpose function,  $f_i(x,a)$  be a system of constraints on the permissible states of the object,  $x = x_1, x_2, \dots, x_n$  be a vector of controlling actions whose components are random functions of time, and  $s(z) = (s_0(z), s_1(z), \dots, s_k(z))$  be an additive interference whose components are scalar functions of a random vector of uncontrolled actions. It is required to choose distributions of components of the random quantity  $x$  such that some numerical characteristic of the random quantity  $F(x,c) + s_0(z)$  is minimized. At this point, the object goes beyond the limits of permissible states with probabilities no greater than  $1 - \alpha_j$ . If the form of the distribution  $p(x)$  of the

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ZAKHAROV, V. V., TARASENKO, V. P., Nelineyn. i optimal'n. sistemy, Moscow, "Nauka", 1971, pp 125-130

random quantity is known exact to the value of the vector of moments of the first order  $\bar{X}$ , and  $P_j$  is a normal distribution function, then the problem reduces to a problem in deterministic linear programming. The approach outlined in this paper to optimum control of an object in the static mode presents new possibilities for constructing the mathematical description of complex processes. In many important problems of optimum control, the controlling effects cannot be considered as acting instantaneously. As a consequence, it becomes necessary to overstate somewhat the minimum value of the purpose function so that the permissible states of the object will be violated with minimum frequency. The proposed method of mathematical description of the object makes it possible to account precisely for the extent of compromise between increasing the purpose function and guaranteeing the maintenance of permissible states. An example of a practical computer-solved problem is presented to illustrate these conclusions and the described procedure as a whole. Authors' abstract.

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USSR

UDC 621.785.784:669.71'721'5'74

ZAKHAROV, V. V., LEVIN, L. I., and ROMANOVA, G. M., All-Union Institute of Light Alloys

"The Effect of 'Maturing' on Artificial Aging of the Al-Zn-Mn-Mg Alloy"

Moscow, Metallovedeniye, No 5, 1971, pp 61-62

Abstract: The effect of small additions of chromium (0.13%), zirconium (0.18%), and copper (0.17%) on the sensitivity of strength properties of an aluminum alloy with 4.5% Zn, 2.0% Mg, and 0.35% Mn to stoppage between hardening and artificial aging, ("maturing") was investigated. The investigation results are discussed with reference to the dependence of the yield point of artificially aged sheets of the alloys on a 4-hr maturing duration at 180°C. Small additions of zirconium and particularly of chromium significantly increase the sensitivity of strength properties of the aluminum alloy to maturing, but small additions of copper decrease its sensitivity. One figure, six bibliographic references.

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1/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--C CURVES REPRESENTING THE DECOMPOSITION OF THE SUPERSATURATED SOLID SOLUTION IN ALUMINUM ZINC MAGNESIUM ALLOYS CONTAINING TRACES OF MANGANESE CONTAINING ALLOY, CHROMIUM CONTAINING ALLOY, ZIRCONIUM CONTAINING ALLOY, COPPER CONTAINING ALLOY, TRACE ANALYSIS, MICROALLOYING, BIBLIOGRAPHY, INTERMETALLIC COMPOUND

AUTHOR--(04)--ZAKHAROV, V.V., NOVIKOV, I.I., YELAGIN, V.I., LEVIN, L.I.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. V. U. Z., TSVETNAYA MET., 1970, (1), 110-116

DATE PUBLISHED--70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SOLID SOLUTION, ALUMINUM ALLOY, ZINC ALLOY, MAGNESIUM ALLOY, MANGANESE CONTAINING ALLOY, CHROMIUM CONTAINING ALLOY, ZIRCONIUM CONTAINING ALLOY, COPPER CONTAINING ALLOY, TRACE ANALYSIS, MICROALLOYING, BIBLIOGRAPHY, INTERMETALLIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--2000/1554

STEP NO--UR/0149/70/000/001/0110/0116

CIRC ACCESSION NO--AP0125180

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125180

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TEMP. TIME CURVES REPRESENTING THE DECOMPOSITION OF THE SUPERSATURATED SOLID SOLUTION IN AL,MG,ZN ALLOYS CONTG. TRACES OF MN, CR, ZR, OR CU (C CURVES) WERE PLOTTED. THE ADDITION OF MN, ZR, AND ESPECIALLY CR SHARPLY REDUCED THE STABILITY OF THE SUPERSATURATED SOLID SOLUTION OF ZN AND MG IN AL. THE TRANSITION METALS REDUCED THE STABILITY OF THE SATURATED SOLUTION AS A RESULT OF THE INITIATING ACTION OF HIGHLY DISPERSED SECONDARY INTERMETALLIC COMPOUNDS FORMED IN THE ALLOY. THE INTRODUCTION OF TRACES OF CU INTO AL,MG,ZN ALLOYS CONTG. SUCH ADDITIVES COUNTERACTED THE EFFECT.

UNCLASSIFIED

USSR  
Aluminum and Its Alloys

USSR

UDC 669.715

LEVIN, L. I., ZOLOTOREVSKIY, V. S., AND ZAKHAROV, V. V., All-Union Institute of Light Alloys

"Effect of Production Conditions on the Structure of Ingots and Semifinished Pressure Molded Products Made of Al-Zn-Mg Alloys"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 123-127

Abstract: Alloys of the following chemical composition (%) were studied: 4.5 Zn, 2.0 Mg, 0.43 Mn, 0.18 Zr, 0.1 Cr, 0.15 Fe, 0.06 Si; and 4.0 Zn, 1.6 Mg, 0.38 Mn, 0.15 Zr, 0.6 Cu, 0.12 Si, 0.13 Fe. The structure of ingots and semifinished products was studied with optical and electron microscopes, and the mechanical properties of the semifinished products, immediately after hardening, and after natural and artificial aging were examined. Mechanical properties of homogenized (at 450° C for 24 hours) ingots did not depend on the temperature (750-900° C) and rate (25-150 mm/min.) of casting. Increase in the ingot diameter from 92 to 370 mm (ultimate) decreased relative elongation by 8% (from 18 to 10%), while the mechanical properties remained unchanged. The macro- and micro-structure of the ingots showed no dependence

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USSR

LEVIN, L. I., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 123-127

on the temperature and rate of casting. The ingots grains increased 2-3 times and dendrite cells by 3-4 times when the ingot diameter was increased from 92 to 370 mm. Nonhomogenized ingots contained dense dislocations, without any secondary intermetallics. Some of the ingots 370 mm in diameter contained Zn-Mg phases when the cooling temperature was below that of the solidus. Homogenized ingots contained secondary intermetallics of manganese and zirconium-containing phases. No relation was established between size, quantity, and distribution of intermetallic particles and the temperature and rate of casting, as well as the ingot diameter. Decomposition of the solid solution of Zn and Mg in aluminum was completely suppressed when ingots were cooled in water and many large particles (up to 5  $\mu$ m) of the Zn-Mg phase were formed during the stepwise ingot cooling (2 hours exposure at 280°C). Heating of ingots to 380-400°C before pressure molding completely eliminated large Zn-Mg particles, which dissolved within 10 min at 400°C. Pressure molding at 350°C led to only a partial disappearance of Zn-Mg particles. All semi-finished products pressed at a rate of 6-8 m/min at 350-400°C had a completely nonrecrystallized structure after hardening, but those produced at 350°C with

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USSR

LEVIN, L. I., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 123-127

a rate of  $\gt 30$  m/min had a completely recrystallized structure. Particles of manganese and zirconium-containing phases were distributed nonuniformly in the pressure molded semifinished products because of their nonuniform distribution in the ingots. The structural changes in ingots caused by the above factors did not have a decisive effect on the structure and mechanical properties of semifinished products. In order to obtain the best semifinished products with noncrystallized structure from Al-Zn-Mg alloys, the pressure molding temperature should not be below  $380^{\circ}\text{C}$ .

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Acc. Nr: **APO043681**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1970, Vol 58, Nr 3, pp 903-911

**SELF EXCITATION OF WAVES WITH DIFFERENT POLARIZATIONS IN NONLINEAR MEDIA**

Berkhoyer, A. L.; Zakharov, V. Ye.

Equations are derived for the envelope waves with different circular polarizations in an isotropic nonlinear medium. The stability and self-focussing of such waves and also the stationary envelope waves are investigated. The results are applied to the problem of nonlinear electromagnetic waves in an isotropic plasma.

REEL/FRAME  
**19770085**

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3.1

Thermomechanical treatment

USSR

UDC 669.716:621.789

DAVIDOV, V. G., DRITS, A. M., and ZAKHAROV, YE. D., All-Union Institute of Light Alloys

"Thermomechanical Treatment of Al-Zn-Mg Alloys"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 128-133

Abstract: The effect of low-temperature thermomechanical treatment (LMT) and of high and low-temperature thermomechanical treatment (HLTMT) on tensile strength, yield strength, and elongation of Al-Zn-Mg alloys was studied. The chemical composition (%) of alloys was: 3.5 Zn, 1.3 Mg, 0.2 Mn, 0.08 Cr, 0.15 Zr, 0.3 Fe, 0.12 Si (alloy 1); 3.4, 1.5, 0.4, 0.14, 0.18, 0.3, 0.12, respectively (alloy 2); and 3.9, 1.5, 0.6, 0.19, 0.22, 0.3, 0.12, respectively (alloy 3). Hot-rolled samples 6 mm thick were water quenched at 450°C and cold-rolled (LMT) at different time intervals, with resulting 83 and 50% deformation. The maximum tensile strength and yield strength was present in those samples which were deformed 108 hours after hot-rolling. Longer intervals between the hot-rolling and cold-deformation (up to 10 days) did not affect the mechanical properties of alloys 1 and 3, which were naturally aged for 30 days. The extent of deformation did not influence the aging kinetics. However, the tensile and yield strength values decreased by 3-5 kg/mm<sup>2</sup> when the cold deformation was decreased from 80 to 50%. The relative elongation was within 5.5-6.5%, regardless of the time interval between the 1/2

USSR

DAVYDOV, V. G., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1973, pp 128-133

hot-rolling and cold plastic deformation, or the extent of deformation. Chemical composition of alloys has a definite influence on the strength characteristics of samples. Increase in the tensile strength of alloys 1 and 3 deformed immediately after the water quenching was 4-5 kg/mm<sup>2</sup> in the presence of 83% deformation, and it amounted to 11-12 kg/mm<sup>2</sup> for samples deformed from 4.5 to 10 days after the water quenching. When deformation was only 50%, the increase in tensile strength amounted to 0-1 and 7-8 kg/mm<sup>2</sup> for the two time intervals, respectively. Increase in the yield strength exceeded by 7-8 kg/mm<sup>2</sup> the tensile strength during corresponding time periods. Alloys 1 and 3 which were artificially aged at 140°C and deformed by 83% immediately after the aging, 3, and 4.5 days after the aging showed a decrease in their mechanical properties. This decrease had a direct relation between the time elapsed between hardening and the cold deformation. A combination of hardening with hot deformation (HLHT), followed by cooling in air or water and deformation 108 hours after cooling showed that the difference in strength characteristics of alloys 1 and 2 (deformed by 83%) cooled in water and air was 1-25 kg/mm<sup>2</sup>, and it was 8-10 kg/mm<sup>2</sup> for alloy 3. When the cold deformation was decreased by 2-3 kg/mm<sup>2</sup>, and by 7-8 kg/mm<sup>2</sup> when samples were deformed by only 50%. Tabulated data are presented in four tables.

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USSR

UDC:621.039.325

RAUZEN, F. V., ZAKHAROV, YE. I., RYABCHIKOV, B. YE, KONORCHENKO, V. D.  
and ODINTSOVA, YE. G.

"Use of Sorption Pulsation Columns for Cleaning of Liquid Radioactive  
Wastes"

Moscow, Atomnaya Energiya, Vol 36, No 1, Jan 74, pp 27-31

Abstract: This article studies the preliminary results of testing of pulsating sorption columns with a distributor fitting for cleaning of liquid radioactive wastes arriving at the Moscow cleaning station. The design of continuous-operation pulsating columns is described. It is shown that these columns can be used to produce the same purification factors as sorption filters. The productivity of the columns, however, is 4-5 times greater, and the resin charge used is as many times less than the corresponding figures for filters. It was found that the minimum volume of equipment is achieved by using columns with great retention of resin in the apparatus.

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1/2 027  
UNCLASSIFIED  
TITLE--EXPERIENCES IN JEJUNOGASTROPLASTY -U- PROCESSING DATE--18SEP70  
AUTHOR--(03)-ZAKHAROV, YE.I., REZNICHENKO, A.I., BELOUS, G.D.  
COUNTRY OF INFO--USSR  
SOURCE--KHIRURGIYA, 1970, NR 3, PP 48-52  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--STOMACH, JEJUNUM, DIGESTIVE SYSTEM DISEASE, TUMOR, SURGERY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1983/1174 STEP NO--UR/0531/70/000/003/0048/0052  
CIRC ACCESSION NO--AP0054073  
UNCLASSIFIED

2/2 027

CIRC ACCESSION NO--AP0054073  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--18SEP70

ABSTRACT. THE ISSUE SUMMARIZES THE RESULTS OF 1811 OPERATIONS FOR GASTRODUODENAL ULCERS, TUMORS AND DISEASES OF THE OPERATED STOMACH, IN 576 CASES WITH JEJUNOGASTROPLASTY. PRIMARY JEJUNOGASTROPLASTY WAS PERFORMED IN 221 PATIENTS WITH GASTRODUODENAL ULCERS AND IN 168 PATIENTS WITH BENIGN AND MALIGNANT TUMORS OF THE STOMACH. RECONSTRUCTIVE JEJUNOGASTROPLASTY WAS PERFORMED IN 125 PATIENTS WITH THE DUMPING SYNDROME AND IN 62 PATIENTS WITH PEPTIC ULCERS. AN ANALYSIS OF THE IMMEDIATE AND REMOTE RESULTS DEMONSTRATES THAT JEJUNOGASTROPLASTY DOES NOT INVOLVE AN INCREASED FREQUENCY OF IMMEDIATE COMPLICATIONS AND LETHALITY IN COMPARISON WITH BILLROTH 2 OPERATION, THUS ENABLING IN THE FUNCTIONAL RESPECT TO ATTAIN MORE FAVORABLE RESULTS.

UNCLASSIFIED

Analysis and Testing

USSR

NERSESYANTS, A. B., ZAKHAROV, Ye. I., (deceased), and BYSTROVA, Z. A., All-Union Scientific Research and Planning and Design Institute of Aluminum, Magnesium and the Electrode Industry

"Gas Chromatographic Analysis of Aluminum and Aluminum Carbide"

Moscow, Zavodskaya Laboratoriya, Vol 36, No 9, 1970, pp 1043-1044

Abstract: A method of gas chromatographic analysis of aluminum and aluminum carbide is proposed for use in industrial aluminum production. The method consists in gas chromatographic analysis of the  $H_2$  and  $CH_4$  separated out during hydrochloric acid decomposition of the sample in a gas volumeter in amounts equivalent to the aluminum and aluminum carbide content. The mechanism of this reaction and the formulas used to calculate the aluminum and aluminum carbide content are presented. A schematic of the VAMI gas volumeter used in the method is illustrated. The accuracy of the method is 3.5 percent for Al and 2.7 percent for  $Al_4C_3$ , and the measurement range is from 100 to 0.1 wt %.

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USSR

ZAKHAROV, YE. V., PIMENOV, YU. V., SHALKINA, L. A.

"Algorithm for Numerical Solution of the Axisymmetric Problem of Electromagnetic Wave Diffraction by an Ideally Conducting Surface of Rotation"

Moscow, Vychislitel'nyye Metody i Programirovaniye XVI, 1971, pp 147-159

Abstract: A study was made of the axisymmetric problem of electromagnetic wave diffraction by ideally conducting, infinitely thin surfaces of rotation. The integral equations in this case are uniform, and the logarithmic singularity of the kernel for coincidence of the arguments permits application of the self-regularization method [V. I. Dmitriyev, et al., Vychisl. metody i programmirovaniye, No X, Moscow State University Press, 1963]. On the basis of the method of self-regularization, an algorithm for numerical solution of the corresponding equations is proposed which considers the nature of the behavior of the solution at the ends of the interval. The algorithm is analyzed as a function of the shape of the surface and frequency.

The algorithm described can be used to find the current density on the surfaces, after which the radiation pattern of the radiator in the presence of an ideally conducting surface of rotation can be calculated. This offers the possibility of determining the effect of a shield on the nature of the radiation. Sample normalized radiation patterns are presented for the case of a disc excited by magnetic and electric dipoles.

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1/2 018

TITLE--ONCE AGAIN ABOUT RAY CONTROLLED MACHINES -U-

UNCLASSIFIED

PROCESSING DATE--18SEP70

AUTHOR--ZAKHAROV, YU.

Z

COUNTRY OF INFO--USSR

SOURCE--PRAVDA, MAY 29, 1970, P 2, COL 2-8

DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--INDUSTRIAL AUTOMATIC CONTROL, IR OPTIC SYSTEM, MACHINE TOOL COMPONENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/0373

STEP NO--UR/9012/70/000/000/0002/0002

CIRC ACCESSION NO--AN0104023

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AN0104023

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE DESCRIBES THE PUL-RAY CONTROL DEVICE DEVELOPED TEN YEARS AGO AT THE LENINGRAD INSTITUTE OF PRECISION MECHANICS AND OPTICS-LITMO. THE SYSTEM EMPLOYS THE INFRARED MODULATED RAY TO CONTROL VARIOUS INDUSTRIAL MACHINES SUCH AS DITCH DIGGERS OR MACHINE TOOLS. SMALL LOT PRODUCTION OF PULS WAS STARTED FIVE YEARS AGO. S. T. TSUKKERMAN, HEAD OF THE LABORATORY THAT DEVELOPED THE TUL, BELIEVES THAT THE PRODUCTION RATE IS TOO SMALL IN TERMS OF THE NEEDS FOR THIS DEVICE.

UNCLASSIFIED

USSR

UDC 536.46:533.6

PANIN, V. F., PARFENOV, L. K., ZAKHAROV, Yu. A.

"On the Phenomenon of Three Flame Propagation Limits in a  $H_2-O_2-N_2$  System"

V sb. Gorennye i vzryv (Combustion and Explosion -- Collection of Works),  
Moscow, "Nauka", 1972, pp 293-295 (from RZh-Mekhanika, No 3, Mar 73, Abstract  
No 3B971)

Translation: The flame concentration limits in hydrogen-oxygen-nitrogen mix-  
tures were studied experimentally in the pressure range  $10^{-1} - 10^3$  mm Hg. The  
existence of two limits (in terms of pressure) was established for flame propa-  
gation: flame propagation at a certain  $H_2$  concentration is possible only in a  
limited pressure interval for a given  $O_2$  content in the system. Analysis of the  
experimental results and published data made it possible to propose the exist-  
ence of three pressure limits for flame propagation in the  $H_2-O_2-N_2$  system.  
A schematic picture is proposed for a system in the pressure range  $10^{-1}-10^5$  mm Hg.  
6 ref. Authors' abstract.

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1/2 030 UNCLASSIFIED PROCESSING DATE--0210CT70  
TITLE--MASS SPECTROMETRY OF GASEOUS PRODUCTS OF AMMONIUM PERCHLORATE  
THERMOLYSIS -U-  
AUTHOR--(03)-ISAYEV, R.N., ZAKHAKOV, YU.A., BORDACHEV, V.V.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 302-5  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--MASS SPECTROSCOPY, MASS SPECTROMETER, AMMONIUM PERCHLORATE,  
ISOTHERMAL TRANSFORMATION, CHEMICAL DECOMPOSITION, THERMAL EFFECT,  
CHEMICAL KINETICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1993/0554 STEP NO--UR/0076/70/044/002/0302/0305  
CIRC ACCESSION NO--AP0113445  
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--02DCT70

CIRC ACCESSION NO--AP0113445

ABSTRACT/EXTRACT--(U) GP-U- ABSTRACT. THE END PRODUCTS OF NH SUB4 CID SUB4 (I) THERMOLYSIS WERE ANALYZED MASS SPECTROMETRICALLY, IN PARALLEL WITH A KINETIC STUDY OF ISOTHERMAL DECOMPN. AND DTA. THE MAIN PRODUCTS OF DECOMPN. ARE H SUB2 O, HCl, Cl SUB2, O SUB2, N SUB2, N SUB2 O, AND NO. CHANGES OF TEMP. ALTER THE RATIO N SUB2 O IS TO NO IS TO N SUB2, DUE TO THE CATALYTIC EFFECT OF I ON REACTIONS IN THE GAS PHASE. THE ANAL. WAS CONDUCTED AT 2 MA EMISSION, 70 V IONIZATION, AND 1.5 KV ACCELERATING VOLTAGE. THE KINETICS OF ISOTHERMAL DECOMPN. OF I WAS STUDIED MANOMETRICALLY AT 211-390DEGREES, AN INITIAL PRESSURE OF 5 TIMES 10 NEGATIVE PRIME3 TORR, AND 200 MG SAMPLE (SMALLER THAN 60 MU PARTICLE SIZE). THE ACTIVATION ENERGY WAS 19.6 AND 24.5 KCAL-MOLE AT 211-30DEGREES AND 274-97DEGREES, RESP. THE 1ST STAGE OF THERMOLYSIS (I IN EQUILIBRIUM NH SUB3 PLUS HClO SUB4 BY PROTON TRANSFER) TAKES PLACE TO A CERTAIN DEGREE AT ALL TEMPS., BUT THERE IS ALSO A SIMULTANEOUS DECOMPN. IN THE SOLID PHASE WITH ELECTRON TRANSFER FROM ANION TO CATION. DECOMPN. OF I PROCEEDS SIMULTANEOUSLY BY BOTH MECHANISMS, BUT IN THE REGION OF RELATIVELY LOW TEMPS., THE SOLID PHASE DECOMPN. PREDOMINATES.

UNCLASSIFIED

Radiation Chemistry

USSR

RYABYKH, S. M., MESHKOV, V. A., and ZAKHAROV, Yu. A., Tomsk Polytechnic Institute imeni S. M. Kirov

"Dissociation of  $\text{AgN}_3$  Crystals by X-Radiation"

Ivanovo, Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, Vol XII, No 11, 1970, pp 1,558-1,560

Abstract: The authors studied the radiolysis kinetics of silver nitride and the effect of the presence of  $\text{Pb}^{2+}$  ions on the radiation stability of  $\text{AgN}_3$ , estimating the degree of dissociation by the amount of radiolytic nitrogen retained by the lattice.

The experimental study was made with  $\text{AgN}_3$  monocrystals, both pure and with  $\text{Pb}^{2+}$  admixtures, at temperatures in the 20-150°C range, with dose rate of  $4.3 \cdot 10^{-16}$  ev/g-sec.

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Radiation Chemistry

USSR

UDC: 541.15

RYABYKH, S. M., and ZAKHAROV, YU. A., Department of Radiation Chemistry,  
Tomsk Polytechnic Institute imeni S. M. Kirov

"Regularities of Gas Evolution in Radiolysis of Lead Azide"

Ivanovo, Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya  
Tekhnologiya, vol. 13, no. 12, 70, pp 1737-1739

Abstract: This communication presents results of studies of the process of gas evolution in  $PbN_2$  radiolysis. The selection of  $PbN_2$  as an object of study has been determined by its high sensitivity to radiation effects, simplicity and stability of its radiolysis products as well as its practical importance. The kinetic curves of gas evolution from polycrystalline lead azide subjected to radiation-induced chemical decomposition are shown in a figure. The temperature dependences of gas evolution under radiation and during post-gas evolution are shown in another figure. In the first case the activation energy is  $5 \pm 1$  kcal/mol, while in the second case it is  $7 \pm 1$  kcal. The process of accumulation of radiolytic nitrogen in the crystal lattice proceeds at a constant rate and its activation energy is  $1 \pm 0.2$  kcal. The presence of diffusion processes is suggested. Equations are proposed to describe the gas evolution rate in  $1/2$

USSR

RYABYKH, S. M., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Khimiya i Khimicheskaya Tekhnologiya, Vol. 13, No. 12, 70, pp 1737-1739

radiation time  $(dN/dt)$  and the post-gas evolution rate  $(dN/dt)_{post} = pN_0 e^{-p\tau}$ . Here  $N$ --nitrogen molecule number;  $t$ --radiation time;  $G$ --radiation-induced chemical yield;  $I$ --absorbed dose power;  $S$ --acid surface;  $l$ --near-surface layer;  $N_0$ --nitrogen molecule number in the near-surface layer on termination of radiation;  $\tau$ --time after radiation. As computed from the equations, the yield probability of the molecule in a unit of time ( $p$ ) was equal  $0.24 \text{ min}^{-1}$ . The thickness of the near-surface layer was about 0.5 micron at room temperature. Since the environment absorbs some of the total radiolytic gas, the experimental data on gas evolution are not recommended for use to determine the radiation-induced chemical yield.

2/2

1/2 022 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--USE OF AN OMEGATRON DURING A STUDY OF THE PHOTOLYSIS OF SOLID  
COMPOUNDS -U-  
AUTHOR--(04)-ZAKHAROV, YU.A., KISLIN, G.A., KLESHINA, X.X., SINITSIN, V.A.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 532-3  
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OMEGATRON, MASS SPECTROMETER, CHELATE COMPOUND, ELECTRIC LAMP,  
SODIUM COMPOUND, CHLORATE, NITRATE, LEAD COMPOUND/(U)RMD4S LAMP

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0889

STEP NO--UR/0076/70/044/002/0532/0533

CIRC ACCESSION NO--AP0137917

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0137917

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITIES OF USING AN OMEGATRON MASS SPECTROMETER FOR DETG. THE COMPN. OF ULTRASMALL AMTS. OF PHOTOLYSIS PRODUCTS, THE SPECTRAL BOUNDARY, AND THE SPECTRAL SENSITIZATION OF THE PROCESS WERE STUDIED. THE CONNECTION OF THE OMEGATRON WITH OIL PUMPS PRODUCES UNSTABLE READINGS EVEN IN THE CASE OF USING TRAPS WITH LIQ. N. MORE EXACT RESULTS ARE OBTAINED WITH A REACTION CELL AND AN RMO 4S LAMP WITH A TI ADSORPTION PUMP USING AN INSULATION WITH THE AID OF IN,GA PLUGS. THE OMEGATRON CAN BE USED FOR STUDYING THE COMPN. AND DECOMPN. OF PHOTOCHEM. STABLE PRODUCTS LIKE METAL CHLORATES AND NITRATES. THE PRINCIPAL PRODUCT OF NACLO SUB3 DECOMPN. IS O. THE INCREASE IN THE FLUX OF IONS WITH THE MASS NOS. OF 44 AND 28 IS DUE TO AN INCREASE IN O CONC. AND THE BURNING OF THE CATHODE OF THE RMO 4S LAMP. THE OMEGATRON IS USEFUL FOR DETG. THE SPECTRAL BOUNDARY OF THE BEGINNING OF PHOTOCHEM. DECOMPN. THAT TAKES PLACE AT A VERY LOW RATE. THE BOUNDARY OF PHOTOACTIVE LIGHT IS DETD. FOR PBN SUB6. THE OMEGATRON CAN ALSO BE USED FOR OBTAINING INFORMATION ON THE SPECTRAL AND CHEM. SENSITIZATION OF SOLID SALTS WITH THE AID OF DYES.

FACILITY: TOMSK. POLITEKH. INST. IN. KIROVA, TOMSK, USSR.

UNCLASSIFIED

USSR

BEZHKO, A. P., BRANETS, V. N., ZAKHAROV, YU. M., SHMYGLEVSKIY, I. P., Moscow

"Application of Quaternions in the Theory of Finite Rotation of a Solid State"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 123-134

Abstract: In this article the basic results of the theory of finite rotation of a solid state obtained in the form of formal operations on hypercomplex numbers (quaternions) are presented. New results are obtained for the addition formulas of finite rotations defined by the Rodrig-Hamilton parameters. A generalization of the known theorems of finite rotation theory is presented, and the correctness of the form of addition of rotations when summing relative motions is demonstrated. The application of quaternions makes it possible easily to obtain all the basic results of the theory of finite rotations and, in addition, to describe the position of the solid state in terms of nondegenerate kinematic parameters.

In a number of problems the angular position of the solid state is defined by solving the kinematic equations on a digital computer. The selection of the kinematic parameters affects the calculations significantly in  
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BEZHKO, A. P., et al., Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 123-134

this case, and for this reason the Rodrig-Hamilton parameters are advantageous. These parameters do not degenerate for any position of the solid state and they are convenient for use in a control system; there is only one coupling equation when these parameters are used, which simplifies the numerical solution of the kinematic equations. Use of the quaternions follows from use of the Rodrig-Hamilton parameters.

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USSR

UDC 621.378.33

ZAKHAROV, YU. P., NIKITIN, V.V., FEDOSEYEV, K.P.

"Scanning Device Based On Injection Lasers"

Kvantovaya elektronika, Moscow, No 5, May 71, pp 101-102

Abstract: The feasibility is examined of creating a device for scanning the coherent emission of injection lasers with a potentiality for time and space control. The circuit of such a device was proposed and an operative model of it was prepared. The scanning device is a set of 10 lasers prepared from one single crystal of gallium arsenide. An autonomous inject pulse from a 10-channel power supply was fed to the p-region of each laser diode. Scanning is accomplished because of the delay of the injection pulses among themselves and the successive feeding of them to the straightedge of the lasers. The circuit of the pulse generator and an oscillogram of the emission are presented. The author thanks I.M. Divil'kovskiy's group for assistance in the work. Received by editors, 12 Feb 71; after revision, 12 Apr 71. 2 fig. 1 ref.

1/1

1/2 026 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--ESTIMATING THE FREQUENCY AND POWER OF A WEAK SIGNAL SLOWLY VARYING  
WITH TIME, BASED ON THE AVERAGE VALUE OF NULL DISTRIBUTION -U-  
AUTHOR--ZAKHAROV, YU.S.  
COUNTRY OF INFO--USSR Z  
SOURCE--KIEV, IZVESTIYA VUZOV SSSR RADIOELEKTRONIKA, VOL 13, NO 2, 1970,  
PP 212-221  
DATE PUBLISHED-----70  
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., NAVIGATION  
TOPIC TAGS--SIGNAL ANALYSIS, SIGNAL FREQUENCY, ELECTRONIC SIGNAL, WEAK  
MAGNETIC FIELD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1991/1462 STEP NO--UR/0452/70/013/002/0212/0221  
CIRC ACCESSION NO--AP0110949  
UNCLASSIFIED

PROCESSING DATE--09OCT70

UNCLASSIFIED


2/2 026  
CIRC ACCESSION NO--AP0110949  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE ARTICLE CONSIDERS THE MEANS FOR OBTAINING ESTIMATES OF THE FREQUENCY AND POWER OF WEAK CONTINUOUS SIGNALS HIDDEN BY NOISE, BASED ON DIGITAL PROCESSING OF THE NUMBER OF NULLS IN THE INVESTIGATED PROCESS. IN HIS COMPUTATIONS, THE AUTHORS ASSUMES THAT EACH OF THE MEASURED NUMBERS OF NULLS IS IN THE FORM OF THE SUM OF TWO NUMBERS, ONE OF WHICH DEPENDS ONLY ON THE SIGNAL CHARACTERISTICS WHILE THE OTHER DEPENDS ONLY ON THE NOISE CHARACTERISTICS. HE ALSO ASSUMES THAT THE SIGNAL TO NOISE RATIO IS LOW. FORMULAS ARE OBTAINED FOR ESTIMATING THE SIGNAL PARAMETERS AND THEIR DISPERSION IN A SINGLE MEASUREMENT OF THE NUMBER OF NULLS IN THE CHANNELS, AND A COMPARISON IS MADE OF THE PROPOSED METHOD OF ESTIMATION WITH THAT BASED ON COMPUTATION OF THE CORRELATION FUNCTION. THE AUTHOR PRESENTS THE RESULTS OF EXPERIMENTS HE PERFORMED IN WHICH THE SIGNAL SOURCE WAS A SPECIAL OSCILLATOR WHOSE FREQUENCY VARIED WITH TIME IN ACCORDANCE WITH A KNOWN LAW. HE FINDS GOOD AGREEMENT BETWEEN THE EXPERIMENTAL AND THE COMPUTED RESULTS.

UNCLASSIFIED

USSR

UDC 621.391

ZAKHAROV, Yu. S. 

"Estimating the Frequency and Power of a Weak Signal Slowly Varying with Time, Based on the Average Value of Null Distribution"

Kiev, Izvestiya Vuzov SSSR-Radioelektronika, Vol 13, No 2, 1970, pp 212-221

Abstract: The article considers the means for obtaining estimates of the frequency and power of weak continuous signals hidden by noise, based on digital processing of the number of nulls in the investigated process. In his computations, the author assumes that each of the measured numbers of nulls is in the form of the sum of two numbers, one of which depends only on the signal characteristics while the other depends only on the noise characteristics. He also assumes that the signal to noise ratio is low. Formulas are obtained for estimating the signal parameters and their dispersion in a single measurement of the number of nulls in the channels, and a comparison is made of the proposed method of estimation with that based on computation of the correlation function. The author presents the results of experiments he performed in which the signal source was a special oscillator whose frequency varied with time in accordance with a known law. He finds good agreement between the experimental and the computed results.

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USSR

UDC 669.15.018.8:620.196.2

ZAKHAROV, YU. W., LEVIN, F. L., Sentyurev, V. P., GRISHIN, A. M., and MARKESHIN, V. S.

"Intercrystalline Corrosion of Alloys With 20% Cr and 40% Ni as a Function of Alloying"

Sb. tr. TsNII chern. metallurgii (Collection of Works of Central Scientific Research Institute of Ferrous Metallurgy), 1970, vyp. 77, pp 95-98 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I592 by authors)

Translation: The article investigates the effect of C, Nb, Mn, Si, Cr, N, Al on the resistance of austenitic Fe-Cr-Ni alloys with 20% Cr and 40% Ni to intercrystalline corrosion in the 500-900° range with holding periods up to 5000 hours. It is shown that alloying with manganese and aluminum sharply lowers the resistance of the alloys to intercrystalline corrosion after provoking heatings. A rise in austenitizing temperature to 1200° contributes to a diminution of resistance. One illustration. Two tables.

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- 3 -

UDC 669.15.018.8.620.194.2

USSR

ZAKHAROV, M. V., Sentyurev, V. P., Markeshin, V. S., Grishin, A. M., and Levin, F. L.

"Stress Corrosion Cracking of Austenitic Steels and Alloys in Boiling 42% Magnesium Chloride"

Sb. tr. TsNII chern. metallurgii (Collection of Works of Central Scientific Research Institute of Ferrous Metallurgy), 1970, vyp. 77, pp 99-101 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I597 by authors)

Translation: A study was made of the effect of Ni (10-40%) on the resistance of austenitic steels and alloys (0.02-0.05% C, ~18% Cr, 1-2% Mn, Ti, Nb) to stress corrosion cracking in boiling 42% magnesium chloride. Ultimate long-term corrosion strength values according to Ni content were determined. The results of the work make it possible to give some explanations of the reasons for the contradictory nature of data in the literature on the effect of alloying elements on the stress corrosion resistance of austenitic steels and alloys. Two illustrations. One table. Bibliography with nine titles.

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USSR

UDC 669.14.018.8:620.194.2

ZAKHAROV, YU. V., Sentyurev, V. P., Markeshin, V. S., Grishin, A. M., and Levin, P. L.

"Corrosion Cracking of Austenitic Steels and Alloys in Boiling 42% Magnesium Chloride"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 99-101

Translation: The influence of nickel on the stability of austenitic steels and alloys to corrosion cracking in boiling 42% magnesium chloride is studied. The values of the long-term corrosion resistance limit are determined as functions of the nickel content. The results of the work make it possible to explain the reasons for the contradictory data from the literature on the influence of alloying elements on the resistance of austenitic steels and alloys to corrosion cracking. 2 figures; 1 table; 9 biblio. refs.

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USSR

UDC 669.14.018.8

ZAKHAROV, YU. V., LEVIN, F. L., SENTYUREV, V. P., GRISHIN, A. M., and MARKESHIN, V. S.

"Intercrystalline Corrosion of Alloys with 20% Cr and 40% Ni as a Function of Alloying"

Spetsial'nyye Stali i Splyavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 95-98

Translation: The influence of C, Nb, Mn, Si, Cr, N, and Al on the stability of iron-chromium-nickel austenitic alloys with 20% Cr and 40% Ni against intercrystalline corrosion (ICC) is studied in the 500-900°C temperature interval with holding times up to 5,000 hours.

It is demonstrated that alloying of the alloys with manganese and aluminum sharply decreases their resistance to ICC after provoking heating. A decrease in resistance is facilitated by increasing the austenitization temperature to 1200°C. 1 figure; 2 tables.

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UDC 669.15'24'26'295-194:  
620.18:620.17

USSR

LEVIN, F. L., BABAKOV, A. A., ABRAMOV, A. A., and ZAKHAROV, Yu. V., Central Scientific Research Institute of Ferrous Metallurgy

"Properties and Structure of Low-Carbon Fe-Ni-Cr-Ti Alloys"

Moscow, Metallovedeniye, No 5, May 70, pp 15-19

Abstract: A study was made of the effect of titanium and carbon on the structural changes and properties of alloys containing 20% Cr and 35% Ni (Kh20Ni34). Carbon content was varied from 0.02 to 0.07%; Ti content was 1.35% max.

Mechanical testing and phase analysis was done on 15-mm-diameter forged rods which had been austenitized at 1130°C for 15 minutes. Mechanical properties were determined at temperatures of 20°C to 1200°C. Aging for different time intervals at 100°C was done to study the structural stability and properties of the hardened samples. Corrosion testing was done on 3-mm sheet which had been austenitized at 1100 and 1150°C for 20 minutes, water quenched, and aged at 500-900°C for 2000 hours (5000 hours in some cases).

It was found that the mechanical properties of Kh20Ni34+Ti did not change over the investigated limits. Strength at ambient and elevated temperatures was a function of the carbon content. At a Ti/C ratio of 1/4 the ductility and impact

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USSR

LEVIN, F. L., et al., Metallovedeniye, No 5, May 70, pp 15-19

strength are increased at elevated temperatures. Any further increase in the Ti/C ratio lowers these properties. Aging the alloys is accompanied by precipitation of  $M_{23}C_6$  carbides into the chromium; if the Ti content is high, TiC is formed. Maximum embrittlement and strength are exhibited when, along with the carbides, the  $Ni_3Ti$  phase is formed.

Resistance to intercrystalline corrosion is improved when the carbon content is reduced. Titanium, which bonds the carbon into stable carbides, increases resistance to intercrystalline corrosion. Alloys with 0.02-0.04% C, at a Ti/C ratio equal to or greater than 29, don't exhibit a tendency to intercrystalline corrosion after aging at temperatures above 500°C. Decreasing the Ti/C ratio increases intercrystalline corrosion attack and reduces the time for this attack to take place.

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USSR

UDC 620.193.28

ZAKHAROV, YU. V., MYASNIKOV, YU. F., UL'YANIN, YE. A., VASIL'YEV, P. YE.,  
and USTIMENKO, M. YU., Central Scientific Research Institute of Ferrous  
Metallurgy imeni I. P. Bardin

"Investigation of High-Strength Steels and Alloys for Work in Humid Hydrogen  
Sulfide"

Moscow, Zashchita Metallov, Vol 9, No 1, Jan-Feb 73, pp 61-63

Abstract: The tendency to failure under the action of hydrogen sulfide was investigated on 40Kh and 65G structural steels. 4Kh13 and Kh16N712Yu stainless steel subjected to martensitic transformation, and dispersion-hardened KhN40MDTYu (EP543) austenitic steel. Cylindrical specimens of 40Kh and 4Kh13 steels and EP-543 alloy were over a period of one month. The test results revealed that 40Kh and 4Kh13 steels in the hardened state ( $R_c > 30$ ) are highly inclined to cracking in the presence of humid hydrogen sulfide, whereas the EP-543 alloy is stable. Laboratory tests under similar conditions revealed a high stability of austenitic dispersion-hardened NI437B alloy on a nickel base. One figure, twelve bibliographic references.

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1/2 027 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--THE OPERATION OF STEAM LINES MADE FROM 12MKH AND 15 KHM STEELS AT  
HIGH PRESSURE ELECTRIC POWER STATIONS AFTER A STANDARD SERVICE LIFE -U-  
AUTHOR-(05)-ZLEPKO, V.F., MAZEL, R.YE., KRUTASOVA, YE.I., ZAKHAROVA, A.I.,  
VORONOV, N.P.  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, TEPLOENERGETIKA, NO. 2, 1970, PP 55-58  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--LOW ALLOY STEEL, ELECTRIC POWER PLANT, THERMOELECTRIC POWER  
PLANT, STEAM BOILER, STEAM TURBINE, STEEL PIPE, PIPE LINE, CHROMIUM  
STEEL, MOLYBDENUM STEEL, RESEARCH FACILITY, ALLOY DESIGNATION/(U)12MKH  
LOW ALLOY STEEL, (U)15KHM LOW ALLOY STEEL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/0355 STEP NO--UR/0096/70/000/002/0055/0058  
CIRC ACCESSION NO--AP0117592  
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117592

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BASED ON PROLONGED TESTS, CONDITIONS WERE ESTABLISHED UNDER WHICH STEAM LINES MADE FROM 12MKH AND 15KHM STEELS, WHICH HAD OPERATED 100,000 HOURS, COULD BE AUTHORIZED FOR FURTHER OPERATION. ONE TABLE, SEVEN ILLUSTRATIONS, BIBLIOGRAPHY CONTAINS THREE CITATIONS. FACILITY: ALL UNION INSTITUTE OF HEAT ENGINEERING AND THE EASTERN BRANCH OF THE ALL UNION INSTITUTE OF HEAT ENGINEERING.

UNCLASSIFIED

1/3 013 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--METHOD FOR MACHINE COMPUTATION OF SEISMIC ACTIVITY MAPS WITH  
UNIFORM DETAIL -U-  
AUTHOR--ZAKHAROVA, A.I. 2  
COUNTRY OF INFO--USSR  
SOURCE--TASHKENT, UZBEKSKIY GEOLOGICHESKIY ZHURNAL, NO 2, 1970, PP 50-52  
DATE PUBLISHED-----70  
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY  
TOPIC TAGS--SEISMICITY, EARTHQUAKE, EPICENTER, ALGORITHM/(U)M20 DIGITAL  
COMPUTER, (U)SP1 COMPUTER PROGRAM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3008/0386 STEP NO--UR/0512/70/000/002/0050/0052  
CIRC ACCESSION NO--AP0137484  
UNCLASSIFIED

PROCESSING DATE--27NOV70

UNCLASSIFIED

2/3 013

CIRC ACCESSION NO--AP0137484  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. A PROGRAM FOR COMPUTING MAPS OF SEISMIC ACTIVITY A WITH UNIFORM DETAIL, PREPARED FOR AN M-20 ELECTRONIC COMPUTER AND KNOWN AS THE SP-1 (FIRST PROGRAM FOR COMPUTING SEISMIC PARAMETERS), IS DESCRIBED. THE ALGORITHM USED WAS THE YU. V. RIZNICHENKO FORMULA FOR DETERMINING A BY THE SUMMATION METHOD. WITH NORMALIZATION OF THE NUMBER OF EARTHQUAKES IN AREA  $(1,000 \text{ KM PRIME}^2)$  AND TIME (ONE YEAR) THIS FORMULA HAS THE FORM (SHOWN ON MICROFICHE) HERE N SUBSIGMA IS THE NUMBER OF EARTHQUAKE EPICENTERS IN THE ZONE OF AVERAGING AREA S IN  $\text{KM PRIME}^2$ , REDUCED TO T SUBO EQUALS PERIOD (YEARS) OF REPRESENTATIVENESS OF EARTHQUAKE EPICENTERS IN THE ZONE OF AVERAGING MINIMUM OF THE REPRESENTATIVE ENERGY CLASSES FOR EARTHQUAKES IN THE REGION; K SUBO IS THE ENERGY CLASS FOR WHICH SEISMIC ACTIVITY IS DETERMINED; GAMMA IS THE SLOPE OF THE FREQUENCY GRAPH. THE SP-1 PROGRAM IS STANDARD; IT CAN BE USED IN COMPUTING A FOR ANY AREA WITH ANY COMPUTATION INTERVAL AND ANY DIMENSIONS OF THE AVERAGING ZONE, USING TWO SETS OF INITIAL DATA. THE FIRST SET OF DATA, DATA FOR THE INITIAL MAP OF EPICENTERS, IS STIPULATED IN THE FORM OF A MATRIX A SUBMN. THE NUMBER OF MATRIX ROWS M IS EQUAL TO THE NUMBER OF EARTHQUAKE EPICENTERS ON THE MAP AND THE NUMBER OF COLUMNS N IS EQUAL TO THE NUMBER OF PARAMETERS DETERMINING EACH EPICENTER. THE A MAP CAN BE COMPUTED FOR ANY QUITE LARGE REGION. THE NUMBER N IN COMPUTING THE A MAP FOR THE EARTH'S SURFACE IS LIMITED BY THREE PARAMETERS OF EACH EARTHQUAKE: SPHERICAL COORDINATES OF ITS EPICENTER, LATITUDE PHI SUBI AND LONGITUDE LAMBDA SUBI (DEGREES) AND ENERGY CLASS K SUBI.

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137484

ABSTRACT/EXTRACT--THE SECOND SET OF DATA IS FOR THE CONSTANTS, INCLUDING THE INITIAL RECKONING POINT PHI SUBO, LAMBDA SUBO, RECKONING INTERVAL A, AREA OF THE AVERAGING ZONE S EQUALS 2A TIMES 2A, SLOPE OF THE FREQUENCY GRAPH GAMMA, PERIOD OF REPRESENTATIVENESS OF EARTHQUAKES OF THE CLASS. ALSO INCLUDED ARE DATA ON THE NUMBER OF ROWS M AND COLUMNS N OF THE INITIAL MATRIX AND THE CORRESPONDING NUMBERS Q AND R OF THE RESULTANT MATRIX (ACTIVITY MAPS OF THE INVESTIGATED REGION). THE BLOCK DIAGRAM OF THE PROGRAM IS SHOWN AND DESCRIBED IN DETAIL. THE USE OF THE DESCRIBED PROGRAM FOR COMPUTING SEISMIC ACTIVITY MAPS GIVES A CONSIDERABLE TIME SAVING. IT ELIMINATES TIME CONSUMING OPERATIONS SUCH AS CONSTRUCTING A MAP OF EPICENTERS AND DETERMING THE NUMBER OF EARTHQUAKES OF DIFFERENT ENERGY CLASSES IN EACH AVERAGING ZONE. FACILITY: SEISMOLOGY INSTITUTE ACADEMY OF SCIENCES UZBEK SSR.

UNCLASSIFIED

1/2 015 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--CRITERIA OF OPERATIONAL DEPENDABILITY OF THE 12KH1MF STEEL -U-  
AUTHOR--ZLEPKO, V.F., ZAKHAROVA, A.I.  
COUNTRY OF INFO--USSR  
SOURCE--MOSCOW, ELEKTRICHESKIYE STANTSII, NR 4, 1970, PP 32-34  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR  
TOPIC TAGS--LOW ALLOY STEEL, ALLOY DESIGNATION, STEEL PIPE, STEAM BOILER,  
RELIABILITY/(U)12KH1MF LOW ALLOY STEEL  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1987/1412 STEP NO--UR/0104/70/000/004/0032/0034  
CIRC ACCESSION NO--AP0104726  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0104726

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE 12KH1MF STEEL IS WIDELY USED IN MANUFACTURING STEAM PIPES AND THEREFORE PROBLEMS OF CORRECT PROGNOSIS AND EVALUATION OF OPERATIONAL DEPENDABILITY OF STEAM PIPES WHICH HAD WORKED FOR A LONG TIME ARE OF GREAT IMPORTANCE. IT IS SUGGESTED THAT THE FACTOR OF STRUCTURAL CHANGES OF STEEL BE USED AS A CRITERION OF OPERATIONAL DEPENDABILITY.

UNCLASSIFIED

USSR

UDC 621.385.623.4

ZAKHAROVA, A. N., PETROV, D. M., and SAMORODOVA, G. A.

"Evaluation of Klystron-Type Accelerators and Transit Klystrons"

Elektron. tekhnika. Nauch.-tekhn. sb. Elektron SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1971, Issue 4, pp 47-62 (from RZh-Elektronika i yeye primeneniye, No 8, August 1971, Abstract No 8A180)

Translation: For an analysis of phenomena in transit klystrons and electron accelerators of the klystron type and their evaluation, relativistic nonlinear equations for the motion of electrons are formulated, taking account of the space charge based on a disk (1-dimensional) model of an electron stream. The problem of excitation of the cavity and the takeoff of energy is solved on the basis of the balance of the active and reactive powers for any amplitude of the microwave fields, taking account of the processes connected with turning of the electrons. A program is formulated for solution of these equations on a computer, which makes it possible to calculate the output characteristics of the devices. In the program, optimization of the output characteristics with respect to a large number of parameters is provided. Some results are presented of an evaluation of 4-cavity klystron amplifiers and 4-cavity electron accelerators. 17 ref. Summary.

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USSR

UDC 621.385.623.4

BORISOV, L.M., ZAKHAROVA, A.N., YEVTUSHENKO, O.V., ZHARYY, YE. V., KAUFMAN, G.M.,  
PETROV, D.M., SAMORCDOVA, G.A.

"Experimental Television Klystron With High Efficiency"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 7, pp 160-162 (from RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11A126)

Translation: The development is reported of an experimental klystron, the parameters of which were optimized for a specified current and voltage with the aid of an electronic computer. The electronic efficiency of the klystron produced amounts to 70 percent. With an amplification band of 1.3 percent and a shift of the maximum amplitude-frequency characteristic to the low-frequency side, the maximum efficiency (with respect to power in the load) exceeds 60 percent with an amplification factor of 40 db. Summary.

1/1

USSR

UDC 621.385.633.032.266

GOLENITSKIY, I.I., ZAKHAROV, A.N., KHOMICH, V.B.

"Effect Of Conditions For Shaping A Beam On The Output Parameters Of A BWT With Electrostatic Focusing"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronic Technology. Scientific-Technical Collection. Microwave Electronics), 1970, Issue 11, pp 3-11 (from RZh--Elektronika i yeye primeneniya, No 2, February 1971, Abstract No 2A188)

Translation: The results of a computation of a backward-wave tube with periodic electrostatic focusing are presented from the position of nonlinear two-dimensional theory for an O-type device. It is shown that the conditions for shaping a beam have a significant effect on the output parameters of the device (output power, efficiency, range of electrical retuning of the frequency, and so forth). 10 ref. Summary.

1/1

USSR

UDC 621.385.633

GOLENITSKIY, I.I., ZAKHAROVA, A.N., KHOMICH, V.B.

"Forming Of Ribbon Electron Stream In A Dynamic Regime Of A BWT With Periodic Electrostatic Focusing"

Elektron. tekhnika. Nauchno-tekhn. sb. Elektron. SVCh (Electronics Technology. Scientific-Technical Collection. Microwave Electronics), 1970, No 6, pp 3-17 (from RZh--Elektronika i yeye primeneniye, No 10, October 1970, Abstract No 10A159)

Translation: A system of equations is formulated for describing the process of forming beams by a periodic electrostatic field in a dynamic regime of a BWT. The special features are discussed of a solution on a Type M-20 digital computer of problems of dynamic electron optics, and a solution is presented of concrete problems. Author's Summary.

USSR

UDC 669.293'294:54:165

ZAKHAROVA, M. I., and VASIL'YEVA, N. A., Moscow State University

"Study of the Decomposition of the Solid Solution of Tantalum in Nickel"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1, 1971, pp 135-136

Abstract: A study was made of the decomposition of a supersaturated  $\alpha$ -solid solution in the alloy Ni-8% (at) Ta. The study made use of X-ray diffraction analysis of single crystals, electron microscopy of thin foils for transmission, and optical microscopy of both single and polycrystals, and was performed after austempering at 650 and 800°C. The experimental data indicated that at these temperatures the decomposition of the solid solution in the Ni-8% (at) Ta alloy takes place by direct separation of three-dimensional crystallites of the equilibrium phase  $Ni_3Ta$ . Upon separation of the  $Ni_3Ta$  phase, the decomposition of the solid solution follows in two phases, a process investigated here on single crystals for the first time. It was found that the crystallite dimensions vary from 300 x 600 Å to 1 x 7.5 μ with an increase in tempering time at 650°C from 28 to 200 hours and from 200 Å to 2 μ with an increase in tempering time at 800°C from 20 minutes to 48 hours.

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USSR

UDC 911.3.616.935(470.313)

STRELYUKINA, G. A., and ZAKHAROVA, M. V.

"Some Aims and Results in Control and Prophylaxis Against Dysentery and Acute Intestinal Disease in Ryazanskaya Oblast"

Nauchn. Tr. Ryazansk. med. in-t (Scientific Works of Ryazan Medical Institute) 37, 1970, pp 3-9 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.254 by Ts. Minsbarg)

Translation: In the past 15 years, dysentery morbidity in Ryazan oblast has decreased more than two-fold. In 1966-1968, dysentery morbidity in urban areas was three times that in rural areas. The morbidity dynamics for the whole spectrum of acute intestinal disorders has basically the same morbidity curve as that for dysentery, but exceeds dysentery morbidity over a 15-year period by a factor of approximately 1.5-3. In 1967-1968 the correlation of dysentery and acute intestinal disease decreased to 1 : 1.5-1 : 1. For the past 4 years, Sonne dysentery bacillus has been isolated in 73-94.8% of all dysentery agents. The study of the increase in Sonne dysentery morbidity as compared to 1958, the number of mild forms of dysentery increased by a factor of more than 3, while the lethality decreased twelve-fold.

1/1

USSR

UDC 632.4:635.21

ZAKHAROVA, T. I., Candidate of Biological Sciences, and GULYUKINA, N. T.,  
Scientific Associate, All-Union Institute of Plant Protection

"Determination of Losses in the Potato Crop From Phytophthora Infections"

Moscow, Zashchita Rasteniy, No 2, 1971, pp 32-33

Abstract: Potatoes infected by this disease cannot be used for human consumption or planting; at best, they can be used as animal feed. Crop losses due to infection of the green tops of potato plants depend on the time at which the disease emerges, the course and intensity of the infection. The degree of Phytophthora infection over the years is subject to great variations. Data were collected on crop losses over the period of 1966-1969 for potato types from the Leningrad and Novosibirsk regions. Mathematical equations for loss calculations were derived. In the mean, a difference of only  $\pm 0.8-1.4\%$  was found between theoretical and experimental data.

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- 25 -

USSR

UDC 632.4:58.08:582.951.4

ZAKHAROVA, T. I., All-Union Scientific Research Institute of Plant Protection,  
Leningrad

"Damage Caused by Phytophthorosis Upon Infection of Potato Tops"

Leningrad, Mikologiya i Fitopatologiya, Vol 5, No 1, 1971, pp 81-83

Abstract: Tops of potato plants of the Berlikhingen variety were infected with phytophthorosis to the extent of 25, 50, 75, and 100%. Comparison of potato yields from naturally infected and healthy plants was made, and the following formulas were derived for the relationship between the loss of yield of potato tubers ( $Y$  in %) and the degree of infection of tops with phytophthorosis ( $X$  in %):  $Y = -2 + 0.492X$  for infection at the end of flowering (loss of flowers by 50% of the plants);  $Y = -1.4 + 0.382X$  for infection at the beginning of ripening (beginning of wilting of the tops);  $\lg Y = 0.27 + 0.11X$  for infection at the stage of ripening (approximately two weeks after the beginning of wilting). The results obtained were statistically valid for degrees of infection in the range of 50-100%, while the losses in yield upon 25% on infection were within the limits of experimental error. By applying the formulas derived, the losses in potato yield in various regions of the USSR in 1965-1968 were calculated on the basis of information on 1/2

USSR

ZAKHAROVA, T. I., Mikologiya i Fitopatologiya, Vol 5, No 1, 1971, pp 81-83

development of phytophthorosis on potato tops given by the Service of Prognoses and Warning. These formulas make it possible to forecast losses on the basis of the intensity of disease in any growing season and to plan measures for disease control in relation to the damage expected.

2/2

- 39 -

Acc. Nr:  
**AP0036566**

Ref. Code: UR 0301

PRIMARY SOURCE: **7**  
Voprosy Meditsinskoy Khimii, 1970, Vol 16,  
Nr 1, pp **19-22**

EFFECT OF SOME DRUGS WITH ANTICHOLINESTERASE ACTION ON MUSCULAR  
CHOLINESTERASES

A. V. Zakharova

Chair of Biochemistry, 1-st I. P. Pavlov Medical Institute, Leningrad

The effect of LG-63 (related to alkylthiophosphonates) and GD-189 (related to alkylthiophosphates) on various muscular cholinesterase: acetyl cholinesterase (ACHE) and butyryl cholinesterase (BuCHE) has been studied. The results obtained showed that both drugs inhibit cholinesterases in vitro as well as in vivo. BuCHE was more susceptible to both drugs as compared to ACHE. Anticholinesterase activity of LG-63 was more pronounced than the appropriate activity of GL-189.

*D.m.*

*6*

REM / FRAME  
121410

USSR

UDC 612.744.015.1:577.153.9/.014.46

ZAKHAROVA, A. V., Chair of Biochemistry, First Medical Institute  
in ~~honor~~ I. P. Pavlov, Leningrad

"The Effect of Some Substances with Anticholinesterase Activity on  
Cholinesterases of Muscle Tissue"

Moscow, Voprosy Meditsinskoy Khimii, Vol 16, No 1, Jan/Feb 70, pp  
19-23

Abstract: The inactivating effect of O-ethyl-S-hexylmethylthiophos-  
phonate (LG-63) and O,O-diethyl-S-hexylthiophosphate (GD-189) on the  
cholinesterases of rat muscle tissue was studied in experiments in  
vitro and in vivo. Acetylcholine, mecholine, and butyrylcholine  
were used as substrates to determine cholinesterase activity. Ex-  
periments indicated that muscle butyrylcholinesterase was somewhat  
more sensitive than acetylcholinesterase to the action of both LG-63  
and GD-189. The anticholinesterase activity of LG-63 towards both  
cholinesterases was considerably more pronounced than that of GD-189.

1/1

USSR

UDC 546.799.541.5

ZAKHAROVA, F. A., ORLOVA, M. M., and GEL'MAN, A. D.

"Solid Compounds of Plutonium (VII)"

Leningrad, Radiokhimiya, Vol 14, No 1, 1972, pp 123-125

Abstract: Earlier it was reported that neptunium (VII) and plutonium (VII) are present in alkaline solutions as the anion  $MeO_5^{3-}$  which form slightly soluble compounds with the alkali and alkaline earth metals. The most suitable cations for the formation of sparsely soluble compounds of neptunium (VII) were shown to be the electropositive complex ions of hexamine cobalt chloride  $[Co(NH_3)_6]Cl_3$  (compound A) and chloropentammineplatinum chloride (IV)  $[Pt(NH_3)_5Cl]Cl_3$  (compound B). However, problems occurred when this method was applied to Pu and therefore a new method of precipitation was developed. For compound A this involved preparing a solution  $1.68 \times 10^{-2}$  M in Pu(VII) by oxidizing a slurry of biputunate with ozone in a 5.2M solution of sodium hydroxide. A solution containing a stoichiometric amount of A (or slightly less) was quickly added to the Pu solution. A greenish-black precipitate was formed which separated rapidly from the mother liquor. The precipitate was 1/2

USSR

ZAKHAROVA, F. A., et al., Radiokhimiya, Vol 14, No 1, 1972, pp 123-125

transferred to a porous glass filter and separated under vacuum. The reduction of plutonium from (VII) to (VI) in the precipitate is accompanied by a change in color from greenish-black to reddish-brown. Additional reactions occur if the precipitate is not separated from the solution. A 90.3% yield was obtained for the compound  $[\text{Co}(\text{NH}_3)_6]_2\text{PuO}_5 \cdot 3\text{H}_2\text{O}$ . For compound B, an aqueous or weakly alkaline solution containing a stoichiometric amount of B was added to a 2-5M NaOH solution of Pu(VII) resulting in a dark green fine-grained precipitate. Excess B results in the reduction of Pu(VII) but Pt(IV) catalyzes the reaction to a lesser degree than does the cobalt. This precipitate was also separated from the solution by filtration, washed and analyzed for Pu and Pt. It had the formula  $[\text{Pt}(\text{NH}_3)_5\text{Cl}]\text{PuO}_5 \cdot 3\text{H}_2\text{O}$ ; no % yield was given. Optical-crystallographic studies indicated that both precipitates were anisotropic, the one from A being in the form of platelets and the one from B in the form of grains.

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- 14 -



USSR

UDC 546.799.541.5

ZAKHAROVA, F. A., ORLOVA, M. M., and GEL'MAN, A. D.

"Solid Compounds of Plutonium (VII)"

Leningrad, Radiokhimiya, Vol 14, Vyp 1, 1972, pp 123-125

Abstract: Earlier it was reported that neptunium (VII) and plutonium (VII) are present in alkaline solutions as the anion  $MeO_5^{3-}$  which form slightly soluble compounds with the alkali and alkaline earth metals. The most suitable cations for the formation of sparsely soluble compounds of neptunium (VII) were shown to be the electropositive complex ions of hexamine cobalt chloride  $[Co(NH_3)_6]Cl_3$  (compound A) and chloropentaminoplatinum chloride (IV)  $[Pt(NH_3)_5Cl]Cl_3$  (compound B). However, problems occurred when this method was applied to Pu and therefore a new method of precipitation was developed. For compound A this involved preparing a solution  $1.68 \times 10^{-2}M$  in Pu(VII) by oxidizing a slurry of biplutonate with ozone in a 5.2M solution of sodium hydroxide. A solution containing a stoichiometric amount of A (or slightly less) was quickly added to the Pu solution. A greenish-black precipitate was formed which separated rapidly from the mother liquor. The precipitate was transferred to a porous glass filter and separated under vacuum. The reduction of plutonium from (VII) to (VI) in the precipitate  
1/2

USSR

ZAKHAROVA, F. A., et al., Radiokhimiya, Vol 14, Vyp 1, 1972, pp 123-125

is accompanied by a change in color from greenish-black to reddish-brown. Additional reactions occur if the precipitate is not separated from the solution. A 90.3% yield was obtained for the compound  $[\text{Co}(\text{NH}_3)_6]\text{PuO}_5 \cdot 3\text{H}_2\text{O}$ . For compound B, an aqueous or weakly alkaline solution containing a stoichiometric amount of B was added to a 2-5M NaOH solution of Pu(VII) resulting in a dark green fine-grained precipitate. Excess B results in the reduction of Pu(VII) but Pt(IV) catalyzes the reaction to a lesser degree than does the cobalt. This precipitate was also separated from the solution by filtration, washed and analyzed for Pu and Pt. It had the formula  $[\text{Pt}(\text{NH}_3)_5\text{Cl}]\text{PuO}_5 \cdot 3\text{H}_2\text{O}$ ; no % yield was given. Optical-crystallographic studies indicated that both precipitates were anisotropic, the one from A being in the form of platelets and the one from B in the form of grains.

2/2

- 48 -

172 020  
TITLE--VASCULAR PATHOLOGY -U- UNCLASSIFIED PROCESSING DATE--11DEC70  
AUTHOR--(03)-ZAKHAROVA, G., FROLOV, YE., TSVETKOVA, N.  
COUNTRY OF INFO--USSR  
SOURCE--MEDITSINSKAYA GAZETA, OCTOBER 2, 1970, P 3, COLS 1-4  
DATE PUBLISHED--02OCT70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--CARDIOVASCULAR SYSTEM, SURGERY, MEDICAL FACILITY  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO--FD70/605038/809 STEP NO--UR/9034/70/000/000/0003/0003  
CIRC ACCESSION NO--AN014247Z  
UNCLASSIFIED

2/2 020

CIRC ACCESSION NO--ANG142472

UNCLASSIFIED

PROCESSING DATE--11DECT.

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE REVIEWS THE FUNCTIONS OF THE CLINIC OF HOSPITAL SURGERY OF THE SARATOV MEDICAL INSTITUTE, WHICH IN THE COURSE OF THE LAST 15 YEARS SERVED AS A CENTER FOR TREATING PATIENTS WITH DAMAGED OR DISEASED VESSELS OF EXTREMITIES. A SPECIAL DEPARTMENT WAS ESTABLISHED IN 1968 FOR TREATING PATIENTS WITH AFFLICTED PERIPHERAL VESSELS. THE DEPARTMENT OPERATES A FUNCTIONAL DIAGNOSTICS LABORATORY, DOES BIOCHEMICAL ANALYSIS, AND RUNS CHECKS OF THE PHYSICAL PROPERTIES OF BLOOD WHICH IS IMPORTANT FOR OPERATIONAL AND POSTOPERATIONAL PERIODS. THE ASSOCIATES OF THE CHAIR OF HOSPITAL SURGERY HAVE BEEN EXPLORING FOR MANY YEARS THE PROBLEMS IN DIAGNOSTICS, AND THE RECOMMENDED TREATMENTS ARE DESCRIBED. ANOTHER SUBJECT, THE PATHOGENESIS AND TREATMENT OF OBLITERATING "ENDARTHERIETE" THE RESULTS OF RECONSTRUCTION SURGERY OF VESSELS, HAS BEEN UNDER STUDY FOR THE LAST TEN YEARS. THE EXPERIENCE IN SURGICAL TREATMENT OF PATIENTS WITH PATHOLOGICAL AND DAMAGED VESSELS OF EXTREMITIES HAS MADE IT POSSIBLE TO START WORK IN OTHER AREAS OF VASCULAR SURGERY. FACILITY: HEAD OF THE CHAIR OF HOSPITAL SURGERY OF THE SARATOV MEDICAL INSTITUTE, SMCLN. FACILITY: HEAD OF THE VASCULAR DEPARTMENT OF THE CLINIC, SMCLN. FACILITY: REGIONAL DEPARTMENT OF PUBLIC HEALTH.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--AROMATIC HYDROCARBONS. XXXVIII. HYDROCARBONS OF THE ANTHRACENE  
SERIES IN DIENE SYNTHESIS -U-  
AUTHOR--(04)-SKVARCHENKO, V.R., SHILNIKOVA, A.G., ZAKHAROVA, G., LEVINA,  
R.YA.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. ORG. KHIM. 1970, 6(1), 174-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ANTHRACENE, AROMATIC HYDROCARBON, DIENE, CONDENSATION  
REACTION, QUINONE, MALEIC ANHYDRIDE, HYDROCARBON SYNTHESIS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1995/1467 STEP NO--UR/0366/70/006/001/0174/0177  
CIRC ACCESSION NO--AP0116904  
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0116904

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE CONDENSATION OF

2,3, DIMETHYLANTHRACENE (I) WITH MALEIC ANHYDRIDE (II) OR RHO

BENZOQUINONE (III) GAVE ONLY 9,10, ADDN. PRODUCTS:

2,3, DIMETHYL, 9,10, (DICARBOXYETHANO), 9,10, DIHYDROANTHRACENE ANHYDRIDE

(IV) OR 2,3, DIMETHYL, 1 PRIME, 2 PRIME, DIHYDRO, 3 PRIME, 6

PRIME, TRIPTYCENEQUINONE (V). SIMILARLY, WHEN

2,3,6,7, TETRAMETHYLANTHRACENE (VI) OR

2,3, DIMETHYLCYCLOHEX(6,7)ANTHRACENE (VII) WERE REACTED WITH II OR III

THE CORRESPONDING 2,3,6,7, TETRAMETHYL DERIV. OF IV AND V, ANHYDRIDE OF

2,3, DIMETHYL, 9,10, (DICARBOXYETHANO), 6,7, CYCLOHEXANO, 9,10, DIHYDROANTHRACE

NE, OR 2,3, DIMETHYL, 2 PRIME, 3 PRIME, DIHYDROQUINOND(3 PRIME, 2

PRIME, 9,10, CYCLOHEXANO(6,7), 9,10, DIHYDROANTHRACENE WERE OBTAINED. THE

REACTION OF IV OR ITS 2,3,6,7, TETRAMETHYLDERIV. WITH H SUB2 C:CMECME:CH

SUB2 GAVE

2,3,6,7, TETRAMETHYLTRICYCLO(2.2.2.2)TETRADECA2,5(7), DIEN, 9,10, DIONE.

THE REACTION OF I, VI OR VII WITH O,H SUB2 NC SUB6 H SUB4 CO SUB2 H, AMYL

LITHIUM MIXT. (WHICH FORMS BENZYNE) GAVE 2,3, DIMETHYLTRIPTYCENE,

2,3,6,7, TETRAMETHYLTRIPTYCENE, OR 2,3, DIMETHYLCYCLOHEXANO(6,7)TRIPTYCENE

AS WELL AS THE CORRESPONDING

8,9, SUBSTITUTED, 5,12, ETHANO, 5,12, DIHYDRONAPHTHACENES OR

8,9, SUBSTITUTED, 5,12, DIMETHYLETHENO, 5,12, DIHYDRONAPHTHACENES.

FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 546.775-306

BUSLAEV, Yu. A., KHEKHEZISHVILI, A. A., YAKUSHEVA, L. P., and ZAKHAROVA, T. A.,  
Institute of General and Inorganic Chemistry imeni N. S. Kurnakov, Academy of  
Sciences USSR

"Polyphosphinates of Oxomolybdenum (V)"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 17, No 2, Feb 72, pp 415-419

Abstract: Upon reaction of  $\text{MoOCl}_4$  with diphenylphosphinic acid  $\text{HOP(O)Ph}_2$ , polyphosphinate of oxomolybdenum with the composition  $\text{MoOCl}_4 \cdot (\text{PO}_2\text{Ph}_2)_n$  (I) and  $\text{MoOCl}(\text{PO}_2\text{Ph}_2)_n$  (II) formed, which had the structure of polymers with phosphinate bridge and isolated molybdenum-oxygen bonds. On reaction with  $\text{EtOH}$ , I and II were converted into the dioxomolybdenum phosphinate  $\text{MoO}_2(\text{OP(O)Ph}_2)_n$  (III). I reacted with  $\text{EtOH}$  more readily than II. With an increasing degree of replacement of phosphinate groups with Cl atoms (I vs. II) and of Cl with O atoms (III vs. I), the degree of polymerization of the phosphinate in  $\text{HClO}_4$  solutions increased.

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USSR

UDC 621.039.524.034.3

BUBNOV, V. P., ZAKHAROVA, I. S., RAZUMOVA, G. A.

"Effect of the Heat of Chemical Reaction on the Efficiency of Thermodynamic Cycles in Chemically Reacting Working Mediums"

Dissotsiiruyushch. gazy kak teplonositeli i rab. tela energ. ustanovok -- V sb.  
(Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 48-51  
(from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U186)

Translation: A study was made of the characteristic features of thermodynamic cycles in chemically reacting working mediums. Estimates of the effect of the heat of chemical reaction on the efficiency of the gas and gas-liquid cycles are presented. There are two illustrations and a five-entry bibliography.

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ZAKHAROVA, K.P.

DISPOSAL OF RADIOACTIVE WASTES  
Collection of papers sponsored by the State Committee for the  
Use of Atomic Energy of the USSR, 1972, Moscow

JPRS 58764  
17 April 1973

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Technical-Economic Comparison of the Methods of Solidification and Tank Storage for Highly Active Liquid Waste from the Processing of Spent Fuel Elements of Water-Cooled Water-Moderated Power Reactors (L. G. Adamyeva, et al.) .....	36
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(I - USSR - XI)

STUDY OF THE POSSIBILITY OF USING BITUMINIZATION FOR PROCESSING HIGHLY ACTIVE WASTES

Article by K. P. Zakharenko, V. V. Kulichenko, Yu. P. Matynov, I. A. Sobolev, and L. M. Khomichik, State Committee for the Use of Atomic Energy of the USSR, IAEA Publication SR-153 (30), Moscow, 1972, Russian pp. 1-247

At the present time the problem of the possibility of increasing the permissible specific activity of wastes enclosed in bitumen is being raised more and more frequently.

Now already there is no doubt of the possibility of bituminization of wastes with a specific activity of up to 1 curie per liter. At the same time, 100 curies per liter in bitumen *is*.

The limiting value of the specific activity is determined by two factors: the radiation-chemical stability of the bitumen blocks and the possible ex- traction of the heat accumulated in the blocks due to the energy of radio- active decay.

1. Radiation-chemical stability of bitumens

An essential factor determining the conditions of the burial of blocks is a possible liberation of gaseous products of radiolysis.

For 5 years observations have been made of the change in the pressure in metals with bitumen blocks containing 60% bitumen BИ-III (oxidized) and 40% sodium nitrate, and having a specific activity from 0.15 to 15.4 curies per liter with respect to strontium-90 (Figure 1). The liberation of gaseous products of radiolysis was observed in all the experiments after a pro- longed period of the process of gas absorption, accompanied by a decrease in the pressure in the metal. For a block with an activity of 0.15 curie

per liter already after two years of storage the rate of gas liberation becomes insignificant and the pressure in the vessel does not increase, in practice. For specimens with a specific activity of 1.54 and 15.4 curies per kilogram gas liberation is still observed, but, however, its rate begins to decrease, and the tendency toward a retardation is greatest in a specimen with a specific activity of 15.4 curies per kilogram. The beginning of noticeable gas liberation and an increase in pressure in a tank for blocks earlier than for blocks of a specific activity of 15.4 curies per kilogram. At the present time, specimens have been prepared with a specific activity of 5 and 52 curies per kilogram with respect to strontium-90 on the basis of bitumen Bk-III (60% Bk-III + 40% NaNO<sub>2</sub>). The volume of the specimen was 83 cubic centimeters (weight 100 grams, free volume in the specimen was 63 cubic centimeters). During the first forty days gas absorption in the specimens was observed (Figure 2), after which gas liberation began. After 150 days the pressure somewhat exceeded the pressure in the tank.

For pure bitumen Bk-III and two specimens based on it, irradiated in a Co-60 installation with a power of the dose of  $2.1 \times 10^5$  rad per hour, the composition of the gaseous phase formed as a result of radiolysis was determined (Table 1).

A comparison of these results with some obtained earlier (2) with a dose of absorbed energy of  $7 \times 10^6$  rad and a power of the dose of  $2.9 \times 10^4$  rad per hour demonstrated that the increase in the power of the dose and the dose of absorbed energy leads to an increase in the content of hydrogen and the appearance of methane, hydrocarbons of group C<sub>2</sub> and carbon dioxide in the gaseous phase.

Simultaneously in all cases a decrease in the oxygen content in the gaseous phase, in comparison with the air ratio, was noted.

The presence of sodium nitrate in the specimen in the given case has no essential effect on the composition of the gaseous phase.

For determination of the nature of radiation changes in the bitumen and in bitumen preparations special investigations were conducted.

Specimens in the form of cylinders, the diameter and height of which amounted to 3.5-4 centimeters, were irradiated on a Co-60 installation with various powers of the dose, and in this case the total dose of absorbed energy was preserved practically constant. The irradiation was conducted in an atmosphere of air.

5

USSR

UDC 547.26'118

ORLOVSKIY, V. V., VOBSI, B. A., and ZAKHAROVA, L. F., Leningrad Chemical  
Pharmaceutical Institute

"Preparation of the Dialkyl Esters of N-Substituted  $\alpha$ -Aminobenzylphosphonic  
Acids"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 5, 1972, pp 1165-1166

Abstract: The title esters may be prepared in high yield without using a catalyst by reacting the dialkyl esters of phosphorous acid with anils in solution at room temperature. If the reaction is carried out in an inert gas and the starting materials are carefully purified, it is not necessary to purify the product. Yields and physical data are for the compounds prepared.

1/1

Microbiology

USSR

UDC 576.858.6.083.35.07

(11)

ZHDANOV, V. M., BYKOVSKIY, A. F., AL'TSHTEYN, A. D., LOZINSKIY, T. F.,  
URYVAYEV, L. V., VOLKOVA, M. L., YERSHOV, F. I., IL'IN, K. V., BEKTEMIROV,  
T. A., IRLIN, I. S., MILLER, G. G., ZAKHAROVA, L. G., PEREKREST, V. V.,  
GERASINA, S. F., and SEVAST'YANOVA, M. V., Institute of Virology imeni  
D. I. Ivanovskiy, Academy of Medical Sciences USSR, and the Institute of  
Epidemiology and Microbiology imeni N. F. Gamaleya, Moscow

"Detection of Oncornaviruses in Continuous Tissue Cultures"

Moscow, Voprosy Virusologii, No 4, 1973, pp 411-414

Abstract: Studies were conducted on a number of human and animal continuous tissue cultures maintained in medium 199 containing 10% bovine serum to determine oncornaviruses. Formation of oncornaviruses in the tissue cultures were followed by the appearance of viral particles in the culture fluid labeled with H<sup>3</sup>-uridine, susceptibility of their synthesis to low actinomycin D concentrations, appearance of these particles following inhibition of nuclear material synthesis by bromodeoxyuridine or mitomycin, presence of reverse transcriptase in these particles, presence of 60-70 S RNA in these particles, and electron microscopy. Of the 26 human lines investigated 14 contained type B oncornavirus, and 4 lines type C virus. Eight of the

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(11)

ZHDANOV, V. M., et al., *Voprosy Virusologii*, No 4, 1973, pp 411-414

14 animal lines studies also showed the presence of oncornaviruses. The source of these viruses in the human lines remains unclear, but the source may have been bovine serum or porcine trypsin used in the preparation of cell suspension. It is noteworthy that type B viruses were isolated in human cultures of epithelial origin, while type C viruses in human cultures of leukotic or sarcomatous origin.

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- 25 -

ZAKHAROVA, L. M.

Cybernetics

30 Jul 71

97

PTDI: CYBERNETICS

02521E

58. USSR

UDC 62-50

ZAKHAROVA, L. M. and SERENOV, V. I.

"Relationship between Electrical Activity of Muscles and Muscle Strengthening in Isometric Contractions"

Zakharovna Professor Upravleniya Vycheshnoy Akademiyyu, Moscow, "Nauka" Publishing House, 1970, pp 61-65

Translation (of author's abstract): Results of experiments on animals and man studying the relationship between total electrical activity of a muscle and its strengthening in the isometric case are described.

It is shown that the signal received from the muscles EMG by passing it through a detector, through an inertial link with a time constant of 0.25 sec, and with a time lag of 0.02 sec is found to show quite good agreement with the variation in muscle strength in the frequency range from fractions of 1 hertz to 10 hertz.

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30: Foreign Press Digest

30 Jul 71

59. USSR

UDC 62-50

ANDRUSOVA, Ye. A., SEMAKOV, M. A., and SERENOV, V. I.

"Relationship between Joint Tremor and Control of Joint Angle"

Institutskiy Professorov Upravleniya Vycheshnoy Akademiyyu, Moscow, "Nauka" Publishing House, 1970, pp 66-73

Translation (of author's abstract): Results of an experimental study of the activity of a pair of muscle-antagonists in the maintenance of a given joint angle under different conditions are given.

The 10-hertz component of the joint angle tremor is shown to result from the functioning of the step-by-step search mechanism and the low-frequency component is a consequence of random extraneous influences on the operation of this mechanism.

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ZAKHAROVA, L. M.

Medicine

30 Jul 71

96, USSR

AZEMKIN, M. A. and ANDRIEVA, Ye. A.

"Several Very Simple Mechanisms of Skeletal Muscle Control"

Isi'dovaniye Professorov Upravleniya Vyshechnoy Aktivnost'yu, Moscow, 1970.

Transition (of author's abstract): Model representations of single muscle control systems and control systems for pairs of muscle-antagonists are given for precise maintenance of desired values of a joint angle and also for the movement of innervated joints.

FROM CITIZENRICES

DDO 62-90

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30 Jul 71  
See Foreign Press Digest

ST. BERN INC

ANDRIEVA, Ye. A., ZAKHAROVA, L. M., LINDVINSKY, A. I., and GURNEV, V. I.

"Muscle Twitches as Elementary Acts of Muscle Activity"

Isi'dovaniye Professorov Upravleniya Vyshechnoy Aktivnost'yu, Moscow, 1970.

Translation (of author's abstract): A method of interpreting an EMG [electrogram] by passing it through a filter is proposed. This technique shows that muscle function was experimentally shown that these twitches are reflected in the curve of variation of the force generated by the muscle in time intervals of the order of 100 msec.

The method used shows that the central fact in the control of muscle activity is the instants of twitch initiation and that these instants are practically independent of filter characteristics.

The proposed method is convenient for studying muscle control processes.

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UNCLASSIFIED  
PROCESSING DATE--23OCT70  
TITLE--SELECTIVITY OF STYRENE OXIDATION BY PALLADIUM CHLORIDE IN WATER -U-  
AUTHOR--(04)-ZAKHAROVA, L.M., VARGAFTIK, M.N., MOISEYEV, I.I., KATSMAN,  
L.A.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 700-2  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--STYRENE, OXIDATION, PALLADIUM CHLORIDE, LITHIUM PERCHLORATE,  
CARBONYL COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1906  
CIRC ACCESSION NO--AP0123690  
STEP NO--UR/0062/70/000/003/0700/0702  
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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123690

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC DATA WERE REPORTED ALONG WITH PRODUCT DISTRIBUTION IN THE OXIDN. OF PHCH:CH SUB2 BY PUCL SUB2 IN H SUB2 O, RUN AT 25DEGREES WITH LICLO SUB4 TO MAINTAIN CONST. IONIC STRENGTH IN HCL OR HCLO SUB4 SOLN. THE REACTION GAVE PHCH SUB2 CHO, ACPH, UNREACTED PHCH:CH SUB2 AND SOME BZH. THE CARBONYL COMPS. WERE FORMED IN SUMMARY 98PERCENT YIELD BASED ON CONVERTED HYDROCARBON. FACILITY: INST. OBSHCH. NEORG. KHIM. IM. KURNAKOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.165.621.74.019

TRUSOV, L. P., DUBROVSKAYA, Ye. F., and ZAKHAROVA, L. N.

"Properties of the Metal of Cast Body Parts of Turbines of 15Kh1MLF-L Steel"

Teploenergetika, 1972, No 3, pp 64-67 (from Referativnyy Zhurnal, No 6, Jun 72. Turbostroyeniye. Single Issue. Abstract No 6.49.84)

Translation: It is demonstrated that, for increasing the casting properties and for higher stability of heat-resistant properties of the metal of casts, it is expedient to correct the requirements of "Technical Regulations/Standards", according to the chemical composition of steel and the technology of heat treatment. Four illustr., five tables.

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USSR

UDC 621.165.621.74.019

TRUSOV, L. P., Candidate of Technical Sciences, DUBROVSKAYA, Ye. F., Candidate of Technical Sciences and ZAKHAROVA, L. N., Engineer. (Central Scientific Research Institute of Technology and Machinery Manufacture)

"Metal Properties of Turbine Cast Components From 15Kh1M1F-L Steel"

Moscow, Teploenergetika, No 3, March 72, pp 64-67

Abstract: The results of an investigation on the chemical composition and mechanical properties of cast components (1000 items) of steam turbine body from perlitic 15Kh1M1F-L steel are presented. It is shown that the production technology ensures basically a sufficiently uniform chemical composition and the assigned level of mechanical properties of cast metal. However for a further improvement of quality of castings from 15Kh1M1F-L steel and greater stability of cast metal high-temperature properties it is advisable to amend the requirements on steel chemical composition and on technology of cast item heat treatment.

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USSR

UDC 621.357.7:669.248:669.295

VOLYNSKIY, V. V. (Candidate of Technical Sciences), ZAKHAROVA, L. V., and  
AZAROVA, A. P.

"Titanium in Nickel Plating"

Moscow, Mashinostroitel', No 2, Feb 72, p 31

Abstract: Titanium is known to hold much promise for increased reliability and service life of plating equipment as well as to offer high anticorrosion and mechanical properties, making it possible to reduce the plating thickness to more than one half. The cost of titanium and steel vessels lined with polychlorovinyl is about the same but the service life of the former is 5-6 times greater. Cited are two cases involving the use of anodium titanium alloy baskets for nickel plating which resulted in savings of 17,600 and 22,000 rubles, respectively. Other cited cases involve titanium heaters for more accurate electrolyte temperature control, titanium heating coils, pumps and pipes in the chemical industry. The rate of recovery of capital investments for new titanium equipment was found to be high in all instances. (4 illustrations).

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USSR

UDC 669.25\*85/.86:669.017.3

ZAKHAROVA, M. I., and FUENTES, KH., Moscow Stated University imeni M. V. Lomonosov

"Structure and Phase Composition of  $\text{Pr}(\text{Co}, \text{Cu})_5$ ,  $\text{Pr}(\text{Co}, \text{Cu}, \text{Fe})_5$ , and  $\text{Pr}(\text{Co}, \text{Ni})_5$  Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 36, No 3, 1973, pp 662-664

Abstract: A study was made of  $\text{Pr}(\text{Co}, \text{Cu})_5$  and  $\text{Pr}(\text{Co}, \text{Cu}, \text{Fe})_5$  alloys as to their phase composition and structure using methods of x-ray diffraction, optical microscopy, microhardness measurement, and local x-ray spectral analysis. The investigated alloys  $\text{PrCo}_{3.5}\text{Cu}_{1.5}$ ,  $\text{PrCo}_{2.5}\text{Fe}_{1.0}$ , and  $\text{PrCo}_{3.5}\text{Cu}_{1.0}\text{Fe}_{0.5}$  were melted in an arc furnace and homogenized in evacuated quartz tubes at  $1100^\circ\text{C}$  with subsequent water quenching. It was found that the Pr-Co-Cu alloys have a region of solid solutions with compositions that deviated from stoichiometric. Pr-Co-Cu alloys with iron consist of two phases with varying Co, Cu, and Fe contents. A study of the possibility of replacing cobalt with nickel was made on an alloy of  $\text{PrCo}_{3.5}\text{Ni}_{1.5}$ . After

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ZAKHAROVA, M. I., and FUENTES, KH., et al., Fizika Metallov i Metallovedeniye,  
Vol 36, No 3, 1973, pp 662-664

homogenization at 1100<sup>o</sup>C for six hours the alloy was found to be a single-phase alloy and the structure did not change even after tempering 150 hours at 400 and 100 hours at 550<sup>o</sup>C. Consequently, phase transformations do not take place in this alloy at temperatures below 1100<sup>o</sup>C. The authors thank G. N. Ronasi who performed the local x-ray spectral analysis. Four figures, six bibliographic references.

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USSR

UDC 669.3:669.017.3

ZAKHAROVA, M. I., KAO-MIN'-T'I, and MOSHKOV, V. V., Moscow State University  
imeni M. V. Lomonosov

"Phase Transformations in Decomposition of Solid Solutions in Cu-1%Be-4%Ag and  
Cu-0.5%Be-1.3%Ti Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 6, Jun 72, pp 1243-  
1248

Abstract: Electron microscopy and X-ray analysis of polycrystals and single  
crystals were used to investigate phase transformations in the decomposition  
of solid solutions in Cu-1%Be-4%Ag and Cu-0.5%Be-1.3%Ti (wt.%) alloys. In the  
Cu-Be-Ti alloy the decomposition of the supersaturated solid solution in the  
process of isothermal tempering at 218 and 300°C proceeds first by separation  
of the  $\beta'$ -Cu<sub>3</sub>Ti and  $\delta'$ -CuBe metastable coherent phases and then by separation  
of the  $\beta$ -Cu<sub>3</sub>Ti and  $\delta$ -CuBe equilibrium phases. Crystals of metastable phases  
separate with orientations in the direction  $\langle 100 \rangle$ , forming a periodical struc-  
ture. The decomposition of the solid solution in the Cu-Be-Ag alloy at 28 and  
300°C proceeds first by separation of the  $\delta'$ -CuBe metastable phase and then by  
separation of the CuBe equilibrium  $\delta$ -phase and Ag crystals containing a small  
quantity of dissolved Cu. Three figures, twelve bibliographic references.

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- END -

CSO: 1842-W

- 65 -



USSR

UDC 621.039.531:669.27

BYKOV, V. N., BIRZHEVOY, G. A., ZAKHAROVA, M. I., and SOLOV'YEV, V. A.

"The Nature and Thermal Stability of Radiation-Induced Defects in Single-Crystal Tungsten"

Moscow, Atomnaya Energiya, Vol 33, No 4, Oct 72, pp 809-813

Abstract: The analysis of radiation-induced defects in tungsten shows that the interpretation of the types of defects characteristic for different annealing stages in tungsten is not well-defined. Investigation results are presented on the nature of radiation defects and their stability at temperatures to 2200°C in single-crystal tungsten irradiated at 450-500°C with a dose of  $1.4 \cdot 10^{22}$  neutrons/cm<sup>2</sup>. This irradiation brings about an increase in electric resistance by 18% at 298°K, by 140% at 77°K, and nearly by 1000 times at 4.2°K; it also results in an accumulation of rhenium in the amount of 0.2 at%. The characteristics of three identified annealing stages of radiation defects and their activation energies are given. The change of the specific electric resistance of single-crystal tungsten during irradiation is associated with the development of small accumulations by hydrogen atoms (20.2%), single vacancies and small accumulations of vacancies (16.5%), complex defects (43.3%), and also with

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BYKOV, V. N., et al., Atomnaya Energiya, Vol 33, No 4, Oct 72, pp 809-813

the formation of rhenium (20%). The high integral flow of neutrons, the high irradiation temperature [(0.20-0.21) $T_{fusion}$ ], and the absence of grain boundaries for the discharging of defects lead to an accumulation of basically complex defects, stable up to 1900°C and giving rise to the change of electric resistance. Four figures, three tables, twenty-two bibliographic references.

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- 29 -

Acc. Nr:

AP0042046

Abstracting Service:

CHEMICAL ABST.

4170

Ref. Code:

4P0366

89611g Alkylated aromatic amines. VIII. Role of the spatial factor in the reaction of methyl iodide with mono-tertiary p-phenylenediamines. ~~Zakharova, S. A.; Khromov-Boitsov, N. Y. (Inst. Eksp. Med., Leningrad, USSR). Zh. Org. Khim. 1970, 6(1), 116-23 (Russ).~~ The reactions were studied of MeI with the equiv. amts. of 1,2,3,4,5-(RR'N)ZY(R''HN)XC<sub>6</sub>H<sub>4</sub> (I) (R, R', R'', X, Y, and Z given): Me, Me, H, H, H, H; Me, Me, H, Me, H, H; Me, Me, H, Me, Me, H; Me, Me, Me, H, H, H; Me, Me, Me, Me, H, H; Me, Me, Me, Me, Me, H; Me, Me, H, H, H, Me; Me, Et, H, H, H, H; Et, Et, H, H, H, H; Et, Et, H, Me, H, H. The formation of the primary-quarternary or secondary-quaternary salts of I occurs only when the NMe<sub>2</sub> group is present. The quaternization does not take place when the primary-tertiary I contain in the tertiary amino group 1 or more Et groups. The effect of X, Y, and Z substituents on the facility of I quaternization is discussed. CPJR

REEL/FRA  
19751943

Acc. Nr:

AP0042047

Abstracting Service:

CHEMICAL ABST.

4/70

Ref. Code:

UR0366

89612h Alkylated aromatic amines. IX. Quaternization of a mixture of aniline with dimethyl and with diethylaniline. Zakharova, N. V.; Khromov-Borisov, N. V. (Inst. Eksp. Med. Leningrad, USSR). *Zh. Org. Khim.* 1970, 6(1), 124-6 (Russ). In the reaction of MeI with 1 equiv. 1:1 PhNH<sub>2</sub> (pK<sub>a</sub> 4.58)-PhNMe<sub>2</sub> (pK<sub>a</sub> 5.06) mixt., 1/3 PhNMe<sub>2</sub> and 2/3 PhNH<sub>2</sub> react. In the reaction of MeI with 1 equiv. 1:1 PhNH<sub>2</sub>-PhNEt<sub>2</sub> (pK<sub>a</sub> 6.56), practically only PhNH<sub>2</sub> reacts. This order of reactivity, opposite to what might be expected from the basicity of these amines, must be due to steric factors. CPJR

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19751944

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