1/2   028
UNCLASSIFIED
TITLE--STRESS CONCENTRATION IN THE CASE OF A PARTIALLY STRENGTHENED   PROCESSING DATE--27NOV70
CIRCULAR HOLE -U-

AUTHOR-(03)-TULCHIY, V.I., YAKIMOVICH, G.I., RUDENKO, A.G.

COUNTRY OF INFO--USSR

SOURCE--PRIKLADNAIA MEKHANIKA, VOL. 6, APR. 1970, P. 93-98

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--STRESS CONCENTRATION, REINFORCED SHELL STRUCTURE, FLAT PLATE,
TENSILE STRESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1328
CIRC ACCESSION NO--AP0124978   STEP NO--UR/0198/70/000/006/0093/0098

UNCLASSIFIED

Pulse Technique

USSR

UDC   621.397.001

TULESHA, Ye. A.

"Possible Evaluations of Information Systems"

Translation: The author considers the possibility of data sampling from systems of TV information storage according to certain characteristic features whose nature and number vary as a function of the class of problems to be solved and the sampling frequency. Information classification is based on such characteristics as the magnitudes and signs of first and second derivatives. The characteristics are evaluated by means of weighted coefficients which are established in statistical tests of typical systems. The probability of erroneous sampling is analyzed. The author also discusses the possibility of an entropy approach to the data storage systems, which is based on adapting various classes of functions of different weights obtained by statistical analysis of the operation of the system. M. N.

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PROCESSING DATE--27NOV70

UNCLASSIFIED

CIRC ACCESSION NO--AP0124978
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   APPLICATION OF A CONTOUR SMOOTHING
TECHNIQUE TO THE FORULATION AND SOLUTION OF TWO STRESS CONCENTRATION
PROBLEMS FOR (1) A HOLE STRENGTHENED ALONG ONE SEMICIRCLE AND (2) A HOLE
SYMMETRICALLY STRENGTHENED AT TWO (OPPOSITE) PARTS OF ITS CONTOUR.
CALCULATIONS FOR THE LATTER CASE ARE PERFORMED FOR STRENGTHENING
MATERIALS SIMILAR TO AND DIFFERING FROM THAT OF THE PLATE.   IT IS SHOWN
THAT FOR A PLATE EXPERIENCING UNIXIAL TENSION, THE WEIGHT OF THE
STRENGTHENING ELEMENT CAN BE REDUCED (WITH THE AID OF PARTIAL
STRENGTHENING) WITHOUT A NOTICEABLE INCREASE IN THE STRESS CONCENTRATION
FACTOR AT THE EDGE OF THE HOLE.   FACILITY: NIKOLAEVSKII
KORABLESTROITEL'NYI INSTITUT, NIKOLAEV, UKRAINIAN SSR.

USSR   UDC 669.18:621.746.58

TULIN, N. A., Candidate of Technical Sciences, VAYNSHTEYN, O. Ya, Engineer,
KUZ'KINA, N. N., Engineer, KHUDEN'KIKH, A. A., Engineer, and SNEZHKO, B. Ya.,
Engineer, Chelyabinsk Metallurgical Plant

"The Use of Argon in the Production of Non-Aging Low-Carbon Steel"

Moscow, Stal', No 3, Mar 73, p 226

Abstract: Low-carbon non-aging steel at the Chelyabinsk Metallurgical Plant
is melted by the scrap-ore process in 100-ton open-hearth furnaces with oxygen
scavenging of the metal. Argon protects the metal flux against oxidation.
This method makes it possible to lower the degree of contamination of 6.2-ton
ingots by oxide aluminaceous impurities which give rise to laminations in
sheet. Argon flux protection decreased sheet rejection by customers and
plants by factors of 2.7-4.5 and 3-4, respectively, and increased annual out-
put by 12%. Two figures.

1/1

USSR

KABLUKOVSKIY, A. F., BAKANOV, K. P., TULIN, N. A., GERASIMOV, YU. V., and KOSYREV, L. K.

"Increasing the Quality of Steels and Alloys by Refining Them with Argon Outside Furnace"

Abstract: The suggested method for th refining of metals uses a 100-ton capacity pouring ladle with a minimum of three built-in (ladle bottom) refractory plugs with passages for argon. The argon in supplied under pressure in the amount of 0.4-1.0 m³/ton of metal for removal of non-metallic inclusions, and in the amount of 1.5-3.0 m³/ton, for elimination of hydrogen. Preliminary tests at many plants and in laboratories indicated that the method is inexpensive and does not require a heavy capital investment. The method allows production of low-carbon heat-resistant steels in open arc furnaces. In addition to refining, the argon facilitates the deoxidation of steel by carbon. Concentration of gases in 1-2Kh13 stainless steel after refining with argon decreased by 45% (concentration of oxygen, hydrogen, and nitrogen decreased by 43, 40 and 12%, respectively). All refined steel and alloys studied after refining were characterized by high density and better microstructure. The density

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USSR

KABLUKOVSKIY, A. F., et al., Stal', No 12, 1972, pp 1087-1091

of 38KhMYuA steel and EI602 alloy increased from 7.7353 to 7.7506 and from 8.3275 to 8. 3403 g/cm^3, respectively, after 7-10 minutes refining with argon. Good results were obtained in the production of bearing steel. The schematic diagram of the ladle with refractory plugs (including theri sizes and manufacturing steps) is presented.

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USSR

OKOROKOV, G. N., SHALIMOV, A. G., ANTIPOV, V. M., and TULIN, N. A.

Proizvodstvo Stali i Splavov v Vakuumnykh Induksionnykh Pechakh (The Production of Steel and Alloys in Vacuum Induction Furnaces), Moscow, Metallurgiya, 1972, 191 pp

Translation of Annotation: The construction of various types of contemporary vacuum induction furnaces is described. Physicochemical processes are described which occur during smelting of steels and alloys in vacuum induction furnaces. Methods are proposed for intensification of reduction and refining of metals. A detailed characterization of the quality of metal is given. The book is intended for scientific workers, engineering-technical personnel, and highly qualified workers of metallurgy factories. It can be useful for students in advanced courses of metallurgical institutions of higher education. 98 illustrations, 64 tables, bibliography of 172 titles.

Table of Contents:

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USSR

OKOROKOV, G. N., et al., The Production of Steel and Alloys in Vacuum Induction
Furnaces, Moscow, Metallurgiya, 1972, 191 pp

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OKOROKOV, G. N., et al., The Production of Steel and Alloys in Vacuum Induction Furnaces, Moscow, Metallurgiya, 1972, 191 pp

- 23 -

USSR   UDC 669.187.2

KUZNETSOV, L. K., Candidate of Technical Sciences, TULIN, N. A., Candidate of
Technical Sciences, ZHAVORONKOV, K. P., Engineer, LABUKOVICH, O. A., Engineer,
and ZINUROV, I. YU., Engineer

"Working Experience of a 100-ton Electric Furnace with Uprated Transformer
and Improved Short Mains"

Abstract: Transformers of 29, 15 and 32 Mv-amp uprated nominal power,
permitting temporary overloading up to 45 Mv-amp, were installed on two
100-ton electric furnaces at the Chelyabinsk Metallurgical Plant. Moderniza-
tion of short mains ensured a more uniform power distribution by phases and
decreased induction losses. The conditions of melting stainless and structural
steels are discussed. For greater effectiveness, further modernization
measures must be carried out. One figure, four bibliographic references.

1/1

Acc. Nr.: AR0106137   TULIN. V. A

Ref. Code:

JPRS 49937

Accuracy of GAL-OMPO-2 Gravimeter on Surface Vessel

/From: Moscow, Referativnyy Zhurnal, Geofizika, Svodnyy Tom, No 1, 1970, IG171-DEP7

The authors evaluated the accuracy of operation of the GAL-OMPO-2 gravimeter during long-term ocean tests. The article describes the method for preparing the instrument for operation, making gravimetric measurements on a surface vessel and processing the observations. The total random observation error is determined, as well as the magnitude of the error dependent only on the gravimeter.
(Abstract: "Evaluation of the Accuracy of the GAL-OMPO-2 Gravimeter Operating on a Surface Vessel," by M. Ye. Artem'yev, E. A. Boyarskiy, V. I. Kornfel'd, Ye. I. Magnitskaya and V. A. Tulin; Moscow, Morsk. Avtomatizir., Gravimetr i yego Rabota, 1969, pp 141-161)

.1/2   024   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--INVESTIGATION OF THE LOW FREQUENCY BRANCH OF ANTIFERROMAGNETIC
  RESONANCE IN CSMNF SUB3 -U-
AUTHOR--TULIN, V.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
  NR 4, PP 1265-1268
DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MAGNETIC RESONANCE, ANTIFERROMAGNETISM, FREQUENCY
  CHARACTERISTIC, CRYOGENIC PROPERTY, LOW FREQUENCY, FLUORIDE, MANGANESE
  COMPOUND, CESIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1571   STEP NO--UR/0056/70/058/004/1265/1268

CIRC ACCESSION NO--AP0106317
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0106317
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE LOW FREQUENCY
ANTIFERROMAGNETIC RESONANCE BRANCH IN CSMNF SUB3 IS INVESTIGATED AT
FREQUENCIES BETWEEN 3700 AND 6000 MHZ. THE DEPENDENCE OF THE GAP OF
THIS AFMR BRANCH ON TEMPERATURE IS STUDIED BETWEEN 1.7 AND 4.2DEGREESK.
IT IS SHOWN THAT WITH AN ACCURACY TO THE EXPERIMENTAL ERRORS THE GAP
DEPENDS ON THE MAGNETIZATION OF THE MN PRIME55 NUCLEI.   FACILITY:
INST. FIZICHESKIKH PROBLEM, AN SSSR.

UNCLASSIFIED

Acc. Nr.: AR0106136

Ref. Code: UR0000

JPRS 49937

Statistical Studies of GAL-OMPO-2 Gravimeter

/From: Moscow, Referativnyy Zhurnal, Geofizika, Svodnyy Tom, No 1, 1970,
IG167-DEP/

This paper gives the results of studies of the stability and accuracy
of operation of a GAL-OMPO-2 gravimeter over a long period in dependence on
various factors. Some recommendations are made on improving the stability
and increasing the accuracy of this instrument.
(Abstract: "Statistical Investigations of GAL-OMPO-2 Gravimeter," by V. I.
Korenfel'd and V. A. Tulin; Moscow, Morskiye Avtomatizir. Gravimetr i yego
Rabota, 1969, pp 87-108)

Reel/Frame
19881361

USSR

TULINOV, V. E. (editor)

Metody i Tekhnika Eksperimental'nykh Issledovaniy v Vysokikh Sloyakh Atmosfery (Methods and Techniques of Experimentation in the Upper Atmosphere), Trudy Tsentr. Aerol. Observ. (Work of the Central Aerological Observatory), Moscow, No 111, 1972, 152 pp

Abstract: The methods and techniques of upper atmosphere research are examined. Results of different laboratory and full-scale experiments are presented. Particular attention was given to automatic process of voluminous meteorological data obtained by an aerological network and by penetrations of rocket probes of the upper atmosphere. The book has been organized for scientific workers and specialists in the field of atmospheric physics.

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1/2   039   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--NO PRIME POSITIVE AND O SUB2 PRIME POSITIVE IONS IN THE LOWER
   IONOSPHERE AND CORPUSCULAR IONIZING RADIATION -U-
AUTHOR--TULINOV, V.F.

COUNTRY OF INFO--USSR

SOURCE--CENTRAL AEROLOGICAL OBSERVATORY; MOSCOW, GEOMAGNETIZM I
   AERONOMIYA, VOL X, NO 3, 1970, PP 538-540
DATE PUBLISHED--------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, ASTRONOMY,ASTROPHYSICS

TOPIC TAGS--IONOSPHERE, ION, IONIZATION, SOLAR CORPUSCULAR RADIATION,
   IONIZING RADIATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605017/006 STEP NO--UR/0203/70/010/003/0538/0540

CIRC ACCESSION NO--AP0140739
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0140739

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNTIL NOW IT HAS BEEN IMPOSSIBLE TO COLLATE EXPERIMENTAL DATA ON THE QUANTITATIVE CONTENT OF THE FUNDAMENTAL IONS NO PRIME POSITIVE AND O SUB2 PRIME POSITIVE IN THE LOWER IONOSPHERE (IN THE RANGE OF ALTITUDES 70-95 KM) WITH CURRENT CONCEPTS ON THE PRINCIPAL SOURCES OF IONIZATION IN THE LOWER IONOSPHERE (EMISSION IN THE L SUBALPHA LINE AND SOLAR X RADIATION). THIS PAPER DEMONSTRATES THAT ALLOWANCE FOR CORPUSCULAR RADIATION AS AN ADDITIONAL IONIZATION SOURCE TO A CONSIDERABLE EXTENT MAKES IT POSSIBLE TO ELIMINATE EXISTING DIFFERENCES. THE AUTHOR FIRST REVIEWS THE PROCESSES OF FORMATION AND DISAPPEARANCE OF O SUB2 PRIME POSITIVE AND NO PRIME POSITIVE IONS. A DEFINITE RATIO SHOULD EXIST BETWEEN THE CONTENT OF THESE IONS IN THE LOWER IONOSPHERE, DEPENDING ON WHETHER DIRECT IONIZ ATION AND RECOMBINATION OR ION EXCHANGE REACTIONS ARE THE DOMINANT PROCESSES IN THE FORMATION AND DISAPPEARANCE OF THESE IONS. HOWEVER, EXPERIMENTAL DATA FAIL TO CONFIRM THIS REGULARITY. THE AUTHOR CONTENDS THAT THE REASON FOR THE CONTRADICTIONS IS THAT IN THE STUDY OF ION FORMATION PROCESSES IN THE LOWER IONOSPHERE IT IS CUSTOMARY TO TAKE ONLY SOLAR RADIATION INTO ACCOUNT AS IONIZING RADIATION. HOWEVER, DIRECT EXPERIMENTAL DATA HAVE NOW BEEN OBTAINED INDICATING THAT CORPUSCULAR RADIATION ALSO PLAYS AN IMPORTANT ROLE IN IONIZ ATION OF THE LOWER IONOSPHERE. RELATIVELY SIMPLE COMPUTATIONS IN THIS PAPER SHOW THAT ALLOWANCE FOR CORPUSCULAR RADIATION AS AN ADDITIONAL IONIZING AGENT MAKES IT POSSIBLE TO ELIMINATE THE DIFFICULTIES IN INTERPRETING DIRECT MEASURES OF THE CONCENTRATION OF O SUB2 PRIME POSITIVE AND NO PRIME POSITIVE IN THE LOWER IONOSPHERE.

UNCLASSIFIED

1/2   026   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--MEASUREMENT OF THE LOW ENERGY PROTON INTENSITY IN THE UPPER
  ATMOSPHERE -U-
AUTHOR-(02)-TULINOV, V.F., LIPOVETSKIY, V.A.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKI ISSLEDOVANIIA, VOL. 8, MAR-APR. 1970, P. 306-307

DATE PUBLISHED-------70

SUBJECT AREAS--ATMOSPHERIC SCIENCES, MISSILE TECHNOLOGY

TOPIC TAGS--UPPER ATMOSPHERE, MEASUREMENT, PROTON, METEOROLOGIC ROCKET,
  ALBEDO

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1763   STEP NO--UR/0293/70/008/000/0306/0307

CIRC ACCESSION NO--AP0115592
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0115592
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EVALUATION OF EXPERIMENTAL DATA
  OBTAINED WITH THE AID OF A METEOROLOGICAL ROCKET CONCERNING THE PROTON
  INTENSITY IN THE ENERGY RANGE FROM 1 TO 20 MEV AT MID LATITUDES AT
  ALTITUDES RANGING FROM ABOUT 35 TO 87 KM. NO INCREASE IN THE NUMBER OF
  SLOW PROTONS IS OBSERVED AT ALTITUDES GREATER THAN 70 KM. THUS
  INDICATING THE ABSENCE OF A PROTON COMPONENT IN THE SOFT CORPUSCULAR
  RADIATION USUALLY RECORDABLE WITH THE AID OF END WINDOW GEIGER COUNTERS.
  CONSEQUENTLY, PROTONS AT ALTITUDES GREATER THAN 35 TO 40 KM ARE COSMIC
  RAY ALBEDO PROTONS. MOREOVER, THE UPWARD AND DOWNWARD MOVING ALBEDO
  PARTICLES FLUXES ARE EQUAL TO EACH OTHER WITHIN AN ERROR RANGE OF ABOUT
  20PERCENT.

UNCLASSIFIED

1/2   030   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--DEPENDENCE OF CORPUSCULAR RADIATION INTENSITY IN THE UPPER
   ATMOSPHERE ON SOLAR ACTIVITY --U-
AUTHOR-(04)-TULINOV, V.F., MOYSEYEV, YU.N, SHAPIRO, I.G., ULANOVA, L.A.

COUNTRY OF INFO--USSR

SOURCE--KOSMICHESKIE ISSLEDOVANIIA, VOL. 8, MAR-APR. 1970, P 307-309

DATE PUBLISHED-------70

SUBJECT AREAS--ASTRONOMY, ASTROPHYSICS, ATMOSPHERIC SCIENCES

TOPIC TAGS--SOLAR ACTIVITY, RADIATION INTENSITY, SOLAR CORPUSCULAR
   RADIATION, UPPER ATMOSPHERE, GEIGER COUNTER, GEOMAGNETIC DISTURBANCE,
   ATMOSPHERIC SOUNDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1762   STEP NO--UR/0293/70/008/000/0307/0309

CIRC ACCESSION NO--AP0115591
                      UNCLASSIFIED

2/2   030   UNCLASSIFIED   PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0115591
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF UPPER ATMOSPHERIC
 SOUNDINGS IN WHICH ENDWINDOW GEIGER COUNTER WERE MOUNTED ON THE ROCKET

UNCLASSIFIED

USSR   UDC 612.886-08

TULKIN, V. M., Second Clinic, Leningrad Scientific Research Institute of Diseases
of the Ear, Throat, Nose, and Speech

"Correlation of the Results of Mechanical and Caloric Stimulation of the Vesti-
bular Apparatus in Healthy Persons"

Moscow, Vestnik Otorinolaringologii, No 5, Sep/Oct 70, pp 84-88

Abstract: Fifty subjects with no history of vertigo or spontaneous or positional
nystagmus were rotated in a special chair (72°/sec) and, 30 min later, were given
a caloric test (irrigation of the ear with 20 ml of water at 20°C) to determine
the comparability of the results as an index of vestibular excitability. Despite
the fact that the latent period of postrotatory nystagmus (1.7 sec) was much
shorter than the latent period following the caloric test (12 sec), the two in-
dicators of nystagmus corresponded in approximately 70% of the cases, i.e., the
latent period was lengthened or shortened in the same individuals with both tests.
Two parameters of nystagmus, frequency and rate of the slow phase, showed the
closest correspondence, and thus can be used for purposes of comparison in healthy
persons. Although the caloric test depends on extralabyrinthine factors, it may
be preferred in many cases to rotation because of its convenience and because it
can be quantified.
1/1

USSR   UDC   617.761-009.29+616-073.97

TULKIN, V. N., Second Clinical Department, Leningrad Scientific
Research Institute of Ear, Throat, and Nose Diseases and Speech
Disorders

"Clinical Value of the Various Parameters of Nystagmus"

Abstract: When analyzing electronystagmograms for clinical pur-
poses, various investigators attach different significance to
numerous attributes of nystagmus such as the overall amplitude,
frequency, duration and maximum speed of the slow phase, the
nature of the fast phase, the duration of the latent period,
overall duration of the nystagmus, and its rate of diminution.
To elucidate this problem, a study was done with 100 healthy
individuals in whom nystagmus was induced by rotation or by the
caloric method. On the basis of statistically analyzed electro-
nystagmographic data, it was concluded that the speed of the slow
phase is the most important parameter for clinical purposes.
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USSR

TULKIN. V. N., Zhurnal Ushnykh Nosovykh i Gorlovykh Bolezney,
Vol 1, Jan/Feb 1971, pp 10-13

The other important attributes, in sequence of diminishing
significance, are: frequency, latent period, total amplitude,
overall duration, and the average amplitude of nystagmus.

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USSR

PAVLOV, P. V., VASIL'YEV, V. K., VOLOD'KO, V. G., ZORIN, Ye. I., TETEL'-
BAUM, D. I., TULOVCHIKOV, V. S., CHIGIRINSKAYA, T. Yu.

"Peculiarities of Concentration Profiles in Ion Implantation and Their
Use for Creating Varicaps and Bipolar Transistors"

Abstract: The authors consider the principal technically important singu-
larities of concentration profiles in the case of ion-beam alloying both
without distillation and after diffusion distillation of dopants. Problems
of calculating the principal sections and depths of PN junctions on silicon
as a function of conditions of irradiation and annealing are discussed.
A description is given of the use of the ion-beam method for making a
varicap with an inverse impurity gradient in the base, and also for making
a binary PNP transistor. The basic parameters of the varicap are calcu-
lated. Nine figures, one table, bibliography of nine titles.

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USSR

TULOVSKIY, V. N., Moscow

"Asymptotic Distribution of the Eigenvalues of Differential Equations"

Abstract: Let $X \subseteq R^n$ be a measurable set. The symbol $L_2(X)$ is used to denote the Hilbert space of functions on X with scalar product

$$(f, g) = \int_X f(x)\,\overline{g(x)}\,dx,$$

where dx is an element of volume in R^n corresponding to the conventional Lebesgue measure. The Lebesgue measure of measurable set $X \subseteq R^n$ is denoted by $\mu(X)$. Let $G \subseteq R^n$ be an open bounded set. The author investigates the distribution of eigenvalues of the equation

$$Au = \lambda Bu \qquad (1)$$

with zero boundary conditions. The method of analysis is based on a lemma from I. M. Glazman. The author thanks B. M. Levitan for formulating the problem.
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Combustion

USSR   UDC 536.46

NOVIKOV, S. S., RYAZANTSEV, YU. S., and TUL'SKIKH, V. YE., Institute of
Chemical Physics, Acad. Sc., USSR, Moscow

"The Influence of Entropic Waves on the Stability of Combustion in a
Semi-Closed Space"

Abstract: The main principle of the theory of the stability of powder combus-
tion in a semi-closed space is based on the assumption of isothermal condi-
tions in the combustion chamber. Later it was found that acoustical and
entropic waves may form in such a chamber. Methodes for calculating
acoustical conductivity have been developed. In any analysis of gas vibra-
tion in the combustion chamber it is necessary to consider the possibility of
generating pressure vibrations due to the interaction of entropic waves at
the outlet from the combustion chamber. In this paper a theoretical treat-
ment is given to longitudinal gas vibration during front combustion in a
chamber with constant crossection, the combustion products evolving through
a jet outlet.

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USSR

UDC 576.852.15.095.4.088.8

ASLANYAN, R. R., TUL'SKIY, S. V., POZHARITSKAYA, L. M., and LAPTEVA, Ye. A., Institute of Microbiology, Academy of Sciences USSR, and Chair of Biophysics, Physics Faculty, Moscow State University imeni M. V. Lomonosov

"Inhibition of Germination of Actinomycete Spores in a Constant Magnetic Field"

Abstract: Actinomycete spores were exposed to a constant magnetic field of 10,000 oersted, generated by a DC-powered electromagnet with an interpole distance of 25-30 mm. Thermoact. vulgaris 136 spores prepared as a suspension in a nutrient medium (opt. dens. 0.2) on glass slides were exposed to the magnetic field for 1.5 hr at 55°C, while those prepared as an aqueous suspension (opt. dens. 0.2) in test tubes were kept in the magnetic field for the same period but at room temperature. Act. streptomycini spores similarly prepared on slides were exposed for 5.5 hr at 28°C and those in test tubes for 1.5 hr at room temperature. Thirty minutes after completion of exposure, the spores were planted on a suitable medium and allowed to germinate for 1.5 hr at 55 and 28°C. On the whole, the number of germinating spores in the experimental samples was 6% lower than in control samples. Among Thermoact. vulgaris, the proportion of germinating spores was 46.5% in experimental vs. 55% in 1/2

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USSR

control slides and 69% in experimental vs. 72% in control tubes. Among Act. streptomycini, the corresponding figures were 47% vs. 54.5% and 44% vs. 49%. Though the mechanism of action remains to be elucidated, it is concluded that a constant magnetic field inhibits germination, possibly by preventing a reduction in the native paramagnetism of the spores.

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1/2   007
                              UNCLASSIFIED
TITLE--OPERATIONAL CALCULATIONS BY MEANS OF THE THEORY OF PROBABILITIES   PROCESSING DATE--27NOV70
 -U-
AUTHOR-(05)-MARTYNOV, I.M., SOTNIKOV, YE.A., TULUPOV, L.P., KUTYYEV, G.M.,
  SHABALIN, N.N.
COUNTRY OF INFO--USSR

SOURCE--(EKSPLUATATIONNYYE RASCHETY S PRIMENENIYEM TEORII VEROYATNOSTEY)
  MOSCOW, TRANSPORT, 1970, 238 PP
DATE PUBLISHED--------70

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

TOPIC TAGS--RAILWAY NETWORK, RAILWAY TRAFFIC, PROBABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1699
                              STEP NO--UR/0000/70/000/000/0001/0238

CIRC ACCESSION NO--AM0130569
                    UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AM0130569   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: PREFACE 3.
CHAPTER I. ELEMENTARY CONCEPTS OF THE THEORY OF PROBABILITIES 5.   II.
CERTAIN PROBLEMS IN OPERATION OF RAILROAD STATIONS 47.   III.
RELATIONSHIP BETWEEN TECHNOLOGICAL INDICES AND PARAMETERS OF EQUIPMENT
OF STATIONS 72.   IV. THE PROCESS OF ACCUMULATION OF RAILROAD CARS IN
THE SORTING YEARD 138.   V. USE OF THE THEORY OF PROBABILITIES IN
ORGANIZATION OF CAR FLOW AND OPERATION OF RAILROAD JUNCTIONS 164.   VI.
CERTAIN PROBABILITY RULES IN DAILY FORCAST OF UNLOADING, LOADING AND
CHECK OF CARS 195.   VII. OPERATIONAL CALCULATIONS BY MEANS OF THE
INFORMATION THEORY 312.   THE BOOK CONTAINS BRIEF SIMPLE DATA ON THE
THEORY OF PROBABILITIES, MATHEMATICAL STATISTICS AND INFORMATION THEORY.
GIVEN ARE METHODS FOR THE USE OF INDICATED SECTIONS OF MATHEMATICS IN
PLANNING OF OPERATION OF RAILROAD STATIONS, CALCULATION OF PARAMETERS OF
THEIR FACILITIES AND OPERATING INDICES.   THE BOOK WAS WRITTEN FOR
ENGINEERING TECHNICAL PERSONNEL AND SCIENTISTS IN RAILROAD TRANSPORT, AS
WELL AS STUDENTS.

UNCLASSIFIED

Ion Exchange

USSR

UDC 678.183.123

TULUPOV, P. Ye., BUTAYEV, A. M., GREBEN', V. P., and KASPEROVICH, A. I., Scientific Physical-Chemical Research Institute Imeni L. Ya. Karpov, Moscow

"Kinetics of Elimination of the Ion Exchange-Resin Functional Groups. IX. Reversibility of the Reaction of Hydrolytic Cleavage of the Sulfonyl Group of KU-2 Cation Exchange Resin"

Abstract: The behavior of the cation exchange resin KU-2 X 8 on heating in a wide range of the concentrations of sulfuric acid solutions was studied. It was shown that thermal hydrolysis of KU-2 sulfonyl groups is complicated by sulfation. Kinetic equations were obtained which described the changes in the exchange capacity of the cation exchange resin with two concurrent reactions taking place: hydrolysis of sulfonyl groups and sulfation of the cation exchange resin matrix.

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Ion Exchange

TULUPOV, P. YE., ZHUKOV, M. A., KOSSAYA, A. M., RASHKOV, A. B., GREBEN', V. P. and KOSTYUKHINA, L. I.

"Preparation and Properties of Heterogeneous Ion-Exchange Membranes"

Abstract: Operational features of ion-exchange membranes depend upon a complex of physico-chemical, electrochemical and mechanical properties, and also upon the stability of such properties during use.
      Studied here are high-density polythylene membranes prepared with the cationite KU-2 and the anionites AV-17 and EDE-10-P, with careful control of moisture content and particle size. These ionites, taken in various proportions and particel sizes, and with both capron and dacron binders, were tested regarding their effect on fusion coefficient, tensile strength and electrical parameters; temperature was also evaluated in this connection.
      Electric conductivity for these heterogeneous ion-exchange members was found to follow the laws already established for homogeneous and interpolymer membranes. Tentative optimal values for the variables mentioned are suggested. Graphs illustrating variation in conductivity, etc. accompany the paper.
1/1

USSR

UDC 541.183.24,661.183

POLYANSKIY, N. G., and TULUPOV, P. YE., Tambovsk Institute of Chemical Machine Building, Scientific Physico-Chemical Research Institute imeni L. Ya. Karpov Moscow

"Thermal Stability of Cation Exchange Resins"

Abstract:- A review with 235 references. For the first time the available data on thermal stability of cation exchange resins in air, water, in some aqueous solutions and in organic media have been summarized. Conclusions were reached on the effect of various factors on the thermal stability of the cation exchange resins and on the nature of processes responsible for the decrease of their exchange capacity. A special note was taken of the existence of an internal connection between the thermal stability and catalytic activity of the ion exchange materials. The review covers the following sections: methodology used in the stability studies of the ion exchange materials; thermal stability of the cation exchange resins in gasseous and vaporous media; thermal stability of the cations in water and in aqueous solutions; and thermal stability of the sulfo-cations exchange resins in organic media.

1/1

USSR

TULUPOV, P. YE., and GREBEN', V. P.

UDC 678:541.183.123_7.019.34

"Chemical Stability of the Ion-Exchange Membrane Ankalite K-2"

Abstract: Results are reported on the study of the stability of the ion exchange membrane Ankalite K-2 in water, acid solutions, and NaOH. It has been established that with increased concentration of the external acid solution the rate of hydrolysis of the membrane's thio groups increases almost proportionately to the concentration of this external acid solution. Depending on the type of acid, the rate of the decrease of exchange capacity varies; it increases in the sequences $HNO_3 < HCl < H_2SO_4$. Electric resistance of the membrane Ankalite K-2 after a contact with HNO_3 solutions increases with the increase in the acid concentration, while the number of ion transfers remains practically unchanged. The thio groups in the K-form and in 3N NaOH solutions are more stable towards hydrolysis than the H-form thio groups.

1/1

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USSR

UDC 678.183.123 ·

TULUPOV, P. Ye., Scientific Research Physico-Chemical Institute imeni L. Ya. Karpov

"Deamination Kinetics of the Cl-form of Anion Exchanger AV-17 on Heating in Alcoholic Media"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 45, No 2, Feb 71, pp 431-435

Abstract: An investigation was carried out of the macrokinetics of the reactions accompanying the heating of the Cl-form of the AV-17 anion exchanger in methanol and other aliphatic alcohols. A series of reactions was proposed for the deamination of the anion exchanger as well as the accumulation of trimethylammonium and tetramethylammonium chloride. In methanol the deamination of the anion exchanger is S_N1, while in ethanol and other alcohols it is of the S_N2 type. This may be due to the fact that the methyl radical from methanol has similar dimensions to those of the substituents connected to nitrogen atom of the amino groups.

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USSR   UDC 678.541.183.123,541.15

TULUPOV, P. YE., and GREBEN', V. P., Physiocochemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry

"Radiation Reistance of Ion-Exchange Membrane Ankalit K-2 in Water"

Moscow, Khimiya Vysokikh Energiy, Vol 4, No 3, May-Jun 70, p 275

Abstract: The principal degradation products in the irradiation of the membrane Ankalit K-2 in water (dose over 200 Mrad) are HCl and $KHSO_4$. The kinetics of $KHSO_4$ and HCl build-up in the irradiation of Ankalit K-2 is governed by a zero-order equation with constants $7 \cdot 10^{-4}$ and $4 \cdot 10^{-2}$ mole/kg·Mrad in the 0-200 Mrad dose range and $4.75 \cdot 10^{-4}$, $2.72 \cdot 10^{-2}$ mole/kg·Mrad in the 200-1000 Mrad dose range. According to elementary analysis data, "inactive" sulfur is absent in the irradiated membrane in contrast to the cation exchanger KU-2. Its content corresponds to the exchange capacity found at pH 4.5. Another feature distinguishing the behavior of the membrane Ankalit K-2 from the KU-2 cation exchanger during irradiation is the formation of

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USSR

large quantities of weakly acid groups with pK 6.9 (0.49 and 0.20 at doses of 1000 and 600 Mrad). Changes in the coefficient of moisture capacity and weight loss indicate that processes of macromolecule degradation, rather than cross-linking, occur preferentially during irradiation of the membrane. The most radiation-sensitive property of Ankalit K-2, as in the case of other membranes, is mechanical strength. An elementary cell structure is suggested for the membrane on the basis of an analysis of experimental data and IR spectra.

2/2

BIOLOGY

Agriculture

USSR   UDC 614.449.57:615.285.7]:576.895.77+595.771

KRIVTSOVA, Ye. N., MITROFANOV, A. M., KOZIN, N. P., TIMOFEYEVA, L. V.,
TULUPOVA, A. M., VINOGRADSKAYA, O. N., YERMISHEV, Yu. V., PLOTNIKOVA, A. S.
and RYAZANTSEV, V. A., Institute of Medical Parasitology and Tropical Medicine
imeni Ye. I. Martsinovskiy, Ministry of Health USSR, and Institute of Agri-
cultural and Specialized Application of Civil Aviation

"Testing of Some Organophosphorus Compounds and Carbamates against Larvae of
Aedes Mosquitoes (Culicidae) in Experiments with Aerial Spraying"

Abstract: The use of organophosphorus compounds and carbamates against
mosquito larvae was tested in the Yakut ASSR, in the area of the villages of
Novy, Aikhal, and Mirny, and the Udachnaya deposits. Water reservoirs were
treated by aerial spraying from an AN-2 plane. The following pesticides were
tested: bytex, methylnitrophos, trolen, sevine, and dipterex; DDT was used as
the reference. Comparatively uniform marshy territories with occasional for-
ests and bushes were selected. Bytex was shown to be especially effective as
a larvicide, a dose of 40 g/hectare proving to be sufficient. Methylnitrophos

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USSR

KRIVTSOVA, Ye. N., et al., Meditsinskaya Parazitologiya i Parazitarnyye Bolezni,
Vol 39, No 5, Sep/Oct 70, pp 599-603

required a 100 g/hectare dose to be effective; trolen in doses 40 and 80
g/hectare reduced the density of mosquito larvae only insignificantly. Dipterex
and sevin proved ineffective as larvicides, being significantly inferior to
DDT. The effect of mosquito larvae eradication with organophosphorus compounds
lasts for 7-14 days.

2/2

- 1 -

USSR

DRUGALEVA, Z. S., GLEZER, N. N., TULUPOVA, S. S.

UDC: 51:330.115

"Use of Mathematical Models in the Development and Allocation of Complex Production of a Territory"

V sb. Sotsial'no-ekon. probl. razvitiya Urala i leninsk. metodol. ekon. issled. (Socioeconomic Problems in Ural Development and Leninist Methodology of Economic Research--collection of works), Sverdlovsk, 1971, pp 278-282 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V872)

Translation: Two linear programming models are written out.

1/1

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USSR

AKATNOV, N. I., TULVERT, V. F.

UDC   532.517

"Turbulent Flow of a Liquid in an Anisotropically Rough Channel"

Trudy Leningradskogo Politekhnicheskogo Instituta, Aerotermodinamika (Works of the Leningrad Polytechnical Institute, Aerothermodynamics), No 313, 1970, pp 92-97

Translation: In this paper the theoretical solution is obtained for the problem of turbulent isothermal flow of a liquid in the gap between anisotropically rough plates parallel to each other. When solving the problem, the equations of turbulent lubrication are used, and the quadratic law of resistance on rough walls is assumed. The pressure distributions in the clearance and the distribution of the velocity vector averaged with respect to the channel height are found. The relation is obtained for the liquid flow rates in the channel in two mutually perpendicular directions as a function of the ratio of the resistance coefficients of the channel in these directions. There is 1 illustration and a 3-entry bibliography.

1/1

USSR

UDC 532.517.4

AKATNOV, N. I., TULVERT, V. F.

"Turbulent Flow of a Liquid in an Anisotropic-Rough Channel"

Translation: This article contains an investigation of the problem of leaking of a liquid in the gap between two parallel flat plates $2a$ long and $2b$ wide. The current is created by sources located continuously in the midplane perpendicular to the plate. The boundary layer equations for the steady-state turbulent flow are averaged across the gap. The solution is found under the assumption that the channel walls are rough, and the coefficients of friction c_x and c_z along the coordinate axes are given. It is demonstrated that the pressure distribution along the plates is determined by the value of the parameters a/b and c_x/c_z. The relations found in the quadratures are presented for varying the pressure along the plates.

1/1

TITLE--SYNTHESIS OF BENZOTHIAZOL 2 YLTHIO CELLULOSE -U-

AUTHOR-(03)-GRIGORYAN, G.L., TULYAGANOV, M.M., GAFUROV, T.G.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(3), 200-1

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--THIAZOLE, CHLORINATED ORGANIC COMPOUND, BENZENE DERIVATIVE,
  CELLULOSE RESIN, EXCHANGE REACTION, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0668   STEP NO--UR/0460/70/012/003/0200/0201

CIRC ACCESSION NO--AP0124340
                    UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO—-AP0124340   PROCESSING DATE—-30OCT71
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF CHLORINATED
CELLULOSE WITH KSR (R IS 2 BENZOTHIAZOLYL) GIVES THE TITLE COMPD. (I).
THE REACTION PROCEEDS TO COMPLETION IN HCONME SUB2 SOLN. AT 150DEGREES
IN 3 HR. IN WATER IN 6 HR AT 100DEGREES, ONLY SIMILAR TO 50PERCENT
REPLACEMENT OF CL WITH SR WAS ACHEIVED: HOWEVER, THE PRODUCT HAD LIGHTER
COLOR THAN THAT PREPD. IN HCO NME SUB2.   FACILITY: NAUCH.
ISSLED. INST. KHIM. TEKHNOL. KHLOP. TSELLYUL., TASHKENT, USSR.

UNCLASSIFIED

1/2   029   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--SYNTHESIS AND INFRARED SPECTROSCOPIC STUDIES OF CELLULOSE MODIFIED
   WITH 2,MERCAPTOBENZOTHIAZOLE DERIVATIVES -U-
AUTHOR-(05)-GRIGORYAN, G.L., TULYAGANOV, M.M., GAFUROV, T.G., ADYLOV, A.,
   TASHPULATOV, YU.T.
COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(4), 753-60

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL SYNTHESIS, IR SPECTRUM, SPECTROSCOPIC ANALYSIS,
   CELLULOSE, MERCAPTAN, BENZENE DERIVATIVE, EPICHLOROHYDRIN, CHEMICAL
   REACTION MECHANISM, CHEMICAL BONDING, THIAZOLE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1228   STEP NO--UR/0459/70/012/004/0753/0760

CIRC ACCESSION NO--AP0134902
                      UNCLASSIFIED

CIRC ACCESSION NO--AP0134902   UNCLASSIFIED   PROCESSING DATE--27NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.
3,(3,CHLORO,2,HYDROXYPROPYL)BENZOTHIAZOLE,2,THIONE (I) AND
2,(2,3,EPOXYPROPYLTHIO)BENZOTHIAZOLE (II) WERE PREPE. FROM
2,MERCAPTOBENZOTHIAZOLE (CAPTAX) (III) AND EPICHLOROHYDRIN.   A REACTION
MECHANISM IS PROPOSED. CELLULOSE (IV) WAS MODIFIED WITH I, II, AND A
1:1 III,OCN(CH SUB2) SUB6 NCO ADDUCT AT 150DEGREES TO GIVE S AND N
CONTG. PRODUCTS. SPECTRAL DATA SHOWED THAT THE MODIFYING AGENTS WERE
CHEM. BOUND TO IV.   FACILITY: NAUCH.-ISSLED. INST. KHIM.
TEKHNOL. KHLOP. TSELLYUL., TASHKENT, USSR.

UNCLASSIFIED

USSR

UDC 632.95

TULYAGANOV, S. R., ALIMOV, E., KHASANOV, S. A., KHIKMATOV, A., KAMILOVA, R. M.,
and RAKHIMOV, A. A., Institute of the Chemistry of Plant Materials, Academy
of Sciences Uzbek SSR; and Institute of Experimental Biology of Plants,
Academy of Sciences Uzbek SSR

"Herbicides"

USSR Author's Certificate kl. [expansion unknown] A 01 n 9/02, No 338, 207,
Filed 14 Oct 70, Published 12 June 72 (from Referativnyy Zhurnal -- Khimiya,
No 7, 1973, Abstract No 7N695 by T. A. Belyayeva)

Translation: To control weeds during the planting of cotton, it was suggested
to use phenyl compounds such as $PhN(COMe)CH_2CH_2OC_6H_4Cl-4$ (I) which have the
active groups β-acetoxyethyllaceanilide and $p-ClC_6H_4OH$. Compound (I) is
almost completely lethal to amaranth and purslane in doses of 10 Kg/Lectare
but is not toxic to the cotton.

1/1

USSR

UDC: 8.74

ZHURAVLEV, Yu. I., KAMILOV, M. M., and TULYAGANOV, Sh. Ye.

"Calculation Procedures for Determining the Informational Weight of a Symbol by Selection"

Tashkent, V sb. Vopr. kibernetiki (Cybernetic Problems--collection of works) No 45, 1971, pp 120-125 (from RZh--Matematika, No 7, 1972, Abstract No 7V649)

Translation: The following problem is solved: Suppose we are given a table T_{nml} of objects for recognition, where n is the number of symbol-columns, m is the number of object-lines, and $\underline{l}$ is the number of classes. We are required to determine the informational weight (the measure of importance) of the symbols in such a table. A sequence of stages is described for determining the informational weight of a symbol by selection algorithms, and the complexity of the calculation procedures then realized is evaluated, from the point of view of the number of operations. Evaluation of the time for solving the problem on the "M-220" and the "EBSM-6" electronic computers are given. V. Mikheyev

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USSR

UDC 8.74

ZHURAVLEV, YU. I., KAMILOV, M. M., TULYAGANOV, SH. YE.

"Computation Procedures for Determining the Information Weight of an Attri-
bute by Voting Algorithms"

V sb. Vopr. kibernetiki (Problems of Cybernetics — collection of works), Vyp.
45, Tashkent, 1971, pp 120-125 (from RZh-Kibernetika, No 7, Jul 72, Abstract
No 7V649)

Translation: The following problem is solved. Let a table of patterns for
recognition T_{nml} be given (n is the number of column attributes, m is the
number of object rows, l is the number of classes). It is necessary to de-
termine the information weight (the measure of importance) of the attributes
of this table. The series of steps for determining the information weight
of the attribute by voting algorithms is described, and the complexity of the
computation procedures from the point of view of the number of operations is
estimated. Estimates are presented for the solution time of the problem on
the M-220 and BESM-6 computers.

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USSR

ZHURAVLEV, Yu. I., KAMILOV, M. M., TULYAGANOV, Sh. Ye.

"Formulas for Calculation of Measures of Importance of a Characteristic"

Vopr. Kibernetiki [Problems of Cybernetics -- Collection of Works], No 44, Tashkent, 1971, pp 15-20, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V577 by V. Mikheyev).

Translation: Formulas are studied for calculation of the measure of importance of an individual characteristic (P_i) for tables of objects of recognition T_{nml} (n is the number of characteristic columns, m is the number of object rows, l is the number of classes). Analysis shows that the primary difficulty in the determination of P_i from the standpoint of the number of computations is related to calculation of the number of votes. It is demonstrated using a number of theorems that in the class of voting algorithms, an effective and simple apparatus can be constructed for calculation of the number of votes and, correspondingly, for the production of P_i. This apparatus is constructed not only for binary tables but for tables of objects fixed by characteristics from a certain arbitrary numerical alphabet.
1/1

USSR

1/2   007
TITLE--THIOCYANATION OF N,BETA,HYDROXYALKYLARYLAMINES AND THEIR
DERIVATIVES -U-
AUTHOR-(02)-AMBARTSUMOVA, R.F., TULYAGANOV, S.R.

UNCLASSIFIED
PROCESSING DATE---27NOV70

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(5), 1045-9

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CONDENSATION REACTION, EPICHLOROHYDRIN, ORGANIC OXIDE,
PROPYLENE, THIOL, CYANATE, AMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1268

STEP NO--UR/0366/70/006/005/1045/1049

CIRC ACCESSION NO--AP0134942

UNCLASSIFIED

UNCLASSIFIED

CIRC ACCESSION NO--AP0134942   PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF RR PRIME1 C SUB6 H
SUB3, NHCH SUB2 CH(OH)R PRIME2 WITH NASCN IN AQ. CUSO SUB4 GAVE
(4,NCS)R, R PRIME1 C SUB6 H SUB2 NHCH SUB2 CH(OH)R PRIME2 (I) (R, R
PRIME1, AND R PRIME2 GIVEN): H, H, H; H, H, ME; 2,ME, H,H; 3,ME, H,H;
2,OME, H,H; 2,CL, H, H; AND 2,CL, 5,CL, H. SIMILARLY, BETA
PHENOXYETHYLAMINO ANALOGS OF I WERE PREPD. CONDENSATION OF 4,NCSC SUB6
H SUB4 NH SUB2 WITH PROPYLENE OXIDE OR EPICHLOROHYDRIN GAVE, RESP., I (R
EQUALS R PRIME1 EQUALS H, R PRIME2 EQUALS ME) OR I (R EQUALS R PRIME1
EQUALS H, R PRIME2 EQUALS CH SUB2 CL). THE OPENING OF THE OXIDE RINGS
PROCEEDED AS EXPECTED.   FACILITY: INST. KHIM. RAST. VESHCH.,
TASHKENT, USSR.

UNCLASSIFIED

1/2   023

UNCLASSIFIED

TITLE--DETERMINATION OF THE LOADS ACTING ON PISTON ROD BUSHINGS OF THE ZMZ-21D ENGINE -U-

AUTHOR--CHAPCHAYEV, A.A., TULYAKOV, V.M.

PROCESSING DATE--11SEP70

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, AVTOMOBIL'NAYA PROMYSHLENNOST', NO 1, JANUARY 1970, PP 6-8

DATE PUBLISHED----JAN70

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

TOPIC TAGS--BUSHING, PISTON ENGINE, INTERNAL COMBUSTION ENGINE, MECHANICAL TEST, CENTRIFUGAL FORCE/(U)ZMZ21D INTERNAL COMBUSTION ENGINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1218

CIRC ACCESSION NO--AP0106004

STEP NO--UR/0113/70/000/001/0006/0008

UNCLASSIFIED

CIRC ACCESSION NO--AP0106004   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE AUTHORS USED AN EXPERIMENTAL   PROCESSING DATE--11SEP70
TECHNIQUE TO DETERMINE THE   LONGITUDINAL FORCES ON A WORKING PISTON ROD;
FROM THESE, AND EASILY CALCULATED CENTRIFUGAL FORCES, THEY DETERMINED
THE LOADS ON THE BUSHINGS.   THE EXPERIMENTAL METHOD INVOLVED A STRAIN
GAUGE ATTACHED DIRECTLY TO THE ROD AND A SPECIAL PICKUP DEVICE DEVELOPED
IN THE INSTITUTE TO CONVEY THE STRAIN GAUGE READINGS TO AN OSCILLOGRAPH.
THE VALUES OBTAINED FROM A STRAIN GAUGE AT THE CENTER OF GRAVITY OF A
ROD IN THE ZMZ-21D ENGINE ARE SHOWN IN A TABLE. THE AUTHORS COMBINED
THESE FORCES WITH THE CENTRIFUGAL FORCE K, DETERMINED BY THE FORMULA K
EQUALS MRW PRIME2, TO OBTAIN THE LOADS ON THE BUSHING.   THESE LOADS ARE
SHOWN IN POLAR COORDINATES IN A DIAGRAM. THE MAXIMUM COMPRESSION LOAD IN
THE FIGURE IS EQUAL TO 2,725 KG, WHILE THE MAXIMUM TENSION FORCE IS MUCH
SMALLER, EQUAL TO 500 KG.   AT MAXIMUM POWER (N EQUALS 4,000 RPM), THE
INSTANTANEOUS PEAK COMPRESSION LOADS ARE 40PERCENT LESS, I.E., 1,620 KG,
WHILE THE TENSION FORCES HAVE INCREASED TO 1,580 KG. SINCE THE ROD
BUSHINGS CONSIST OF UPPER AND LOWER HALVES, THE FORCES SHOWN ABOVE THE
CENTER OF THE POLAR DIAGRAM OPERATE ON THE UPPER HALF OF THE BUSHING,
AND THOSE BELOW THE CENTER OF THE DIAGRAM ON THE LOWER HALF.   THE
AUTHORS FOUND THE AVERAGE LOAD ON THE BUSHINGS TO INCREASE WITH
INCREASING RPM, WHILE THE PEAK LOADS DECREASED. THEY ALSO CALCULATED
THESE VALUES BY THEORETICAL MEANS FOR THE OPERATING RANGE MEASUREMENT
POINT (N EQUALS 3,200 RPM), AND OBTAINED A MEAN LOAD VALUE APPROXIMATELY
20PERCENT LESS THAN THAT DETERMINED EXPERIMENTALLY.

UNCLASSIFIED

USSR

UDC 621.434.1:629.113:624.042

CHAPCHAYEV, A. A., TULYAKOV, V. M., The Automotive and Motor Vehicle
Scientific Research Institute

"Determination of the Loads Acting on Piston Rod Bushings of the ZMZ-21D
Engine"

Abstract: The authors used an experimental technique to determine the
longitudinal forces on a working piston rod; from these, and easily
calculated centrifugal forces, they determined the loads on the bushings.
The experimental method involved a strain gauge attached directly to the
rod and a special pickup device developed in the institute to convey the
strain gauge readings to an oscillograph. The values obtained from a
strain gauge at the center of gravity of a rod in the ZMZ-21D engine are
shown in a table.

The authors combined these forces with the centrifugal force K,
determined by the formula $K = mrw^2$, to obtain the loads on the bushing.
These loads are shown in polar coordinates in a diagram.

1/2

USSR

CHAPCHAYEV, A. A., TULYAKOV, V. M., Avtomobil'naya Promyshlennost', No 1,
January 1970, pp 6-8

    The maximum compression load in the figure is equal to 2,725 kg,
while the maximum tension force is much smaller, equal to 500 kg. At maximum
power (n = 4,000 rpm), the instantaneous peak compression loads are 40%
less, i.e., 1,620 kg, while the tension forces have increased to 1,580 kg.

    Since the rod bushings consist of upper and lower halves, the forces
shown above the center of the polar diagram operate on the upper half of the
bushing, and those below the center of the diagram on the lower half. The
authors found the average load on the bushings to increase with increasing
rpm, while the peak loads decreased.

    They also calculated these values by theoretical means for the operating
range measurement point (n = 3,200 rpm), and obtained a mean load value
approximately 20% less than that determined experimentally.

2/2

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Ion Exchange Phenomena

USSR

UDC 541.183.12

TULYPOV. P. YE., and POLYANSKIY, N. G., Physical Chemistry Institute imeni
L. Ya. Karpova, Moscow and Tambovskiy Institute of Chemical Instrumentation

"Thermal Stability of Anion Exchange Resins"

Moscow, Uspekhi Khimii, No 9, Vol 42, 1973, pp 1650-1680

Abstract: The increasing use of exchange resins at various temperatures and
pressures requires that the behavior of the resins under these conditions be
known. Methods for calculating the efficiency and ion exchange capacity of
resins at higher temperatures are given. Reactions such as deamination and
dehydration which tend to degrade the resin when it is heated in air, water,
aqueous solutions, organic solvents, and mixed media are discussed. The
Cl⁻, OH⁻ and other forms of the anion exchange resin are considered. Finally,
the mechanisms and kinetics of the degredation of the resins are examined at
length and such parameters as energies of activation and rate constants
are calculated. (112 references).

1/1

USSR

TUMAKAYEV, G. K., ZHIKHAREVA, T. V., and LAZOVSKAYA, V. R.

"Kinetics of the Physico-Chemical Processes in a Shock Wave of Mercury Vapor: Part 2, the Relaxation Zone; Initial Ionization Region"

Abstract: The first part of this article appeared in the journal named above (vol 16, 1971, p 1986). In the second part, given in the present paper, an analysis is made of the kinetics of excitation and ionization of mercury atoms in the relaxation zone of the shock wave path through mercury vapor. The basis of this analysis is provided by experimental data obtained by the authors in an earlier paper (G. K. Tumakayev, et al, in the collection Aerofizicheskiye issledovaniya sverkhzvukovykh techeniy -- Aerophysical Investigations of Ultrasonic Currents -- edited by Yu. A. Dunayev, "Nauka," 1967) on the distribution of normal 6^1S_0 and excited mercury atoms in states $6^3P_{0,1,2}$ and on the electron concentration behind the front of the shock wave. It is found that, for Mach numbers between 7 and 15, the population of the block of $6^3P_{0,1,2}$ states in the whole region of initial ionization is the result [1,2]
1/2

USSR

of inelastic electron-atom collisions. The authors express their thanks to Yu. A. Dunayev for his discussion of the work and to R. N. Orlova for her assistance with the computations.

2/2

UNCLASSIFIED

TITLE--KINETICS OF THE BEGINNING IONIZATION OF A MONATOMIC GAS BEHIND THE
SHOCK WAVE FRONT -U-

PROCESSING DATE--23OCT70

AUTHOR-(02)-ZHIKHAREVA, T.V., TUMAKEYEV, G.K.

COUNTRY OF INFO--USSR

SOURCE--TEPLOFIZIKA VYSOKIKH TEMPERATUR, VOL. 8, JAN.-FEB. 1970, P. 40-45

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SHOCK WAVE FRONT, GAS IONIZATION, GAS DENSITY, IONIZATION
CROSS SECTION, EXCITATION CROSS SECTION, MERCURY, ARGON, XENON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/0398

CIRC ACCESSION NO--AP0111591

STEP NO--UR/0294/70/008/000/0040/0045

UNCLASSIFIED

CIRC ACCESSION NO--AP0111591

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THEORETICAL ANALYSIS OF THE
CHARACTERISTICS OF THE FIRST IONIZATION PHASE OF AR, XE AND HG ATOMS
BEHIND THE SHOCK WAVE FRONT FOR A CONCENTRATION OF ROUGHLY 100,000T
NORMAL ATOMS PER CC AT TEMPERATURES FROM 9000 TO 18,000 DEG K. THE
EFFECT OF RESONANCE RADIATION ON THE IONIZATION KINETICS IS FOUND TO BE
INSIGNIFICANT WHILE THE STEPWISE IONIZATION DURING ATOM ATOM COLLISIONS
APPEARS TO BE DOMINANT DURING THE INITIAL PHASE OF IONIZATION.
EXCITATION CROSS SECTIONS AND EXCITATION IONIZATION CROSS SECTIONS ARE
OBTAINED FOR HG DURING ATOM ATOM COLLISIONS FROM EXPERIMENTAL DATA FOR
THE DISTRIBUTION OF ELECTRONS AND NORMAL AND EXCITED HG ATOMS IN THE
RELAXATION ZONE OF THE FLOW.   FACILITY: AKADEMIIA NAUK SSSR,
FIZIKO TEKHNICHESKII INSTITUT, LENINGRAD, USSR.

UNCLASSIFIED

USSR

GARDIN, Yu. Ye., ODYNETS, L. L., and TUMAKOV, V. S., Petrozavodsk State University imeni O. V. Kuusinena

UDC 541.1382:541

"Galvanoluminescence Upon Electrochemical Oxidation of Tantalum and Aluminum"

Abstract: A study was made of the basic regularities in the luminescence which occurs during electrochemical oxidation of tantalum and aluminum. The results of the study indicate that the luminescence of fully formed specimens results from the ionic current component. The anode luminescence is apparently a type of electrochemiluminescence, related to electrode reactions occurring at the oxide-electrolyte interface.

1/1

USSR

SLONIM, A. D. and TUMAKOVA, N. M., Institute of Cytology and Genetics, Academy of Sciences USSR, Siberian Division, Novosibirsk

UDC 612.53+612.743

"Thermoregulatory Electrical Activity of Different Kinds of Muscle Fibers in White Rats Adapted to Cold"

Abstract: Study of electrical activity in the deep part of the rat anterior tibial muscle, which consists chiefly of slow fibers, showed that it is much higher when the animal is cooled than in the periphery of the muscle, which consists of fast fibers. Thermoregulatory electrical activity of the slow fibers during acute cooling is not only higher (8 to 10 times higher) but more variable than that of the fast fibers. However, in the course of adaptation to cold the difference tends to level out owing to the marked decrease in activity of the slow fibers. Adaptive changes in thermoregulatory muscle contractility associated with intensified heat production is concentrated largely in the slow fibers.

1/1

- 49 -

USSR

TUMAKOVA, N. M., Institute of Physiology, Siberian Department, Academy of Sciences USSR, Novosibirsk

UDC 612.74

Abstract: During exposure to a temperature of 7°C, the electrical activity of the anterior tibial muscle, which is very low at 29°C, increases considerably, and the integrated electrical activity (IEA) of slow muscle fibers is about 10 times as high as that of fast fibers. After adaptation to cold (10-65 days at about 5°C), the peak IEA becomes smaller, while internal body temperature is maintained at a higher level. Again, the main difference is observed in the slow fibers. With increasing period of acclimatization to cold, the adaptation becomes more efficient. Thus, while the slow fibers' peak IEA of 20 mcV is reached in 20 mins and body temperature falls by 10°C in control rats, the corresponding figures are 5.5 mcV, 25 mins, and 7°C after 10 days of acclimatization and 4.6 mcV, 35 mins, and 6°C after two months of acclimatization. It is concluded that the slow fibers, which are located in deeper layers of the

1/2

USSR

TUMAKOVA, N. M., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 11, 1972, pp 1765-1768

muscle and have a richer blood supply and a higher metabolic rate, play the main role in the regulation of body temperature and adaptation to cold.

2/2

172   010

TITLE--PALLADIUM (II) N CYCLOHEXYLSALICYLALDIMINATES —U—

UNCLASSIFIED

PROCESSING DATE--30OCT70

AUTHOR-(03)-OSIPOV, O.A., MINKIN, V.I., TUMAKOVA, ZH.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 154-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PALLADIUM COMPOUND, ORGANIC COMPLEX COMPOUND, DIPOLE MOMENT, MOLECULAR STRUCTURE, POLYNUCLEAR HYDROCARBON, HETEROCYCLIC BASE COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1235

CIRC ACCESSION NO--AP0116697

STEP NO--UR/0192/70/011/001/0154/0155

UNCLASSIFIED

2/2   010
CIRC ACCESSION NO--AP0116697   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   PROOF THAT THE   PROCESSING DATE--30OCT70
N,ALKYLSALICYLALIMINATES OF PD (II) WITH ALDYL GROUPS CONTG. BRANCHING
AT THE ALPHA C ATOM BELONG TO THE FAMILY OF COMPDS.   WITH A NONPLANAR
CONFIGURATION OF THE CHELATE UNIT IS CONDUCTED BY DETN. OF DIPOLE
MOMENTS OF A SERIES OF COMPLEXES OF THE TYPE I, WHERE R EQUALS H, NET
SUB2 AND R PRIME2 EQUALS ARYL, N,ALKYL.   THE DATA IS IN AGREEMENT WITH
THE CONCEPT CONCERNING THE INFLUENCE OF THE STRUCTURE OF THE SUBSTITUTE
UPON THE N ATOM IN THE CHELATE UNIT OF DIVALENT METALS WITH N
SUBSTITUTED SALICYLALDIMINES.   THE FACT THAT THE STRUCTURE OF THE
N,ALKYL GROUP APPEARS TO BE SIGNIFICANTLY MORE MARKED THAN THAT OF
N,ARYL CONFORMS TO THE DATA CONCERNING THE FREE ENERGY OF THE EQUIL:
SQUARE IN EQUILIBRIUM TETRAHEDRON.   FACILITY: ROSTOV. GOS.
UNIV., ROSTOV, USSR.

UNCLASSIFIED

039

TITLE--BAKELITE PLYWOOD -U-   UNCLASSIFIED

AUTHOR--TUMANOV, A.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, AVIATSIYA I KOSMONAVTIKA, NO. 2, 1970, P 36

DATE PUBLISHED-------70

PROCESSING DATE--11SEP70

SUBJECT AREAS--MATERIALS, BIOLOGICAL AND MEDICAL SCIENCES, AERONAUTICS

TOPIC TAGS--WOOD, PHENOL FORMALDEHYDE RESIN, MICROBIAL DEGRADATION,
LAMINATED STRUCTURE, AIRCRAFT MATERIAL, RESIN/(U)KBR AIRCRAFT, (U)VIAM
B3 RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1427

CIRC ACCESSION NO--AP0104740   STEP NO--UR/0209/70/000/002/0036/0036

UNCLASSIFIED

272   039
CIRC ACCESSION NO--AP0104740   UNCLASSIFIED   PROCESSING DATE--11SEP70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN THIS, THE SIXTH INSTALLMENT OF
A CONTINUED ARTICLE, THE AUTHOR BRIEFLY TRACES THE HISTORY OF PLYWOODS
AND RESINS USED FOR THE EXTERIOR SURFACES OF AIRCRAFT. HE REVIEWS THE
PROBLEMS WHICH CONTRIBUTED TO THE RELATIVELY SHORT LIFE OF AIRCRAFT DUE
TO VARIOUS TYPES OF BIOLOGICAL DEGRADATION OF THE RESIN AND THE
DELAMINIZATION OF THE LAYERS. IT WAS PROPOSED THAT 0.03 MM THICK KRAFT
CELLULOSE PAPER IMPREGNATED WITH A PHENOL FORMALDEHYDE RESIN BE USED TO
LAMINATE LAYERS OF BIRCH VENEER. THIS WAS PUT IN A HYDRAULIC PRESS,
HEATED TO 150DEGREESC, AND PRESSED. TESTS AND EXPERIENCE TO DEMONSTRATE
THE EFFICACY OF THIS METHOD IS GIVEN, AND IT IS NOTED THAT, BY WW II, A
MORE EFFECTIVE CRESOL FORMALDEHYDE RESIN WAS IN USE IN THE USSR. AMONG
THE AIRCRAFT TO USE MATERIALS OF THE ABOVE TYPE WERE: THE MBR2
AMPHIBIAN AIRCRAFT, EARLY MIG'S, THE LAGG3, THE LA5, THE YAK7, THE IL2,
AND THE PO2 AND UT1 TRAINERS. THE VIAM B3 RESIN DEVELOPED YEARS AGO BY
THE ALL UNION INSTITUED OF AVIATION MATERIALS IS STILL IN USE TODAY IN
BUILDING TRAINERS, GLIDERS, PROPELLERS, AND IN HELICOPTERS.

UNCLASSIFIED

1/2   019

UNCLASSIFIED

TITLE--DETERMINATION OF TRACES OF METALLIC IRON IN IRON OXIDE, FERRO
SILICON, AND SILICIDE BASE ALLOYS -U-

PROCESSING DATE--11DEC70

AUTHOR-(02)-TUMANOV, A.A., ZOLOTOVA, L.P.

COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB., 1970, 36, (3), 276-77

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--CHEMICAL ANALYSIS, IRON, OXIDATION, CHEMICAL PRECIPITATION,
SILICON BASE ALLOY, ELECTRONIC EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0944

STEP NO--UR/0032/70/036/003/0276/0277

CIRC ACCESSION NO--AP0131529

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--11DEC70
CIRC ACCESSION NO--AP0131529
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD OF DETERMINING TRACES (10
  PRIME NEGATIVE2 TO 10 PRIME NEGATIVE3 PERCENT) OF METALLIC FE IN
  MATERIALS COMMONLY USED FOR RESISTORS IN ELECTRONIC APPARATUS IS
  DESCRIBED. THE METHOD IS BASED ON THE SELECTIVE DISSOLUTION OF FE IN
  METHYL ALCOHOL CONTG. A SUITABLE SALICYLATE. THE SENSITIVITY IF 1 MU G
  OF FE IN A FINAL VOLUME OF 25 ML. THE AVERAGE ERROR IS 10-25PERCENT,
  THIS ARISING PARTLY FROM WEIGHING DIFFICULTIES AND PARTLY FROM THE
  OXIDATION OF THE METALLIC FE IN THE COURSE OF PREPARATION.

UNCLASSIFIED

UNCLASSIFIED

TITLE--DETERMINATION OF FACTORS OF A GAMMA GLOBULIN SYSTEM GM -U-

PROCESSING DATE--20NOV70

AUTHOR--TUMANOV, A.K.

CCUNTRY OF INFO--USSR

SCURCE--U.S.S.R. 263,084
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--04FEB70

SUBJECT AREAS--BIOLCGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--CHEMICAL PATENT, GAMMA GLOBULIN, BLOOD SERUM, ANTIBODY

CCNTROL MARKING--NO RESTRICTIONS

DCCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1080

STEP NO--UR/0482/70/000/000/000C/0000

CIRC ACCESSION NO--A0130115

UNCLASSIFIED

CIRC ACCESSION NO--AA0130115   UNCLASSIFIED

PROCESSING DATE--20NOV70

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   FACTORS OF A GAMMA GLOBULIN SYSTEM
ON WERE DETD. BY MIXING THE SERUM BEING STUDIED WITH PARTICLES
SENSITIZED WITH INCOMPLETE RHESUS ANTIBODIES.   A SUSPENSION OF NEUTRAL
PARTICLES OF DERMATOL WAS USED FOR THE SENSITIZED PARTICLES TO SIMPLIFY
AND SPEED UP A STUDY OF THE SYSTEM BOTH IN LIQ. AND IN DRY BLOOD AND TO
CARRY OUT THE REACTION AT ROOM TEMP.

UNCLASSIFIED

DEVICE FOR OBTAINING MIXTURES OF METAL CHLORIDE VAPORS

the process of deposition of metals from vapors of their halides is used as the method of obtaining metals or for deposition of coatings made of them on various materials. In the published literature there is a description of certain devices used in laboratory practice for these purposes [1]. From the experience of working with such devices it is known that one of the most complex assemblies of the devices is the halide compound evaporator [2], especially in cases where the evaporation point does not exceed the melting point of the halide. This is typical for widely used compounds. The problem is still more complicated if it is necessary to perform joint precipitation of two or more metals (when obtaining coatings made of compounds or alloys).

Various means of solving this problem are possible. One of the most prospective means is the creation of a device with separate evaporation of the halide compounds and mixing their vapors before input to the reaction zone.

In the described device there are two evaporators each of which is a tube with a boat with chloride, placed in it (Figure 1). The inside diameter of the evaporator is 60 mm, and the length of the boat with the metal chloride is 500 mm. The evaporators are joined by a mixer tube having a flange for attachment to the reaction chamber. The installed valves permit the use of any evaporator independently of the other. All the flanges and valves are arranged so that the removable thermostating furnaces will have a simple design. Tubular furnaces are installed on the evaporators, and a two-reaction removable heater is installed on the mixer tube. The removable heaters greatly simplify the assembly and adjustment of the device. All the separable joints (flanges, valves, thermocouple inputs) are executed with polyfluoroethylene packing; therefore, the thermostating temperature should not exceed 200-250 degrees.

The gas carrier (argon, hydrogen, and so on) can be passed through the evaporators or, bypassing them, directly through the mixer. The concentration

- 19 -

TUMANOV, A. N.

UDC 536.423.1.561.8.321.669.294:669.27

DEVICE FOR OBTAINING MIXTURES OF METAL CHLORIDE VAPORS

[Article by R. S. Ly900v, A. N. Tumanov, Moscow Steel and Alloys Institute, Department of High-Temperature Materials; Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy, Tsvetnaya Metallurgiya, Russian, No 5, 1971, submitted 22 January 1971, pp 122-124.]

The process of deposition of metals from vapors of their halides is used as the method of obtaining metals or for deposition of coatings made of certain devices used in laboratory practice for these purposes [1]. From the experience of working with such devices it is known that one of the most complex assemblies of the devices is the halide compound evaporator [2], especially in cases where the evaporation point does not exceed the melting point of the halide. This is typical for widely used compounds. The problem is still more complicated if it is necessary to perform joint precipitation of two or more metals (when obtaining coatings made of compounds or alloys).

Various means of solving this problem are possible. One of the most prospective means is the creation of a device with separate evaporation of the halide compounds and mixing their vapors before input to the reaction zone.

In the described device there are two evaporators each of which is a tube with a boat with chloride placed in it (Figure 1). The inside diameter of the evaporator is 60 mm, and the length of the boat with the metal chlor- ide is 500 mm. The evaporators are joined by a mixer tube having a flange for attachment to the reaction chamber. The installed valves permit the use of any evaporator independently of the other. All the flanges and valves are arranged so that the removable thermostating furnaces will have a simple de- sign. Tubular furnaces are installed on the evaporators, and a two-reaction removable heater is installed on the mixer tube. The removable heaters greatly simplify the assembly and adjustment of the device. All the separable joints (flanges, valves, thermocouple inputs) are executed with polyfluoroethylene packing; therefore, the thermostating temperature should not exceed 200-250 degrees.

The gas carrier (argon, hydrogen, and so on) can be passed through the evaporators or, bypassing them, directly through the mixer. The concentration

- 19 -

USSR:

Composite Materials

TUMANOV, A. T. and PORTNOY, K. I.

UDC 047:69-419.4

"Composite Materials"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 4, 1972,
pp 24-27

Abstract: A general description is presented of composites including
their classification into fibrous (strengthened by continuous fibers
and short filamentary crystals), dispersion-hardenable (produced by
the addition of disperse strengthener particles to the metal matrix),
and laminated (--by compaction and rolling dissimilar materials).
Included are also alloys with oriented crystallization of eutectic
structures. The characteristics of each class of the composites are
detailed and the immediate objectives relative to advances in
composites outlined. The dispersion hardening method is proposed for
increasing the heat resistance of nearly all nickel-, cobalt-, iron-,
chromium-, titanium-, molybdenum-, and tungsten-base steels and alloys.
The high-property potentials of composites have been the focus of
attention of designers of modern engines, machines, and equipment inas-
much as the new materials would enable the solution of two major prob-
lems: 1) increased rigidity and weight effectiveness of structures
1/2

USSR

TUMANOV, A. T., et al, Metallovedeniye i termicheskaya obrabotka metallov,
No 4, 1972, pp 24-27

owing to increment in strength and elastic modulus; 2) greater capacity
of engines, machines, and assemblies as a result of higher service
temperatures (for Al- and Mg-base composites from 300 to 500°C, for
Ti-base materials from 600 to 700-800°C, and for Ni-base materials from
1000 to 1200°C). Application of composites is seen to promote advances
in aviation, space, machine building, and many other segments of
technology. (6 bibliographic references)

2/2

- 13 -

USSR

GERSHENZON, Ye. M., NEGIREV, A. A., PUTILOV, P. A., TUMANOV, B. N.

UDC: 621.317.757

"An Autodyne Radio Spectrometer"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 26, 1970, Soviet Patent No 278797, Class 21, filed 2 Dec 68, p 47

Abstract: This Author's Certificate introduces an autodyne radio spectrometer for the submillimeter wavelength range which contains a source of SHF oscillations, with a phase shifter and attenuator connected to this source. As a distinguishing feature of the patent, the measurement precision is improved by using a backward wave tube with dc-isolated decelerating system and collector as the SHF source.

USSR

UDC 616.932+616-008.97(VIBRIO)-085.332(TETRACYCLINUM)-033

TIMINA, V. P., TUMANOV, F. A., and SHALYGINA, N. B., Central Scientific Research Institute of Epidemiology, Ministry of Health USSR, Moscow

"Distribution of Tetracycline in Vibrio Carriers and Cholera Patients"

Abstract: A group of El Tor vibrio carriers (180) received 300,000 or 500,000 IU of tetracycline orally while a series of cholera patients (8) were given 500,000 IU of the antibiotic together with rehydration therapy. The antibiotic was taken at 6-hour intervals. This schedule was sufficient to maintain a therapeutic level of the drug in the serum, but it was much higher in the gastrointestinal tract. Boosting the dose given the carriers from 300,000 to 500,000 IU produced only a slight increase in the amount present in the tissues studied, but the amount excreted with feces increased sharply. The serum tetracycline concentration in the cholera patients with pronounced diarrhea was considerably higher than in the carriers. Those suffering from severe gastro-enteritis excreted the antibiotic rapidly, thereby reducing its therapeutic value.

1/1

1/2   011

TITLE--PROGRAMMED CONTROL OF ACETONE RECOVERY DURING ACETATE FIBER
PRODUCTION -U-   UNCLASSIFIED   PROCESSING DATE--02OCT70

AUTHOR-(02)-TUMANOV, G.S., OBNOVLENSKIY, P.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VOLOKNA 1970, (1) 69-71

DATE PUBLISHED--------70

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

TOPIC TAGS--ACETONE, ACETATE, CELLULOSE RESIN, INDUSTRIAL WASTE, AUTOMATIC
CHEMICAL PROCESS CONTROL, CHEMICAL PRODUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0483

CIRC ACCESSION NO--AP0107088   STEP NO--UR/0183/70/000/001/0069/0071

UNCLASSIFIED

CIRC ACCESSION NO--AP0107088   UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   A PROGRAMMED PNEUMATIC CAM GEAR   PROCESSING DATE--02OCT70

WAS USED FOR THE CONTROLLED RECOVERY OF ME SUB2 CO FROM A GAS AIR MIXT.

DURING THE PRODUCTION OF CELLULOSE ACETATE FIBERS.   THE CAM GEAR

CONTROLLED THE OPERATION OF 11 ADSORBERS (AND 1 EXTRA ADSORBER); IT CAN

BE RE DILY PROGRAMMED FOR VARIOUS ADSORPTION CYCLES AND EFFECTIVELY

CONTROL THEM.

UNCLASSIFIED

TUMANOV, G. V.

SO: JPRS 53891
12 Aug 71)

SPINAL CORD REFLEX ACTIVITY IN NORMAL AND LABYRINTHECTOMIZED ANIMALS UNDER
THE INFLUENCE OF RADIAL ACCELERATIONS

UDC 612.833-06:612.858.014.47:531.113

Abstract: A study was made of spinal cord induced po-
tentials (H-reflex) in intact and labyrinthectomized
rats at accelerations of 0.5-8 g in a "head-pelvis"
direction. The combined effect of accelerations in
the range from 0.5 to 8 g considerably changed spinal
cord reflex activity. At 0.5 g the H-reflex increased
in amplitude and returned to the background value; after
rotation ceased. At 2, 4 and 6 g the reflex was sup-
pressed in direct proportion to the acceleration. The
time for reflex restoration also increased with an
increase in acceleration. During acceleration the
functional state and activity of the motor analyzer
were determined by a combination of factors: reflex
changes in motor neuron activity, associated with
muscular reception, and vestibular stimuli. In laby-
rinthectomized animals the depression of spinal ac-
tivity manifested a muscle dependence of the exposure.

It is known that accelerations in a definite range of intensities
considerably change the nature of motor activity. The percentage of
operator errors increases, the time required for performing a stipulated
task lengthens, and inhibited mobility is observed (L. V. Chkhizdze, A. R.
Kotovskaya, at al.; V. I. Yazdovskiy, et al.; Code, et al.).

The complexity in performing voluntary movements during acceleration
involves an increase in body weight, impaired reflex regulation from the
proprioceptors, and changes in conditioned reflex activity as a result of
a predominance of inhibitional cortical processes (H. A. Gard and N. N.
Gurovskiy; A. S. Barer; S. I. Nudman; Wells and Morehouse).

1/2   029
TITLE--EFFECT OF THE SOMATOTROPHIC HORMONE AND ESCULAMINE ON THE VIABILITY
OF RATS UNDER THE INFLUENCE OF ACCELERATIONS--U--
AUTHOR--OVECHKIN, V.G., TUMANOV, G.V.

UNCLASSIFIED

PROCESSING DATE--11SEP70

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, KOSMICHESKAYA BIOLOGIYA I MEDITSINA, RUSSIAN, VOL 4, NO 1,
JANUARY FEBRUARY 1970, P 80
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ACCELERATION STRESS, SOMATOTROPHIC HORMONE, SPACE MEDICINE,
ADRENAL GLAND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1936/0752

CIRC ACCESSION NO--AP0102717

STEP NO--UR/0453/70/004/001/0080/0080

UNCLASSIFIED

CIRC ACCESSION NO--AP0055125   UNCLASSIFIED   PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WITH RESPECT TO THE INCREASING-
ROLE OF GRINDING AMONG PRECISON SURFACE FINISHING METHODS, THE AUTHORS
CONVEY THE SUGGESTION OF FORMING A NEW MORE RELIABLE EQUATION FOR DISC
LIFE, CONSIDERING THE EFFECT OF VARIOUS FACTORS, THUS OF THE EFFICIENCY
OF THE EMPLOYMENT OF INDIRECT MATERIALS, AND WHICH ENSURES IN GENERAL A
MORE EXACT DETERMINATION OF THE ECONOMICALNESS OF GRINDING. SUGGESTIONS
ARE SUPPORTED BY EVALUATED EXPERIMENTAL RESULTS.

UNCLASSIFIED

USSR

AMBARTSUMYAN, R. V., LETOKHOV, V. S., MAKAROV, G. N., PLATOVA, A. G.,
PURETSKIY, A. A., and TUMANOV, O. A.

"Investigating the Exciation of Oscillatory Levels in $N^{14}H_3$ by Radiation
of a CO_2 Laser"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 3, 1973, pp
771-784

Abstract: The difficulty in the way of developing a precise explanation of
the processes leading to the dissociation and chemical reactions of molecules
excited by infrared radiation is the result of the paucity of effective
methods for investigating the oscillatory state. In this paper, a direct
method is developed for studying the population of oscillatory molecule
levels from the intensity of the absorption lines in molecular transitions
from the oscillatory state to the excited electronic state. Experiments
for studying the population change of oscillatory levels in the NH_3 molecule
under the excitation of a CO_2 laser are described, and a diagram of the
experimental apparatus is given together with an explanation of its operation.
The electron-oscillatory transmission spectrum of ammonia in the 2000-2250 Å
range with and without the laser is produced. The theory of the phenomenon
is developed and its results compared with the experimental results.
1/1

- 55 -

USSR

LETOKHOV, V. S., RYABOV, Ye. A., and TUMANOV, O. A. (Institute of Spectroscopy, USSR Academy of Sciences)

"Molecular Gas Luminescence Induced by a CO_2 Laser Pulse"

Abstract: Ultraviolet and visible luminescence induced by radiation from a CO_2 laser is investigated in NH_3 and C_2F_3Cl gases absorbing the radiation. The luminescence is found to be of a threshold nature. The dependence of the threshold on gas pressure and dependence of luminescence intensity on intensity of the CO_2 laser pulse are measured. It is found that luminescence is produced without any delay with respect to the laser pulse. The role of vibrational heating of molecules by the laser pulse with subsequent dissociation and light emission by the decay products and also other possible mechanisms of luminescence production are discussed.

1/1

1/2   011
UNCLASSIFIED
TITLE--EFFECT OF ALKALI METAL CATIONS ON THE FORMATION OF CERAMIC PIGMENTS   PROCESSING DATE--04DEC70
OF THE CALCIUM OXIDE STANNIC OXIDE SILICON DIOXIDE SYSTEM -U-
AUTHOR-(02)-TUMANOV, S.G., FILIPPOVA, E.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(4), 814-17

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CERAMIC MATERIAL, CALCIUM OXIDE, TIN OXIDE, SILICON DIOXIDE,
BORIC ACID, CHROMIUM OXIDE, LITHIUM OXIDE, CERAMIC PIGMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1459

STEP NO--UR/0363/70/006/004/0814/0817

CIRC ACCESSION NO--AP0130392
UNCLASSIFIED

CIRC ACCESSION NO--AP0130392   UNCLASSIFIED   PROCESSING DATE--04DEC70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MORE THAN 1PERCENT OF ALKALI
OXIDES IN THE COMPN. OF PINK PIGMENTS HAS A DETRIMENTAL EFFECT ON THE
COLORATION. THE MOST DETRIMENTAL EFFECT IS OBSERVED IN CASE OF LI SUB2
O. ALKALI OXIDES ENHANCE THE SINTERING OF THE BATCH DURING FIRING,
WHICH INTENSIFIES WITH THE DECREASE IN THE IONIC RADIUS OF THE CATION
AND WITH AN INCREASE IN THE ENERGY COEFF. DURING THE PREPN. OF CR-SN
PINK PIGMENTS THE USE MUST BE AVOIDED OF RAW MATERIAL CONTG. ALKALI
METAL CATIONS. INSTEAD OF K SUB2 CR SUB2 O SUB7, WHICH IS GENERALLY
USED IN THE PRODUCTION OF PINK PIGMENTS, IT IS MORE EXPEDIENT TO USE CR
SUB2 O SUB3, WHICH GIVES A MORE PURELY RED COLORATION, AND BORIC ACID
SHOULD BE USED INSTEAD OF BORAX.   FACILITY: DULEVSKII KRASOCHNYI
ZAVOD, USSR.

UNCLASSIFIED

1/2   025   UNCLASSIFIED   PROCESSING DATE--16OCT70
TITLE--A THERMOBAROCAMERA FOR OPTICAL INVESTIGATIONS -U-

AUTHOR-(02)-KAMELIN, G.P., TUMANOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO MEKHANICHESKAYA PROMYSHLENNOST', NO 2, FEB 70,
   PP 24-25
DATE PUBLISHED-------70

SUBJECT AREAS--METHODS AND EQUIPMENT

TOPIC TAGS--THERMOBAR CHAMBER, CAMERA, HEAT EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1588   STEP NO--UR/0237/70/000/002/0024/0025

CIRC ACCESSION NO--AP0118571
                         UNCLASSIFIED

2/2   025
CIRC ACCESSION NO--AP0118571   UNCLASSIFIED
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A BRIEF DESCRIPTION IS GIVEN OF
THE DESIGN OF A THERMOBAROCAMERA FOR INVESTIGATION OF THE DISARRANGEMENT
OF OPTICAL APPARATUS AT A PRESSURE UP TO 5 TIMES 10 PRIME NEGATIVE6 MM
HG AND VARIABLE CONDITIONS OF HEAT EXCHANGE.

PROCESSING DATE--16OCT70

UNCLASSIFIED

USSR

POVIDAYLO, V. A., SILIN, R. I., TUMANOV, V. I., YUREVICH, R. V.

UDC: 621.762:669.018.25(088.8)

"Method of Processing of Metal Ceramic Products"

USSR Author's Certificate Number 354939, Filed 26/02/71, Published 13/11/72 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G441), by S. Krivonosova).

Translation: The method suggested includes surface oxidation of products in air at 850-950°, cooling and subsequent removal of the oxide layer by vibration. In order to increase the mechanical properties of the products and simplify the technology of their processing, products are oxidized in a stream of compressed air heated to the oxidation point, then cooled at up to 100°/min. The method can be used in the production of hard alloy drilling and cutting tools, for example for hardening of hard-alloy teeth of drilling machines.

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USSR

UDC 621.173.162.4

SHNYREV, P. D., Candidate of Technical Sciences, DROBININ, I. N., Candidate of Technical Sciences, docent, TUMANOV, V. I., Candidate of Technical Sciences, and GINZBURG, M. A., Engineer

"Friction Forces and the Coefficient of Friction During the Attrition of Hard Alloys in a Medium of Liquid Nitrogen"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 7, 1972, pp 28-31

Abstract: The results are presented of an experimental investigation of the friction forces and the coefficient of friction during the sliding friction of pairs of specimens of hard alloys VK60M and VK6 in a medium of liquid nitrogen. It was established that within the limits of change of the rate of friction from 0.2 to 0.4 m/sec, the coefficient of friction increases as the rate of friction increases, and with an increase of the load from 35 to 135 kg/cm^2 the coefficient of friction decreases. 4 figures. 1 table. 6 references.

1/1

USSR

UDC 669.275'25'784'018.25

SHNYREV, P. D., DROBININ, I. N., TUMANOV, V. I., GINZBURG, M. A., and
SHNYREV, G. D.

"Investigation of Wear of Cermet Hard-Metal Alloys in Liquid Nitrogen Medium"

Issledovaniye iznosa metallokeramicheskikh tverdykh splavov v srede zhidkogo
azota (cf. English above), Institute of Metallurgy, Academy of Sciences USSR,
Moscow, 1971, 8 pp, ill, bibliography with five titles, No 3214-71 Dep (from
RZh-Metallurgiya, No 1, Jan 72, Abstract No 11820 Dep by authors)

Translation of Abstract: The work investigates the influence of Co content
and grain size of tungsten carbide on the wear of WC-Co alloys during test-
ing in liquid N_2 medium. The investigation reveals that wear increases with
an increase in Co content; the magnitude of wear rises with an increase in
WC-phase grain size; volume wear of WC-Co alloys of varying composition and
with varying grain size of tungsten carbide is inversely proportional to
Rockwell hardness. Three illustrations. One table. Bibliography of five
titles.

1/1

1/2   033
UNCLASSIFIED
TITLE--DETERMINATION OF THE TUNGSTEN CONTENT IN THE BINDING PHASE OF HARD
SINTERED ALLOYS -U-
PROCESSING DATE--27NOV70

AUTHOR-(05)-TUMANOV, V.I., SHCHETILINA, YE.A., CHEREDINOV, A.A.,
YELMAKOVA, S.M., SEREBROVA, O.I.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 262,483
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(6)
DATE PUBLISHED--26JAN70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--METAL CHEMICAL ANALYSIS, HARD ALLOY, TUNGSTEN CONTAINING
ALLOY, MAGNETIC PERMEABILITY, CURIE TEMPERATURE, METALLURGIC RESEARCH
FACILITY, FERROMAGNETISM, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/1463

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0126994
UNCLASSIFIED

CIRC ACCESSION NO--AA0126994   UNCLASSIFIED   PROCESSING DATE--27NOV70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE W CONTENT IS DETD. BY HEATING
THE SAMPLE, MEASURING WITH A MAGNETOMETRIC APP. THE CHANGE OF THE
MAGNETIC PERMEABILITY OF THE ALLOY, AND DETG. THE CURIE TEMP. ACCORDING
TO THE LOSS OF FERROMAGNETIC PROPERTIES.   FACILITY: VSESOYUZNYY
NAUCHNO-ISSLEDOVATEL'SKIY INSTITUT TVERDYKH SPLAVOV.

UNCLASSIFIED

1/2   026
UNCLASSIFIED
TITLE--WETTABILITY AND PROPERTIES OF MONO AND DIBORIDES OF GROUP IV AND VI
METALS --U--

PROCESSING DATE--13NOV70

AUTHOR-(03)-TUMANOV, V.I., GORBUNOV, A.YE., KONDRATENKO, T.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 540

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--BORIDE, TITANIUM COMPOUND, CHROMIUM COMPOUND, TUNGSTEN
COMPOUND, ZIRCONIUM BORIDE, COPPER ALLOY, NICKEL ALLOY, CHROMIUM ALLOY,
MOLYBDENUM ALLOY, MICROHARDNESS, WETTING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1104

STEP NO--UR/0076/70/044/002/0540/0540

CIRC ACCESSION NO--AP0123096
UNCLASSIFIED

2/2   026

CIRC ACCESSION NO--AP0123096   UNCLASSIFIED   PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE WETTABILITY OF TIB, CRB, WB, ZRB SUB2, AND CRB SUB2 BY CU, NI, AND ALLOYS OF NI-CR, NI-CR-MO HAVE BEEN STUDIED. THE SP. ELEC. COND. AND MICRO HARDNESS ARE GIVEN. THE CONTACT WETTING ANGLE WAS DETD. AT 10 PRIME NEGATIVE4-10 PRIME NEGATIVE5 TORR BY THE DROP METHOD AT THE M.P. OF THE WETTING MATERIAL SP. ELEC. COND. WAS MEASURED BY USING THE EDDY CURRENT METHOD AND MICROHARDNESS WAS MEASURED IN KG-MM PRIME2 AT A LOAD OF 40 G. THE WETTABILITY OF ZRB SUB2 BY MANY COMPONENT NI BASED ALLOYS WAS LESS THAN THAT ON PURE NI. THE CONTACT WETTING ANGLE VARIED FROM 75-80DEGREES. IN THE CASE OF CRB, THE WETTING ANGLE WAS ZERO. WETTABILITY OF MONO AND DIBORIDES BY NI AND CU IMPROVED WITH RISING AT. NO. OF THE METAL OF BORIDE. DECREASE OF B CONTENT IN MONOBORIDES AS COMPARED TO DIBORIDES RESULTED IN THE DECREASE OF CONTACT WETTING ANGLE BY NI AND CU.

UNCLASSIFIED

USSR

UDC 546.3-19'821'78

TUMANOV, V. I., MOZZHUKHIN, YE. I., and YELMANOVA, S. M.

"Effect of Temperature on the Physical Properites of Two-Phase and Three-Phase Titanium-Tungsten Solid Alloys"

Moscow, Neorganicheskiye Materialy, Vol 6, No 1, Jan 70, pp 15-19

Abstract: Expansion of the regions of application of solid alloys gives rise to the necessity for investigating their physical properties at various temperatures. The relations obtained in doing this are useful in studying problems connected with the structural peculiarities of solid alloys. Heretofore, with the exception of data on the Young's modulus, there have been no published data on the physical properties of titanium-tungsten alloys at increased temperatures. This article contains an investigation of the temperature dependence of thermal expansion, electrical resistance, and young's modulus of two-phase and three-phase titanium-tungsten solid alloys in the 20-800°C temperature range. It was found that the variation of the physical properties as a function of Co content is not additive. The composition-property curves have extremal values which correspond to 5 volumetric percent Co for two-phase alloys and 12 volumetric percent Co for three-phase alloys.

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