CHIZHIK, A. A.

CRITERIA FOR EVALUATING THE TENDENCY OF TURBINE-BLADE
MATERIALS TO COLD BRITTLENESS

The growth of the unit capacities of turbine sets ob-
servable in Soviet and foreign power engineering and the ten-
dency, connected with that, to increase the blade length of
the last stages of low-pressure cylinders of steam turbines
force the seeking of ways to use materials with initial strength
properties. In connection with the use of high-strength steels
in turbine sets special attention must be given to study of the
tendency to brittle destruction of the materials used and the
development of a reliable criterion for its evaluation with con-
sideration of distinctive features of the work of the blade set.

The last stages of low-pressure blades work at tempera-
tures of 30-40°C under the effect of centrifugal forces and
also of variable disturbing forces which cause alternate stress-
es. The reasons for the appearance and the character of the dis-
turbing forces acting on the blade apparatus are varied, but the
principal ones are inadequate build-up of the stage, imperfec-
tions of the channel part, the operating conditions (load fluc-
tuations, reduction of frequency in the network, cases of short-
circuiting of the generator, etc). For blades of the last stages
of powerful turbomachines highly charged with static stresses
the level of alternate stresses causing the appearance of fatigue
cracks can be insignificant. Therefore cases of fatigue damage
of the blades are encountered in existing turbine sets. Prac-
tice in the operation of steam turbines shows [1] that vibration-
al failures of working blades amount to about 10-15% of all ac-
cidents with turbines.

Cases of viscous and brittle destruction of blades with
fatigue cracks are distinguished. Very widespread are viscous
destructions, which usually occur under nominal loads, when the

- 1 -

[I - USSR - I]

CHIZHIK, K. G.

PROTOTYPE OF A CONTINUOUS DRYER DEVELOPED BY THE IKMO,
ACADEMY OF SCIENCES BELORUSSIAN SSR

The Institute of Heat and Mass Transfer of the Academy of
Sciences, Belorussian SSR has developed a continuous method of
drying pharmaceutical chemical preparations. The method con-
sists in having the moist granulation and drying in a falling
and fluidized bed be accomplished in a single apparatus. This
makes the process continuous and also permits curtailing losses
of material to a minimum, improving the quality of output, ac-
celerating the process of granulation and drying by tens of times,
reducing production area, and treating, normal conditions for the
work. On the basis of that method, optimum drying conditions
have been worked out and a prototype of the equipment has been
made which has undergone industrial tests at the Chemical and
Pharmaceutical Plant "Zdorov'ye Trudyashchimsya" in Khar'kov.

The figure presents a schematic diagram of the drying
apparatus. It consists of a granulator (2), drying chamber (1),
air heater (5), blower (4), cyclone (3), bucket chain and a con-
trol panel. The drying chamber is a vertical pipe 400 mm in dia-
meter with an expanded separator section. The vertical part of
the dryer is 1500 mm high. In the lower part is a perforated
grid on which the material being dried is fluidized. In the
separator part of the dryer is a granulator, which is a cylinder
with a perforated bottom. The diameter of the openings can be
adapted depending of the required granulometric composition of
the material being dried. In the given case the opening diameter
is 2 mm. Screw blades serve as a triturator. On the lower side

- 1 -

[I - USSR - D]

2

USSR   UDC: 681.32.001

BELEVTSEV, A. T., BESSHAPOSHNIKOV, Ye. A., YEFIMOV, V. P., MUZALEV, Ye. Yu.,
SEMENOV, B. A., CHIZHIK, S. P.

"Resistive Element for a Potentiometer"

USSR Author's Certificate No 293271, filed 1 Aug 69, published 11 Mar 71
(from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct
71, Abstract No 10A188 P)

Translation: This Author's Certificate introduces a resistance element for
a potentiometer. The element is made in the form of two layers applied in
sequence, one of them being a layer of rhodium. For the purpose of thermal
stabilization of the resistance, the element utilizes a heat-treated chromium
film as the rhodium sublayer. One illustration.

1/1

USSR

UDC 621.762.2:669.22

CHIZHIK, S. P., SHTAYNBERG, A. N., KAGAN, N. M., KHASIN, E. I., SHELEST, A. YE., DMITRIYENKO, V. YE., and LAYNER, D. I.

"Method of Producing Silver Granules"

USSR Authors' Certificate No 267079, Cl. 40b, 1/04; 31 b³, 9/00, (B 22f), filed 27 Apr 67, published 16 Jul 70 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3G404P by S. Krivonsova)

Translation: An alloy containing up to 50% Ag, the rest Al, is rolled into strip and treated in alkali. In order to produce granules with up to 0.5% Al content, the initial alloy is rolled into strip up to 0.5-5 mm in thickness, and before alkali treatment is heated to 540-560°, held for 1.5 hr in an inert atmosphere until a solid solution of Ag in Al forms, and is hardened.

1/1

1/2   021   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--USE OF THE NUCLEAR MAGNETIC RESONANCE OF PHOSPHORUS TO STUDY
   EXTRACTION BY ORGANOPHOSPHORUS COMPOUNDS. I. EFFECT OF SOLVATION -U-
AUTHOR-(05)-ROZEN, A.M., BORODIN, P.M., NIKOLOTOVA, Z.I., CHIZHIK, V.I.,
   SVENTITSKIY, YE.N.
COUNTRY OF INFO--USSR

SOURCE--RADIOKHIMIYA 1970, 12(1), 69-76

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--PHOSPHORUS ISOTOPE, ORGANIC PHOSPHATE, URANIUM COMPOUND,
   NUCLEAR MAGNETIC RESONANCE, SPIN LATTICE RELAXATION, SOLVENT EXTRACTION,
   SOLVENT ACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1464   STEP NO--UR/0186/70/012/001/0069/0076
CIRC ACCESSION NO--AP0135135
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0135135
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRIME31 P CHEM. SHIFT DELTA OF
 BU SUB3 PO SUB4 (TBP), CH SUB3(C SUB5 H SUB11 O)SUB2 PO (DAMP) AND A
 TRIOCTYLPHOSPHINE OXIDE (TOPO) SOLN. IN CCL SUB4 ARE PLUS 6.3, MINUS
 23.3, AND MINUS 38.0 PPM, RESP.; THE PRIME31 P CHEM. SHIFTS OF SOLVATES
 (DELTA SUBO) PREPD. BY SATN. OF THE ABOVE EXTRACTANTS WITH UO SUB2(NO
 SUB3)SUB2 ARE PLUS 4.3, MINUS 32.1, AND MINUS 63.8 PPM, RESP. THE
 SOLVATION SHIFT (DELTA DELTA EQUALS DELTA DELTA SUBO)WAS A LINEAR
 FUNCTIONOF THE NO. OF ESTER GROUPS (RO), AND THE LOG. OF THE EXTN.
 CONST. (LOG K) INCREASED LINEARLY WITH INCREASING DELTA DELTA, I.E.
 DELTA DELTA COULD BE USED AS A MEASURE OF THE EXTG. POWER OF ORG. P
 COMPDS. THE CHEM. SHIFTS ASSOCD. WITH THE DILN. OF THE ABOVE
 EXTRACTANTS (AND SOLVATES) WITH DECANE, CCL SUB4, BENZENE AND CHCL SUB3
 DID NOT EXCEED 1-3 PPM. THE SPIN LATTICE RELAXATION TIMES (T SUB1) OF
 PRIME31 P IN TBP, DAMP, THE TBP SOLVATE AND THE DAMP SOLVATE WERE 5.8,
 5,3 0.85, AND 0.33 SEC, RESP.; DILN. OF THESE EXTRACTANTS (OR SOLVATES)
 WITH CCL SUB4 AND CHCL SUB3 INCREASED THE T SUB1, INDICATING THE
 OCCURRENCE OF INTERACTION ON THE DILN.

USSR

BALOVNEV, V. I., CHIZHIK, Ye. I., DVORKOVOY, V. Ya., RASTEGAYEV, I. K.,
ZELENIN, A. N.

"Device for Studying the Effect of an Explosion in Excavation of Soils"

Otkrytiya Izobreteniya Promyshlennye Obraztsy Tovarnyye Znaki, No 5, 1972,
Patent No 355311.

Translation: 1. Device for studying the effect of an explosion in excava-
tion of soils by the working organs of earth moving and transportation
machines including a container, an explosive device and measuring instru-
ments, differing in that in order to assure the possibility of regulation of
the energy and direction of application of the explosion, a plate is hinged
in the container, with the explosive device rigidly connected to the plate,
made with a power cylinder with a back valve, with an elastic film mounted
on the side toward the soil, interacting with the filament installed in the
power cylinder.
      2. An installation according to Claim 1, differing in that the plate
is connected to the container by a screw mechanism, with a smaller plate
articulated to it, connected to the larger plate by an additional screw
mechanism.

1/2

USSR

BALOVNEV, V. I., CHIZHIK, Ye. I., ET. AL., Otkrytiya Izobreteniya Promyshlen-
nye Obraztsy Tovarnyye Znaki, No 5, 1972, Patent No 355311.

2/2
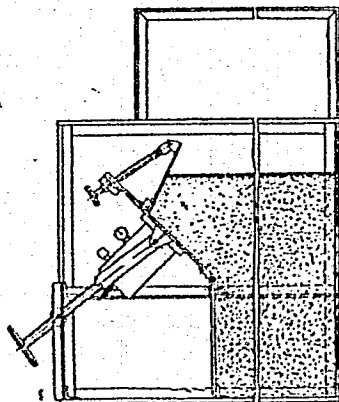
Acc. Nr.: *AM C106713*

Chizhikov, A. I.; Perminov, V. P.; Lokhimovich, V. L.; Girskiv, V. Ye.; Morozenskiy, L. I.; Grigor'yev, L. F.

Continuous Casting of Steel Into Billets of a Large Cross-Section (Nepreryvnaya razlivka stali v zagotovki krupnogo secheniya) Moscow, Metallurgiya, 1970, 135 pp (SL:2047)

TABLE OF CONTENTS:

Reel/Frame

19890037

/ 8

Acc. Nr.: *AM 0106713*

1 : 10 (150X1500 mm)

Given are results of investigations of conditions in formation of large continuous ingots.

Given are results of the development and adoption of techniques for continuous steel casting into slabs with a width up to 1500 mm and shaped castings with a cross-section up to 280 X 420 mm.

Reel/Frame
19890038

Powder Metallurgy

CHIZHIKOV, D. M., TSVETKOV, Yu. V., and RATNER, Yu. Ye.

"Kinetics of Reduction of Ammonium Perrhenate and Certain Properties of Rhenium Powder"

Translation: Metallic Re is produced by reduction of ammonium perrhenate with hydrogen. Therefore, the study of the kinetics of this process is not only of theoretical, but also of practical significance. It is established that the kinetics of the process follow the Roginskiy-Schultz equation. The intermediate products and metallic rhenium are formed in the process of reduction in the roentgenoamorphous state. It is believed that amorphous Re trioxide is formed as an intermediate product of the reduction of ammonium perrhenate. The influence of the conditions of the process (temperature, concentration of water vapor in the gas medium) on the particle size and purity of the metallic Re is studied. High-purity metallic Re is produced, in which the impurity content is 1-2 orders of magnitude lower than permitted according to the technical conditions. 3 figures; 1 table; 4 biblio. refs.

1/1

USSR

CHIZHIKOV, D. M., and ROSTOVTSEV, S. T., Editors

UDC 669.046.46.001

Termodinamika i Kinetika Protsessov Vosstanovleniya Metallov (Thermodynamics and Kinetics of the Reduction Processes of Metals), Izdatel'stvo Nauka, Moscow, 1972, 184 pp.

Translation of Annotation: This collection of works contains materials presented at the Conference on Thermodynamics and Kinetics of the Reduction Processes of Metal Oxides, held at the Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences USSR, May 20-23, 1969.

Main problems of the theory of metallurgical processes were reviewed in some papers. Temperature applicability ranges of the reduction mechanisms, and the role of dissociation and contact phenomena in the reduction mechanism were presented. The reduction thermodynamics of metal oxides by gases of a complex composition (CH_4, $CH_4 + CO_2$, $CH_4 + H_2O$) was also discussed. Considerable attention was paid to the kinetics of the gaseous reduction of non-ferrous and ferrous metals, particularly the application of natural gas in the reduction mixtures with CO_2 and H_2O. Characteristics of the carbothermal reduction and the reduction from melts were also discussed to some extent. The book also contains several articles on possible ways to accelerate the reduction processes by using catalytic additives, ultrasound, and other means.

1/10

USSR

CHIZHIKOV, D. M and ROSTOVTSEV, S. T., Izdatel'stvo Nauka, 1972, 184 pp

New research results on thermodynamics, kinetics, and mechanism of the reduction processes are summarized.

This book is intended for engineers, technicians, and scientists working in nonferrous and ferrous metallurgy. It can also be used by graduate and undergraduate students of chemical and metallurgical higher educational institutions.

Table of Contents:

2/10

- 80 -

USSR

CHIZHIKOV, D. M., and ROSTOVTSEV, S. T., Izdatel'stvo Nauka, 1972, 184 pp

3/10

USSR   UDC 669.35.71.1.24.6.782.71.620.193.27(088.8)

VOL, A. Ye., GAYDAY, P.I., GORYNIN, I. V., KAPYRIN, G. I., KUZNETSOV, Ya. Ya.,
PROKOF'YEV, S. N., SUMINOV, N. S., CHIZHIKOV, G. I., SHUMSKIY, K. A.

"Copper-Based Alloy"

Translation: An alloy with increased corrosion-fatigue strength in sea water is
suggested. The composition of the alloy (%) is: Al 7-9, Mn 8-12, Fe 2-4, Ni 1.5 -
4, Sn 0.1-05, Si 0.1-0.5, remainder - Cu. The technological properties of the alloy
can be improved by introducing up to 0.3 % Mg and up to 0.2 % Be. These additions
decrease the tendency of the alloy toward film formation. The alloy has (in kg/mm^2)
$\sigma_b \geq 65$, $\sigma_o.2 \geq 30$, HB 180-210, $\sigma_{-1} \geq 17$ at $10 \cdot 10^6$ cycles and is a promising shipbuilding
material.

1/1

USSR   UDC 669.35'5:539.4.014.11:629.1.037

VOL, A. YE., SOLDAKOVA, I. A., CHIZHIKOV, G. I.

"Determination of the Residual Stresses in Brass Propellers"

V sb Metallovedeniye (Physical Metallurgy -- collection of works), Sudostroyeniye Press, No 15, Leningrad, 1971, pp 163-168 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 41663)

Translation: Basic results from determining the residual stresses in natural propellers made of LMtsZh55-3-1 brass are discussed. It was established that in the manufacture and repair of propellers, significant residual stresses can result from the application of certain technological operations. The presence of these stresses can lead to breaking of the propeller vanes during operation. The conclusion was drawn to the necessity for complete heat treatment of propellers made of LMtsZh55-3-1 brass even if they are not subjected to welding or surfacing during the production process. Four illustrations and a 2-entry bibliography.

1/1

USSR

UDC: 624.131.54:539.375

CHIZHIKOV, P. G. and BEDA, V. I.

"Design of Foundations from Deformations"

Podol'sk, Osnovaniya fundamenty i mekhanika gruntov, No 5, 1972,
pp 11-13

Abstract: This article is in the nature of a survey of accomplish-
ments in the field of foundation design. It discusses an expres-
sion involving relative settling and loads which improves the meth-
od for computing foundations, and examines the statistical proces-
sing of the results of tests on 65 foundations based on that
expression. Two formulas approximating the expression are stated;
these permit designing foundations from deformations in the varia-
tion interval of the limiting sag, and are useful for computing
foundations of all types constructed by various methods in any
kind of soil. A sequence of steps in the computation of founda-
tions from deformation is given, and a table is reproduced for
presenting data obtained in the tests made on deep foundations in
water-absorbent ground. A bibliography of 16 titles, made up pri-
marily of Russian sources, is appended.
1/1

- 51 -

1/2   020   UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--USE OF ANIMALS WITH A MODELLED DISEASE IN INVESTIGATIONS ON
  HYGIENIC STANDARDS -U-
AUTHOR--CHIZHIKOV, V. A.

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA I SANITARIYA, 1970, NR 5, PP 19-23

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, MECH., IND., CIVIL AND
  MARINE ENGR
TOPIC TAGS--AIR POLLUTION, HYGIENE, FORMALDEHYDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1641   STEP NO--UR/0240/70/000/005/0019/0023

CIRC ACCESSION NO--AP0112635
                      UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112635

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN SEARCH OF THE MOST SENSITIVE AND ADEQUATE METHODS OF INVESTIGATING THE HYGIENIC STANDARD LEVELS OF NOXIOUS SUBSTANCES IN THE ATMOSPHERE AN ATTEMPT WAS MADE TO CARRY OUT NECESSARY EXPERIMENT OVER ANIMALS WITH A MODELLED DISEASE. THE RESULTS OBTAINED SHOW THAT ANIMALS WITH CHORMONIC INSUFFICIENCY MAY BE USED IN TESTS AS ANIMALS WITH A WEAKENED STATE OF HEALTH. THE MORTALITY AMONG THESE ANIMALS AFTER 4 HR POISONING WITH FORMALDEHYDE AT CONCENTRATIONS OF 0.9, 1.0, 2.0 AND 5.0 MG-L WAS MUCH MORE HIGHER THAN AMONG THE CONTROL ANIMALS.   FACILITY: KAFEDRA KOMMUNAL'NOY GIGIYENY TSENTRAL'NOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY, MOSCOW.

UNCLASSIFIED

GAVRILOV, A. N., CHIZHIKOV, V. Yu., IZMAYLOV, Ye. A., Moscow Aviation Institute imeni S. Ordzhonikidze

"Analytical Description of the Spatial Distribution of Scattering of the Magnetic Field of a Gyromotor"

Abstract: Analytical expressions are found which approximate the actual distribution of the scattering field of a gyromotor. It is shown that the scattering field of a specific gyroscopic element can be determined by using selected analytical expressions and making just a few measurements at nodal points in space. The resultant formulas can be used for calculating the extent to which the scattering field of a gyromotor affects the output characteristics of a floating gyroscopic device.

1/1

USSR   UDC: 531.383

GAVRILOV, A. N., CHIZHIKOV, V. Yu., and IZMAYLOV, Ye. A.

"Experimental Investigation of Magnetic Field Dispersion in a
Gyromotor"

Leningrad, Priborostroyeniye, No 4, 1972, pp 122-128

Abstract: Because the magnetic field in a gyromotor may create a
moment that affects the rotation of the output axis of the in-
strument and may distort the signal of induction sensors used in
gyroscopes, this paper proposes a method of experimentally deter-
mining the distribution of the dispersion field and presents the
results of an experiment conducted with a floating gyro unit con-
taining a motor. The unit was hermetically sealed in an aluminum
casing, the ring of the motor was also made of an aluminum alloy
while its active part was of the Vicalloy type. A diagram of the
experimental equipment is given, the procedure is explained, and
the method of measurement detailed. This last involves the use of
three coils placed in the three mutually perpendicular planes, in
each of which a voltage is induced by the magnetic field. Plots
of the dispersion field of the gyromotor are given. The authors
are connected with the S. Ordzhonikidze Moscow Aviation Institute.
1/1

- 114 -

CHIZHIKOVA, G.I.

EXPERIMENTAL STUDY OF A METHOD FOR THE PARTIAL OXIDATION OF THE PRODUCTS OF MAN'S VITAL FUNCTIONS

[Article by G. S. Shtrak, T. S. Garyova, V. V. Popov and G. I. Chizhikova, Moscow, Kosmicheskaya Biologiya i Meditsina (Space Biology and Medicine), Russian, 1971, pp 25-28]

1. At the present time the literature contains information on different technological methods for processing man's vital functions (vacuum drying, thermal drying, biological mineralization, etc.). Each of these methods has its advantages and disadvantages and the method for processing wastes is selected taking into account the specific model of a life support system and the power supply for the system.

2. In some cases it is desirable to carry out a partial oxidation of the products of man's vital functions. This is characterized by:

-- a total decontamination of the initial product, consisting of:
-- a maximum return of moisture, including pyrogenetic;
-- collection of solid residue suitable for storage;
-- formation of a gas phase which after catalytic oxidation is safe for plants to breathe;
-- small expenditures of oxygen, 10% of the maximum quantity necessary according to stoichiometric expressions.

3. We carried out an experiment consisting of 70 tests on the products of vital functions were taken from subjects kept on a definite diet. A total of 1.5-2 hours was expended in processing 150-200 g of product.

4. The use of catalysts made possible a considerable decrease in the oxidation temperature for the vapor phase.

CHIZHIKOVA, G. I.

life support systems

SO: JPRS 54768
22 Dec 71

CATALYTIC OXIDATION OF SOME GASEOUS PRODUCTS OF PYROLYSIS OF WASTES OF HUMAN VITAL FUNCTIONS

UDC 628.493:629.78.048.5

Abstract: A study was made of the applicability of catalysts (hopcalite, copper-chromium, copper-cobalt, platinum and palladium) in bringing about deep oxidation of the vapor-gaseous phase formed during the thermal treatment of human wastes. Oxidizing properties of the catalysts were studied for individual gases: methane, hydrogen, and carbon monoxide. Catalysts with higher activity were used to oxidize a real gas mixture. It was found that the gas mixture oxidation reaction is completed at 350° only when using a palladium catalyst.

During prolonged space flights the most effective human life support system in all probability is a system based on the cycling of matter. In such a system a link for mineralizing the products of human vital functions is required. The operation of this link is based on mineralization, the oxidation of organic wastes for the purpose of obtaining nutrient solutions for cultivating higher and lower plants.

A number of methods for the physicochemical mineralization of wastes is known: thermal oxidation, oxidation in the liquid phase ("wet combustion"), ozonization, oxidation in an electric discharge, ultrasonic oxidation, and catalytic oxidation. (S. O. Kuznetsov, et al.).

The gas phase obtained in the processing of wastes by all the already mentioned methods requires additional, deeper oxidation.

The gas phase forming during the thermal processing of wastes includes the following components: hydrogen, carbon dioxide, carbon monoxide,

USSR   UDC   621.396.69:621.316.8(088.8)

ANDREYEV, Yu. N., KVASOV, V. I., SEREDINA, N. N., LEONT'YEV, A. K., CHIZHIKOVA, T. F.

"A Device for Automatically Sorting Resistors into Groups by Ratings"

USSR Author's Certificate No 258427, Filed 18 Aug 65, Published 14 Apr 70 (from
RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10V315 P)

Translation: The proposed device contains a drum type casette with accumulators
arranged in several levels, a loading vibration hopper, transporting mechanisms,
guide channels with rotating gates, a measuring unit and an actuating electromagnet.
As a distinguishing feature of the patent, the work productivity of the device is
increased and sorting precision is improved by utilizing a unit for storing combina-
tions of resistance measurements connected to the transporter drive. This unit is
made in the form of a hollow cylinder with movable pins around the periphery in several
rows. These pins are connected to electromagnets by means of levers. The electro-
magnets are connected to the measurement unit and are mounted on the column of a
master unit located inside the hollow cylinder. The contacts controlled by the movable
pins are connected in the control circuit of the actuating electromagnet.

1/1

1/2   007   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--CHLOROMETHYLATION OF METHYL CARBONATES OF 4,ALKYLPHENOLS -U-

AUTHOR-(03)-CHERNYAVSKAYA, T.A., ROMADANCE, I., CHIZHIKOVA, V.P.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3), 475-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ALKYLATION, CHLORINATION, CARBONATE, PHENOL, CONDENSATION
  REACTION, BROMINATED ORGANIC COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1673   STEP NO--UR/0366/70/006/003/0475/0477

CIRC ACCESSION NO--AP0112667
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0112667
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE CONDENSATION OF 2,4,6,R,R
 PRIME1,R PRIME2,C SUB6 H SUB2 ONA WITH CLCO SUB2 ME IN ACETONE GAVE
 75-95PERCENT 2,4,6,R,R PRIME1,R PRIME2,C SUB6 H SUB2 OCO SUB2 ME (I) (R,
 R PRIME1, AND R PRIME2 GIVEN): H, ISO-PR, H; H, ET-MECH, H; H, TERT-BU,
 H; H, ETCME SUB2, H; BR, ETMECH, H; BR, ETCME SUB2, H; CL, TERT-BU, H;
 CL, ETCME SUB2, H; BR, TERT-BU, BR; BR, ETCME SUB2, BR. THE
 CHLOROMETHYLATION RATE OF I (M. SOMMELET, 1933) DEPENDS ON THE SIZE AND
 BRANCHING OF I. THE FOLLOWING CHLOROMETHYL DERIVS. OF I WERE PREPD. (R
 EQUALS R EQUALS R PRIME2 EQUALS H, R PRIME1 GIVEN): ME, ISO-PR, ETMECH,
 TERT-BU, ETCME SUB2.   FACILITY: RIZH. POLITEKH. INST., RIGA,
 USSR.

UNCLASSIFIED

1/3   042   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--TWO QUANTUM ANTI STOKES PROCESSES DURING THE EXCITATION OF DYES -U-

AUTHOR-(04)-VEDUTA, A.P., GALANIN, M.D., KIRSANOV, B.P., CHIZHIKOVA, Z.A.

COUNTRY OF INFO--USSR

SOURCE--PIS'MA ZH. EKSP. TEOR. FIZ. 1970, 11(3), 157-62

DATE PUBLISHED------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--RUBY LASER, NEODYMIUM LASER, LIGHT SCATTERING, EXCITED STATE,
   DYE, SPECTRUM, EXCITATION ENERGY, LUMINESCENCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2090   STEP NO--UR/0386/70/011/003/0157/0162

CIRC ACCESSION NO--AP0125677
                       UNCLASSIFIED

CIRC ACCESSICN NO--AP0125677

ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. A SOLN. OF DYE WAS EXPOSED FOR 20
NSEC TO IMPULSES FROM RUBY AND ND LASERS WITH A PEAK POWER OF 50 MW, AND
THE SPECTRA OF THE LATERALLY SCATTERED LIGHT MEASURED. CHARACTERISTIC
ELECTRONIC VIBRATION BANDS ARE SHOWN: (1) ABSORPTION OF QUANTUM OF
RADIATICN, (2) RELAXATION TO LOWER STATE, (3) ONE QUANTUM LUMINESCENCE,
(4) ABSORPTION WITH TRANSFER TO VIRTUAL LEVEL, (5) RELAXATION, (6)
NONRADIATIVE RELAXATION TO 1ST EXCITED STATE, (7) LUMINESCENCE FROM 1ST
EXCITED STATE, AND (8) ANTI STOKES COMBINATION DEGRADATION. ALL SPECTRA
SHOWED THAT THE MAX. CORRESPONDING TO PROCESS (8) LIE ON THE SHORT
WAVELENGTH SLOPE OF THE MAX. CORRESPONDING TO PROCESS (7). THE POSITION
OF THE MAX. COINCIDE WITH THE SUM OF THE ENERGIES OF THE PROCESSES (3)
AND (4). EXCITATION OF POLYMETHINE DYES WITH 2ND HARMONIC RADIATION OF
WAVELENGTH 530 NM DOES NOT PRODUCE A MAX. FOR PROCESS (8), BUT A MAX. IS
SEEN FOR PROCESS (7). PROCESS (8) IS APPROX. LINEAR WITH EXCITATION
ENERGY EXCEPT AT LOW ENERGIES WHEN 2,PHOTON EXCITATION BECOMES
IMPORTANT. PROCESS (7) IS LINEAR WITH EXCITATION ENERGY. THE
POLARIZATICN OF VARIOUS MAX. WAS MEASURED BY OBSERVATION OF CROSS
SECTION IN RELATICN TO EXCITING BEAM DIRECTION. EXPTL. VALUES OF
POLARIZATION RATIO (I PERPENDICULAR TO- I PARALLEL TO) WERE (A) 0.74
PLUS OR MINUS 0.12 WITH UNPOLARIZED RADIATION AT MAX. 570 NM, AND (B)
0.63 PLUS OR MINUS 0.05 AND 0.50 PLUS OR MINUS 0.06 WITH POLARIZED
RADIATICN AT MAX. 380 AND 450 NM, RESP. THE CROSS SECTION OF PROCESS
(8) WAS 10 PRIME NEGATIVE28 10 PRIME NEGATIVE27 CM PRIME2.

UNCLASSIFIED

3/3   042   UNCLASSIFIED   PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0125677
ABSTRACT/EXTRACT--THEORY GIVAS A VALUE OF 10 PRIME NEGATIVE29-10 PRIME
NEGATIVE26 CM PRIME2, AND EXPTS. WITH 2,PHOTON ABSORPTION GIVE A VALUE
OF 10 PRIME NEGATIVE27 CM PRIME2. ALL MAX. FOR PROCESS (8) ARE BROADER
THAN EXPECTED FOR ONE QUANTUM ABSORPTION AND IN SOME CASES ARE SHIFTED
TO THE SHORTWAVE REGION.   THIS MAY BE BECAUSE PROCESS (2) IS INCOMPLETE
OWING TO THE CHARACTERISTIC LIFETIMES OF THE PROCESSES (10 PRIME
NEGATIVE13-10 PRIME NEGATIVE11 SEC).   FACILITY: FIZ. INST. IM.
LEBEDEVA, MOSCOW, USSR.

                        UNCLASSIFIED

TITLE--TWO QUANTUM ANTI STOKES PROCESSES IN THE EXCITATION OF DYES -U-

AUTHOR-(04)-VEDUTA, A.P., GALANIN, M.D., KIRSANOV, B.P., CHIZHIKOVA, Z.A.

COUNTRY OF INFO--USSR

SOURCE--JETP LETTERS (USA), VOL. 11, NO. 3, P. 157-62, FEB. 1970

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--DYE, RAMAN SCATTERING, LUMINESCENCE, EXCITED STATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1854   STEP NO--US/0000/70/011/003/0157/0162

CIRC ACCESSION NO--AP0135419
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0135419
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REPORTS AN EXPERIMENTAL
OBSERVATION OF ANTI STOKES RAMAN SCATTERING BY THE ELECTRONIC STATE OF
MOLECULES AND LUMINESCENCE FROM THE SECOND EXCITED ELECTRONIC STATES IN
ORGANIC DYES.   FACILITY: USSR ACAD. SCIS.

UNCLASSIFIED

AA0040521   Chizhou, A·P·   UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent,
              236964 AUTOMATIC RESISTANCE WELDING OF CHAINS   /-70
                      involves attaching the electrode holders
              (10) to the spring loaded slide rails (11),
              operating in guides mounted in the levers (12),
              which carry clamping die (13). The link ends are
              brought together by slides (6), the clamping press-
              ure depending on springs (7) strength. The
              electrodes are brought into position by operation
              of levers (12) from cams (14), through levers (15)
              and concentric splined shafts (16), one of which
              is hollow. Switch (17) switches on the welding
              current, upsetting takes place, and the current is
              switched off by switch (19). Further movement
              of levers (12) bring dies (13) into contact with
              the link, and simultaneously retract the electrodes
              by means of pushrods (20). The electrode holders
              (22) are rotated to permit passage of the dies (13).
              to the link. Retraction of the levers (12) is by
              springs (23). The machine welds alternate links,

                              19750032

AA0040521

26.10.67 as 1192873/25-27. A.P. CHIZHOV & B.G.
MITNITSKII. PRESS FORGE ENGINEERING OFFICE.(16.6.69)
Bul 7/3.2.69. Class 49k, 21h. Int.Cl.B 21 1, B 23k.
and the chain is turned through 90° and fed through
a second time to complete the operation. A
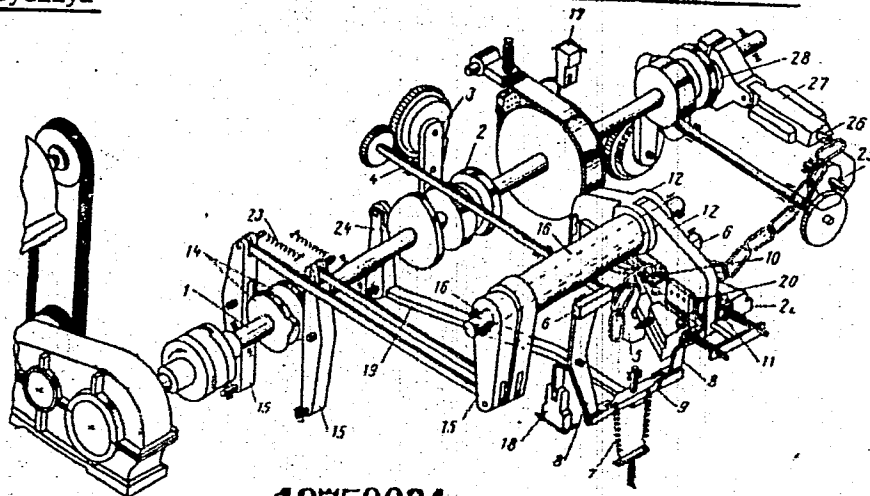reciprocating blade (26) is incorporated for
flashing removal.

2/3

19750033

AA0040521

AUTHORS: Chizhov, A. P: Mitnitskiy, B. G.

Tsentral'noye Proyektno-Konstruktorskoye Byuro Kuznechno-Pressovogo
Mashinostroyeniya

19750034

3/3

LD

"On the Effect of a Strong Radiation Field on an Electron Moving in a Plane
Electromagnetic Wave"

Abstract: Let there be a charged particle (electron) which is simultaneously
acted on by the field of a monochromatic plane electromagnetic wave (first
wave) and a second wave of arbitrary spectral composition (external radiation
field). The first wave is considered to be more intense, and hence the motion
of the electron is mainly due to interaction with it. The article considers
the action of the second wave on the electron, as well as the question of
variations in the mean energy of the electron during its interaction with the
radiation field. Conditions are found whereby the acceleration of the elec-
tron by the external field compensates for intrinsic electronic energy
losses.

1/1

- 50 -

.USSR   UDC 669.293.126.153

PROKOSHKIN, D. A., VASIL'YEVA, YE. V., MARKOVA, S. A., and CHIZHOV, I. N.,
Moscow Higher Technical School imeni N. E. Bauman. Department AM-9

"Investigation of the Effect of Carbon and the Properties of NV1OTZTs Alloys"

Ordzhonikidze, Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya Metallurgiya,
No 4, 1973, pp 138-143

Abstract: Nb-W-Ti-Zr alloys, with and without additional alloying of carbon
were produced by electron-beam melting for the purpose of studying the effect
of carbon on these alloys. Chemical composition of the niobium-base alloys was
(in wt %):

	W	Ti	Zr	C	O	N	H
NV1OTZTs	9.82	2.80	1.60	0.04	0.004	0.005	0.001
NV1OTZTsU	9.48	3.25	2.05	0.10	0.008	0.004	0.001

Ingots 120 mm in diameter were subjected to a two-step hot pressing processing
to produce 16-mm diameter rods which were vacuum annealed at temperatures
ranging from 400 to 1800°C for 0.5 hours and then measured for Vickers hardness.
Hardness measurements showed that both alloys become softer with annealing,
reaching a minimum between 1200 and 1400°C with hardness, then rising. Alloy

1/3

USSR

PROKOSHKIN, D. A., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy--Chernaya
Metallurgiya, No 4, 1973, pp 138-143

NV1OTZTs is harder than the alloy with additional carbon, with the difference
in hardness remaining almost constant throughout the range of annealing temper-
atures. Conversely, alloy NV1OTZTsU has a higher hardness than NV1OTZTs when
the alloys were quenched from 1600°C and aged at 1100°C for 0 to 300 hours
with the difference in hardness increasing between the alloys with increased
aging time at 1100°C. The best combination of mechanical properties at room
temperature for the two alloys was produced for a heat treating mode of
quenching from 1600°C + aging at 1100°C for 150 hours with tensile strength,
yield strength, elongations and hardness values of 72.8 kG/mm^2, 66.5 kG/mm^2,
20%, 230 kG/mm^2 and 90.0 kG/mm^2, 67.3 kG/mm^2, 15%, 285 kG/mm, respectively for
NV1OTZTs and NV1OTZTsU. The long-time strength of alloy NV1OTZTs was 28 kG/mm^2
when quenched from 1600°C which is equal to the American alloy F-48, although
the American alloy contains a much larger quantity of tungsten (15%). Thus,
heat treatment of the alloys by quenching to the supersaturated solid solution
for the given conditions ensures additional strengthening of the alloys and is
especially effective for the alloy with additional carbon content. For condi-
tions of long-time stress at 1100°C, precipitation of a finely dispersed

2/3

USSR

strengthening carbide phase occurs from the multicomponent solid solution and prevents the occurrence of shear and diffusion processes. Retarding of the diffusion process of dislocation creep by hard refractory particles of the precipitations leads to increased high-temperature creep strength. 3 figures, 4 tables, 8 bibliographic references.

3/3

USSR

PROKOSHKIN, D. A., VASIL'YEVA, Ye. V., TRET'YAKOV, V. I., CHIZHOV, I. N.,
Moscow

"Study of the Heat Resistance of Nb-Mo Alloys, Alloyed with Titanium and
Zirconium"

Abstract: This work studies the regularities of the influence of titanium
and zirconium on the heat resistance of the alloys Nb + 10 wt. % Mo and Nb +
+ 15 wt. % Mo. The titanium was introduced to the alloys in order to improve
the technological characteristics and increase oxidation resistance. It was
found that the addition of up to 3% titanium to the alloy Nb + 10 % Mo pro-
duces almost no change in the stable creep rate; intensive softening is ob-
served as the titanium content is increased to over 3%. The hardening effect
of the addition of (1 wt. %) zirconium to Nb + 10 % Mo + Ti depends on the
titanium content and appears most clearly with titanium concentrations of not
over 3%. An increase in the content of molybdenum to 15% facilitates increas-
ing heat resistance of niobium alloys. The expediency of alloying Nb + 15 %
Mo with titanium at 3% is demonstrated, since further increases in titanium

1/2

- 83 -

USSR

Prokoshkin, D. A., Vasil'yeva, Ye. V., Tret'yakov, V. I., Chizhov, I. N.,
Izvestiya Akademii Nauk SSSR, No 4, Jul-Aug 73, pp 230-235.

content cause significant reduction of the heat resistance. Additional
hardening of Nb + 15 % Mo + 3 % Ti can be achieved by the addition of 1%
zirconium. The alloys produced have good technological properties and can
be recommended for use as structural materials to operate at 1100° C and
higher.

2/2

TITLE--SMOTHERING OF DUST -U-

AUTHOR-(03)-CHIZHKOV, YE.N., GOLOVINA, N.I., SHTERN, E.K.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 262,819
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--04FEB70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--INDUSTRIAL HYGIENE, RESPIRATORY SYSTEM, SURFACE ACTIVE AGENT,
   PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1408   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128807
                         UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AA0128807
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WETTING AGENTS, SUCH AS ALK. ESTS.
OF PEAT, ARE USED TO SMOTHER DUST AT LOW TEMPS. PEAT AND AN AQ.
0.1-0.3N NAOH SOLN. WERE USED IN A 1:30-1:100 RATIO.   FACILITY:
CENTRAL SCIENTIFIC RESEARCH AND DESIGN CONSTRUCTION INSTITUTE OF
PROPHYLACTICS FOR PNEUMOCONIOSES AND SAFETY TECHNIQUES.

UNCLASSIFIED

Materials

USSR   UDC: 621.78

PROKOSHKIN, D. A., VASIL'YEVA, Ye. V., MARKOVA, S. A., CHIZHOV, I. N.

"Influence of Heat Treatment on High-Temperature Strength and Creep of
NV10M5TZTs Niobium Alloy"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Mashinostroyeniye, No 11,
1972, pp 121-124.

Abstract: An alloy was studied with the following chemical composition
(wt. %): 9.4% W, 5.98% Mo, 2.75% Ti, 1.65% Zr, impurity contents 0.05% C,
0.02% N, 0.02% O, 0.001% H. The short-term strength and creep of this alloy
were studied at 1100°C. The influence of heat treatment on the character-
istics of high temperature strength and heat resistance of the alloy was
studied. It was shown that hardening from 1700°C is an effective means of
strengthening the alloy at high temperatures. High heat resistance of the
alloy is achieved as a result of formation of a multicomponent solid solution
with high interatomic bond strength and separation of the dispersed refractory
carbide phase during long service at 1100°C.

1/1

CHIZHOV, S. V.

PROMISING METHODS FOR WATER RECLAMATION IN SPACECRAFT LIFE SUPPORT SYSTEMS

S. V. Chizhov, B. A. Adamovich, Yu. Ye. Sinyak, Z. P. Pak, I. I. Mikina, ...tin, V. V. Krasnoshchekov.

Abstract: 1. This paper convincingly demonstrates the need for developing regenerative life support systems, water regeneration from water-bearing wastes being the first and foremost step in their design and development. The selection of a particular water regeneration method is dependent on a complex functional relationship between the flight program, flight duration, spacecraft power supply, number of crew members, possibility of replenishing the food supply, weight and reliability of the life support system, etc. 2. An analysis of the sources of water-bearing wastes, mass flows, and their chemical composition demonstrates that most of the water can be reclaimed using the sorption technique. The technique can also be applied to the atmospheric condensate, transpiration water of higher and lower plants, water produced by electrochemical generators, condensates resulting from catalytic decomposition of hydrogen peroxide, and catalytic hydration of carbon dioxide. This technique can also be used in attaining a high purification of water formed during any other regeneration method. It may well be employed, although with certain limitations, to regenerate wash water. Wide application of the technique is illustrated by experimental data derived from a one-year medico-engineering test. 3. When developing life support

11

CHIZHOV, S. V.

space biology

COLEEN

A condensate of atmospheric moisture forming in the air conditioning system in a man-occupied pressure chamber in quantitative respects contains relatively few organic and inorganic impurities (A. A. Ballod, et al.; David; Happi Const; Schone). However, qualitatively their composition is extremely varied. Yu. G. Nefedov and S. N. Zaloguyev, as well as F. V. Kautroun, mention that the atmosphere of closed systems contains ammonia, phenols, carbon monoxide, methane, indole, acetone, mercaptans, amines, carboxylic acids, hydrogen sulfide, methyl and ethyl alcohols, and a number of other compounds. These compounds are released as a result of man's vital functions or are formed as a result of the destruction of polymer materials in the cabin and operation of instruments and apparatus.

During the prolonged functioning of a greenhouse the atmosphere of the closed system will also accumulate different gaseous products, for the most part associated with plant metabolism.

Since most of those substances are readily soluble in water, during water vapor condensation they become part of the condensate.

The toxicological importance of different substances is naturally different. Analysis of the properties of the compounds forming the condensate shows that even in insignificant quantities they can exert a varied frequently directly opposite effect on plant growth and development. It can be postulated that the total effect of this mixture on plants will be still more complex. Within closed systems one can also observe new and unexpected effects not characteristic of individual components. This is also attributable to the fact that products in an aqueous solution can interact with one another, forming still unstudied substances. Since it is

CHIZHOV, S. V.

life support systems

[Article by V. V. Shaydorova, S. V. Chizhov, Yu. Ye. Sinyak, A. A. ...
and N. A. Sokolova; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian,
Vol 5, No 5, 1971, submitted for publication 21 September 1970, pp 36-40]

Abstract: This paper gives the experimental characteristics for the contact method for decontaminating water using silver reduced on the surface of activated charcoals and ion exchange resins using ascorbic acid, hydroquinone and formaldehyde. It was established that the dynamics of dissolving of ionic silver from a silvered surface is dependent on the chemical nature of the sorbent and on the method for reducing the silver. In this method the decisive role is played by impurities present on the sorbent surface. A filter consisting of a silvered KU-2 x 8 cationite, reduced by hydroquinone, and AG-5 activated charcoal exhibited a stable rate of washing of silver from the surface.

The decontamination of water by silver ions can be accomplished by different methods: by adding to the water different preparations containing silver salt, enrichment of the water by electrolytic silver, or by bringing the water into contact with silvered surfaces. Each of these methods has its advantages and disadvantages. The use of preparations in tablet form is difficult due to their chemical instability in the light; the use of electrolytic silver is extremely effective but requires the expenditure of electric energy.

In the contact method water is decontaminated using metallic silver applied to the surface. Krause (1928) in Germany and then the Soviet scientists S. V. Moiseyev (1932), V. A. Uglov (1934), V. A. Lazarev (1935), and others used silver applied to beads, Raschig rings, coal and river sand, wadding, gauze and other inert carriers.

- 54 -

CHIZHOV, S. V.

Life Support Systems

SO: JPRS 53448
24 June 71

UDC 613.32:629.78.048

ARTIFICIAL MINERALIZATION OF WATER REGENERATED DURING SPACEFLIGHT

Abstract: Data published in the Soviet and foreign literature indicate a need for adding minerals to the water regenerated from human wastes during spaceflight. The paper presents experimental findings concerning the mineralization of regenerated water with solid-phase salts, powdered $2 CaO \cdot SiO_2$, and salt tablets. This method has certain advantages over current techniques, yielding drinking water with better organoleptic properties and superior physicochemical composition.

Since drinking water can be obtained during spaceflight by means of its regeneration from the products of man's vital functions and waste, hygienists are faced with the serious problem of ensuring that the regenerated water will have the required palatability and chemical composition.

It is known that in its composition regenerated water is close to distilled water and is characterized by the absence of mineral compounds present in natural drinking water which are physiologically important for the human body (Yu. Ye. Sinyak).

The biological role of most macro- and microelements present in water has been studied quite well (A. I. Voynar; R. D. Gabovich).

It is well known that food plays the principal role in supplying the body with mineral compounds. However, it has been established through research that the inadequate intake of individual mineral components with water can also exert a negative effect both on its organoleptic properties and on a number of body physiological functions (L. I. Shelukhin; Margaret). For example,

31

CHIZHOV, S. V.

LIFE SUPPORT SYSTEMS

METHODS FOR CLEAN CONDENSATION OF ATMOSPHERIC MOISTURE FOR ITS
USE IN A CLOSED ECOLOGICAL SYSTEM

(Inorganic Chemistry Faculty)

The reprocessing of water during prolonged space flights has great sig-
nificance for reducing the weight of the life support systems [1, 10, 12].

Based on data furnished by a number of authors [1, 10, 12], the daily
human requirement for water during a flight of 3 days amounts to about 7 li-
ters [1] or [2] month flight, a man needs 15 L, while on a 1 year flight, he
needs 25 L [1, 10]. Water sources on spacecraft can consist of atmospheric
humidity condensate (AHC), urine, sanitary-hygienic water, transpiration
moisture (condensate of higher and lower plants) and condensate of fuel cells.
For the land-to-space flights, it is primarily feasible to recover water
from the least polluted products of AHC type or the transpiration water from
plants.

The main source of AHC is the moisture from air breathed by man, con-
taining highly volatile products of his life activity. At the present time,
there has been identified in AHC a large number of chemical compounds, both
of organic and inorganic nature. Among the identified inorganic admixtures
(impurities), we include ammonia, nitrates, nitrites, chlorides, phosphates
and sulfates of calcium, magnesium, sodium and ammonia; among the
organic impurities, we include the lower aliphatic alcohols, fatty acids,
ketones, aldehydes and amines [7].

Acetone is formed in the human organism during the transformation of
fatty acids and hydrocarbons. It is released mainly with exhaled air and in
the urine. The release of acetone is also possible through the skin when its
(acetone's) level in the blood is high.

-1-

[I - USSR - D]

Stress Analysis and Stability Studies

USSR   UDC: 620.10

CHIZHOV, V. F., BOCHAROV, N. I., ANTONOV, A. S.

"Joint Deformation of Rings and Shells of Rotation with Arbitrary form of
Generatrix"

Abstract: The possibility of approximation of an arbitrary envelope of rota-
tion by a system of 0-moment shells and rings was demonstrated in an earlier
work. This work suggests that the solution produced earlier for a conical
shell be extended to an envelope of rotation with arbitrary form of generatrix,
which can be approximated by a finite number of truncated conical shells. The
accuracy of approximation of the envelope of rotation by the truncated conical
shells is related to the possibility of solution of the system of linear
algebraic equations by computer. The problem of deformation of envelopes of
rotation with arbitrary form of generatrix and rings under the influence of
local stresses is studied. The envelopes is assumed to be a 0-moment envelope,
the ring is deformed in its own plane. Calculations and experiments confirming
the correctness of the method suggested are presented.

1/1

Chizhov, V. F.

"Oscillations of a Concentrated Mass on a Ring Connected to a Thin Shell"

Abstract: This article presents a method for determining the frequencies of oscillations for a concentrated mass located on a ring connected to a thin spherical or cylindrical shell. The shells are considered to be momentless, the axis of the ring is considered nonextensible. Simple dependences are produced for determination of the frequencies of the complex systems. Experimental studies are presented on the oscillations of a concentrated mass on a ring connected to a cylindrical shell. The results of calculations and experiments agree with a high degree of accuracy.

1/1

USSR   UDC 620.10

CHIZHOV, V. F., Candidate of Technical Sciences, Associate
Professor

"Codeformation of a Thin Shell and a Ring Loaded From its Surface"
(Article presented by Candidate of Technical Sciences V. I.
Fedos'yev, Professor at the Moscow Higher Technical School imeni
N. E. Bauman)

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy. Mashinostroyeniye.
No 3, 1972, pp 5—12

Abstract: The codeformations of thin zero-moment spherical and
cylindrical shells and connected with them rings loaded from
their surface are analyzed, proceeding from a system of equati-
ons in which the two- and three-dimensional stress-strain condi-
tions are clearly divided. On the basis of analyses of disloca-
tions of the ring, dependent on its deformation by loading, reac-
tions of the shell, and the codislocation of shell and ring, func-
tions were derived characterizing the internal force factors and
the doslocations of the shell-ring system. From these functions,
the deformable system can be completely calculated and all shell
and ring characteristics determined for arbitrary external loa-
ding conditions. One illustr., 24 formulas, two biblio. refs.
1/1

USSR   UDC 620.10

CHIZHOV, V. F., Associate Professor, Candidate of Technical Sciences

"Deformation of a Ring Associated With a Thin Conical Shell"

Abstract: The joint deformation of a ring loaded in its plane and a thin conical shell is considered. It is assumed that the shell is a zero moment shell, that the ring deforms in its plane, and that the ring flexural rigidity in its own plane is substantially higher than from the plane. This assumption allows the consideration of the ring equations in a plane. Concise formulas are derived for determining the coefficients of tangential and normal displacements of ring points, and also coefficients of bending moments and displacement stresses in ring sections, in the presence of ring loading by a concentrated radial force at four different groups of boundary conditions. A passage to the limit from a truncated cone to a cylinder is correct in all formulas. The results show that a reduction of the angle leads to a significant reduction of displacements and bending moments in the transverse ring sections. In the case of concentrated force the nondimensional coefficient for determining displacements and moment coefficients are presented in tables.
1/1

Radar

USSR   UDC: 621.396.962.3

CHIZHOV, V. I., YEGOROV, V. V.

"Characteristics of Discriminators in the Case of Reflection of Radio
Signals From Extended Rough Surfaces"

Tr. Mosk. aviats. in-ta (Works of Moscow Aviation Institute), 1970, vyp.
208, pp 37-47 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G45)

Translation: The authors consider operation of a discriminator in radar
range finders with coherent and noncoherent signal processing. Circuits
are analyzed for a two-channel discriminator with range-detuned channels,
and a discriminator with switching of reference signals. Three illustrations,
bibliography of one title. N. S.

1/1

USSR

UDC: 621.396.96:621.371

CHIZHOV, V. I., NUZHDIN, V. M., YEGOROV, V. V., OVCHINNIKOV, Ya. Yu.

"Energy Characteristics of a Signal Reflected from an Extended Rough Surface"

Translation: The authors consider the energy characteristics of a reflected signal as a function of the statistical properties of the reflecting surface, the velocity vector of the aircraft, radiation patterns of the transmitting and receiving antennas, and parameters of the probing signal. The spectrum of Doppler fluctuations at the receiver output is calculated. The indeterminacy function is found for the reflected signal. It is shown that the energy spectrum of the signal at the receiver output is a convolution of the indeterminacy function of the probing signal and the transition-spectral characteristic of the surface. Six illustrations, bibliography of three titles. N. S.

1/1

USSR

UDC 620.10

CHIZHOV, V. F., Candidate of Technical Sciences, Docent, KULEMIN, V. B., Engineer

"Experimental Investigation of the Strength of a Frame Connected With a Thin Cylindrical Shell"

Moscow, Izvestiya Vysshykh Uchebnykh Zavedeniy, Mashinostroyeniye, No 12, 1970, pp 9-12

Abstract: A study is made of the simultaneous deformation of a circular frame and a thin cylindrical shell when the frame is loaded by two radial concentrated forces. It is shown that it is possible to use the calculated system of a zero-moment shell when the correct boundary conditions are observed. The research was conducted on shells with $R/h = 1000$. 3 figures (a table is included in Figure 3), 2 bibliographic entries in the form of footnotes.

1/1

USSR

UDC 681.327.11.621.391.8:519.27

SIDORENKO, V. V., CHIZHOV, Ye. Kh.

"The Recording of Random Processes by Means of a Digital Printer Based on Highly Durable Elements"

Tr. Metrol. In-tov SSSR (Works of Metrological Institutes of the USSR), No 126(186), 1971, pp 156-163 (from Referativnyy Zhurnal, Metrologiya i Izmeri-tel'naya Tekhnika, No 12, Dec 71, Abstract No 12.32.108)

Translation: A principle is proposed for constructing a device for the high-speed recording of data, represented in pulse-phase form, on a dynamic-type printer. In a printer of the dynamic type, considerable advantages are inherent in a pulse-phase code, since it is combined with selection of the printed sign with respect to time. 5 figures. 7 references.

1/1

- 91 -

USSR

CHIZHOV, Yu. A.

"Analysis of Capitalist Reproduction by Means of Small-Scale Regression Models"

V sb. Probl. postroyeniya i ispol'z. narodnokhoz. modeley (Problems of Constructing and Utilizing National Economic Models—collection of works), Novosibirsk, 1971, pp 142-270 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V439)

[No abstract]

1/1

TITLE--TELOMERIZATION OF ETHYLENE WITH METHYL PROPIONATE AND ETHYL
  ACETOACETATE -U-

AUTHOR-(03)-TERENTYEV, A.B., CHIZHOV, YU.P., BRAKHME, P.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (1), 176-8

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ACETATE, ETHYLENE, ALIPHATIC CARBOXYLIC ACID, CHEMICAL
  SEPARATION, GAS CHROMATOGRAPHY, CHEMICAL REACTION RATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0702   STEP NO--UR/0062/70/000/001/0176/0178

CIRC ACCESSION NO--AP0113566
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0113566
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TELOMERIZATION OF ETHYLENE (I)
WITH ETCO SUB2 H OR ETCO SUB2 ME IN THE PRESENCE OF TERT,BU SUB2 O GAVE
THE FOLLOWING PRODUCTS (PRODUCT, PERCENT IN MIXT. GIVEN):   (FORMULA
SHOWN ON MICROFICHE). THE LAST 2 PRODUCTS ARE FORMED BY REARRANGEMENT
OF II OR III. THE TELOMERIZATION OF I WITH ACCH SUB2 CO SUB2 ET IN THE
PRESENCE OF DICYCLOHEXYL PERCARBONATE GAVE A MIXT. CONTG. 59PERCENT
ACCHETCO SUB2 ET, 16PERCENT ACCHBUCO SUB2 ET, 18PERCENT ACCETBUCOS BU2
ET, AND 7PERCENT ACCET SUB2 CO SUB2 ET. ALL THESE PRODUCTS WERE SEPD.
AND IDENTIFIED BY GAS CHROMATOG.   FACILITY: INST. ELEMENTOORG.
SOEDIN., USSR.

UNCLASSIFIED

BERDENNIKOV, N. I., CHIZHOVA, M. V., and BELOZEROV, A. A.

"Concerning the Study of Some Effective Parameters of Real Media on the Basis
of Data of Seismic Observations in Boreholes"

Leningrad, Vopr. Dinamich. Teorii Rasprostr. Seysmich. Voln -- Sbornik (Questions
of the Dynamic Theory of the Propagation of Seismic Waves -- Collection of
Works), Nauka, No 11, 1971, pp 124-135 (from Referativnyy Zhurnal, Mekhanika,
No 2, Feb 72, Abstract No 2V795 by Ye. I. Lyuke)

Translation: Consideration is given to the possibility of utilizing some
effective parameters of a medium, that were obtained on the basis of vertical
seismic profiling, for refining an effective seismic model of a cross section.
A procedure is proposed for determining the effective coefficients of absorp-
tion for various intervals of the cross section, which are established with
joint analysis of the amplitude curves, the curve of the apparent resistences
ρ_K of the stratum velocities, and other physical and stratigraphic properties
of the cross section. The effective coefficient of absorption for a direct
wave α is determined according to the formula

$$\frac{A_i}{A_1} = \frac{L_1}{L_i} = \ell^{-\alpha (H_i - H_1)},$$

1/3

USSR

BERDENNIKOV, N. I., et al., Vopr. Dinamich. Teorii Rasprostr. Seysmich. Voln -- Sbornik, Nauka, No 11, 1971, pp 124-135

where H_i is the depth of the observation point, L_i/L_i is the relative geometric divergence of the direct-wave front. With such determination, in coefficient $\overline{\alpha}$ is included the effect of passage of the wave through thin layers; this effect is characterized by the passage coefficient $1 \pm k_i$. As a result of failure to account for thin stratification, $\overline{\alpha}$ may be overstated in comparison to the average stratum absorption $\sum H_i \alpha_i / \Delta H$, if the determination interval does not contain a gradient of accoustic rigidity, or if the accoustic rigidity increases with depth. If the determination interval is characterized by a negative gradient of accoustic rigidity, coefficient $\overline{\alpha}$ will be understated in comparison to the average-stratum coefficient of absorption. The effective absorption coefficient of a reflected wave $\overline{\alpha}'$ differs from $\overline{\alpha}$ due to a different direction of the incident ray and the reflected ray. Coefficient $\overline{\alpha}'_i$ is determined from the relationship of the amplitudes of the direct wave and the reflected wave at a given point of observation.

$$\frac{A_{refl}}{A_{dir}} = \frac{L_{dir}}{L_{refl}} \, K\,l^{-2\overline{\alpha}' - 2\Delta h},$$

2/3

USSR

BERDENNIKOV, N. I., et al., Vopr. Dinamich. Teorii Rasprostr. Seysmich. Voln --
Sbornik, Nauka, No 11, 1972, pp 124-135

where k is the coefficient of reflection from the boundary which shapes the
given wave; $\triangle$ h is the distance from the observation point to the reflecting
boundary. On the basis of observation at a series of points, it is possible
to determine the parameters of α' and k. Experimental determination of the
values of k, α and α', conducted within a large volume, showed that
the reflection coefficients k are determined with sufficient stability with an
error of 10-15%. A considerable difference is ascertained between the absorption
coefficients along a direct wave α and along a reflected wave α' for the
same intervals of cross section. The values of α considerably exceed the
values of α'. Consequently, when conducting calculations of wave fields, it
is necessary to introduce absorption parameters which depend upon the wave type.

3/3

ON THE PARTICIPATION OF DEXTRAN IN INTRACELLULAR METABOLIC REACTIONS IN PROXIMAL CONVOLUTED RENAL TUBULES

S. S. Chizhova, A. Z. Abidova

Laboratory of Electron Microscopy of the Uzbek Scientific Research
Institute of Hematology and Blood Transfusion

Using cytochemical and electron microscopic investigations the authors have demonstrated that upon administration to rats of dextran (polyglucin, SF-4 strain) for plastic and energetic purposes of intracellular metabolism in the proximal convoluted renal tubules only glucose is utilized, which appears during the splitting of polyglucin in the organism. Morphologically this is manifested by the formation of a complex of substances closely associated with cellular mitochondria. By comparing these data with the results of investigations, obtained earlier with the administration of protein and glucose, the authors arrived at the opinion that only organic substances are utilized for plastic and energetic purposes. The greater part of reabsorbed dextran is deposited in the cell, in the endoplasmatic reticulum in the form of large drops and does not participate in metabolic reactions of the cell.

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REEL/FRAME

19820447

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YAKUSHIN, V. I., CHIZHOVA, V. YA., RAKEVICH, S. Z., and PETROV,
I. N.

"Quality of Non-Aging Type 08Yu Steel Produced in a Dual-Bath Steelmaking Furnace"

Translation: The possibility is demonstrated of producing low-carbon non-aging type-08Yu steel in a dual-bath steelmaking furnace. The technology differs significantly from the ordinary open-hearth process.

It is characterized by high rates of oxidation during the finishing period, from 0.60 to 1.35%/hr (averaging about 1.00%/hr). Due to the rapid nature of the process, the period of pure bubbling is absent in the production of non-aging steel.

One distinguishing feature of melts in the dual-bath furnace is the increased degree of oxidation of the final slag.

The yield of rollable steel and the quality of end products are practically the same as for steel of the same type produced in open-hearth furnaces without blowing of oxygen through the bath.

1/1

- 26 -

UDC 669.183.218.5

USSR

TRUBETSKOV, K. M., TARASOV, V. M., ALYMOV, A. A., MOKRUSHIN,
K. D., TAT'YANSHCHIKOV, A. G., CHIZHOVA, V. YA., and YAKUSHIN, V.I.

"Material Balance of the Process in Dual=Bath and Open-Hearth Furnaces"

Translation: A method of determining the yield of usable steel and consumption
of metal charge is studied, as well as the methodology of experimental melts
with material balance. Data are presented on the consumption of iron in dual-
bath and open-hearth furnaces operating with intensive blowing of the bath with
oxygen. The yield of iron in a dual-bath furnace is 93.6%, in an open-hearth
furnace--93.5%. 2 tables; 3 biblio. refs.

1/1

7

TRUBETSKOV, K. M., TARASOV, V. M., ALYMOV, A. A., MOKRUSHIN,
K. D., TAT'YANSHCHIKOV, A. G., CHIZHOVA, V. YA., and YAKUSHIN, V.I.

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1/1

YAKUSHIN, V. I., CHIZHOVA, V. YA., RAKEVICH, S. Z., and PETROV,
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"Quality of Non-Aging Type 08Yu Steel Produced in a Dual-Bath Steelmaking Furnace"

Translation: The possibility is demonstrated of producing low-carbon non-aging
type-08Yu steel in a dual-bath steelmaking furnace. The technology differs sig-
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steel.
     One distinguishing feature of melts in the dual-bath furnace is the increased
degree of oxidation of the final slag.
     The yield of rollable steel and the quality of end products are practically
the same as for steel of the same type produced in open-hearth furnaces without
blowing of oxygen through the bath.

1/1   - 26 -

TITLE--ABSORPTION COEFFICIENT OF N-TYPE INDIUM ARSENIDE WITH VARIOUS
    DEGREES OF DOPING -U-

AUTHOR-(03)-CHIZHOVA, Z.V., RADCHENKO, R.A., TAUBKIN, I.I.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA I TEKHNIKA POLUPROVODNIKOV, VOL. 4, MAY 1970, P. 935-937

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--INDIUM ARSENIDE, ABSORPTION COEFFICIENT, SINGLE CRYSTAL,
    ELECTRON DENSITY

CONTROL MARKING--NC RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0883   STEP NO--UR/0449/70/004/000/0935/0937

CIRC ACCESSION NO--AP0136317
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0136317

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE SPECTRAL DEPENDENCES OF THE ABSORPTION COEFFICIENT OF INDIUM ARSENIDE SINGLE CRYSTALS WITH ELECTRON CONCENTRATIONS RANGING FROM 2 TIMES 10 TO THE 16TH TO 4.6 TIMES 10 TO THE 19TH PER CU CM AT TEMPERATURES OF 107 AND 300 K. SPECIMENS WITH CONCENTRATIONS OF 2 TIMES 10 TO THE 18TH PER CU CM AND ABOVE WERE DOPED WITH TELLURIUM, WHILE THOSE WITH CONCENTRATIONS OF 2 TIMES 10 TO THE 16TH AND 1.8 TIMES 10 TO THE 17TH PER CU CM WERE NOT SPECIALLY DOPED. WITH AN INCREASE IN THE ELECTRON CONCENTRATION A SHIFT IN THE LONG WAVE EDGE OF THE INTRINSIC ABSORPTION BAND TOWARD LOWER WAVELENGTHS, DUE TO THE BURSTEIN-MOSS EFFECT, IS OBSERVED, AS WELL AS AN INCREASE IN THE ABSORPTION COEFFICIENT DURING ABSORPTION BY FREE CARRIERS. A DEPENDENCE OF THE INTRINSIC ABSORPTION EDGE ON THE ELECTRON CONCENTRATION IS NOTED FOR CONCENTRATIONS GREATER THAN 8 TIMES 10 TO THE 17TH PER CU CM AT 300 K AND GREATER THAN 5 TIMES 10 TO THE 17TH PER CU CM AT 107 K.

UNCLASSIFIED

USSR   UDC: 577.3

AYT'YAN, S. Kh., CHIZMADZHEV, Yu. A., Institute of Electrochemistry, Academy
of Sciences of the USSR, Moscow

"Formalism of Correlation Functions for Describing Neuron Networks"

Abstract: A mathematical formalism is presented for describing neuron nets
with regard to the correlations between neighboring neurons. Expressions
are derived for the probability density functions of neurons with respect
to the elapsed time since the last excitation and for the probability of
neuron activity. Conditions of existence of a steady state are determined
for different probability density functions.

1/1

USSR   UDC 541.13

BURSHTEYN, R. KH., PSHENICHIKNOV, A. G., TARASEVICH, M. R., CHIZMADZHEV, YU. A., and CHIRKOV, YU. G., Institute of Electrochemistry Academy of Sciences USSR, Moscow

"Moisture Exchange in Hydrigen-Oxygen Cell with a Capillary Membrane. II. Cells with a High Moisture Capacity"

Abstract: Analysis of the moisture exchange process in hydrogen-oxygen element with a capillary membrane and with electrodes exhibiting buffering capacity makes it possible to determine certain advantages of the "open" system (moisture exchange occurs on both electrodes) in comparison to the "closed" system (the moisture exchange occuring only at the hydrogen electrode). When the moisture exchange is sufficiently large in open systems (in contrast to he closed systems), the volume of the liquid in the electrode does not depend on the current charge. Therefore in such a case there are no limitations in regard to the current magnitude in the element.

1/1

USSR   UDC 541.136

DRUZHININ, N. G., ONISHCHUK, V. A., and CHIZMADZHEV, YU. A., Moscow

"Anomalous Gas Flow Into a Liquid Through a Porous Hydrophobic Membrane"

Abstract: To achieve a stable performance of a fuel cell, it is necessary to
prevent gas leakage into the electrolyte chamber through the porous electrode.
Several authors noted that the reason for this process is due to the Stefan's
vapor stream from the liquid through the capillaries into the gas. In this
paper a quantitative theoretical treatment of this problem is given. Starting
with a capillary equilibrium situation in hydrophobic pore, three positions
are possible for the meniscus during gas expulsion of liquid from the capil-
lary. The pressure differential $\Delta p = p_g - p_l$ equals to $2\,\sigma \cos \theta / r_0$ for the
equilibrium situation, and increases to a maximum value of $2\,\sigma \sin \theta / r_0$,
finally dropping to zero after the meniscus reaches the external surface of
the capillary. Mathematical formulae have been developed describing this gas
leakage as a function of temperature.

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USSR

UDC 541.132

BURSHTEYI, R. KH., DRIBINSKIY, A. V., TARASEVICH, M. R.,
CHIZMADZHEV, YU. A., CHIRKOV, YU. G., Institute of Electro-
chemistry, Academy of Sciences USSR, Moscow

"Mechanism of Current Generation in Hydrophobic Gas-diffusion
Electrodes. I"

Abstract: In spite of the wide utilization of hydrophobic gas-
diffusion electrodes, the mechanism of their action has been
poorly studied. This study was aimed at theoretical analysis of
the mechanism of current generation in such electrodes and com-
parison with experimental results. The active layer of a hydro-
phobic electrode may be approximated by a model consisting of a
gas filled cylinder, its walls a mixture of fluoroplast and a
catalyst wetted with the electrolyte. With $\psi > 0.97$ the entire
surface of porous electrode generates current by an intrakinetic
regimen. The electrochemical activity of hydrophobic electrodes
calculated from derived equation and the one obtained experi-
mentally for the range $\psi = 1.07 \to 0.9$v were very close. The
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USSR

BURSHTEYN, R. KH., et al, Elektrokhimiya, Vol 7, No 12, Dec 71, pp 1826-1830

electrochemical activity of these electrodes is in direct linear relationship to the layer thickness at low polarizations. It has been determined that when $\eta < 1\text{-}1.5$, the current generation is controlled by the kinetic regimen and when $\eta > 8$--by the intra-diffusional regimen.

2/2

CHIZMADZHEV, YU. A.

Chemical Source

FIRST INTERNATIONAL SYMPOSIUM ON BIOELECTROCHEMISTRY

[Article by Doctor of Chemical Sciences Yu. A. Chizmadzhev, Moscow, *Khimiya i Zhizn'*, Russian, September 1971, pp 92-93]

The first International Symposium on Bioelectrochemistry, organized with the support of the International Committee for Electrochemical Thermodynamics and Kinetics, was held in September 1971 ...

Much attention was given to the thermodynamics of irreversible nonlinear processes which have a relation to biology and to the electrochemical thermodynamics of reactions of biologically active compounds. ...

- 118 -

USSR   UDC 577.37

CHIZMADZHEV, Yu. A., MARKIN, V. S., and KUKLIN, R. N., Institute of Electro-
chemistry, Academy of Sciences USSR, Moscow

"Relay-Race Transfer of Ions Through Membranes. II. Alternating Current"

Abstract: By applying the relay-race model of ion transfer, passage of an
alternating current through an artificial bimolecular phospholipid membrane
upon addition of inhibitors of oxidative phosphorylation is considered. The
same assumptions in regard to the membrane and the uncouplers are made as those
in a preceding study by the authors of the passage of a direct current
(Biofizika, Vol 16, No 2, 1971). Relationships between impedance of the mem-
brane and the effects of pH and frequency on capacitance and conductance are
derived. The transfer current upon rapid fixation of the potential on the
membrane is calculated. The results show that on assumption of an alternating
current the relay-race model leads to electrochemical properties of the mem-
brane that differ from those obtained on the basis of a mobile carrier model,
whereas the properties of the membrane are the same for either model if a di-
rect current is assumed. One can therefore determine, by carrying out measure-
ments with an alternating current, which of the two mechanisms corresponding
to the theoretical models of ion transfer is actually applicable.
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- 1 -

Electrochemistry

USSR   UDC 541.136

CHIZMADZHEV, YU. A., MARKIN, V. S., TARASEVICH, M. R.,
CHIRKOV, YU. G., Academy of Sciences USSR, Institute of
Electrochemistry

Moscow, Makrokinetika Protsessov v Poristykh Sredakh (Macrokinetics
of Processes in Porous Media), "Nauka," 1971, 364 pp

Translation of Annotation: The behavior of liquid and gas in
porous media is of interest in connection with a variety of problems
pertaining to underground hydro- and gas dynamics, mercury poro-
metry, and industrial chemistry. Of special urgency are the in-
vestigations of the processes in porous catalysts, where chemical
or electrochemical reactions take place against the background of
hydrodynamic phenomena. Fuel cells, which are highly promising
and are now being intensely developed, making it possible to
directly convert chemical energy into electric energy, can serve
as an example of such a system.

This book is devoted to the study of the mechanism of current
generation in electrochemical generators. It expounds in detail
the theory of capillary phenomena in porous media, the theory of

1/9

USSR

CHIZMADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh Sredakh, "Nauke," 1971, 364 pp

hydrodynamic mixing, etc., as well as the basic principles of the action of porous gas electrodes of fuel cells.

The book is intended for physicists, physical chemists, electrical chemists, and engineers interested in the phenomena occurring in porous media. It is of special interest to specialists working in the field of direct conversion of chemical energy into electric energy. This book can be useful to students of upper courses and to graduate students of the appropriate specialties.

Tables: 1. Illustrations: 261. Bibliography: 491 entries.

2/9

- 14 -

USSR

CHIZMADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh Sredakh, "Nauka," 1971, 364 pp

3/9

USSR

CHIZMADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh Sredakh, "Nauka," 1971, 364 pp

4/9

- 15 -

USSR

CHIZHMADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh
Sredakh, "Nauka," 1971, 364 pp

5/9

USSR

CHIZMADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh Sredakh, "Nauka," 1971, 364 pp

6/9

- 16 -

USSR

CHIZMADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh
Sredakh, "Nauka," 1971, 364 pp

USSR

CHIZHADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh Sredakh, "Nauka," 1971, 364 pp

8/9

- 17 -

USSR

CHIZMADZHEV, YU. A., et al, Makrokinetika Protsessov v Poristykh Sredakh, "Nauka," 1971, 364 pp

Biophysics

AYT'YAN, S. Kh., LEVICH, V. G., Corresponding Member, Academy of Sciences USSR,
MARKIN, V. S., and CHIZMADZHEV, Yu. A., Institute of Electrochemistry, Academy of
Sciences USSR, Moscow

"Generalized Model of Ion Transport Through Artificial Phospholipid Membranes"

Abstract: A generalized model of ion transport through artificial phospholipid
membranes is presented. Passage of electric current through the membrane is re-
garded as resulting from the direct passage of T particles, stagewise jumps of
A ions, and transport of A during the action of carrier membranes. In the
membrane, T and L ions can lie only on the boundary in certain potential wells,
and only one ion can be present in each well (ions can enter wells only on the
condition that the wells are vacant). Additionally, T and L ions may shift
from wells at the left margin to the opposite well on the right boundary, pro-
vided the shift is to a vacant well.

1/1

USSR   UDC 541.13

MARKIN, V. S., PASTUSHENKO, V. F., and CHIZMADZHEV, Yu. A., Institute of
Electrochemistry, Academy of Sciences USSR

"Propagation of a Pulse in the Electrokinetic Model of Nerve Fiber"

Abstract: Electrochemical systems with N-shaped current-voltage characteris-
tics attract much research, since they enable one to model the generation
processes and the propagation of nerve impulses. This article considers
an electroosmotic system which displays localized drop in the current-
voltage characteristics. The model system consisted of a two compartment
electrolytic cell separated by a membrane and containing two solutions of
different concentrations on the two sides of the membrane. The membrane
was polarized by a segmented electrode located some distance away from the
membrane in solution of lower concentration. In the experiment a constant
current density j_0 is imposed upon this segmented electrode. It was found
that propagation of the signal is determined not only by the properties
of the membrane, but also by the nature of the distribution of the potential
along the membrane. Equations were derived which describe the profile of
1/2

USSR

MARKIN, V. S., et al., Elektrokhimiya, No 3, Mar 71, pp 337-345

the potential along the membrane and changes of the concentration of the
electrolyte inside the membrane. Calculations are given for the rate of
the propagation of the potential step along the membrane as a function of
the parameters of the electroosmotic cell. The rate of propagation of the
signal is dependent on the polarization current and has the shape of
semiparabolas of different radius of curvature. From the formulae de-
scribing the rate of propagation of the impulse it is apparent that in
the discrete membrane system, which is analogous to myelinized fiber,
impulses propagated more rapidly than in the uniform membrane. In the
membrane consisting of small segments which are separated by short inter-
vals of the local current density on the active segments of the membrane
remain constant then the increase of the resistance of the membrane r by
a factor of α decreases the current density per unit length of the membrane
by a factor of α. Substituting changes of the current and resistance into
derived equations one finds that the rate of the propagation of the signal
is increased by a factor of $\alpha^{1/2}$.

2/2

USSR   UDC: None

CHKALOVA, V. P., RUBIN, A. L., PAKHOMOV, V. G., and POPOVICH, B. D.

"Electromagnetic Phase Method of Controlling the Thickness of
Nonmagnetic Conducting Coatings on a Ferromagnetic Base"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye
znaki, No 12, 1973, p 113, No 371413

Abstract: In this device, eddy currents are excited in the specimen
and the thickness of the latter's coating is obtained from the
phase of the voltage induced. A special choice of the exciting
transmitter's frequency and of the current frequency improves the
accuracy of the device and enables the operator to dispense with
a standard.

1/1

USSR

CHKALOVA, V. V., BONDARENKO, V. S., STEMBER, N. G., STRIZHEVSKAYA, F. N.,
FOKINA, G. O.

"Solid Solutions Based on Alkali Metal Niobates"

Abstract: The study of solid solutions based on alkali metal niobates is of
interest, since these materials have high piezoelectric properties plus high
sound propagation rates, an important factor for practical applications. In
this article, primary attention is concentrated on the investigation of trinary
solid solutions $(NaLiK)NbO_3$ and binary solid solutions $(NaLi)NbO_3$. The solid
solutions based on alkali metals were produced using the carbonate salts Na_2CO_3,
K_2CO_3, Li_2CO_3 and niobium pentoxide. Some of the dielectric, piezoelectric and
elastic properties of the binary and trinary solid solutions were studied. The
studies showed that in the system $(NaLi)NbO_3$, solutions with two and three
mol. % $LiNbO_3$ have the maximum piezoelectric and elastic properties. The com-
positions with the highest sound propagation velocities, lowest dielectric

1/2

- 80 -

USSR

Chkalova, V. V., Bondarenko, V. S., Stember, N. G., Strizhevskaya, F. N.,
Fokina, G. O., Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Mater-
ialy, No 6, Jun 73, pp 987.991.

constants and highest piezoelectric properties are determined. These materials
are most promising for use in high frequency ultra-acoustics. The solid solu-
tions studied have good temperature stability and a broad range of working
temperatures.

2/2

USSR

CHKANIKOV, D. I., MAKEYEV, A. M., PAVLOVA, N. N., and DUBOVOY, V. P., All-Union Scientific Research Institute of Phytopathology, Bol'shiye Vyazemy Moscow Oblast

"N-(2,4-Dichlorophenoxyacetyl)-L-Glutamic Acid, A New Metabolite of 2,4-D"

Abstract: A new metabolite, N-(2,4-dichlorophenoxyacetyl)-L-glutamic acid, was separated by paper chromatography along with N-(2,4-dichlorophenoxyacetyl)-L-aspartic acid from extracts of soya bean plants treated with 2,4-D-2-^{14}C. These conjugates of 2,4-D had the same mobility during paper chromatography in different solvents (20 were used). They were separated by gas-liquid chromatography. Both of these compounds were identified by UV, IR, NMR, and mass spectra. The compounds underwent complete hydrolysis in 6 N HCl at 100° in 2 hr yielding 2,4-D and equimolar amounts of aspartic and glutamic acids. Amino acid derivatives of 2,4-D were accumulated mainly in the treated leaves of soya and, presumably, were not transferred into other organs. The amino acid derivatives of 2,4-D were absent in the phloem sieve tubes of aphids feeding on soya bean plants treated with 2,4-D. It is assumed that the production of amino acid derivatives is one of the ways in which the soya leaf tissues immobilize the 2,4-D.   1/1

Abstract: Studies on the uredospores of the wheat stem rust agent, Puccinia graminis f. sp. tritici, showed high activities for β- glucosidase, α-galactosidase, α-mannosidase, acetyl esterase, and acid phosphatase; α-glucosidase was absent and β-galactosidase activity was relatively low. The activities of homogenates were not significantly higher than those of intact spores. Uredospores belonging to different races of this agent showed great variability to enzymatic activity, which may be related to virulence (ease of penetration into wheat tissues). Buds and primary hyphae showed high activities for β-glucosidase, α-galactosidase, and α-mannosidase.

1/1

Agriculture

USSR

UDC 581.13.04:632.95.024.4

CHKANIKOV, D. I., MAKEYEV, A. M., PAVLOVA, N. N., and DUBOVOY, V. P., All-Union Scientific Research Institute of Phytopathology, Bol'shiye Vyazemy, Moscow Oblast

"The Behavior of 2,4-D in Plants With Different Resistance to This Herbicide"

Abstract: In plants sensitive to 2,4-D (sunflower and mustard), the herbicide is quickly carried away from the leaves to which it is applied and accumulates in the growth tips and stalks, almost without being metabolized. In moderately sensitive plants (bean, soya, pea, coleus, beechwheat, and common lamb's-quarters), the herbicide is transported at a lower rate, and a portion of it is metabolized to low molecular-weight water-soluble or ether-soluble metabo-lites. In resistant plants (wheat, maize, plantain, lady's mantle, and strawberry), the herbicide remains in the leaves either in the initial, free form or conjugated with large molecules. Immobilization of the herbicide in the leaf tissue is one important mechanism of resistance, and this fixation can be achieved not only by conjugation but also by other means.

1/1

USSR

UDC: 51:621.391

KHARATISHVILI, N. G., CHKHEIDZE, I. M., ELIZBARASHVILI, I. M.

"Some Problems of Abbreviated Data Representation in Systems of Control, Measuring, and Monitoring"

Translation: The paper deals with the question of approximating continuous

signals $f(t)$, $t \in [0, 7]$ with the aid of functions $f^*(t) = \sum_{k=1}^{n} a_k \varphi_k(t)$, where $\{\varphi_k(t)\}$ is a

set of linearly independent functions and a_k are certain constants. It is shown that for signals $f(t)$ from the class of continuous functions or functions of the class $Lip_1 M$ the best uniform approximation with the limitation $\|f(t) - f^*(t)\| < \varepsilon$ can be realized by partial Fourier-Haar sums. It is further shown that selecting a Haar system as the basis of the functions in the case of additive interference $\xi(t)$ which is a stationary process with correlation

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USSR

KHARATISHVILI, N. G. et al., Inform. metody v sistemakh upr. izmereniy i kontrolya, t. 1, 1972, pp 48-53

function $a \exp \{-\beta\tau\}$, $\alpha > 0$, $\beta > 0$, gives the approximation greater inter-ference immunity than a trigonometric system or a system of Kotel'nikov readings.

2/2

USSR

GABASHVILI, N. V., KIRIYA, T. A., CHACHASHVILI, A. G., CHKHAIDZE, L. L.

"Use of Methods of Mathematical Programming for Optimization of Drilling Modes"

Primeneniye Metodov Matematicheskogo Programmirovaniya dlya Optimizatsii Rezhimov Bureniya [English Version Above], Tbilisi, Metsniyereba Press, 1971, 96 pages, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V480 K).

NO ABSTRACT.

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TITLE--APPLICATION OF THE PROBLEM OF MOMENTS TO THE CALCULATION OF THE
   DIRECTION OF TANGENTIAL DESCENT IN THE SOLUTION OF OPTIMUM CONTROL

AUTHOR--CHKHAIDZE, L.L.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK GRUZINSKOI SSR, SOOBSHCHENIIA, VOL. 58, APR. 1970,
   P. 45-48

DATE PUBLISHED----APR70

SUBJECT AREAS--MATHEMATICAL SCIENCES, PHYSICS

TOPIC TAGS--MATHEMATIC METHOD, OPTIMAL AUTOMATIC CONTROL, BANACH SPACE,
   ALGORITHM, AERODYNAMIC MOMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605018/E10 STEP NO--UR/0251/70/058/000/0045/0048

CIRC ACCESSION NO--AP0140870
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0140870   UNCLASSIFIED   PROCESSING DATE--11DEC70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DEVELOPMENT OF AN APPROACH TO THE
SOLUTION OF MATHEMATICAL PROGRAMMING PROBLEMS BY DETERMINING THE
DIRECTION IN WHICH A FUNCTION DECREASES MOST RAPIDLY AMONG POSSIBLE
DIRECTIONS LOCATED AT THE INTERSECTION OF HALF SPACES THAT ARE FORMED BY
PLANES TANGENTIAL TO A SET OF POSSIBLE SOLUTIONS. THIS CONCEPT (TERMED
THE DIRECTION OF TANGENTIAL DESCENT) IS EXTENDABLE TO PROBLEMS INVOLVING
THE MINIMIZATION OF A FUNCTIONAL IN REFLEXIVE BANACH SPACES FOR OPERATOR
CONSTRAINTS, AND TO CERTAIN OPTIMUM CONTROL PROBLEMS. THE APPROACH
PROPOSED IS BASED ON CONSTRUCTING ALGORITHMS FOR CALCULATING THE
DIRECTION OF TANGENTIAL DESCENT ON THE BASIS OF CHKHAIDZE'S (1969)
PROBLEM OF MOMENTS.   FACILITY: GRUZINSKII POLITEKHNICHESKII
INSTITUT, TIFLIS, GEORGIAN SSR.

UNCLASSIFIED

1/2 011
UNCLASSIFIED
TITLE--AN APPROACH TO OPTIMUM CONTROL PROBLEMS WITH OPERATOR CONSTRAINTS
PROCESSING DATE--13NOV70
-U-
AUTHOR--CHKHAIDZE, L.L.,

COUNTRY OF INFO--USSR

SOURCE--AKADEMIIA NAUK GRUZINSKOI SSR, SOOBSHCHENIIA, VOL. 57, JAN. 1970,
P. 41-44
DATE PUBLISHED--------70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--OPTIMAL AUTOMATIC CONTROL, APPROXIMATE SOLUTION, ALGORITHM,
DIFFERENTIAL OPERATOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/1453
STEP NO--UR/0251/70/057/000/0041/0044
CIRC ACCESSION NO--AP0118442
UNCLASSIFIED