USSR

KLIMENKO, V. V., GULENYUK, N. P.

"The Constancy of Motor Perceptions"

Moscow, Teoriya i Praktika Fizicheskoy Kul'tury, No 6, Jun 71, pp 28-31

Abstract: The purpose of this research was to determine some properties of the constancy of perceptions of complex coordinated movements of a ballistic type. The moving act was seen as man's psychological interaction of subject with object; physiological interaction as organism with outside environment; and mechanical: as inert mass displaced in the earth's gravitational field. The physical act selected was a jump upwards (one leg springing one leg moving in upper thrust). The experiment used 14 people, ages 18-25. Six hundred twenty tensograms were registered. Subjects were asked to attempt the highest possible leap; after noticeable decrease of jump height, subjects were asked to continue, but with the aim of the quickest possible leg thrust and subsequent halting of movement in that leg. Data showed that movement system characteristics change over a period of trial, but the subject's perception remains constant. He does not note changes in neuromuscular function and therefore does not correct for them; this cannot be explained on the basis of exhaustion alone. The article concludes that movement perception is

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USSR

KLIMENKO, V. V., GUMENYUK, N. P., Teoriya i Praktika Fizicheskoy Kul'tury,
No 6, Jun 71, pp 28-31

directly related to intellectual context; with changes in this context, man
understands the act of motion differently and perceives it differently. Per-
ception constancy is a factor which facilitates compensation for excess sen-
sory information; when sensory information is inadequate, it supplements dis-
torted perception through the elements resulting from movement effort.

2/2

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USSR

CLIMENYUK, V. M. , KUVSHINOV, G. Ye.

"An AC Differentiator With an Inductive Memory Device"

Translation: From the standpoint of the result produced, the most ef-
fective devices are those which realize direct differentiation of the
modulating function of a signal with provision for delay compensation
over a wide range of modulation frequencies. The simplest from the stand-
point of manufacturing and adjustment are AC differentiators with capaci-
tive memory. However, this type of memory has disadvantages which limit
the field of application. For instance, using it in a current feedback
loop involves an increase in losses to adjustment resistance; in addition,
precise adjustment is made more difficult due to discrete selection of
capacitance. These disadvantages are eliminated in the proposed AC dif-
ferentiator with inductive memory. The device is described, and the
results of an experimental check are given. Three illustrations, bibli-
ography of three titles. O. Sh.

1/1

AA0040714   GUMENYUK VP   UR 0482   /-75

Soviet Inventions Illustrated, Section I Chemical, Derwent,

240702   UREA PRODUCTION from NH3 & CO2, using
        converted natural gas as CO2 source, and
as H2 source for NH3 synthesis, is intensified and
energy losses reduced, by total or partial injection
of the converted natural gas feed at 30 kg/cm2
with ammonium carbonate solution and liquid ammonia
at 600-1000 kg/cm2 to absorb CO2 from the feed.
Part of the converted natural gas is compressed
and introduced at the base of the urea synthesis
tower, at a temp. higher than the temp. of synthesis,
and assists concentration of the urea melt.
6.7.67. as 1171649/23-26, GORLOVSKII, D.M. et al.
(12.8.69) Bul. 13/1.4.69. Class 12o, Int. Cl.
C 07c.

19750354

AA0040714

AUTHORS: Gorlovskiy, D. M.; Kucheryavyy, V. I.; Lebedev, V. V.;
           Al'tshuler, L. N.; Levenkova, N. I.; Mel'nikov, B. P.;
           and Gumenyuk, V. A.

19750355

USSR

UDC 621.79.027

AMONENKO, V. M., AZHAZHA, V. M., V'YUGOV, P. N., GUMENYUK, V. S., and
SIVOKON', V. V.

"The Possibility of Purification of Chemically Active Metals by Zone Melting"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory
and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 5-12

Translation: An installation is described for zone cathode ray melting of
zirconium with a residual pressure of $^{-}5 \cdot 10^{-8}$ torr. The heating chamber,
sealed with metal, is evacuated with two oil-vapor pumps with sorption traps.
Data are presented on the partial pressures of residual gases and their
changes as functions of the duration of operation of the installations with
the sorption traps. It is demonstrated that the use of the new 5F-4E vacuum
oil as a working fluid in the oil-vapor pumps is promising for the production
of vacuums of $^{-}4 \cdot 10^{-6}$ in metallurgical pipe installations. Data are pre-
sented on zone purification of zirconium in a vacuum of $7 \cdot 10^{-8} - 1 \cdot 10^{-7}$ torr.
5 Tables; 6 Figures; 2 Bibliographic references.

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- 11 -

USSR   UDC 678.5.06:620.173.23

GUMENYUK, V. S., and KRAVCHUK, V. S., Institute of Mechanics, Kiev
Academy of Sciences Ukrainian SSR

"Stability Study of Cylindrical Sheels Made of Glass Reinforced
Plastic "

Abstract: Experiments were carried out on the stability of cylin-
drical shells when subjected to compression forces. The shells were
prepared by winding the glass thread, or from glass cloth, or by a
combination of both methods. It was determined that with short
lasting stress at normal temperature the glass reinforced plastic
behaves as an elastic material obeying Hook's law. The ratio of
shear modulus to reduced resilience modulus exerts its greatest
effect on the value of critical stress for cylindrical glass rein-
forced plastic shells. Both the metallic and glass reinforced plas-
tic shells are very sensitive to manufacturing defects and, as a con-
sequence, experimental values for critical stress are much lower than
theoretical values. Contrary to metallic shells, the initial im-
perfections of glass reinforced plastic are less important, resulting
in differences in statistical distributions.

·1/1

TITLE--FASTENING METAL FLANGES TO FIBERGLASS SHELLS -U-

AUTHOR-(03)-BIGULA, B.A., GUMENYUK, V.S., SYTNIK, V.S.

COUNTRY OF INFO--USSR

SOURCE--KIEV, TEKHNOLOGIYA I ORGANIZATSIYA PROIZVODSTVA, NO 1, 1970, PP
  99-100
DATE PUBLISHED-------70

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

TOPIC TAGS--FIBERGLASS, SHELL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1338   STEP NO--UR/0418/70/000/001/0099/0100

CIRC ACCESSION NO--AP0123296
                        UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0123296
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT.   THE AUTHORS STUDY THE FASTENING OF
   METAL FLANGES TO FIBERGLASS SHELLS.   THE FASTENING IS ACCOMPLISHED BY
   WINDING.   A PARTICULAR FEATURE OF THIS CONSTRUCTION IS THE FASTENING OF
   THE FIBERGLASS SHELL, UNWEAKENED BY HOLES OR CUTS, TO METAL FLANGES
   USING CIRCULAR WEDGES.   THE ADVANTAGE OF THIS METHOD OF FASTENING IN
   COMPARISON TO EXISTING METHODS IS ITS SIMPLICITY AND THE PRESENCE OF
   CONCENTRATED STRESS IN THE FLANGE FASTENING JOINT ALONG WITH A CLEAR
   DETERMINING OF THE AREA OF LOADING.   THE ORIGINAL ARTICLE HAS ONE
   ILLUSTRATION AND TWO BIBLIOGRAPHIC ENTRIES.

UNCLASSIFIED

1/2   052
UNCLASSIFIED
PROCESSING DATE--09OCT70
TITLE--HIGH PRESSURE BALLOONS MADE FROM GLASS FIBER REINFORCED PLASTICS
-U-

AUTHOR-(05)-BIGULA, B.A., GUMENYUK, V.S., KARAMASH, N.P., KRISTUK, A.A.,
URBANSKIY, S.V.

COUNTRY OF INFO--USSR

SOURCE--MEKH. POLIM. 1970, 6(1), 149-52

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HIGH PRESSURE, BALLOON, GLASS FIBER, REINFORCED PLASTIC,
MATERIAL DEFORMATION, MECHANICAL STRENGTH, TEST METHOD/(U)HC55 6 250
GLASS, (U)EF64 REINFORCED PLASTIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/0025
STEP NO--UR/0374/70/006/001/0149/0152
CIRC ACCESSION NO--AP0114425
UNCLASSIFIED

2/2   052   UNCLASSIFIED   PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0114425
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CONSTRUCTION OF A FLATTENED
   ELLIPSOID BALLOON PREPD. FROM HC55-6-250 GLASS REINFORCED EF6-4 IS
   DESCRIBED. DEFORMATION, STRENGTH, AND CYCLIC TESTING DATA ARE GIVEN.
      FACILITY: INST. MEKH., KIEV, USSR.

UNCLASSIFIED

1/2   039   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MICROSTRUCTURE OF GLASS FIBER REINFORCED PLASTICS -U-

AUTHOR-(02)-GUMENYUK, V.S., YAGELSKIY, A.N.

COUNTRY OF INFO--USSR

SOURCE--PLAST. MASSY 1970, (6), 52-4

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GLASS FIBER, REINFORCED PLASTIC, ELONGATION, LIGHT
   INTERFERENCE, MICROSCOPY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0917   STEP NO--UR/0191/70/000/006/0052/0054

CIRC ACCESSION NO--AP0134646
                      UNCLASSIFIED

CIRC ACCESSION NO--AP0134646
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COLOR STREAKS OBSD. AT GREATER
   THAN 400 TIMES MAGNIFICATION ON THE SURFACE OF GLASS FIBER RESIN
   LAMINATES ARE CAUSED BY THE DELAMINATION OF THE SINGLE GLASS MONOFIBRILS
   AND BY LIGHT INTERFERENCE.   ELONGATION OF A SAMPLE TO 50-60PERCENT OF
   BREAKING LENGTH CAUSED INTENSIFICATION OF THESE LIGHT PATTERNS.
   EVIDENTLY THE DELAMINATION STARTS AT THIS ELONGATION STAGE.

UNCLASSIFIED

USSR

PUKHOV, G. Ye., Academician of the Academy of Sciences of the UkrSSR,
MAYERGOYZ, I. D., KATKOV, A. F., and GUMENYUK-SYCHEVSKIY, V. I., Institute
of Cybernetics, Academy of Sciences of the UkrSSR, Kiev

"On the Theory of One Class of Devices for Computer Input of Graphic Data"

Abstract: This paper deals with a class of devices for automatic input
of graphic information into a computer. Using conductive sheets of films,
the devices considered operate on the basis of modeling distributions with
a structure which is known and is as simple as possible. The only known
representative of this class is a device which utilizes a square conduc-
tive sheet in which time-alternating electric fields are set up in two
mutually perpendicular directions parallel to the sides of the square.
A pen (pencil) is used for time-sequential measurements of the voltage,
approximately proportional to the x and y coordinates, which are sent
through an analog-code converter to the computer and to a display. A
broader principle is introduced for improving this type of device. In
essence, this generalized principle is as follows. Two potential distri-
butions alternating in time and described by the equations
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USSR

PUKHOV, G. Ye., et al., DAN SSSR, Vol 200, No 1, Sep 71, pp 53-55

$$U = \varphi_1(x, y), \quad U = \varphi_2(x, y)$$

are set up in the conducting plate. The voltages U_1 and U_2 measured by the pen on each cycle isolate equipotential lines to which the contact point of the pen belongs on each cycle. The equations of these lines take the form

$$U_1 = \varphi_1(x, y); \quad U_2 = \varphi_2(x, y).$$

Solving this system, we find the coordinates of the point of contact of the pen as the coordinates of the point of intersection of the equipotentials. Two realizations of this generalized approach are presented. Two figures, bibliography of nine titles.

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USSR

GUMETSKIY, R. Ya., GURA, B. M., DERKACH, M. F., MISHIN, L. N.

"An Algorithm for Recognizing Simple Sentences"

Translation: The paper discusses an attempt to extend a model of word recognition in such a way as to enable recognition of meaningful sentences with simple grammatical construction compiled from a limited set of words. Indefinite decisions on words are made more precise by meaning analysis, and, when necessary, by reference to differentiating procedures of lower levels of the model. The result of sentence recognition is a sequence of words united by unity of meaning and compatible with the acoustic characteristics of the speech flow.

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USSR

GUMETSKIY, R. Ya., GURA, B. M., DERKACH, M. F., MISHIN, L. N.

"Algorithm for Recognition of Simple Phrases"

VI Vses. Seminar "Avtomat. Raspoznavaniye Slukhovykh Obrazov [ARSO VI)
Dokl. i Soobshch. [Sixth All-Union Seminar on "Automatic Recognition of
Auditory Patterns (ARSO VI), Reports -- Collection of Works], Tallin,
1972, pp 85-88 (Translated from Referativnyy Zhurnal, Kibernetika, No 1,
1973, Abstract No 1 V850 by the authors).

Translation: An attempt is studied to expand the model of recognition
of words so as to allow recognition of intelligent phrases with a simple
grammatic structure, composed of a limited set of words. Uncertain de-
cisions on words are refined by semantic analysis, and when necessary
by the use of differentiated procedures in the lower levels of the model.
The result of recognition of a phrase is a sequence of words combined
into a semantic unit and compatible with the acoustical characteristics
of the speech stream.

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USSR   UDC 621.039.53.001.5

GRADUSOV, G. N., GUMILEVA, M. G.

"Methodological Characteristics of a Laboratory Study of the Interaction of Structural Materials With Aqueous Coolant at High Parameters"

Translation: The interaction of structural materials with an aqueous coolant and the mechanism of processes occurring on the surface of various alloys in contact with the aqueous medium at high parameters were investigated, and their behavior under actual conditions was predicted. Studies conducted over many years concerning the interaction of aluminum and zirconium alloys with high-parameter aqueous coolants showed that comparable and reproducible results are obtained in installations of different types if the technique given is strictly observed, whereas   any deviations from the technique cause a sharp change in the research results. 2 ref.

1/1

- 51 -

1/2   030   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--AN INSTALLATION OF CARRYING OUT CORROSION TESTS WIT'! STATIC
   CONDITIONS IN THE HYPERCRICAL RANGE —U—
AUTHOR-(02)-GRADUSOV, G.N., GUMILEVA, M.G.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, DOKL. NAUCHNO-TEKHN. KONFERENTSII PO ITOGAM NAUCHNO,
REFERENCE--REFERATIVNYY ZHURNAL, TEKHNOLOGIYA MASHINOSTROYSINIYA, NO 12,
DATE PUBLISHED-------70

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

TOPIC TAGS--TEST METHOD, HIGH PRESSURE EFFECT, HIGH TEMPERATURE EFFECT,
   CORROSION RATE, STEAM BOILER, CORROSION R AND D, ELECTRIC POWER PLANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1982/1880   STEP NO--UR/0000/69/000/000/0028/0032

CIRC ACCESSION NO--AR0053027
                           UNCLASSIFIED

CIRC ACCESSION NO--AR0053027

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A REPORT IS MADE ON THE DEVELOPMENT OF AN EXPERIMENTAL INSTALLATION WHICH PERMITS TESTS OF STRUCTURAL MATERIALS TO BE CONDUCTED IN STATIC CONDITIONS WITHIN A BROAD INTERVAL OF TEMPERATURES AND PRESSURES. IT IS DESIGNED FOR THE POSSIBILITY OF OPERATING IN THE HYPERCRITICAL RANGE AT A PRESSURE OF 250 ATMOSPHERES AND A TEMPERATURE OF UP TO 550DEGREESC, BUT MAY ALSO BE USED IN TESTING SAMPLES IN THE SUBCRITICAL RANGE, IN SUPERHEATED STEAM AS WELL AS IN BOILING WATER. THE INSTALLATION CONSISTS OF THREE CONSECUTIVELY ENGAGED BASIC ELEMENTS: AN AUTOCLAVE, A STEAM GENERATOR, AND A MULTIPLIER. THE STRUCTURE OF ITS INDIVIDUAL SUBASSEMBLIES IS DESCRIBED IN DETAIL, AND SO IS THE METHOD OF CONDUCTING CORROSION TESTS. THE INSTALLATION HAS BEEN REGULARLY USED SINCE 1966 FOR THE CONDUCT OF LONG TERM CORROSION TEST. ANALYSES OF THE OPERATING CONDITIONS SHOWED THAT THE PRESSURE FLUCTUATIONS DO NOT EXCEED PLUS OR MINUS 5 ATMOSPHERES AND THE TEMPERATURE FLUCTUATIONS DO NOT EXCEED PLUS OR MINUS 5DEGREESC.

UNCLASSIFIED

Acc. Nr.: AP0046770

Ref. Code: UR0115

USSR

UDC 681.2.002.3

MINAKOV, A. G., ZOLOTAREVA, R. S., MINKO, N. I., ORLOVA, M. S., LITVINOV, A. V., and GUMILEVSKII, A. A.

"Introduction of Pyroceramics in the Instrument-Making Industry"

Moscow, Izmeritel'naya Tekhnika (Measurement Technology), No 1, 1970, p 107

Translation: At the Scientific Research Institute of Auto Glass, transparent and semi-transparent pyroceramics were synthesized, replacing the jewels used in the instrument-making industry. Information as presented on the course of tests and adoption of the pyroceramics. (1 table)

Reel/Frame
19790074

USSR   UDC 535.34

SMOLINSKIY, Ye. S., PALAMARYUK, V. Ye., DIMITRASHCHUK, A. T., and GUMINETSKIY,
S. G.

"Method of Investigation of Absorption Spectra of Colloidal Solutions Under
Deep Mode Conditions"

Abstract: The design and operating principle of a device for study of the
absorption spectra of colloidal solutions under deep mode conditions are
described. The solutions are illuminated from above, and the light receivers
consist of spherical and planar ground glass elements. The method of mea-
suring the index of absorption α of colloidal solutions using these receivers
is described. Results from determination of α for scattering media with
various concentrations of glass powder are presented.

1/1

USSR

UDC 669.71.053.4.094

AKSEL'RUD, G. A., ABRAMOV, V. YA., REYFMAN, E. D., SIMENISHIN, YE. M., GUMNITS-
KAYA, N. A.

"Extraction of Sodium Aluminate in Capillary Models"

Translation: Results are presented from a study of the process of extracting
sodium aluminate in hot solutions of various concentration at temperatures of 60,
75, and 90°. The values of the diffusion coefficient of sodium aluminate are
calculated on the basis of processing the experimental data. An explanation
is presented for the nature of variation of the magnitudes of the diffusion
coefficients based on the $Na_2O-Al_2O_3-H_2O$ system. There are 5 illustrations
and 1 table.

1/1

SENDZIMIR, Y., and GUMOVSKA, V., Department of Physical Chemistry
and Electrochemistry, Mining-Metallurgical Academy, Kracow, Poland

"Problems of Corrosion and Protection of Metal Powders"

Abstract: A review is presented of problems of corrosion and
protection of metal powders. The influence of the degree of
dispersion and nature of the surface of the metal powder parti-
cles on their thermodynamic properties and reaction kinetics is
studied. The investigations performed were designed to improve
the methods of studying corrosion processes and the properties
o f protection of metal powders and products made of these
powders against corrosion. 34 biblio refs.

1/1

USSR G UDC 621.778.07

GUN, G. Ya., POLUKHIN, P. I., BAYER, K., and BELOV, M. I.

"Calculating the Deformed State in Drawing Shaped Sections"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya,"
1970, pp 184-193

Translation: A description is given of an experiment to determine the picture
of metal flow in the transverse plane during the drawing of shaped sections.
On the basis of experimental data, a general method is developed for physical
modeling of metal flow in a transverse direction on the basis of the electro-
hydrodynamic analogy. Analytical and graphic methods of determining the
deformed state of the metal after drawing are worked out on the basis of the
use of conformal transformation and electrohydrodynamic modeling. Twelve
figures and four bibliographic entries.

1/1

USSR   UDC 621.777.07

GUN, G. Ya., POLUKHIN, P. I., YAKOVLEV, V. I., GOLOVINOV, M. F., PRUDKAVSKIY,
B. A., KORSETSKIY, G. M., RYZHOV, A. F., and BRUNILIN, A. I.

"Optimal Die Designing for Pressing Aluminum Alloys"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya,"
1970, pp 139-199

Translation: Questions of optimal die designing are considered using a
computer. On the basis of statistical processing of a number of existing
dies and theoretical and experimental research, a method is proposed for
calculating the working belts and location of the center of gravity of a
section on the die. Five figures and three tables.

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USSR   UDC 621.777.07.001.5

GUN, G. Ya., POLUKHIN, P. I., YAKOVLEV, V. I., YUROV, Yu. V., KORITSKIY,
G. M., PRUDKOVSKIY, B. A., and KUCHERYAYEV, B. V.

"Experimental Investigation of Speed Distribution During Pressing in Multi-
channel Matrices"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya,"
1970, pp 177-184

Translation: Results are given of experimental studies to determine the
speeds of metal flow into a matrix with several channels, which form an
established profile divided by crosspieces. Six figures and three tables.

1/1

USSR   UDC 621.777.01

GUN, G. Ya., POLUKHIN, P. I., SHCHERBEL', R. D., and GALKIN, A. M.

"A Technique for Determining the Stress-Deformation State Under Conditions
of Flat Extrusion"

Translation: The work considers the question of determining the stress-
deformation state under conditions of flat extrusion using flow theory.
In determining deformation speeds and hydrostatic pressure in the deforma-
tion area, the method of electrodynamic analogies was used. Curves of
deformation speeds and stresses in the deformation area were constructed
on the basis of the technique developed. The work contains references to
experimental confirmation of results obtained. Seven figures and four
bibliographic entries.

1/1

USSR   UDC 621.777.01

GUN, G. Ya., SHCHERBEL', R. D., and GALKIN, A. M.

"Calculating the Temperature Field of a Test Piece During Precipitation on a Plastometer"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 172-177

Translation: This article deals with the question of determining the temperature field of a test piece during precipitation on a plastometer. By solving the equation of heat conductivity by numerical and analytical methods, temperature fields are obtained on the basis of the height of the test piece being precipitated at different test speeds and degrees of deformation. In order to confirm the results, an experimental investigation was made on increasing temperature when testing cylindrical specimens made of the AMC6 alloy. Four figures and five bibliographic entries.

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USSR   UDC 621.777.07.001.5

GUN, G. Ya., POLUKHIN, P. I., RUTMAN, G. G., SKUGAREV, V. I., and KOSYREV,
V. K.

"An Experimental Investigation of the Speeds of Effusion During Pressing in
Two-Channel Dies"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya,"
1970, pp 208-211

Translation: While developing the optimal design of pressing dies, it was
necessary to make a series of experiments to analyze the kinematic conditions
of the process. In this work, the influence of the ratio of the areas and
shape of orifices in a flat two-channel die on the exit speed of sections
being pressed is studied. A method is developed for measuring the speeds
of metal effusion. The results obtained are evidence of the slight influ-
ence of section shapes on the nature of change in the speed as a function
of the ratio of their section areas. A significant difference in metal
effusion manifests itself where the ratio of areas is greater than two.
Four figures and one bibliographic entry.

1/1

Forming

USSR   UDC 621.777.53.072

GUN, G. Ya.

"Mathematical Modelling and Optimization of the Compacting Process"

Moscow, Plasticheskaya Deformatsiya Metallov i Splavov, "Metallurgiya"
Publishing House, No 64, 1970, pp 7-15

Translation: The problems of creating a mathematical model of the compacting
process are considered. A model is realized on the Minsk-22 computer. As a
result of calculations, it is possible to obtain the force of compacting and
a distribution of velocities of effusion from the different channels during
compacting in multichannel matrices. This technique is used to optimize the
design of compaction matrices. Seven illustrations, two bibliographic
entries.

1/1

"Mathematical Modeling of the Cutting Process"

Translation: In this article, the method of using potential fields to
analyze the process of chip formation during cutting is considered. Analytical
formulas are obtained for calculating the power parameters of the process.
Minimizing the function received makes it possible to determine the optimal
value of the back rake angle of the cutting tool in different cutting modes.
Seven illustrations, 12 bibliographic entries.

1/1

USSR   UDC: 621.774.31

POTAPOV, I. N., POLUKHIN, P. I., GUN, G. Ya., and AKHMEDSHIN, R. I.

"Questions of Optimizing the Process of Piercing on Cross-Screw Rolling Mills"

Moscow, Plasticheskaya Deformatsiya Metallov i Splavov, "Metallurgiya" Pub-
lishing House, No 64, 1970, pp 23-28

Translation: The article considers the problem of using the mathematical
theory of planning an experiment to determine the optimal value of mill pro-
ductivity considering all factors influencing the process and limitations
superimposed on the conditions under which cross-screw rolling occurs. The
mathematical theory of the experiment makes it possible to work out principles
of continuous optimal control over the process of cross-screw rolling with due
regard for changes in the process related to the action of various uncontrolled
factors. Two illustrations and 10 bibliographic entries.

1/1

Superalloys

USSR   UDC 669.14.018.45-13:621.771.0.14:539.374

GUN, G. YA., POLUKHIN, P. I., SKUGOREV, V. S., GALKIN, A. M.,
ZHUCHIN, V. N., ISAYEV, V. A., KARLOV, S. V., and ZAPOROZHTSEV,
YU. V., Moscow Institute of Steel and Alloys

"Investigation of the Resistance to Deformation and the Indi-
cators of Plasticity of Heat-Resistant Alloys on a Nickel
Base"

Abstract: In this article the authors cite the results of an
investigation on resistance to deformation of heat-resistant
alloys EP199, EP220, and EI929 on a nickel base in wide temp-
erature range and deformation rate. They have constructed
curves for the change in the indicators of plasticity in a
broad range of temperature-rate conditions of deformation.

1/2

USSR

GUN, G. YA., et al., Izvestiya VUZ, Chernaya Metallurgiya, No 11, 1973,
pp 92-97

     The research was carried out because of the reality
at the present time for knowledge of the behavior of materials
with respect to resistance to deformation and indicators of
plasticity in a range that varies broadly for the temperature
and rate of deformation.

     The first three illustrations depict curves of defor-
mation resistance of the above alloys as a function of the
size and amount of deformation at various temperatures. The
fourth figure shows change in values of ψ and δ of these heat-
resistant alloys as a function of temperature and rate of de-
formation.

     The article contains four illustrations and 3 biblio-
graphic references.

2/2

1/2   028   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--CALCULATING THE THERMAL EFFECT OF PLASTIC DEFORMATION IN HIGH
   VELOCITY TESTS -U-
AUTHOR-(04)-POLUKHIN, P.I., GUN, G.YA., SHCHERBIL, R.D., GALKIN, A.M.

COUNTRY OF INFO--USSR

SOURCE--IZVEST. AKAD. NAUK SSSR, METALLY, MAR.-APR. 1970 (2), 171-175

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PLASTIC DEFORMATION, THERMAL EFFECT, ALUMINUM ALLOY,
   MATHEMATIC EXPRESSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/1163   STEP NO--UR/0370/70/000/002/0171/0175

CIRC ACCESSION NO--AP0130191
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0130191

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERMAL EFFECTS RESULTING FROM
   HIGH SPEED PLASTIC DEFORMATION (UPSETTING) OF CYLINDRICAL METAL PARTS
   ARE DISCUSSED THEORETICALLY. THE TEMP. DISTRIBUTION IN SUCH SAMPLES
   DIFFERS ONLY SLIGHTLY FROM THAT ASSOCIATED WITH ADIABATIC DEFORMATION.
   FOR LOW DEFORMATION VELOCITIES THE TEMP. FIELD IS NONUNIFORM. NUMERICAL
   SOLUTION OF THE EQUATIONS GOVERNING THESE CHANGES TENDS TO MAKE THE
   SAMPLE TEMP., IN GENERAL, TOO HIGH. IN THE CASE OF THE COMPRESSION OF
   AL ALLOYS, IN PARTICULAR, THE THERMAL EFFECTS MAY GIVE A FALSE
   IMPRESSION OF THE DEFORMATION RESISTANCE.

UNCLASSIFIED

USSR   UDC 632.95

GUNAR, M. I., MIKHALYUTINA, Yk. B., SHVETSOVA-SHILOVSKAYA, K. D., and
MEL'NIKOV, N. N.

"Method of Preparing O,O-Dialkyl-O-acylnaphthyl Phosphates or Thiophosphates"

USSR Authors' Certificate No 257501, filed 5 Nov 67, published 20 May 70
(from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N565P)

Translation: Compounds possessing pesticidal activity of the formula
(RO)(R'O)P(X)OY ($\underline{I}$) (R and R' = lower alkyl; X = O or S; Y = 1-acetylnaph-
thyl-2) are obtained by the reaction of (RO)(R'O)P(X)Cl with acetylnaphthol
($\underline{II}$) or naphtholate in the presence of K_2CO_3 or NaOH at 70-110° in organic
solvent. For example, 0.62 g Na is added to a solution of 5 g $\underline{II}$ in 50 ml
MePh at 90° and stirred 30 min; the unreacted Na is removed; at 100° 5.1 g
$(EtO)_2P(S)Cl$ is added and heated 8 hr at 110°. On cooling, 50 ml water is
added; the organic layer is rinsed with saturated solution of K_2CO_3 and
water, and dried over $MgSO_4$; the solvent is distilled off, to yield after
distillation $\underline{I}$ (R = R' = Et; X = S), yield 63%, boiling point 159-62°/0.14 mm,
d_4^{20} 1.2003, n^{20}_D 1.5740. The following $\underline{I}$'s are prepared analogously with
a yield of 40-45% (given here are: R = R^T, X, boiling point in °C/mm,
1/2

USSR

GUNAR, M. I., et al., USSR Authors' Certificate No 257501, filed 5 Nov 67, published 20 May 70 (from RZh-Khimiya, No 1, 10 Jan 71, Abstract No 1N565P)

d_4^{20}, n^{20}D): Me, S, 172-5/0.2, 1.2544, 1.6050; Me, 0.156-8/0.18, 1.3548, 1.5630; Et, 0, 155-60/0.1, 1.2177, 1.5465. A mixture of 3.72 g II in 50 ml PhMe, 3.49 g (MeO)(EtO)P(S)Cl and 2.9 g K_2CO_3 is heated 7 hr at $90°$ to yield I (R = Me; R' = Et; X = S), boiling point 170-3°/0.2 mm, d_4^{20} 1.2396, n^{20}D 1.5850.

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- 21 -

UDC 612.176-053

USSR

MISHCHENKO, V. S., and GUNYADI, B. K., Institute of Physiology imeni O. O. Bogomolets, Academy of Sciences, Ukrainian SSR Kiev

"Cardiac Output in Children and Adolescents After Submaximal Exercises"

Abstract: The minute volume of blood, some other parameters of hemodynamics, and oxygen transport function were measured in children 8 to 15 years of age (and in adults for purposes of comparison) after submaximal exercise on an ergometer bicycle when oxygen consumption and functional changes in the circulatory system are close to the maximal indexes. The possibilities of central circulation were found to increase substantially in children while the utilization of oxygen from the blood changes only slightly at this age. Hence the reserve capacity for increased oxygen consumption in children is related to more the circulatory factors responsible for the low utilization of oxygen from blood than to the capabilities of central circulation. The period from adolescence to adulthood, however, is characterized by an increase in central circulation, oxygen transport by blood, and utilization of oxygen from blood.

1/1

UDC 632.95

USSR

SHAPOVALOVA, G. K., ROMANOVA, V. V., MARCHENKO, L. F., GULAR, ..I. SHUMYATSKAYA, T. N., MIKHALYUTINA, YE. B., SHVETSOVA-SHILOVSKAYA, K. D., and MEL'NIKOV, N. N.

"Insecticide"

USSR Authors' Certificate No 244800, filed 9 Feb 68, published 15 Jan 70, (from RZh-Khimiya, No 20 (II), 25 Oct 70, Abstract No 20 N547P by S. LYUBARSKAYA)

Translation: The authors suggest as insecticides compounds of the formula $(RO)(R'O)P(X)(OR'')$ (I; R and R' = Me, Et; R'' = acetyl-, halogen- or alkyl-substituted phenyl or naphthyl; X = 0 or S), which are obtained by the interaction of dialkyl chlorophosphates or thiophosphates with the corresponding phenols or naphthols or phenolates in MeCN with K_2CO_3 at 75-80° or in an inert solvent at 90-110°. The following are obtained: I (R = R', R'' = substituted phenyl; given are R, substituents in the phenyl ring, X, boiling point in °C/mm, d_4^{20}, $n^{20}D$): Me, 2-Ac, S, 120-6/0.14, 1.2465, 1.5372; Et, 2-Ac, S, 110-4/0.09, 1.1911, 1.5271; Et, 3-Ac, S, 120-4/0.1, 1.1378, 1.5260; Me, 4-Ac, 0, 124-30/0.08, 1.2539, 1.5070; Et; 4-Ac, 0, 130-3/0.1, 1.1846, 1.4970; Me, 4-Ac, S, 120-3/0.08, 1.2648, 1.5445; Et, 4-Ac, S, 127-30/0.08, 1.1822, 1.5280; Me,

USSR

SHAPOVALOVA, G. K., et al., USSR Authors' Certificate No 244300

2-Ac-4-Cl, S, 136-43/0.15, 1.3519, 1.5510; Et, 2-Ac-4-Cl, S,
126-30/0.13, 1.2531, 1.5295; Et, 2-Ac-5-Cl, S, 125-7/0.1, 1.2542,
1.5325; Me, 2-Ac-6-Cl, 0.127-9/0.11, 1.3555, 1.5118; Me, 4-Ac-2Cl,
0.152-3/0.15, 1.3556, 1.5218; Et, 4-Ac-2-Cl, 0, 159-61/0.12, 1.2699,
1.5094; Me, 4-Ac-2-Cl, S, 133-43/0.18, 1.3463, 1.5538; Me, 2-Ac-4-Me,
S, 133-8/0.15, 1.2340, 1.5405; Me, 2-Ac-5-Me, S, 132-8/0.17,
1.1864, 1.5388; Me, 4-Ac-2-Me, S, 153-6/0.18, 1.2400, 1.5465;
Et, 4-Ac-3-Me, 0, 150-1/0.2, 1.1740, 1.5015; Me, 4-Ac-3-Me, S,
155-61/0.22, 1.2404, 1.5442; Et, 4-Ac-3-Me, S, 152-4/0.2, 1.1656,
1.5290; Me, 2-Ac-4-Me2, S, 130-2/0.05, 1.1927, 1.5380; Et, 2-Ac-4,
5-Me2, S, 135-40/0.05, 1.1312, 1.5200; Et, 2-EtCO, 0, 130-2/0.1,
1.2565, 1.4930; Me, 4-EtCO, 0, 149-52/0.08, 1.2273, 1.5070; Me,
4-EtCO, S, 142-7/0.1, 1.2264, 1.5420; I (R = Me, R' = Et, X = S;
R" = substituted phenyl; given here are substituents in the phenyl
nucleus, boiling point in oC/mm, d4^20, n^20D): 4-Ac, 121-4/0.1,
1.2338, 1.5368; 2-Ac, 120-4/0.18, 1.2245, 1.5318; 4-Ac-2,5-Me2,
156-8/0.05, 1.1896, 1.5375; 4-EtCO, 148-52/0.1, 1.195, 1.5321;
I (R" = 2-acetylnaphthyl; given here are R, R', X, boiling point
In oC/mm, d4^20, n^20D): Me, Me, 0, 156-7/0.18, 1.3543, 1.5630;
Et, Et, 0, 155-60/0.1, 1.2177, 1.5465; Me, Et, S, 170-3/0.2,

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USSR

SHAPOVALOVA, G. K., et al., USSR Authors' Certificate No 244800

1.2396, 1.5850; Et, Et, S, 159-62/0.14, 1.2003, 1.5740. I's are approximately as active as chlorophos against Musca domestica, Calandra orycae and Porthetria dispar and have low toxicity for warm-blooded animals.

3/3

USSR   UDC 542.91:547.854.4

ZAV'YALOYE, S. I., GUNAR, V. I., and OVECHKINA, Institute of Organic Chemistry
imeni N. D. Zelinskiy, USSR Akademy of Sciences

"The First Case of O^2-Alkylation of 1-Substituted Uracils"

Moscow, Izvestiya Akad. Nauk SSSR, Seriya Khimicheskaya, No 1, Jan 72,
pp 210-211

Abstract (letter to editor): The writers claim to have established that
alkylation of 1-substituted uracils can be directed to the oxygen atom with
C^2, provided $(CH_3)_2CHI$ (YP) is used as the alkylating agent, and also that
$(CH_3)COH$ (TB) is used as the solvent. A structural scheme for the reaction
is included in the letter.

1/1

Nitrogen Compounds

UDC $542.974 + 547.857$

USSR

GRACHEVA, YE. P., VOLKOVA, Z. S., GUNAR, V. I., ARUTYUNYAN, E. A., and ZAV'YALOV, S. I., Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences USSR

"Methods for Activation of Purine and Pyrimidine S-Methylmercapto Derivatives in Reactions With Weakly Nucleophilic Compounds"

Abstract: The article considers methods for the activation of 6-methylmercaptopurine (I) in reactions with aromatic amines, based on the drawing off of electrons from the sixth carbon atom of I by complexing with Lewis acids and the introduction of an electron-acceptor group into the molecule of I. The Lewis acids studied were $HgCl_2$, $CuCl_2$, $FeCl_3$, BF_3, $ZnCl_2$, $CoCl_2$, $MnCl_2$ and $NiCl_2$. The strongest catalytic properties were found in $HgCl_2$. The use of $HgCl_2$ permits a sig-

1/2

USSR

GRACHEVA, YE. P., et al., Izvestiya Akademii Nauk SSSR, Seriya Khimi-
cheskaya, No 2, Feb 70, pp 420-423

nificant decrease in the reaction time for I with such aromatic
amines as aniline and p-chloroaniline. Activation of I in the amina-
tion reaction also results from the introduction of an acetyl group in
the ninth position of I. Attempts to activate the molecule of S-meth-
yl-6-methyl-2-thiouracil in reactions with nucleophilic compounds were
less successful. It was found that $HgCl_2$ does not have any signifi-
cant catalytic effect on the amination of S-methyl-6-methyl-2-thio-
uracil with aniline. The alcoholysis of S-methyl-6-methyl-2-thio-
uracil and S-methyl-2-thiouracil by n-butanol in the presence of $HgCl_2$
and pyridine gives low yields.

2/2

USSR

UDC 542.91 + 547.854.4

ARUTYUNYAN, E. A., GUNAR, V. I., and ZAV'YALOV, S. I., Institute of
Organic Chemistry imeni N. D. Zelinskiy, Moscow, Academy of Sciences
USSR

"Peculiarities of the Reaction of Uracils and Phosphoric Acid Amides"

Abstract: The authors studied conditions for direct amination of
uracyl and related structures with phosphoric acid amides. The re-
action gives high yields of 2,4-diaminopyrimidines when it is carried
out at 215-240° for 10-90 min in the presence of traces of acids.
Amine hydrochlorides and POCl$_3$ may be used as catalysts. Uracils
unsubstituted at the nitrogen atom, 2,6-dimethyl-4-hydroxypyrimidine,
and hypoxanthine give smoothest reactions with O:P(NR$_2$)$_3$(I). The
amides of phosphoric acid may vary in their alkyl substituents. The
authors believe that the reaction of (I) with the amide function
occurs as a 1,2-addition through a four center intermediate structure.
The authors thank V. A. KOREMEVSKIY for his spectrum research.

1/1

USSR   UDC 542.91 + 547.057

ARUTYUNYAN, E. A., GUNAR, V. I., and ZAV'YALOV, S. I., Institute of
Organic Chemistry imeni N. D. Zelinskiy, Moscow, Academy of Sciences
USSR

"New Synthesis Method for 6-Aminopurines"

Abstract: A new synthesis of 6-aminopurines was developed by direct
amination of hypoxanthine (I) or its derivatives with phosphoric
acid amides. For example, (I) heated with $O:P(NH_2)_2OC_6H_5$ at 235°
gave adenine, m.p. $> 300^\circ C$; (I) heated with $O:P(NHCH_2C_6H_5)_3$ at 230-
235° gave 6-benzylaminopurine, m.p. $205-206^\circ$; 9-benzylhypoxanthine
(II) heated with $O:P(N(CH_3)_2)_3$ at $200-225^\circ$ gave 6-dimethylamino-9-
benzylpurine, m.p. $127-129^\circ$; (II) heated with $O:P(NHC_6H_5)_3$ at 220-
235° gave 6-anilino-9-benzylpurine, m.p. $180-182^\circ$; and finally
xanthene heated with $O:P(N(CH_3)_2)_3$ gave 2,6-bis-(dimethylamino)-
purine, m.p. $233-237^\circ$.

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1/2   010   UNCLASSIFIED   PROCESSING DATE--13NOV70

TITLE--REACTION OF URACILS WITH PHOSPHORIC ACID AMIDES -U-

AUTHOR-(03)-ARUTYUNYAN, E.A., GUNAR, V.I., ZAVYALOV, S.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (4), 904-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--URACIL, PHOSPHORIC ACID, AMIDE, CHEMICAL REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/0444   STEP NO--UR/0062/70/000/004/0904/0909

CIRC ACCESSION NO--AP0131083
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0131083
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMINE HCL AND POCL SUB3 CATALYZE
   THE REACTIONS OF URACILS WITH AMIDES OF PHOSPHORIC ACID IN WHICH
   POSSIBLY THE CARBONYL FORMS OF URACILS TAKE PART THROUGH A 4 CENTER
   REACTION INTERMEDIATE. HEATING URACIL WITH ME SUB2 NH. HCL AND (ME SUB2
   N)SUB3 PO 1 HR AT 235DEGREES GAVE 75PERCENT 2,4 BIS(DIMETHYLAMINO)
   PYRIMIDINE, M. 39-41DEGREES; WITHOUT ME SUB2 NH.HCL THE YIELD WAS BUT
   56PERCENT IN 2.5 HR. (FORMULAS SHOWN ON MICROFICHE).   FACILITY:
   INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

1/2   008   UNCLASSIFIED   PROCESSING DATE--23OCT70
TITLE--ACTIVATING METHYLTHIO DERIVATIVES OF PURINE AND PYRIMIDINE IN
   REACTIONS WITH WEAKLY NUCLEOPHILIC COMPOUNDS -U-
AUTHOR-(05)-GRACHEVA, YE.P., VOLKOVA, Z.S., GUNAR, V.I., ARUTYUNYAN, E.A.,
   ZAVYALOV, S.I.
COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 420-3

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--URACIL, PURINE, PYRIMIDINE, HYDROGEN SULFIDE, COMPLEX COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/0854   STEP NO--UR/0062/70/000/002/0420/0423

CIRC ACCESSION NO--AP0119758
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0119758
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 6,METHYLTHIOPURINE (I) AND HGCL
    SUB2 IN ETOH GAVE A 1:1 COMPLEX, DEOCMPD. 215-18DEGREES, WHICH WITH H
    SUB2 S REGENERATED THE PURINE. PHNH SUB2 AND HGCL SUB2 WITH I GAVE
    77PERCENT 6,ANILINOPURINE, M. 284-6DEGREES, WHILE RHO-CHLOROANILINE GAVE
    6,(RHO,CHLOROANILINO) PURINE, M. 317-19DEGREES. I AG SALT AND ACCL IN C
    SUB6 H SUB6 GAVE THE 9,AC DERIV. OF I, M. 134-6DEGREES, WHICH WITH PHNH
    SUB2 3 HR AT 110DEGREES GAVE 45PERCENT 6,ANILIO, 9,ACETYLPURINE, M.
    271-2DEGREES, WHILE HOLDING WITH AQ. MENH SUB2 2 HR GAVE 71PERCENT
    6,METHYLAMINO,9,ACETYLPURINE, M. 219-21DEGREES. S,
    METHYL,6,METHYL,2,THIOURACIL AND HGCL SUB2 TREATED WITH BUOH IN THE
    PRESENCE OF PRIDINE 6 HR AT REFLUX GAVE 37PERCENT 2,BUTOXY,4,
    HYDROXY,6,METHYLPYRIMIDINE, M. 87-8DEGREES, WHICH WITH AQ. HCL GAVE
    6,METHYLURACIL. SIMILARLY, S,METHYL,2,THIOURACIL GAVE 2,
    BUTOXY,4,HYDROXYPYRIMIDINE, M. 85-6DEGREES. THUS, HGCL SUB2 CATALYZES
    AMINATION OF I AND ALCOHOLYSIS OF S-ME THIOURACILS.   FACILITY:
    INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

TITLE--A STUDY OF POSTRADIATION DAMAGE IN SUBMOLECULAR STRUCTURE OF DNA
  UNDER DIFFERENT RADIATION CONDITIONS -U-

AUTHOR-(03)-PINTO, R.I., BARENFELD, L.S., GUNCHEV, KH.Z.

COUNTRY OF INFO--USSR

SOURCE--TSITOLOGIYA; 12: 343-51 MAR 1970

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, RADIATION DAMAGE, FLUORESCENCE, THYMUS GLAND, HYDROGEN
  BONDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/2022   STEP NO--UR/9053/70/012/000/0343/0351

CIRC ACCESSION NO--AP0120665
                            UNCLASSIFIED

CIRC ACCESSION NO--AP0120665

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHANGES IN THE VISCOSITY AND INTENSITY OF A SECONDARY FLUORESCENCE OF PREPARATIONS OF DNA SUBMOLECULAR STRUCTURES ISOLATED FROM THE RAT THYMUS AFTER IRRADIATION IN VIVO WERE INVESTIGATED USING DIFFERENT DOSES AND RADIATION REGIMES. THE INTENSITY OF THE SECONDARY FLUORESCENCE WAS MEASURED THROUGHOUT A GRADUAL INCREASE OF THE PREPARATION TEMPERATURE FROM 20 TO 60DEGREESC. THE RESULTS SUGGEST THAT DAMAGES TO DNA OBSERVED DURING IRRADIATION ARE CAUSED BY DESTRUCTION OF SUBMOLECULAR STRUCTURES AND LOCAL DAMAGES IN THE SYSTEM OF HYDROGEN BONDS. THE TESTED PROPERTIES OF DNA DEPENDED ESSENTIALLY ON THE EVENTS OCCURRING IN THE CELLS IMMEDIATELY AFTER IRRADIATION. THEREFORE, A SECONDARY IRRADIATION WITH 5 TO 15 MINUTE INTERVALS ALTERED THE PATTERN OF RADIATION DAMAGE, WHEREAS AN IRRADIATION WITH 30 MINUTE INTERVALS RESULTED IN THE ACCUMULATION OF DAMAGE.   FACILITY: INST. OF CYTOLOGY, LENINGRAD.

UNCLASSIFIED

1/2   018   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--CACLUATION OF THE INTENSITY OF BREMSSTRAHLUNG FOR X RAY TUBES -U-

AUTHOR-(05)-AFONIN, V.P., LOSEV, N.F., PAVLINSKIY, G.V., GUNICHEVA, T.N.,
    REVENKO, A.G.
COUNTRY OF INFO--USSR

SOURCE--ZAVOD. LAB. 1970, 36(4), 431-4

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--BREMSSTRAHLUNG, X RAY, SPECTRUM, RADIATION INTENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/2032   STEP NO--UR/0032/70/036/004/0431/0434

CIRC ACCESSION NO--AP0139836
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0138886
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE FORMULA BY CRAMERS IS COR. FOR
  THE CALCN. OF THE SPECTRUM OF BREMSSTRAHLUNG.   THE DERIVED FORMULA IS
  THE CORRECTION FOR DISPERSION AND ABSORPTION OF ELECTRONS OF
  BREMSSTRAHLUNG IN AN ANODE.   THE CALCN. OF CORRECTION COEFF. IS BASED ON
  THE IDEA OF TWO STREAMS OF ELECTRONS IN THE ANODE, ONE IS DIRECT
  MOVEMENT AND THE SECOND REVERSED.   BY SUING THE COR. FORMULA THE
  INTENSITY WAS CALCD. OF BREMSSTRAHLUNG FOR AL, CU, MO, AG, AND W ANODES.
   THE RESULTS ARE COMPARED WITH EXPTL. DATA.   GOOD AGREEMENT WAS FOUND IN
  THE LONGWAVE SPECTRAL REGION.   FACIILITY: INST. GEOKHIM.,
  IRKUTSK, USSR.

UNCLASSIFIED

Construction

USSR   UDC 539.4:624

POLYAKOV, S. V., KONOVODCHENKO, V. I., SAFARGALIYEV, S. M., GUNINA, R. S.

"Study of the Strength of Brick Masonry of Various Design Types"

V sb. Materialy k Vses. soveshch. po proyektir. i str-vu seismostovk. zdaniy i sooruzh. (Materials from the All-Union Conference on the Design and Construction of Earthquake-Proof Buildings and Structures -- Collection of Works), Moscow, 1971, pp 115-119 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3V1224)

Translation: The results of tests of brick masonry of calcined clay brick, ordinary and patterned (with grooves on the side spaces)and also of silicate brick, ordinary, hollow and wavy (with a wavy surface) are given. The normal and tangential adhesion to the masonry was studied on samples, columns of dimensions 25 × 25 × 30 (and 22) cm. The samples of calcined brick were tested under static and pulsation (10 Hz) loads. The samples of silicate brick were tested only under static load. A rise in the strength of adhesion to the masonry was noted for patterned and wavy brick. Tests for central compression were conducted on samples of masonry of dimensions 38 × 64 × 120 cm of clay ordinary and patterned brick with reinforcement and without reinforcement. The strength of the reinforcement of the masonry was much higher than the theoretical values calculated by the formulas from the construction norms and regulations. The bearing

1/2

USSR

POLYAKOV, S. V., et al, Materialy k Vses. soveshch. po proyektir. i str-vu
- seismostoyk. zdaniy i sooruzh., Moscow, 1971, pp 115-119

capacity of the masonry under the action of a transverse load was determined on
masonry samples of dimensions 38 × 64 × 120 cm. The samples were anchored in a
force field and were subjected to the simultaneous action of horizontal and
vertical compressing forces. Dynamic tests of the samples were conducted on
a seismic platform. A. S. Arkhipov.

2/2

THE PROCESS OF PRECIPITATION IN A COBALT-TUNGSTEN-TITANIUM ALLOY

A. L. Berezina, L. P. Gun'ko, and K. V. Chuistov, Institute of the Physics of Metals of the Ukrainian SSR Academy of Sciences, submitted to press 1 February 1972; final version 26 April 1972.

pages 1215-1218

By x-ray and electron-microscopic methods, in a clearance the process of precipitation in a Co—W—Ti alloy was investigated. In the temperature range of 500—600°, a homogeneous formation of an intermediate β'-phase with a structure L1$_2$ was observed. Its composition is presumed to be Co$_3$(W, Ti). The origin of the β'-phase is accompanied by the appearance of superstructural maximums and satellites on the x-ray photographs near the reflections from the cubic matrix (the β-phase). It was established that in the process of the growth of a particle at the β'-phase a periodic modulated structure is formed. Together with continuous precipitation of the β'-phase at temperatures of 650—700° an intermittent decay along the boundaries of the grains is also observed with a more stable phase of Co$_3$W. The aging of the alloy Co—W—Ti at high temperatures (800—1000°) is characterized only by continuous precipitation.

The process of the decay of binary alloys of Co—Ti and Co—W has been quite well studied [1—6]. In the first of them, the precipitation of the excess phase (Co$_3$Ti) of type Cu$_3$Au—L1$_2$ occurs basically with respect to a homogeneous mechanism with the formation of a modulated structure [1—5]. In the second, it occurs by a heterogeneous means, as a result of which it is primarily a pseudo-periodic (cellular) structure that is formed [6]. It is alternating plates of the phase of precipitation of Co$_3$W with a lattice of the Ni$_3$Sn (DO$_{19}$) type and an impoverished matrix (of the α - phase with a GPU lattice).

The purpose of this work is to ascertain the mechanism of decay in
a primary Co--W--Ti alloy, containing 7 wt % (atomic) W and 1.6% Ti
(atomic). It was assumed that alloying of the ternary Co--W alloy with
titanium may change the mechanism of precipitation from an almost purely
heterogeneous mechanism toward a homogeneous one. Such an
assumption was based on the data from references [2, 4], in which high
heat-resistant characteristics of this alloy were observed, which are
usually not proper for systems with a purely heterogeneous mechanism of
precipitation.

A Co--W--Ti alloy was prepared in an arc furnace in an atmosphere
of purified argon, rolled at 1100°C in the air, and annealed at 1100° for
10 hours. An electron-microscopic investigation in a clearance was made,
and an X-ray investigation of the coarse-crystal specimens. The progress
of aging was controlled according to the variation of the hardness.

The specimens were hardened at 1200° in water in quartz ampoules
and subjected to aging in the temperature range of 500--1100° for different
times. The aging was performed in a vacuum of 10⁻³--10⁻⁴ torr. Foils
for the electron-microscopic investigation were prepared from discs with
a diameter of 3 millimeters and a thickness of 0.2--0.3 millimeters by
means of electron polishing in an electrolyte of 5 % sulfuric acid, 1.25 %
hydrofluoric acid, and 93.75 % methyl alcohol at a voltage of 50--70 volts
and T = 0°.

The morphology of the precipitation (the shape of the particles and
the nature of their spatial distribution) was investigated according to the
methodology in reference [9], as a rule in reflexes (100) of the well-
ordered phase.

Results of the Experiment and their Discussion

In Figure 1 a curve of the variation of the hardness after isochronic
annealings (1 hour) at various temperatures is shown. We may note the
rapid growth of hardness at 600--700° and the slow drop at 800--1000°C.
The electron-microscopic and x-ray investigation made it possible to
establish the structural variation occurring in the decay of the Co--W--Ti
alloy.

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USSR   UDC:533.6:629.76+629.78

GUN'KO, Yu. F., KURBATOVA, G. I., FILIPPOV, B. V.

"Method of Calculation of Aerodynamic Factors of Bodies in a Highly
Rarefied Plasma in the Presence of a Strong Internal Magnetic Field"

Aerodinamika Razrezh. Gazov [Aerodynamics of Rarefied Gases -- Collec-
tion of Works], No 6, Leningrad University Press, 1973, pp 54-66 (Trans-
lated from Referativnyy Zhurnal Aviatsionnyye i Raketnyye Dvigateli,
No 9, 1973, Abstract No 9.34.17)

Translation: The influence of the internal magnetic field on the aero-
dynamic characteristics of bodies moving in a rarefied plasma was studied.
The study was performed for the case where $R \gg \rho_i$, where R is the charac-
teristic dimension of the body, ρ_i is the Larmor radius of an ion near
the surface of the body. The internal magnetic field was a dipole field.
It is shown that for $R' \gg 1$, the primary contribution to forces and moments
is made by particles scattered by the dipole field, and in this case the
stagnation force is proportional to $h_0 V e_i M$, where h_0 is the unperturbed
ion density, V is the velocity of motion of the body, e_i is the ionic
charge, M is the dipole moment. In calculating the forces and moments
1/2

USSR

GUN'KO, Yu. F., KURBATOVA, G. I., FILIPPOV, B. V., Aerodinamika Razrezh. Gazov, No 6, Leningrad University Press, 1973, pp 54-66

acting on the body due to indirect collisions of ions with the surface of the body, drift equations of motion were used. As an example, calculations are presented for a sphere moving parallel to the axis of the dipole. 5 Figures; 10 Biblio. Refs.   Resume

2/2

USSR

GUN'KO, Yu. F., KURBATOVA, G. I., FILIPPOV, B. V.

"Method of Calculating Aerodynamic Coefficients of Bodies in a Highly Rarefied Plasma in the Presence of the Strong Magnetic Field of the Plasma"

Translation: The influence of the internal magnetic field on the aerodynamic characteristics of bodies moving in a rarefied plasma was studied. The study was performed for the case $R > \rho_u$, where R is the characteristic size of the body, ρ_u is the larmor radius of an ion near the surface of the body. The natural magnetic field was a dipole field. It is shown that for $R' \ll 1$, the primary contribution to forces and moments is made by particles scattered by the dipole field, the braking force in this case being proportional to $n_0 V_c 1_u M$, where n_0 is the unperturbed ion density, V_c is the velocity of motion of the body, 1_u is the ion charge, M is the dipole moment.

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USSR

GUN'KO, Yu. F., et al., Aerodinamika Razrezh. Gazov, No 6, 1973, pp 54-66

In calculating the forces and moments acting on the body as a result of
direct collisions of ions with the surface of the body, the drift equations
of motion were used. As an example, calculations are presented for a sphere
moving parallel to the axis of the dipole. 3 figures; 10 biblio. refs.

2/2

TITLE--CHANGES OF RESPIRATION AND CHILDREN BODY OXYGEN REGIME PARAMETERS
   IN EXERCISE -U-

AUTHOR--GUNYADI, B.K.

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 3, PP 318-325

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEDIATRICS, RESPIRATORY PHYSIOLOGY, OXYGEN METABOLISM,
   EXERCISE, HEART RATE, HEMODYNAMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1350   STEP NO--UR/0238/70/016/003/0318/0325

CIRC ACCESSION NO--AP0115326
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0115326

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHANGES IN RESPIRATION, OXYGEN
  TRANSPORT BY BLOOD, ITS CONSUMPTION BY TISSUES, OXYGEN REGIMES OF THE
  BODY AND THEIR REGULATION DURING MUSCULAR ACTIVITY WERE STUDIED IN 76
  CHILDREN. OXYGEN REQUIREMENT FOR THE WORK AND OXYGEN DEBT IN CHILDREN
  WERE LESS. RHYTHM OF RESPIRATION AND HEART CONTRACTION WERE QUICKER.
  VENTILATION AND BLOOD FLOW IN THEM INCREASED MORE THAN IN ADULTS.
  VENTILATION AND HEMODYNAMIC EQUIVALENTS WERE HIGHER THAN IN ADULTS.
  UNDER THESE CONDITIONS MINUTE RESPIRATORY AND BLOOD CIRCULATION
  CAPACITIES IN CHILDREN WERE MUCH LESS THAN IN ADULTS. WITH EQUAL
  INTENSITY OF OXYGEN CONSUMPTION, THE INTENSITY OF ITS ENTERING INTO THE
  LUNGS, ALVEOLI AND ITS TRANSPORT BY BLOOD WERE MORE IN CHILDREN. OXYGEN
  TENSION IN THE ALVEOLAR AIR, IN THE ARTERIAL AND PARTICULARLY IN MIXED
  VENOUS BLOOD EVEN DURING THE PERIOD OF SUBMAXIMUM INTENSITY LOADING IN
  CHILDREN REMAINED HIGHER. THE INVESTIGATIONS CARRIED OUT PERMIT A
  GENERAL CONCLUSION TO BE MADE THAT THE OXYGEN REGIMES IN A CHILD BODY
  WITH AN INTENSIVE MUSCULAR ACTIVITY PROVE TO BE LESS STRESSED AND LESS
  ECONOMICAL, THAN IN PERSONS OF THE MIDDLE AGE.   FACILITY:
  DEPARTMENT OF AGE PHYSIOLOGY, THE A. A. BOGOMOLETZ INSTITUTE OF
  PHYSIOLOGY, ACADEMY OF SCIENCES, UKRAINIAN SSR, KIEV.

USSR   UDC 678.5.06:539.3+539.4

GUNYAYEV, G. M., ZHIGUNM I. G., SORINA, T. G., and YKAUSHIN, V. A., All-Union
Scientific Research Institute of Aviation Materials, Moscow; Institute of
Mechanics of Polymers of the Academy of Sciences Latvian Soviet Socialist
Republic, Riga

"Shearing Strength of Composites Based on Whiskered Fibers"

Abstract: A study was made of the elastic and strength characteristics of
unidirectional carbon plastics based on carbon fibers whiskered by silicon
nitride filament crystals from the gaseous phase and titanium dioxide from
aerosol. The advantages in bending properties of these composites are
shown. For an approximate evaluation of the elastic properties of uni-
directional composite based on whiskered fibers, summation formulas can be
used which take into account the characteristics of the ruggedization of
the filamentary crystals of the anisotropic matrix. Eight figures, five
tables, thirteen bibliographic references.

1/1

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GUNYAYEV, G.M.

UDC 678.5.06:539.6.011

COMPRESSIVE STRENGTH AND DEFORMATION PROPERTIES OF CARBON-FIBER REINFORCED PLASTICS

An experimental study was made of the deformational and strength characteristics of unidirectionally carbon-fiber reinforced plastic under uniaxial compression in the longitudinal and transverse directions and at an angle of 45 degrees to the direction of reinforcing both during short-term and prolonged tests. On the basis of the deformational properties of the components, an effort was made to describe the creep curves of the plastic in all three loading directions. When forecasting the compressive strength in the direction of the reinforcing and transverse to the reinforcing, the Mohr theory was used. There are three tables, five illustrations and a five-entry bibliography.

Carbon-fiber reinforced plastics are a prospective form of composite material. The mechanical properties of these composite materials have still been investigated extremely inadequately. It turns out that the use of carbon-fibers as the reinforcing does not lead to a proportional change in all the mechanical characteristics of the plastic by comparison, for example, with fiberglass.

The purpose of this paper is to study a number of mechanical properties of unidirectionally carbon-fiber reinforced plastics in the presence of compression both under short-term and prolonged loads.

For the experimental study of the deformational properties of the carbon-fiber reinforced plastics, prismatic specimens were prepared 50 - 1mm, with transverse dimensions of 7 x 15 and 5 x 15 mm. Resistance sensors were glued to both lateral surfaces of the specimens in the direction of effect of the load and perpendicular to it. The deformations were measured by the TA-2 electromechanical strain gauges and using the ISI6 type strain gauge built by the Brewel and Kerr Company.

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In order to determine the deformational characteristics in the presence of compression perpendicular to the direction of the reinforcement, angle of 45 degrees to the direction of reinforcement, and at an in an all-purpose PM-1000 tester to 400 kilogram-force/cm², the specimens were loaded to determine the deformational characteristics under compression in the direction of the reinforcing, the specimens were loaded to 900 kilogram-force/cm².

The results of studying the Young's modulus of unidirectionally carbon-fiber reinforced plastic in the direction of the reinforcing (E_1), perpendicular to the direction of the reinforcing (E_2) and at an angle of 45 degrees with respect to the direction of reinforcing (E_{45}) and the values of the Poisson coefficient ν_{21} are presented in Table 1 where each of the deformational characteristics is defined by the results of testing three specimens. The theoretical values of the moduli calculated by the formulas presented in reference [1] are also presented in this table.

Comparison of the experimental and theoretical values of the Young's moduli and Poisson coefficient

Table 1

$E_1 \cdot 10^{-6}$ kg-force/cm²		$E_2 \cdot 10^{-6}$ kg-force/cm²		$E_{45} \cdot 10^{-6}$ kg-force/cm²		ν_{21}	
Exp.	Theor	Exp.	Theor	Exp.	Theor	Exp.	Theor
					0.046	0.043	0.16	0.14

The characteristic diagrams of the deformation of the carbon-fiber reinforced plastics during uniform loading to rupture are illustrated in Figure 1.

In order to estimate the effect of the time factor on the deformational properties of the carbon-reinforced plastics, the specimens were creep tested for two loading levels amounting to 0.3 and 0.6 of the short-term compressive strength. The temperature of the experiments was 20 ± 1°C.

The experimental results are shown in Figure 2.

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GUNYAYEV, G. M., All-Union Order of Lenin Scientific Research Institute of
-Aviation Materials, Moscow

"Realization of Mechanical Properties of Fibers in High-Modulus Polymer
Composites"

Riga, Mekhanika Polymerov, No 6, Nov-Dec 72, pp 1123-1125

Abstract: The effect of distribution of the strength and deformation prop-
erties of high-modulus fibers, degree of twist, presence of pores in the
polymer matrix on the degree of realization of potential possibilities of
the fibers in composite materials is considered.

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Power, Turbine, Engine, Pump

USSR   UDC: 62-235.5

MALYUTIN, P. V., GUNYAYEV, G. M., VORONTSOV, I. A., RUMYANTSEV, A. F.,
BARDINA, N. P., STEPANENKO, N. D., KARIMBAYEV, T. D., KISELEV, Yu. A.,
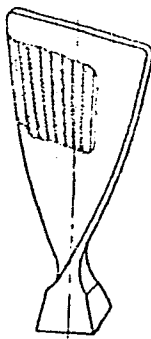GORSHKOV, L. A.

"A Turbine Blade"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 21, Jul 72, Author's Certificate No 344168, Division F, filed 31 Aug 70,
published 7 Jul 72, p 135

Translation: This Author's Certificate introduces a turbine blade for an
axial compressor made of a laminar composition material. As a distinguish-
ing feature of the patent, the rigidity and vibration strength are increased
by making the blade from alternating layers of glass and carbon fiber
fillers oriented relative to the longitudinal axis of the blade, 34-45%
of the fiberglass-filled layers being oriented at angles from 0 to ±15°,
while 5-15% of the fiberglass-filled layers are oriented at angles from
±75 to 90°, 20-30% of the carbon fiber-filled layers are oriented at angles
from 0 to ±15°, and 20-30% of the carbon fiber-filled layers are oriented
at angles from ±45 to ±60°.

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USSR

MALYUTIN, P. V. et al., USSR Author's Certificate No 344168

USSR   UDC[537.226+537.311.33]:[537+535]

BAREYKIS, V. A., GUOGA, V. I., MATULENENE, I. B., POZHELA, YU. K., and
REPSHIS, V. I.

"Investigation of the Warming-Up of Current Carriers in Nonrectifying Point
Contact"

Translation: The authors measured noise temperature and thermoelectromotive
force of hot holes as a function of bias voltage for p-Ge specimens with
nonrectifying point contact at room temperature. It is shown that in the
point contact the electric field warms the current carriers. For a bulk
specimen values of noise temperature for point contact were compared with
noise temperature as well as with carrier temperature determined according to
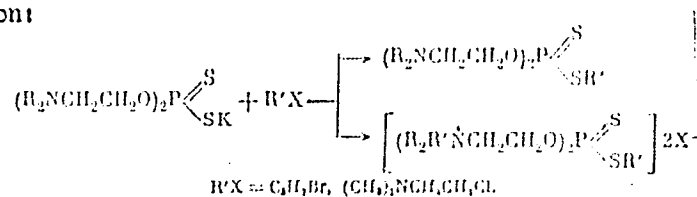thermoelectromotive force measurements.

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·USSR

UDC 547.26'118

GUPALO, A. P. and ZEMLYANSKIY, N. I., L'vov State University imeni Ivana Franko

"Amino Esters of Thiophosphoric Acids. Part V. Alkylation of the Potassium Salts of Amino Esters of Dithiophosphoric Acids by Alkyl Halides"

Leningrad, Zhurnal Obshchy khimii, Vol 42(104), Vyp 8, 1972, pp 1720-1724

Abstract: The potassium salts of O,O-di(tert-aminoalkyl)dithiophosphoric acids were reacted with alkyl chlorides and bromides under mild conditions in order to prepare neutral esters of dithiophosphoric acids, according to the following reaction:

$$(R_2NCH_2CH_2O)_2P{\diagup}^{S}_{\diagdown SK} + R'X \longrightarrow \begin{cases} \longrightarrow (R_2NCH_2CH_2O)_2P{\diagup}^{S}_{\diagdown SR'} \\ \longrightarrow \left[(R_2R'\overset{+}{N}CH_2CH_2O)_2P{\diagup}^{S}_{\diagdown SR'} \right] 2X^- \end{cases}$$

$$R'X = C_4H_9Br, (CH_3)_2NCH_2CH_2Cl.$$

The product was purified under vacuum and by chromatography. As the neutral amino ester is unstable, it undergoes thion-thiol isomerization. It goes

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·USSR

through a stage in which an imnone salt is formed, which may be converted
into the thiol isomer of the original ester or dimerized into the stable
piperazine salt.

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USSR   UDC 547.1'118'122:621.892.009.6

GORDASH, YU. T., KHARCHENKO, L. S., RABINCVICH, I. L., BACHINSKIY, T. P.,
GUFALO, A. P., ZEMLYANSKIY, N. I., KOTOVICH, B. P., and MURAV'YEV, I. V.,
All-Union Scientific Research and Project and Design Institute of the
Petroleum Conversion and Petrochemical Industry, Kiev

"Investigation of Sulfur-Containing Organophosphorus Compounds as Additives
to Lubricating Oils"

Abstract: The effectiveness of derivatives of thiophosphoric acid as addi-
tives to lubricating oil was studied. Fifteen compounds of this type
including O,O-dialkyl-S-alkyl dithiophosphates, O-diethylaminoethyl-S,S-dipro-
pyl trithiophosphate, bis(O,O-diethyldithiophosphate)-benzylidene, bis(O-
methyl-O-butylthiophosphone)disulfide, O-alkyl-S,S-dialkyl trithiophosphates,
and S,S,S-tetraethyl tetrathiophosphate were synthesized for this purpose.
The formulas and characteristics of these compounds are listed in a table.
The effects of addition of the 15 compounds to oil DS-11 on the thermal
oxidation stability of the oil, the corrosion of Pb plates, the over-all
index of wear, the critical load of seizing, and the critical load of welding
were determined and compared with those of additive DF-11 (Zn butyloctyl-
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USSR

GORDASH, YU. T., et al., Neftekhimiya, Vol 11, No 1, Jan-Feb 71, pp 135-140

dithiophosphate). The results of the tests showed that use of trialkyl tetrathiophosphates, bis(O,O-dialkylthiophosphone)disulfides, and O-dialkyl-aminoalkyl-S,S-dialkyl trithiophosphates as multifunctional additives to lubricating oils would be of advantage. The effects of the CCl_3 group in reducing wear and seizing of friction surfaces were confirmed by the results of tests on dithiophosphates containing an $-SC(=O)CCl_3$ group. The tests with O,O-difurfuryl-S-trichloroacetyl dithiophosphate indicated that this compound would be a good all-around additive for lubricating oils.

2/2

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USSR   UDC 621.73.042:62-412

MAZHAROVA, G. YE., BATENEVA, M. K., SIDORENKO, G. V., GUPALO, V. G., and
LUCHKOVA, L. I.

"Effect of Deformation on the Structure and Properties of R18 Steel"

Moscow, Kuznechno-Shtampovochnoye Proiavodstvo, No 7, Jul 71, pp 13-15

Abstract: The first ingots of R18 steel forged by upsetting have been tested
at the Dneprospetsstal' Plant. Ingots from one heat were forged by existing
plant technology and by an experimental method.

Existing technology:

1. Heating an ingot weighing 590 kg in a continuous fur-
   nace up to 1250°C for one hour.
2. Drawing the ingot on a 5-ton drop forge along into a
   blank with a 260-mm square side and cutting into
   standard length.
3. Heating the standard blank in a continuous furnace
   up to 1250°C for 30 minutes.
4. Drawing the standard blank into a blank with a 160-mm
   square side.

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USSR

MAZHAROVA, G. YE., et al.,   Kuznechno-Shtampovochnoye Proizvodstvo, No 7,
Jul 71, pp 13-15

5.   Cooling the blanks in unheated coolers for 36 hours.

Experimental technology:

1.   Same as 1 above.
2.   Same as 2 above except 220-mm dimension is used.
3.   Same as 3 above.
4.   Upsetting standard blanks along the ingot axis to a
     height equal to 1/2-1/3 the original height, turning
     90° and drawing in a direction perpendicula r to the
     ingot axis, down to ingots with a 120-mm square side
     with an intermediate heating to 1250°C for 15-20 min.
5.   Same as 5 above.

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USSR

MAZHAROVA, G. YE., et al., Kuznechno-Shtampovochnoye Proizvodstvo, No 7, Jul 71, pp 13-15

As a result of increasing the forging reduction ratio and deformation of metal throughout its volume, crushing of the eutectic lattice occurs along with a more uniform distribution of the carbide phase. Mechanical properties of metal forged as described are better than when forged by the conventional technology, as a result of which transverse forging provides a deeper and more uniform working of the metal. A disadvantage of experimental technology is the additional preheating which lowers productivity of the forging machinery by 15-20%. Two figures, one table, three bibliographical references.

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USSR

GUPALO, YU. P., RYAZANTSEV, YU.S. (Moscow)

"Concerning the Mass and Heat Exchange of a Spherical Particle in the Laminar Flow of a Viscous Liquid"

Abstract: An approximate solution is obtained of the problem of the mass and heat exchange of a moving solid spherical particle at small finite peclet and Reynolds numbers. Consideration is given to the case of an arbitrary speed of a first-order chemical reaction on the surface of the particle. The problem is solved by the method of joining asymptotic expansions according to the Peclet number. A concentration and temperature field is constructed, and the complete flow of the substance and of heat on the surface of the article is found. In the present work the problem of diffusion toward the spherical particle at finite Peclet numbers is generalized for the case of finite Reynolds numbers and the chemical reaction on the surface of the particle. Expansion of the range of Reynolds number is attained by using, for the velocity field, expressions describing the flow about a spherical particle at finite Reynolds numbers. 3 figures, 8 bibliographic entries.

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USSR   UDC 621.52:6??.?9

ALEKSANDROVA, A.T., GURA, A.N., KULOMZIN, YE.N., SHAPKIN, YE.V.

"Experimental Units For Study Of The Operation Of Mechanisms And Radioelectronic
Systems In A Vacuum"

Tr. Mosk. in-ta elektron. mashinostr. (Works Of The Moscow Institute Of
Electrical Machine Construction), 1971, No 9, pp 185-190 (from Radhielektronika
i yeye primeneniye, No 2, Feb 72, Abstract No 2A66)

Translation: Units were developed for simulation of vacuum conditions in the
range of vacuums of $10^{-4} \div 10^{-8}$ mm of mercury at temperature from minus 100 to
plus 300° C. The means for high-vacuum pumping in the unit are two series-
connected diffusion pumps with an output of 2000 and 500 l/sec. A.F.

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USSR

UDC 8.74

GUMETSKIY, R. Ya., GURA, B. M., DERKACH, M. F., MISHIN, L. N.

"An Algorithm for Recognizing Simple Sentences"

Tallin, VI Vses. seminar "Avtomat. raspoznavaniye slukhovykh obrazov (ARSO VI)". Dokl. i soobshch.--sbornik (Sixth All-Union Seminar on Automatic Recognition of Audible Patterns. (ARSO VI). Papers and Reports--collection of works), 1972, pp 85-88 (from RZh-Matematika, No 1, Jan 73, abstract No 1V850 by the authors)

Translation: The paper discusses an attempt to extend a model of word recognition in such a way as to enable recognition of meaningful sentences with simple grammatical construction compiled from a limited set of words. Indefinite decisions on words are made more precise by meaning analysis, and, when necessary, by reference to differentiating procedures of lower levels of the model. The result of sentence recognition is a sequence of words united by unity of meaning and compatible with the acoustic characteristics of the speech flow.

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USSR

GUMETSKIY, R. Ya., GURA, B. M., DERKACH, M. F., MISHIN, L. N.

"Algorithm for Recognition of Simple Phrases"

VI Vses. Seminar "Avtomat. Raspoznavaniye Slukhovykh Obrazov [ARSO VI]
Dokl. i Soobshch. [Sixth All-Union Seminar on "Automatic Recognition of
Auditory Patterns (ARSO VI), Reports -- Collection of Works], Tallin,
1972, pp 85-88 (Translated from Referativnyy Zhurnal, Kibernetika, No 1,
1973, Abstract No 1 V850 by the authors).

Translation: An attempt is studied to expand the model of recognition
of words so as to allow recognition of intelligent phrases with a simple
grammatic structure, composed of a limited set of words. Uncertain de-
cisions on words are refined by semantic analysis, and when necessary
by the use of differentiated procedures in the lower levels of the model.
The result of recognition of a phrase is a sequence of words combined
into a semantic unit and compatible with the acoustical characteristics
of the speech stream.

1/1

TITLE--THE EFFECT OF SOME ADRENERGIC BLOCKING AGENTS ON THE AMPHETAMINE
    TOXICITY IN AGGREGATED AND ISOLATED MICE -U-

AUTHOR-(02)-RAYEVSKIY, K.S., GURA, S.YA.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 89,
    NR 5, PP 62-65
.DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--TOXICOLOGY, WHITE MOUSE, ADRENERGIC BLOCKING AGENT,
    AMPHETAMINE, BODY TEMPERATURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0212   STEP NO--UR/0219/70/069/005/0062/0065

CIRC ACCESSION NO--AP0120910
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0120910
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF FOUR ADRENERGIC
  BLOCKING AGENTS OF ALPHA AND BETA TYPE (PHENTOLAMINE, TROPAPHEN,
  PROPRANOLOL, PRONETHALOL) ON THE AMPHETAMINE TOXICITY IN AGGREGATED AND
  ISOLATED ALBINO MICE AND ON THE FOLLOWING INCREASE OF THE BODY
  TEMPERATURE WAS STUDIED. PHENTOLAMINE, TROPAPHEN, PROPRANOLOL WERE
  FOUND TO DECREASE THE AMPHETAMINE TOXICITY IN ISOLATED AND AGGREGATED
  MICE. PRONETHALOL WAS FOUND TO BE EFFECTIVE ONLY IN RESPECT TO
  AMPHETAMINE TOXICITY IN ISOLATED MICE. THE INCREASE OF BODY
  TEMPERATURE, INDUCED BY AMPHETAMINE, WAS FOUND TO BE PARTLY PREVENTED BY
  ALL THE ADRENERGIC BLOCKING AGENTS OF BOTH ALPHA AND BETA TYPE. IT IS
  SUPPOSED THAT THE CENTRAL EFFECTS OF THE STUDIED AGENTS DO NOT SEEM TO
  BE CAUSED BY THEIR ADRENERGIC BLOCKING PROPERTIES.   FACILITY:
  INSTITUTE OF PHARMACOLOGY, USSR ACADEMY OF MEDICAL SCIENCES, MOSCOW.

USSR   UDC 615.281:547.722.5].015.44:576.851.42

POVELITSA, F. D., and GURAL', A. G., Chair of Microbiology, Kiev Institute for
Advanced Training of Physicians

"The Antibacterial Effect of Furacriline on Brucella"

Abstract: Furacriline exerts a pronounced bacteriostatic effect on three
species of Brucella. The effective concentrations are: 8 mcg of the drug per
ml of the culture medium for Brucella melitensis strain No 548; 1 mg/ml for
Brucella abortus No 88 and 141; and intermediate concentrations for Brucella
melitensis No 401, 398, and "Chuyko," Brucella abortus No 19, 281, 544, and
840, and Brucella suis No 1330. Administration of daily oral doses of 1 mg of
aqueous furacriline for 7 days to mice intramuscularly inoculated with 0.2 ml
of a Brucella suspension containing 200 million microbes does not cure the
animals but considerably reduces the number of Brucella cells present in the
liver, spleen, and lymph nodes.

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USSR

POVELYTSYA, F. D., DEKHTYAR, N. V., and GURAL', A. G., Kiev Scientific Research
Institute for the Advanced Training of Physicians, Kiev

"The Effect of Antibiotics on Immunity in Brucellosis"

Abstract: A number of investigators have noted that therapy of bacterial
infections with antibiotics inhibits the development of postinfection immunity.
The effects of intramuscular administration of streptomycin on the specific
and nonspecific immunity of rabbits infected experimentally by intramuscular
injection of Br. abortus 544 were studied. The agglutinin titer in Wright's
reaction, the complement titer of the serum, the lysozyme level, the bacteri-
cidal activity of the blood serum, and the concentration of sialic acids were
determined. The results showed that streptomycin lowered the specific immun-
ity when administered in the first days after infection, because it reduced
the amount of antibodies that formed, as indicated by the agglutinin titer.
It did not affect the nonspecific immunity, because the indexes of this
immunity (the complement titer, the bactericidal activity of the serum, the
lysozyme level, and the sialic acid content) were not changed vs. those of
infected animals not treated with the antibiotic.
1/1

UDC: 8.74

USSR

BEREZNAYA, I. Ya., GURARI, V. E.

"Stabilization of Output Sequences of a Linear Cadence Filter"

Probl. bioniki, Resp. mezhved. temat. nauch.-tekhn. sb. (Problems of Bion-
ics. Republic Interdepartmental Thematic Scientific and Technical Collec-
tion), 1971, vyp. 7, pp 39-47 (from RZh-Kibernetika, No 5, May 72, Abstract
No 5V491)

Translation: An investigation is made of the particulars of transforming
non-zero stable sequences into chains of n (n = 1, 2,...) series-connected
models of on-off Neurons. A stable sequence is defined as one which, when
sent to the input of the main chain of neurons, appears at the output of
certain neurons in this chain. The authors consider stabilization of a set
of output sequences -- the property of conversion of input sequences in the
main chain which consists in the fact that, beginning with some neuron, the
set of output sequences for all subsequent neurons does not change. It is
shown that since the main chain is a type of finite automaton, stabilization
of output sequences is a special case of a common property of automata which
consists in the fact that a finite automaton with number of states K con-
verts any periodic sequence with period ω and length μ of the preperiod to

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USSR

BEREZNAYA, I. Ya., GURARI, V. E., Probl. bioniki. Resp. mezhved. temat. nauch.-tekhn. sb., 1971, vyp. 7, pp 39-47

a periodic sequence with period of no more than $K\omega$, and reduced length of no more than $\mu + K\omega$. The structure of a stable set of output sequences is described.   V. Mikheyev.

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USSR   UDC 621.314.57

SOKOLOV, S.D., BLY, YU.M., DOBROVOL'SKIS, T.P., IUPYAN, A.G., FIRSOVA, L.D.,
AYZENSHTEYN, L.S., GURAL'NIK, YA. D.

"System Of Control Of Thyristorized Inverter"

Tr. VNII Zh.-d. transp. (Works Of The All-Union Scientific-Research Institute Of
Railroad Transportation), 1970, Issue 420, pp 69-85 (From RZh--Elektronika i yeye
primeneniye, No 4, April 1971, Abstract No 4B665)

Translation: The paper describes a system of control of thyristorized converters
[sic] arranged according to the circuit "two reverse stars with an equalizing re-
actor" or according to a 3-phase bridge scheme which assures turn-on of a large
number of series-parallel connected thyristors. In the control circuit, individual
(for each thyristor) output current transformers are used. This assures high
efficiency and makes it possible to obtain identical currents through the thyris-
tor gates with a considerable dispersion of their input characteristics. The cir-
cuit for pulse shaping consists of two 3-loop networks and a discharge thyristor.
The first loop produces a steep initial burst, and the remainder the necessary
duration of the control pulse. The experimental characteristics are considered
of the pulse shapers with various parameters of the current of the output trans-
formers, parameters of the thyristors, and length of the connecting conductors.
A block diagram is presented of the modeling on an analog computer of the system
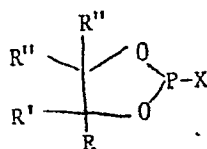for control of thyristors. 3 ill. 2 tab. 4 ref. L.R.

USSR

YEFREMOV, Yu. Ya., MUSIN, R. Z., GURARIY, L. I., and MUKMENEV, E. T.,
Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov, Academy
of Sciences USSR, Kazan'

"Mass S ectrometric Analysis of Some Five-Membered Phosphite Rings"

Abstract: The 1,3,2-dioxaphospholanes of the following type were studied

For a compound A, $R = R' = R'' = H$, $X - OC_2H_5$; for B, $R = CH_3$, $R' = R'' = $
H, $X = OC_2H_5$; for C, $R = R' = R'' = CH_3$, $X = OC_2H_5$; for D, $R = R' = R'' = H$, $X = $
OC_6H_5; and E, $R = R' = R'' = H$, $X = Cl$. The parent peak M^+ comprised from
2.8% for B to 11:00% for D of the total peak areas. The $(M - 2\%)^+$
peak from the loss of C_2H_4 from the ethoxy group was 10% for A, a few %

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YEFREMOV, Yu. Ya., et al., Khimiya Geterotsiklicheskikh Soyedineniy, No 10, 1972, pp 1329-1330

for B and C, and negligable for D & E (the latter not containing the $-OC_2H_5$ group). The $(M-45)^+$ peak, i.e., loss of $-OC_2H_5$, for A, B, & C, has a value similar to the $(M-28)^+$ peak. Decreasing the number of methyl groups increases the stability of the ions where X represents an electron or $X = OH$. Loss of the "X" group and loss of the alkyl part of the alkoxy group appear to be the main dissociation reactions of these compounds.

2/2

USSR   UDC 541.67:547.879

ARBUZOV, B. A., Academician, ARSHINOVA, R. P., GUBARIY, L. I., MUKMENEV,
E. T., Scientific Research Institute of Chemistry imeni A. M. Butlerov
Affiliated with Kazan State University imeni V. I. Ul'yanov-Lenin; Institute
of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences
of the USSR, Kazan

"Dipole Moments and Kerr Constants of 1,32-Dioxaphospholans"

Abstract: The paper is a continuation of research on the stereostructure
of heterorings. The authors study conformations of a series of 1,3,2-dioxa-
phospholans with the tricoordinate phosphorus atom. Four compounds of this
type were synthesized by reacting ethylene-1,2-propylene, 2-3butylene and
2,3-dimethyl-2, 3-butylene glycols with phosphorus trichloride and alkyl
dichlorophosphites. The dipole moments and Kerr constants were measured in
an atmosphere of dry argon. The results show that the usual conformation of
the 1,3,2-dioxaphospholan ring is distorted by the spatial interaction of
methyl groups which takes place in the case of meso-2-chloro-4,5-dimethyl
1,3,2-dioxaphospholan. This explains the contradictory data in the litera-
ture with respect to PMR and gas electronography determinations of the
stereostructure of these rings. The authors thank A. N. Vereshchlagin and
A. G. Vul'fson for assistance with the work. 1/1

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GURARIY, M.L.

UDC 535.35

THE EFFECTIVE CROSS SECTION OF STIMULATED EMISSION IN INHOMOGENEOUSLY BROADENED ACTIVE MEDIA

Article by M.L. Gurariy ..., M.L. Curran ..., and M.No. Zhabotinskii, Minsk, ..., Kvantovaya Elektronika, Vol 14, No 1, 1971, signed to ...

The cross section of stimulated emission σ ... is one of the most important characteristics of active laser material, since amplification in ... ... is determined by it.

In studies ... measurements of σ ... for ... ions in silicate glass ... ... in various ways. However, the inhomogeneous character of the ... ... the luminescence line ... not taken into account, and therefore the measured cross section represents a value averaged over the distorted ... ... broadened line. An estimate of the influence of the intensity ... ... of the test signal fraction on the value of the measured cross section ... of stimulated emission is made below. In the computations we used a ... ... for the spectral population density of the metastable level, ... a narrow band signal with small duration (in comparison with the ... ... time), the decay of the metastable level and the time of excitation transfer between ions) has the form /4/

$$\frac{\partial n(v,t)}{\partial t} = -c(v,t)\,\rho\,\sigma\,f(v,v) \tag{1}$$

where $n(v,t)$ is the spectral density of the population of the metastable ... σ ... is the cross section of stimulated emission according to the effective ... the ... in the maximum of the elementary luminescence band; $f(v)\,c(v)\,c$ ... ... with the central frequency $v = v_c$.

Equation (1) is integrated immediately:

$$n(v,t) = n(v,t)\exp[-\dots\,v,t]\,c. \tag{2}$$

$$[I - USSR - L]$$

1/2   026
UNCLASSIFIED
TITLE--ON THE THEORY OF ELECTRON EXCITATION TRANSFER VIA PHONONS -U-
PROCESSING DATE--27NOV70

AUTHOR-(02)-GURARI, M.L., KOZHUSHNER, M.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 6, PP 1967-1971
DATE PUBLISHED------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PHONON, ELECTRON ENERGY LEVEL, PERTURBATION THEORY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2233
STEP NO--UR/0056/70/058/006/1967/1971
CIRC ACCESSION NO--AP0125811
UNCLASSIFIED

CIRC ACCESSION NO--AP0125811
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROBABILITY FOR TRANSFER OF
    ELECTRON EXCITATION BETWEEN IMPURITIES IN A SOLID BODY VIA THE FIELD OF
    VIRTUAL PHONONS IS CALCULATED. THE CALCULATION IS CARRIED OUT WITHIN
    THE FRAMEWORK OF PERTURBATION THEORY. IT IS SHOWN THAT THE TRANSITION
    PROBABILITY W SIMILAR TO (DELTA-DELTA) PRIME2N-N PRIME2 WHERE N IS THE
    NUMBER OF LATTICE CONSTANTS BETWEEN THE IMPURITIES, DELTA IS THE PHONON
    ZONE WIDTH AND DELTA THE ENERGY DIFFERENCE BETWEEN THE ELECTRON AND
    PHONON LEVELS. THE MECHANISM MAY BE IMPORTANT FOR TRANSFER OF LOW LYING
    ELECTRON AND ELECTRON VIBRATIONAL EXCITATIONS.   FACILITY:
    INSTITUT KHIMICHESKOY FIZIKI AN SSSR.

UNCLASSIFIED

USSR

BEREZNAYA, I. YA., and GURARI, V. E.

"Stabilization of Output Sequences -- Phase Linear Filter"

Probl. bioniki. Resp. mezhved. temat. nauch.-tekhn. sb. (Problems in Bionics -- Collection of Works in Republic Interdepartmental Scientific and Technical Program), 1971, vyp. 7, pp 39-47 (from RZh-Matematika, No 5, May 72, Abstract No 5V491 by V. MIKHEYEV)

Translation: The article investigates peculiarities in the transformation of nonzero stable sequences in a circuit of $n(n = 1, 2, \ldots)$ series-connected models of on-off neurons. A sequence which, when presented at the input of a basic neuron circuit, is encountered at the output of some neurons of this circuit is said to be a stable sequence. The authors deal with the stabilization of the set of output sequences -- that property of transformation of input sequences in the basic circuit which consists in the fact that, from a certain neuron on, the set of output sequences in all the subsequent neurons does not vary. It is shown that inasmuch as the basic circuit is a variety of finite automata, stabilization of output sequences is a particular case of the general property of automata, which consists in the fact that a finite automaton with the number of states K converts any periodic sequence with period (words) of length $1/2$

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BEREZHAYA, I. YA., and GURARI, V. E., Probl. bioniki. Resp. mezhved. temat. nauch.-tekhn. sb., 1971, vyp 7, pp 39-47

μ of the preperiod into a periodic sequence with a period no greater than $K(U)$ and reduced length no greater than $\mu + K(U)$. A description is given of the structure of a stable set of output sequences.

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1/2   027   UNCLASSIFIED   PROCESSING DATE--04DEC70
TITLE--MECHANICAL PROPERTIES OF INDUSTRIAL STEELS CONTAINING RARE EARTH
  METALS -U-
AUTHOR-(04)-GLADKIKH, A.N., GURASHOV, V.N., SKUDNOV, V.A., SOKOLOV, L.D.

COUNTRY OF INFO--USSR

SOURCE--METALLOVEDENIE I TERM. OBRABOT. METALLOV, 1970, (3), 31-34

DATE PUBLISHED-------70

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

TOPIC TAGS--RARE EARTH METAL, IMPACT STRENGTH, CARBON STEEL, ALLOY STEEL,
  METAL BRITTLENESS, TOUGHNESS, FATIGUE STRENGTH, SULFUR, SULFIDE,
  DESULFURIZATION, METAL MECHANICAL PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0920   STEP NO--UR/0129/70/000/003/0031/0034

CIRC ACCESSION NO--AP0133009
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