2/2

1/2   035   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--ADDITIVE FOR AN INTERNAL COMBUSTION ENGINE FUEL -U-

AUTHOR-(05)-SANIN, P.I., ARABYAN, S.G., SHER, V.V., KHOLOMONOV, I.A.,
   GORDASH, YU.T.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 266,457
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--17MAR70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--CHEMICAL PATENT, CARBOXYLIC ACID, ESTER, KETONE, ACETYLENE,
   MINERAL OIL, FUEL ADDITIVE, INTERNAL COMBUSTION ENGINE, ORGANOALUMINUM
   COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0879   STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132969
                    UNCLASSIFIED

CIRC ACCESSION NO--AA0132969
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE ADDITIVE CONSISTS OF
16-25PERCENT POLYALUMINOOXANES AND CARBOXYLIC ACID ESTERS AND 1-5PERCENT
BETA DIKETONE, E.G. ACETYLACETONE, OR BETA KETO ACID ESTER, E.G.
ACETOACETIC ESTER, IN MINERAL OIL.   FACILITY: TOPCHIEV, A. V.,
INSTITUTE OF PETROCHEMICAL SYNTHESIS.   FACILITY: STATE UNION
SCIENTIFIC RESEARCH TRACTOR INSTITUTE.

UNCLASSIFIED

USSR   UDC: 532.72

BABAK, V. N., KHOLPANOV, L. P., MALYUSOV, V. A., ZHAVORONKOV, N. M.

"Steady-State Mass Exchange in a Liquid-Gas System Under Conditions of Laminar Opposed Motion of the Phases"

Translation: This paper deals with the problem of redistribution of matter between the gas and liquid phases in the case of laminar film run-off of a liquid along the walls of vertical plates under counterflow conditions. The equations of diffusion in the liquid and gas phases respectively are written in the form

$$v_{\text{ж}} \frac{\partial c_{\text{ж}}}{\partial x} = D_{\text{ж}} \frac{\partial^2 c_{\text{ж}}}{\partial y^2}, \quad v_{\text{r}} \frac{\partial c_{\text{r}}}{\partial x} = D_{\text{r}} \frac{\partial^2 c_{\text{r}}}{\partial y^2}$$

The boundary conditions are set up in the following manner: $c_{\text{ж}} = k c_{\text{r}}$, $D_{\text{ж}} \partial c_{\text{ж}}/\partial y = D_{\text{r}} \partial c_{\text{r}}/\partial y$ on the phase interface, $\partial c_{\text{r}}/\partial y = 0$ on the axis of the channel

1/2

BABAK, V. N. et al., Teor. osnovy khim. tekhnol., 1971, 5, No 2, pp 179-186

formed by the vertical plates $\partial c_m/\partial y = 0$ on the surface of the plates. [Translator's note: the subscripts m and r in these expressions stand for liquid and gas respectively]. The concentration of transferred matter in the gas phase at the time of gas input into the system is c_0, while the concentration of transferred matter in the liquid phase at the time of liquid input into the system is zero. For different values of the dimensionless parameters ϵ and β^2, assuming a flat velocity profile in the liquid and gas phases, viz. $v_r = \bar{v}_r, v_m = \bar{v}_m,$ where $\bar{v}_r, \bar{v}_m$ are the average velocities of the gas and liquid phases respectively, formulas are derived for the average concentrations of liquid and gas at the output. It is shown that when the inequalities $\epsilon\beta^2 \ll 1, \epsilon \ll 1$ are simultaneously satisfied, resistance to mass transfer is concentrated only in the liquid phase, and when the inverse inequalities $\epsilon\beta^2 \gg 1, \epsilon \gg 1$ are simultaneously satisfied, the problem can be solved only in the gas phase, assuming that the concentration is equal to zero on the phase interface. Authors' abstract.

2/2

KIREYEV, P.S., KHOLOPKIN, A.I., KOL'TSOV, G.I., YUKHTANOV, YE.D.

"On The Nature Of The Quick Action Of Cadmium Telluride Detectors"

Abstract: The cadmium telluride p-n junction detectors used in this study had a working area of 0.1 cm^2, a thickness of 200 micrometer, a capacitance measured at 600 kHz of 5 pf with a back bias of 220 v, and a back current with this voltage of 0.1 microamp. The thickness of the region of the space charge, assessed from the voltfarad characteristic, had a magnitude of approximately 10 micrometer. The output signal was taken from a load resistance of 75 ohm, and the time constant of the circuit did not exceed 0.6 nanosec. With the use of an amplifier, the time constant increased to 4.6 nanosec. The complex structure of the output signal is interpreted as the result of a collection of charges from the space charge region, giving a current pulse with a duration of approximately 10 nanosec, and from the base with a pulse duration of 150-100 nanosec. The drift collection of charges from the base is assured as a result of redistribution of the field with a sufficiently high level of generation of the charge carriers. 2 fig. 9 ref. Received by editors, 4 Dec 1970.

1/1

Instruments and Measurements

KHOLOPKIN, A. I., KOL'TSOV, G. I., KIREYEV, P. S.

"Pulse Characteristic of a Detector With a PIN Silicon Struc-
ture"

Abstract: The authors calculate the pulse characteristic of
a silicon structure with PIN structure uniformly excited with
respect to volume. The detector is made by a method briefly
described by P. S. Kireyev and others in *Pribory i Tekhnika eks-
perimenta*, 1968, No 5, p 63. A pulse x-ray tube was used as
the source of emission, giving an x-ray pulse with an average
energy of the quanta of about 60 keV and a duration of several
nanoseconds. This enables comparison of the theoretical and
experimental pulse characteristic. The results of the study
show that silicon detectors with PIN structure can be suc-
cessfully used to register x-ray pulses in the nanosecond
range. Utilization of a simple model of the process of col-
lection of charge carriers enables investigation of the pulse
shape and the processes determining it. Fig. 4, bibl. 6.
1/1

USSR

BERKINBLIT, M. B., VVEDENSKAYA, N. D., DUDZYAVICHUS, I., KOVALEV, S. A., FOMIN,
S. V., KHOLOPOV, A. V., and CHAYLAKHYAN, L. M. Institute of Problems of Information
Transmission, Academy of Sciences USSR, Moscow and Moscow State University imeni
M. V. Lomonosov

"Study of Propagation of Excitation in Purkinje Fibers of the Heart Studied in a
Mathematical Model"

Abstract: Propagation of the action potential in a uniform Purkinje fiber was modeled
on a computer using Noble and McAlister models. The velocity of impulse propagation
in the Noble model is shown to be five times lower, and in the McAlister model two
times lower, than that measured experimentally. This discrepancy can be explained
by the underestimated value of the rate of growth of the forward front of the action
potential in the models used, since the calculations showed that the velocity of
the impulse propagation to a first approximation linearly depends upon the growth
of velocity of the forward front. The action potential in the region of fiber expan-
sion was modeled on the Noble Model. It passes through larger expansions than the
impulse in the Hodgkin-Huxley model, apparently because of the more extended time
of the heart impulse. It is also shown that geometric nonuniformity can provide a

1/2

USSR

BERKINBLIT, M. B., et al., Biofizika, Vol 15, No 3, May/Jun 70, pp 521-527

temporary delay in impulse propagation, which comprises a considerable part of
atrioventricular delay. It is suggested that the experimentally observed "hollow"
and "hump" on the background of the plateau of cardiac action potentials are caused
by the electrotonic "reflection" of the potential from geometric nonhomogeneities,
since the potentials of such a shape are reproduced in model calculations.

2/2

+2

USSR

BERKINBLIT, M. B., DUDZYAVICHYUS, I., KOVALEV, S. A., FOMIN, S. V., KHOLOPOV, A. V., and CHAYLAKHYAN, L. M., Institute of Problems of Information Transmission, Academy of Sciences USSR, Moscow

"Study of the Formation of a Local Response in a Nonuniform Membrane Corresponding to the Hodgkin-Huxley Model"

Abstract: The electric response of a model which consists of two membranes regions (one active and the other shunting) connected in parallel is considered. This model imitates biological objects containing membrane regions with a different threshold (e. g., neurons), as well as conditions of nonuniform membrane polarization. The transition is gradual in actual membranes, however. Shifts in the amplitude and duration of the reaction that develops, in the stimulation threshold, and in ionic currents as a result of shifts in the ratio of the excitable to nonexcitable area of the membrane are discussed. On the basis of the model, it is shown that the nonuniformity of the membrane considerably increases the range of strengths of the stimulating current at which a local response develops. The relations obtained
1/2

USSR

BERKINBLIT, M. B., et al, Biofizika, Vol 15, No 5, Sep/Oct 70, pp 873-880

explain some characteristics of the electric reactions of smooth muscles and
of myocardial tissue.

2/2

- 3 -

1/2   020   UNCLASSIFIED   PROCESSING DATE--23OCT70

TITLE--COMPUTER MODELING OF THE BEHAVIOR OF NERVE FIBER MEMBRANE UNDER
   RHYTHMIC STIMULATION -U-

AUTHOR-(05)-BERKINBLIT, M.B., DUDZEVICUS, I., KOVALEV, S.A., FOMIN, S.V.,
   KHOLOPOV, A.V.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 147-55

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NERVE TISSUE, CELL MEMBRANE, MATHEMATIC MODEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0017   STEP NO--UR/0217/70/015/001/0147/0155

CIRC ACCESSION NO--AP0105117
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0105117
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BEHAVIOR OF EXCITABLE MEMBRANE
UNDER RHYTHMIC STIMULATION WAS STUDIED USING THE MATH MODEL OF HODGKIN
AND HUXLEY. SUMMATION OF SUBTHRESHOLD STIMULI WAS REPRODUCED ON THE
MODEL. THIS PROCESS WAS MAINLY DETD. BY THE TIME CONST. OF THE RESTING
MEMBRANE. THE PERIODIC FALL OF IMPULSES AND THE CHARACTER OF IONIC
PROCESSES RESPONSIBLE FOR THIS PHENOMENON WERE STUDIED IN DETAIL.
EXISTENCE OF MAX. FREQUENCIES WAS SHOWN; THESE WERE REPRODUCED BY THE
MEMBRANE UNDER HIGH FREQUENCY STIMULATION, IN THE RANGE OF 140-170
RESPONSES-SEC. THE CHANGE OF FIBER IONIC GRADIENTS MAY BE THE CAUSE OF
FATIGUE AND OF GRADUAL TRANSITION FROM LONG CYCLES TO THE SHORTER ONES
IN THE PROCESS OF PROLONGED RHYTHMIC STIMULATION.   FACILITY:
INST. PROBL. INFORM. TRANSM., MOSCOW, USSR.

UNCLASSIFIED

1/3 - 009   UNCLASSIFIED   PROCESSING DATE--09OCI70
TITLE--THICKNESS AND STRUCTURE OF THE SEDIMENTARY COVER IN THE INDIAN
  OCEAN, (THICKNESS AND STRUCTURE OF SEDIMENTARY LAYER IN INDIAN OCEAN)
AUTHOR-(02)-NEPROCHNOV, YU.P., KHULOPOV, B.V.

COUNTRY OF INFO--USSR, INDIAN OCEAN

SOURCE--MOSCOW, DOKLADY AKADEMII NAUK SSSR. VOL. 191, NO. 1, 1970, PP.
  183-186
DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OCEAN, SEDIMENTARY ROCK LAYER, SEISMIC VELOCITY, SEISMIC
  REFLECTION, SEISMIC SOUNDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/1876   STEP NO--UR/0020/70/191/001/0183/0186

CIRC ACCESSION NO--AT0114325
                    UNCLASSIFIED

CIRC ACCESSION NO--AT0114325

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINCE 1960 THE INSTITUTE OF
UCEANOLOGY HAS BEEN CONDUCTING SEISMIC STUDIES OF CRUSTAL STRUCTURE IN
THE INDIAN OCEAN BY THE DEEP SEISMIC SOUNDING AND REFLECTED WAVES
METHODS. FIGURE 1 IN THE TEXT SHOWS EXACTLY WHERE THIS WORK HAS BEEN
DONE AND BY WHAT RESEARCH VESSELS. THIS ARTICLE IS DEVOTED EXCLUSIVELY
TO WHAT HAS BEEN LEARNED CONCERNING THE THICKNESSES OF THE SEDIMENTARY
LAYER IN THE INDIAN OCEAN AND FIGURE 2 IS A MAP SUMMARIZING DATA FROM
ALL SUCH RESEARCH. THE THICKNESS OF SEDIMENTS ON THE MID OCEAN REDGES
IS SMALL AND VERY VARIABLE. THE SLOPES OF RIFT CANYONS ARE USUALLY
WITHOUT A SEDIMENTARY COVER. IN THE ARABIAN SEA AND THE BAY OF BENGAL
THICKNESSES WERE RECKONED FROM THE SURFACE OF THE LAYER WITH A VELOCITY
OF 6.5 KM-SEC. FOR OTHER REGIONS THICKNESS OF SEDIMENTS WAS RECKONED TO
THE SURFACE OF THE LAYER WITH A VELOCITY OF 4.5-5.5 KM-SEC, THAT IS, IN
SOME AREAS PROBABLY APPLIES ONLY TO UNCOMPACTED SEDIMENTS RATHER THAN
THE ENTIRE SEDIMENTARY LAYER. MAXIMUM SEDIMENT THICKNESS (MORE THAN 1-2
KM) ARE CONCENTRATED IN THE NORTHERN REGIONS OF THE OCEAN WHERE
ACCUMULATIVE PLAINS ARE PRESENT, IN THE JAVA TRENCH AND NEAR THE SHORES
OF AFRICA. IN EXTENSIVE REGIONS OCCUPIED BY OCEAN BASINS AND MID
OCEANIC RIDGES THE THICKNESS OF THE UNCOMPACTED SEDIMENTS IS LESS THAN
0.5 KM AND VARIES GREATLY, PARTICULARLY ON THE RIDGES. THE TOTAL
THICKNESS OF THE SEDIMENTS IN THE OCEANIC BASINS AND ON THE RIDGES WILL
REMAIN OPEN UNTIL THERE IS A FULL UNDERSTANDING OF THE NATURE OF THE
LAYER WITH A VELOCITY OF 4.5-5.5 KM-SEC.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AT0114325
ABSTRACT/EXTRACT--IT IS ENTIRELY PROBABLE THAT IN MANY REGIONS AS A RESULT
   OF INTENSE VOLCANIC ACTIVITY THE LOWER PART OF THE SEDIMENTS HAS BEEN
   COMPACTED AND MIXED WITH VOLCANIC MATERIAL.   FACILITY: INSTITUTE
   OF OCEANOLOGY.

89

UNCLASSIFIED

TITLE--THICKNESS AND STRUCTURE OF THE SEDIMENTARY COVER IN THE INDIAN
OCEAN, (THICKNESS AND STRUCTURE OF SEDIMENTARY LAYER IN INDIAN OCEAN)
AUTHOR-(02)-NEPROCHNOV, YU.P., KHOLOPOV, B.V.

COUNTRY OF INFO--USSR, INDIAN OCEAN

SOURCE--MOSCOW, DOKLADY AKADEMII NAUK SSSR. VOL. 191, NO. 1, 1970, PP.
183-186
DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OCEAN, SEDIMENTARY ROCK LAYER, SEISMIC VELOCITY, SEISMIC
REFLECTION, SEISMIC SOUNDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/1876   STEP NO--UR/0020/70/191/001/0183/0186

CIRC ACCESSION NO--AT0114325
                            UNCLASSIFIED

CIRC ACCESSION NO--AT0114325

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SINCE 1960 THE INSTITUTE OF
UCEANOLOGY HAS BEEN CONDUCTING SEISMIC STUDIES OF CRUSTAL STRUCTURE IN
THE INDIAN OCEAN BY THE DEEP SEISMIC SOUNDING AND REFLECTED WAVES
METHODS. FIGURE 1 IN THE TEXT SHOWS EXACTLY WHERE THIS WORK HAS BEEN
DONE AND BY WHAT RESEARCH VESSELS. THIS ARTICLE IS DEVOTED EXCLUSIVELY
TO WHAT HAS BEEN LEARNED CONCERNING THE THICKNESSES OF THE SEDIMENTARY
LAYER IN THE INDIAN OCEAN AND FIGURE 2 IS A MAP SUMMARIZING DATA FROM
ALL SUCH RESEARCH. THE THICKNESS OF SEDIMENTS ON THE MID OCEAN REDGES
IS SMALL AND VERY VARIABLE. THE SLOPES OF RIFT CANYONS ARE USUALLY
WITHOUT A SEDIMENTARY COVER. IN THE ARABIAN SEA AND THE BAY OF BENGAL
THICKNESSES WERE RECKONED FROM THE SURFACE OF THE LAYER WITH A VELOCITY
OF 6.5 KM-SEC. FOR OTHER REGIONS THICKNESS OF SEDIMENTS WAS RECKONED TO
THE SURFACE OF THE LAYER WITH A VELOCITY OF 4.5-5.5 KM-SEC, THAT IS, IN
SOME AREAS PROBABLY APPLIES ONLY TO UNCOMPACTED SEDIMENTS RATHER THAN
THE ENTIRE SEDIMENTARY LAYER. MAXIMUM SEDIMENT THICKNESS (MORE THAN 1-2
KM) ARE CONCENTRATED IN THE NORTHERN REGIONS OF THE OCEAN WHERE
ACCUMULATIVE PLAINS ARE PRESENT, IN THE JAVA TRENCH AND NEAR THE SHORES
OF AFRICA. IN EXTENSIVE REGIONS OCCUPIED BY OCEAN BASINS AND MID
OCEANIC RIDGES THE THICKNESS OF THE UNCOMPACTED SEDIMENTS IS LESS THAN
0.5 KM AND VARIES GREATLY, PARTICULARLY ON THE RIDGES. THE TOTAL
THICKNESS OF THE SEDIMENTS IN THE OCEANIC BASINS AND ON THE RIDGES WILL
REMAIN OPEN UNTIL THERE IS A FULL UNDERSTANDING OF THE NATURE OF THE
LAYER WITH A VELOCITY OF 4.5-5.5 KM-SEC.

UNCLASSIFIED

UNCLASSIFIED

CIRC.ACCESSION NO--AT0114325   PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT--IT IS ENTIRELY PROBABLE THAT IN MANY REGIONS AS A RESULT OF INTENSE VOLCANIC ACTIVITY THE LOWER PART OF THE SEDIMENTS HAS BEEN COMPACTED AND MIXED WITH VOLCANIC MATERIAL.   FACILITY: INSTITUTE OF OCEANOLOGY.

UNCLASSIFIED   89

UNCLASSIFIED

TITLE—SCATTERING OF X RAYS NEAR THE MAGNETIC ORDERING POINT —U—

PROCESSING DATE--30OCT70

AUTHOR-(02)-NABUTOVSKIY, V.M., KHOLOPOV, YE.V.

CCUNTRY OF INFO—USSR

SOURCE—FIZ. TVERD. TELA 1970, 12(2), 619-21

DATE PUBLISHED————70

SUBJECT AREAS—PHYSICS

TOPIC TAGS—X RAY SCATTERING, CRYSTAL LATTICE STRUCTURE, MAGNETIC MATERIAL, SPIN LATTICE RELAXATION, CURIE POINT, MAGNETIC TRANSFORMATION, TEMPERATURE DEPENDENCE

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED

PROXY REEL/FRAME—1987/1971

STEP NO—UR/0181/70/012/002/0619/0621

CIRC ACCESSICN NO—AP0105045

UNCLASSIFIED

CIRC ACCESSION NO—AP0105045
ABSTRACT/EXTRACT—(U) GP-0- ABSTRACT. THE SCATTERING OF X RAYS ON
FLUCTUATIONS OF D. IN MAGNETS WAS CONSIDERED. UNDER THE EFFECT OF
EXCHANGE INTERACTION OF SPINS, THE LATTICE IS DEFORMED RANDOMLY, LEADING
TO ADDNL. BACKGROUND. ON THE OTHER HAND, ANOMALIES ARE PRODUCED IN THE
PHONON SPECTRUM. BY STUDYING THE TEMP. AND ANGULAR DEPENDENCES OF THE
BACKGROUND AND INTENSITIES OF BRAGG PEAKS, IT IS POSSIBLE TO DET. THE
TYPE OF THE CORRELATOR ENERGY AND THE DEPENDENCE OF THE RELAXATION TIME
OF THE SPIN SYSTEM ON TEMP. CLOSE TO THE CURIE TEMP. A CUBIC LATTICE
WAS CONSIDERED WITH 1 ATOM IN THE UNIT CELL. THE FORCES ACTING AT THE
LATTICE POINTS ARE ASSUMED TO BE CENTRAL, AND THE APPROXN. OF NEAREST
NEIGHBORS ONLY IS CONSIDERED. THERMAL AND EXCHANGE FLUCTUATIONS ARE
CONSIDERED AS STATISTICALLY INDEPENDENT. FOR DIFFERENT MAGNETS,
DIFFERENT MACHANISMS OF ANOMALIES CAN PREVAIL.   FACILITY: INST.
NEORG. KHIM., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR   UDC:621.791.16.052:621.7.011

KHOLOPOV, Yu. V., All-Union Scientific Research Institute of Electric
Welding Equipment

"Treatment of Welded Metal Joints with Ultrasound in Order to Relieve
Residual Stresses"

Abstract: The laboratory of ultrasonic welding of the author's institute
has studied the basic energetic characteristics of the process of stress
relief in welded joints by ultrasonic treatment and the possibility of
using powerful mechanical oscillating systems. Butt joints in several
titanium alloys, produced by argon-arc welding, were studied. Reliable
50-80% reductions in residual stresses were produced with energy densities
of 1000-1400 j/cm^3. Energy density seems to be the main factor deter-
mining the reduction in residual stress. At lower densities, for example
700 j/cm^3, slight reductions (5-15%) were achieved. Oscillating intensi-
ties of up to 10-15 w/mm^2 surface area can be used, producing an oscil-
lating stress of around 1 kg/mm^2. Materials can be processed at at least
20 m/hr.

1/1

USSR   UDC 621.791.16.669.24

MERIIH, B. V., Candidate of Technical Sciences, and KHOLOPOV, YU. V., All-Union Scientific Research Institute of Electric Welding Equipment

"Selection of a Welding Nozzle Material for the Ultrasonic Welding of Nickel"

Moscow, Svarochnoye Proizvodstvo, No 8, Aug 73, pp 26-27

Abstract: Various materials were tested for use as welding nozzles in the ultrasonic welding of NKO2 nickel. The materials tested were EA925 surfacing alloy, recommended for welding copper; 03I1, for welding aluminum; stellite, normally used for providing high erosion stability at elevated temperatures; TsN12 surfacing alloy, recommended for   galling operations a elevated temperatures; molybdenum rods(TsM2A alloy), R6M3 high-speed cutting alloy, and EI572 and EI787 heat-resistant Fe-base alloys, and EI893 and EI828 Ni-base alloys. Two nozzles made from each material were tested and the performance was evaluated by the number of spot welds that could be done before cleaning. Many of the materials were rejected for reasons of crack development, low mechanical strength at higher temperatures, etc. It was ascertained that the strength of a material in ultrasonic welding depends on its yield strength at the welding temperature, impact strength, and surface condition. In the welding of nickel
1/2

USSR

MERIIN, B. V., et al., Svarochnoye Proizvodstvo, No 8, Aug 73, pp 26-27

it was established that the best nozzle material was the nickel-base heat-resistant alloys. Three figures, six bibliographic references.

2/2

- 69 -

Welding

USSR

UDC: 621.791.16

KHOLOPOV, Yu. V.

"Ultrasonic Welding"

U'trazvukovaya svarka [English version above], Leningrad, Mashinostroyeniye Press, 1972, 152 pp.

Translation of Foreword: Powerful ultrasonic oscillations are broadly used in various branches of the national economy. At the present time, industry uses ultrasonic cleaning and degreasing of various products. Ultrasound is used to produce highly dispersed emulsions, to disperse solids in fluids, coagulate aerosols and hydrosols, degas liquids and melts. It has been established that powerful ultrasonic oscillations influence the structure and mechanical properties of a crystallizing melt.

Ultrasonic oscillations can relieve the residual stresses in welded seams produced by arc welding. Ultrasound has been found to influence the intensity of polymerization of adhesives quite effectively. The ultrasonic treatment of hard and superhard materials has been broadly introduced to industry.

One interesting and promising industrial application of ultrasound is ultrasonic welding (USW). This method of welding has very valuable technological properties: it is possible to join metals without removing surface

1/6

USSR   UDC: 621.791.16

Kholopov, Yu. V., U'trazvukovaya svarka, Leningrad, Mashinostroyeniye Press,
1972, 152 pp.

films or melting, excellent weldability is achieved for pure and superpure
aluminum, copper and silver; thin metal foil can be welded to glass and ceramic
substrates.

    Ultrasound is used to weld over half of all known thermoplastic polymers.
Ultrasonic welding of plastics is particularly valuable, since for many
polymers it is the only possible reliable method of joining. Polystyrene, one
of the polymers most commonly used for the manufacture of various mass-
produced products, is best welded by ultrasound.

    The possibility of using USW for the production of microelectronic pro-
ducts has particularly drawn the attention of researchers.

    Presently, equipment and technology for USW of metals and plastics have
been developed in the USSR and are being successfully used in industry.
Abroad (USA, England, FRG, Japan) a number of large firms are involved in the
development of equipment and technology for USW. Series production of USW
machines for welding of thin metal films, plastics, etc. has been undertaken.

    2/6   •

USSR

UDC: 621.791.16

Kholopov, Yu. V., U'trazvukovaya svarka, Leningrad, Mashinostroyeniye Press, 1972, 152 pp.

However, the process of ultrasonic welding of metals and plastics has not been sufficiently studied. Recommendations published earlier for the development of equipment and selection of the most important technological parameters of the welding mode have been incomplete and partially contradictory. The machines developed in the early 1960's failed to meet the requirements of industry in a number of areas of design and technology. Furthermore, the opinion developed that USW had an inexplicably unstable nature, manifested in a wide variation in the strengths of the joints produced, disappearance of the welding effect and general unreliability of this welding method.

The necessity therefore arose of analyzing published materials, summarizing the results of research and development work performed at the All-Union Scientific Research, Planning-Design and Technological Institute for Electric Welding Equipment (VNIIESO), the Acoustical Institute (AKIN), the Moscow Higher Technical School imeni Bauman (MVTU) and other organizations.

This book presents a brief description of existing concepts concerning the physical principles of the welding process. The general, most important

3/6

USSR

UDC: 621.791.16

Kholopov, Yu. V., U'trazvukovaya svarka, Leningrad, Mashinostroyeniye Press, 1972, 152 pp.

problems of technology and equipment are studied, typical machines for USW and specific examples of their utilization in industry are described.

Considering the similarity of the technological equipment used for welding of metals and plastics, reinforcement of plastics with metals, and also polymerization of adhesives and relief of residual stresses in seams produced by fusion welding, we hope that this work will be useful to a broad range of specialists involved in the utilization of powerful ultrasonic oscillations.

Table of Contents

USSR   •   UDC: 621.791.16

Kholopov, Yu. V., U'trazvukovaya svarka, Leningrad, Mashinostroyeniye Press, 1972, 152 pp.

5/6

USSR

UDC: 621.791.16

Kholopov, Yu. V., U'trazvukovaya svarka, Leningrad, Mashinostroyeniye Press, 1972, 152 pp.

KHOLOPOV, Yu. V. (Cand. of Techn. Sciences), SMIRNOV, A. S., MIRKIN, A. M., KASHCHEYEVA, L. P., IGNAT'YEV, A. S.,and ERLIKH, M. G. (Engineers)

"MTU-0,4-4 Ultrasonic Welder for Plastics and Metals"

Abstract: The New MTU-0,4-4 welder is a prototype of the MTU-0.4-3 machine with a redesigned welding head furnished with two types of mechanical oscillatory systems. The new unit is suited for welding plastic components in the radio engineering and electronics industry including micromotors, condensers, batteries, filters, cells, etc. The machine will join plastics with metals by pressing them into polymers,and will weld copper, aluminum,and nickel. The MTU-0.4-3 model has been successfully operated for several years at radio engineering plants and has shown yearly savings ranging from 5000 to 10,000 rubles. The technical specifications for the new ultra-sonic model are cited. The serial production project has been assigned to the Kaliningrad Plant of Electrical Equipment. (1 illustration)
1/1

- 21 -

UDC 621.791.89

USSR

POVSTYAN, V. I., KHOLOPOV, YU. V.

"Method of Stabilizing the Mechanical Strength of Joints in the Case of Ultra-sonic Welding of Metals"

Kiev, Avtomaticheskaya Svarka, No 7, 1971, pp 75-76

Abstract: A method of stabilizing the mechanical strength of joints during ultrasonic welding of metals and experimental work performed at the All-Union Scientific Research Institute of Electric Welding Equipment confirming the principles on which the method is based are discussed. The mechanical power of an oscillatory system is equal to the product of the force times the velocity $P_{mech} = Fv$ (where F and v are the oscillatory force and the system velocity). The required P_{mech} can be obtained by varying these parameters of the oscillatory system. Decreasing the amplification coefficient K with a given power of the oscillatory system essentially increases its equivalent force, and this permits stabilization of the amplitude in the welding process [Kholopov, Elek-tronnaya tekhnika, Series 10, No 7, 1967]. From the nature of the deviation of the mechanical power during oscillation of the network voltage, the following conclusions are drawn: first, it is most efficient to use oscillatory systems with small K, in individual cases $K \le 1$; secondly, stabilization of ξ_{weld} (the

1/2

USSR

POVSTYAN, V. I., et al., Avtomaticheskaya Svarka, No 7, 1971, pp 75-76

oscillatory displacement amplitude) can be increased appreciably under the
conditions of some power reserve of the power supply when the required amplitude
of the mechanical oscillations is reached by increasing the power in the conver-
ter instead of by varying the amplification coefficient. When using this system
to weld various materials (aluminum, copper and gold conductors with nickel,
copper, gold and aluminum film circuits on metal, glass and silicon), joints are
obtained with high stability of the mechanical strength.

2/2

UDC 621.791.06

USSR

NEFEDOV, V. V., and KHOLOPOV, Yu. V., All-Union Scientific Research Institute of Electrowelding Equipment

"Ultrasonic Foil Seam Welding"

Kiev, Avtomaticheskaya Svarka, No 12, Dec 70, pp 58-59

Abstract: A process developed by the All-Union Scientific Research Institute of Electrowelding Equipment for a continuous transverse system with 1.5 kW of power for ultrasonic seam welding of metal foils is described. Features of the process are its low sensitivity to loading and the broad zone of approach to the welding roller. Experiments on using the process for aluminum welding are described. The energy for the device is supplied by an UZM-1.5 ultrasonic generator whose output parameters are controlled by a T-141 thermal volt-ampere meter. The amplitude of the welding roller oscillations is measured by an UBV-2 vibrometer and its frequency by Lissajou figures using the S1-1 electronic oscillator and the GZ-34 sonic oscillator. A drawing and a description of the welding head are given as well as curves showing the strength of the weld seam as a function of the oscillation frequency of the welding head and the welding rate. Ultrasonic seam welding is seen as a highly productive method for joining aluminum, copper, nickel, and other foils.

1/1

TITLE--MTU 0.4-3 FOR ULTRASONIC METAL WELDING -U-

AUTHOR-(05)-KHOLOPOV, YU.V., ZAYTSEV, M.P., SMIRNOV, A.S., SOLDATENKOV,
   V.A., ERLIKH, M.G.
COUNTRY OF INFO--USSR, UNITED KINGDOM, UNITED STATES

SOURCE--MOSCOW, SVAROCHNOYE PROIZVODSTVO, NO. 5, 1970, PP 47-48

DATE PUBLISHED--------70

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

TOPIC TAGS--PATENT, WELDING EQUIPMENT, FOREIGN TECHNICAL RELATION,
   ULTRASONIC WELDING, MACHINERY MANUFACTURING PLANT/(U)MTU04 3 ULTRASONIC
   WELDER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605041/810 STEP NO--UR/0135/70/000/005/0047/0048

CIRC ACCESSION NO--AP0142720
                           UNCLASSIFIED

CIRC ACCESSION NO--AP0142720
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MACHINE FOR ULTRASONIC WELDING
OF METALS CONSISTS OF AN ACOUSTICAL SECTION, USING A MECHANICALLY
OSCILLATORY SYSTEM. THE WELDING HEAD, FIXED TO A TABLE, A HORIZONTAL
DRIVE SERVO FOR THE ACOUSTICAL SECTION, A CONTACT PRESSURE SERVO,
CONTROL EQUIPMENT FOR THE ENERGY FEED SOURCE, AND CONTROL PEDALS. THE
ACOUSTICAL SECTION HAS A MAGNETOSTRICTIVE TRANSDUCER, A KNIFE
EXPONENTIAL CONCENTRATOR, AND A RESONATING ROD OPERATING IN THE BENDING
OSCILLATION MODE. A PHOTOGRAPH OF THE MACHINE IS GIVEN TOGETHER WITH
FURTHER DETAILS OF ITS CONSTRUCTION, AND A CROSS SECTIONAL DIAGRAM OF
THE ACOUSTICAL SECTION IS PRESENTED. OPERATION OF THE MACHINE UNDER
PLANT CONDITIONS HAS SHOWN TAHT IT IS SIMPLE AND RELIABLE IN OPERATION.
EXPERIMENTS WERE CONDUCTED ON THE MECHANICAL STABILITY OF WELDS MADE BY
THE MACHINE IN THE COURSE OF FILM TRANSFORMER AND ELECTRICAL CAPACITOR
MANUFACTURE; THE RESULTS OF THOSE EXPERIMENTS ARE GIVEN IN TABULAR FORM.
ASSEMBLY LINE MANUFACTURE OF THE MTU 0.4-3 MACHINE HAS BEEN ORGANIZED
IN THE "ELEKTROSVARKA" PLANT IN KALININGRAD. PATENTS HAVE BEEN OBTAINED
FOR THE MACHINE IN GREAT BRITAIN AND THE UNITED STATES.
FACILITY: VNIIESO.

UNCLASSIFIED

USSR   UDC 621.791.16.057

KHOLOPOV, YU. V., Candidate of Technical Sciences, ZAYTSEV, M. P., Candidate
of Technical Sciences, SMIRNOV, A. S., Engineer, SOLDATENKOV, V. A., Engineer,
and ERLIKH, M. G., Engineer VNIIESO (All-Union Scientific Research Institute of
Electric Welding Equipment)

"The MTU-0.4-3 Machine for the Ultrasonic Welding of Metals"

Abstract: A description is given of the MTU-0.4-3 machine for the ultrasonic
welding of metals. Exploitation of the machine under industrial conditions shows
that it is simple and reliable in its operation. Wear-resistant welding tips
may produce up to 81,000 spot welds before servicing, and up to 250,000 before
being replaced. The use of the machine in the production of K50-6 and K50-7
aluminum electrolytic condensers resulted in a 14.5% reduction of rejects, and
in increased welding reliability, greater service life of the article, and a
39% increase in labor productivity. Specifications of the machine are as follows:

Power in kw	0.4
Operational frequency in kc	$22\pm7.5\%$

1/2

USSR

KHOLOPOV, YU. V., et al, Svarochnoye Proizvodstvo, No 5, May 70, pp 47-48

Contact pressure in kg   8-60
Thickness of welded articles
    in mm   0.01-0.2
Productivity   15-90 spots per min.
Welding tip feeding in mm   120 x 47 or 120 x 74
Gap between tips in mm   0-20
Dimensions in mm   1300 x 600 x 1235

2/2

DYADENKO, N. S., LUN'KO, A. I. and KHOLOPTSEVA, T. V., "Radiopribor"
Plant, Kiev

"Electrical Resistance of Copper-Graphite Powder Compositions"

Abstract: This article studies the change in electrical resistance
during the process of pressing of copper-graphite powder compositions
with "open" graphite and graphite covered with copper. For comparison,
experiments were also performed with pure copper. Furthermore, the
evenness of distribution of the components in pressings produced at the
greatest pressures was determined. The change in resistivity of copper-
graphite compositions during the process of their pressing shows that
a sharp reduction in resistivity of all compositions studied is observed
at pressing pressures of 1.2-1.6 t/cm^2, while resistivity decreases more
smoothly above this pressure. Compositions containing graphite granules
clad with copper have significantly lower resistivity than compositions
with "open" graphite, as a result of the formation of a solid copper
framework in the first case, and a graphite frame in the second.

1/1

USSR   UDC: None

KHOLOSHA, Ye. G., VOYEVODIN, Yu. M., VERKLOV, B. A., and ZAVGO-
RODNIY, Ye. Kh.

"Safety Valve for Hydraulic Systems"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye
znaki, No 27, 1971, p 124, No (11)351027

Abstract: The body of the valve contains a load spring in a gate
made of a hollowed cavity containing a two-piston differential
plunger. There is also an added cavity with a two-piston plun-
ger containing a stepped bore into which the first cavity fits,
thus lending the device compactness and a better structure. The
valve is made by cutting slits in the body into which the plungers
are inserted. A diagram of the device in cross section is given.

1/1

USSR

UDC 537.29

KORNILOV, E. N., KHOLPANOV, L. P. and PUPKOV, Ye. I., Tula

"Effect of Electrolyte Composition and Temperature on the Anodic Dissolution of VT-14 Titanium Alloy"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 72, pp 130-133

Abstract: Experimental data are presented on an investigation of the anodic polarization of VT14 titanium alloy in different electrolytes and on a determination of the limiting stage of the anode process during electrochemical treatment. It was shown that the dissolution rate and anodic polarization of the alloy depends primarily on anion composition and temperature of the electrolyte and that the limiting stage of VT14 dissolution is electrochemical for the electrolytes used: 15% KBr (pH 8.2), 15% NaCl + 1% NaF (pH 8.3), 15% NaCl (pH 7.5) and 14% KF (pH 9.2). Of these electrolytes, the bromide and chloride-bromide electrolytes had the greatest electrochemical activity, which allows them to be recommended for the electrochemical treatment of VT14. 3 figures, 1 table, 7 bibliographic references.

1/1

USSR   UDC 532.516

KHOLPANOV, L. P., SHKADOV, V. Ya., MALYUSOV, V. A., ZHAVORONKOV, N. M.

"A Theoretical Study of Gravitational Runoff of Thin Layers of Liquid Under Wave Formation"

V sb. Teplo- i massoperenos. T. 1 (Heat and Mass Transfer. Vol. 1 -- Collection of Works), Minsk, 1972, pp 186-197 (from RZh-Mekhanika, No 8, Aug 72, Abstract No 8B741)

Translation: The problem of the flow of a thin liquid film over a vertical plane in the absence of gas flow and the analogous problem of a film in the presence of a gas flow washing the film are solved in the nonlinear approximation. To solve the first problem the flow function and the variable thickness of the film are expanded in series in terms of harmonics. Equations for the expansion coefficients obtained after substituting expansions into the Navier-Stokes equations and the boundary conditions are solved by computers. Figures are given showing the lines of flow and the ratio of the surface velocity to the average (with respect to the film thickness) for two values of the Galilean number $G = gh^3/v^2$. It is pointed

1/2

USSR

KHOLPANOV, L. P., et al, Teplo- i massoperenos. T. 1, Minsk, 1972, pp 186-197

that the flow function and the tangential stress at the wall take on negative values at the valleys of the waves for $G > 45$. The second problem of a film interacting with a gas is solved under the assumption of a parabolic velocity profile of the liquid in the film (the Kapitsa assumption). The problem of the motion of the gas is not solved but the interaction of the film with the gas is taken into account by assigning some constant tangential stress on the surface. The equation of the surface in this problem is also sought in the form of an expansion in terms of harmonics and the authors restrict themselves to the second approximation in terms of the amplitude. The value of the square of the amplitude is given for the case of downward flow $\alpha^2 = R/g(1-T/2)-1/^3/_2 + R/4G \cdot T$, where T is the dimensionless tangential stress. 14 ref. L. N. Maurin.

2/2

1/2   041   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--EFFECT OF THE MUTUAL DIFFUSION OF ACCEPTORS ON THE STRUCTURE OF
  DIFFUSED P N JUNCTIONS IN SILICON CARBIDE -U-
AUTHOR-(03)-VIOLIN, E.YE., KOVANKO, V..V, KHOLUYANOV, G.F.

CCUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 231

DATE PUBLISHED------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PN JUNCTION, SILICON CARBIDE, PHYSICAL DIFFUSION,
  SEMICONDUCTOR BAND STRUCTURE, IMPURITY LEVEL, BORON, ETCHED CRYSTAL,
  THERMAL EMF, PHOTO EMF

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/1993   STEP NO--UR/0449/70/004/001/0231/0231

CIRC ACCESSION NO--AP0105067
                             UNCLASSIFIED

CIRC ACCESSION NO--AP0105067

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INFLUENCE OF REVERSE DIFFUSION
OF THE ORIGINAL COMPENSATING ACCEPTOR ON THE STRUCTURE OF P N JUNCTIONS
WAS STUDIED ON 6H, N TYPE SIC CRYSTALS.   AN ELONGATED TRANSITION REGION
OF HIGH RESISTIVITY MAY BE PRODUCED WITHIN THE P N JUNCTION STRUCTURE.
EXPTL. WORK WAS CARRIED OUT ON P N JUNCTIONS PREPD. BY DIFFUSION OF B
INTO N DOPED SIC CRYSTALS THAT WERE COMPENSATED DURING GROWTH BY BE.
ELECTROLYTIC ETCHING AS WELL AS PHOTOEMF. AND THERMOEMF. MEASUREMENTS
SHOW A P MINUS P MINUS N STRUCTURE, WHERE P IS A REGION WITH APPROX. 10
PRIME7 OHM CM RESISTIVITY.   THE P LAYER WIDTH FROM CAPACITANCE
MEASUREMENTS AND FROM ETCH PIT EVALUATION IS 1.8-2.7 MU IN CRYSTALS OF
0.5-2 OHM CM RESISTIVITY.   THESE VALUES AGREE WITH THE KNOWN DIFFUSION
COEFFS. OF BE AND B IN SIC.   FACILITY: LENINGRAD. ELEKTROTEKH.
INST. IM. UL'YANOVA, LENINGRAD, USSR.

USSR

KHOLYAVKO, V. I., FEFELOV, M. A.

"Nonlinear Characteristics of a Thin Delta Wing Close to an Interface"

Translation: The authors consider an approximate method for calculating
the lift of a thin delta wing of low aspect ratio with a sharp edge close
to a solid or free (in the case of a hydrofoil) surface. The calculation
is based on the linear theory of an isolated wing (determination of the
potential component of lift), on the analogy with a suction force on the
leading edge (determination of the nonlinear component), and on the theory
of a thin body (accounting for the interface). Simple analytical relations
are found for calculating the lift of the wing over a wide range of angles
of attack. Authors' abstract.

1/1

USSR   UDC 629.78.015.532.522

ZHURAVLEV, V. N. and KHOLYAVKO, V. I.

"Integral Method of Calculating Semi-Limited Laminar Flow"

Abstract: An approximate integral method of solving the problem of propagation of a laminar, immersed boundary layer of an incompressible liquid along a hard plane surface was presented. For determining the basic characteristics of the given form of flow, integral relationships of impulses and conservation conditions were employed as well as the universal profile of velocity natural for the jet and boundary portion of the flow. Results are compared with an earlier published precise solution and approximation. Author's view, 3 figures, 4 bibliographical references.

1/1

USSR   UDC: 629.78.015: 533.68.685

KHOLYAVKO, V.I. and USIK, YU. F.

"Effect of Wind Tunnel Boundary Layer on Flow Around Low Aspect Ratio Wing"

Translation: The flow past a thin, plane, low aspect ratio wing in a round test section of a wind tunnel is investigated. The analysis is based on general relations of the thin body theory and on relations obtained for the connected mass. Solutions are obtained, which make it possible to determine the corrections of the lift and center of pressure of the wing, taking into account the boundary layer of the round wind tunnel of both closed and open type (3 illustrations, 2 references, resume).

1/1

USSR

ZHURAVLEV, V. N., KHOLYAVKO, V. I.

"Integral Method of Calculating a Semi-Limited Laminar Stream"

Samoletostr. i Tekhn. Vozd. Flota. Resp. Mezhved. Temat. Nauch.-Tekhn. Sb.
[Building of Aircraft and Air Force Technology, Republic Interdepartmental
Thematic Scientific and Technical Collection], 1972, No 29, pp 3-7, (Trans-
lated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No
10 B683, by V. M. Kovalenko).

Translation: An approximate integral method is presented for solving the
problem of propagation of a laminar submerged stream of an incompressible
fluid adhering to a hard, flat surface. The integral relationship of im-
pulses and the condition of conservation, plus the velocity profile sug-
gested by the authors

$$\bar{u} = \eta e^{0.5(1-\eta^2)}$$

suitable for stream and wall sectors of the flow, are used to determine
the basic characteristics of the this type of flow; here $\bar{u} = u/u_m$, $\eta =$
$= y/y_m$, $u_m(x)$ is the maximum velocity of longitudinal flow in the section
in question at distance y_m from the wall. The nature of change of the
1/2

USSR

ZHURAVLEV, V. N., KHOLYAVKO, V. I., Samoletostr. i Tekhn. Vozd. Flota.
Resp. Mezhved. Temat. Nauch.-Tekhn. Sb., 1972, No 29, pp 3-7.

values of y_m and u_m along the x axis is determined from the condition of
self-similarity of the flow. The results of calculations of tangential
friction stress on the wall, the flow volume per second and the momentum
through an arbitrary section of the boundary layer are quite similar to
the corresponding results of the precise solution (Akatnov, N. I., Tr.
Leningr. Politekhn. In-ta., 1953, No 5).

2/2

USSR

UDC 533.69.01+533.662.013

KHOLYAVKO, V. I., USIK, Yu. F.

"Effect of the Flow Boundaries of a Wind Tunnel on Flow Over a Wing of Low Aspect Ratio"

Samoletostr. i tekhn. vozd. flota. Resp. mezhved. temat. nauch.-tekhn. sb. (Aircraft Construction and Engineering Activities of the Air Force. Republic Interdepartmental Thematic Scientific-Technical Conference), 1972, No. 28, pp 3-9 (from RZh-Mekhanika, No 8, Aug 72, Abstract No 8B422)

Translation: Flow around a thin plane wing of low aspect ratio in a wind tunnel with a circular working area is discussed. The solution is obtained on the basis of general relationships of the theory of a thin body and relationships obtained for a connected mass. Solutions are obtained which make it possible to determine the magnitude of the errors in the coefficients of lift and the position of the center of pressure of the wing considering the effect of : flow boundaries of a wind tunnel of circular cross section with a closed and open working area. Authors abstract.

1/1

USSR

KHOLYAVKO, V. I., USIK, Yu. F.

"Torque Characteristics of a Short-Span Wing in a Limited Flow of a Non-viscous Fluid"

Samoletostr. I Tekhn. Vozd. Flota. Resp. Mezhved. Temat. Nauch.-tekhn. Sb, [Aircraft Construction and Air Force Technology. Republic Interdepartmental Thematic and Scientific and Technical Collection], 1971, Vol 25, pp 3-8. (Translated from Referativnyy Zhurnal Mekhanika, No 1, 1972, Abstract No 1B328 by the authors).

Translation: Based on the general dependences of the theory of a thin body and the approximate relationships produced for an attached mass, the torque characteristics of a thin, flat, short-span wing moving near a solid or free surface (hydrofoil) are studied. The influence of the shape of the wing in plan and its span on the position of the center of pressure of the wing is studied for various angles of attack with constant distance from the division boundary and with a change in the position of the center of pressure through the height of the wing over the surface of the division boundary with a constant angle of attack. The influence of the derivatives of the center of pressure with respect to the angle of attack and flying altitude on longitudinal static stability of a short-span wing is analyzed.

1/1

USSR

UDC 629.78.015:533.6.015.4

KHOLYAVKO, V. I.

"Aerodynamics of a Nonplanar Low Aspect Ratio Wing in a Stream of Nonviscous Fluid"

Samoletostr. i Tekhn. Vozd. Flota. Resp. Mezhved. Temat. Nauch.-Tekhn. sb. [Aircraft Building and Air Force Technology Republic Interdepartmental Thematic Scientific and Technical Collection], No 24, 1971, pp 8-13, (Translated from Referativnyy Zhurnal, Raketostroyeniye, No 2, 1972, Abstract No 2.41.127 from the Resume).

Translation: Thin body theory methods are used to study the flow of a nonviscous, incompressible fluid around a thin low aspect ratio wing bent in the longitudinal direction. The possibility is studied of using cylindrical twisting (curvature) of the wing to produce the desired aerodynamic characteristics. The aerodynamic characteristics of nonplanar and planar wings are compared. 4 Figures; 3 Biblio. Refs.

1/1

USSR   UDC 533.69.01

KHOLYAVKO, V. I., Khar'kov

"Nonplanar Wing With Slight Elongation Near Division Surface"

Mekhanika Zhidkosti i Gaza, No 6, 1971, pp 49-55.

ABSTRACT: A study is made of the flow of a nonviscous fluid around a thin
wing of slight elongation, bent in the longitudinal direction, near a hard
or soft (for a moving wing) surface. The possibility is studied of using
the cylindrical twist (curvature) of the wing to provide the necessary longi-
tudinal balancing and decrease drag with a fixed lift. The study is per-
formed by methods of the theory of a thin body.

1/1

USSR

UDC: 517.945.72

KHOMA, G. P. and YATSYUK, V. T.

"Shortening the Computing Method for Partial Differential Equations"

Kiev, Ukrainskiy Matematicheskiy Zhurnal, No 3, 1972, pp 418-421

Abstract: The method of the second of the above-named authors, presented in an earlier article (K issledovaniyu sistem differentsial'nykh uravneniy v prostranstve C^∞, Sb, Asimptoticheskiye i kachestvennyye metody v teorii nelineynykh kolebaniy -- Investigating Systems of Differential Equations in C^∞ Space, in the collection Asymptotic and Qualitative Methods in Nonlinear Oscillation Theory, Izd. In-ta matematiki AN UkSSR, Kiev, 1971) is used to shorten the method for computing differential equations containing partial derivatives. A partial differential equation is considered and is transferred to C^∞ space, a point in which is the computed totality of continuous functions uniformly limited by some constant.

1/1

SHATROVSKAYA, N. I., and KHOMASURIDZE, Ye. I., Moscow Institute of Vaccines
and Sera imeni Mechnikov

"Phage Typing of Enteropathogenic Escherichiae of Serological Groups 011:K58,
055:K59, and 026:K60"

Abstract: Enteropathogenic Escherichiae collected in the Georgian Republic
were typed with phages of Nicolle's collection. Pathogen 011:K58 prevailing
in Georgia differs from the Lille type 011:K58H:12 prevailing in France inas-
much as it is not lysed by phage No 11 and is poorly lysed by phage No 20.
Therefore it is categorized as a variant of Lille. Pathogen 055:K59, unlike
the Londres and Bethum type 055:K59H6, is also lysed by phage No 4 and is
therefore classified as a variant of Bethum. In addition, two new phage types
of the 026:K60:H28 serotype were detected: one lysed by phages No 10 and 14,
which received the name Tbilisi, and one lysed by phages No 10, 14, and 11,
which received the name Tbilisi var. Mzheta. Nicolle's collection of phages
is regarded as very useful for diagnosing enteropathogenic escherichiae of
the known types and for detecting new variants.
1/1

USSR

NIKOLAYEV, A. V., GINDIN, L. M., SOKOLOV, A. P., ZAKHAROV, V. F., KHOMAYKO, L. A.

UDC 669.778.053.4.094

"Leaching Antimony out of the Khovu-Aksinsk Arsenates of Cobalt-Nickel Concentrates by Caustic Soda Solutions"

V sb. Sintez, ochistka i analiz neorgan. materialov (Synthesis, Purification and Analysis of Inorganic Materials -- collection of works), Novosibirsk, Nauka Press, 1971, pp 171-174 (from RZh--Metallurgiya, No 4, Apr 72, Abstract No 4G309)

Translation: The technological scheme for refining arsenate concentrates was developed using the method of two-stage leaching out in NaOH solutions under optimal conditions: 1) the first leaching out stage: initial NaOH concentration 250 g/ℓ, S:L = 1:4, temperature 80°, duration 1 hour; 2) second leaching out stage: initial NaOH concentration 250 g/ℓ, S:L = 1:4, temperature 80°, duration 2 hours. Aqueous repulping of the hydroxide cake took place under these conditions: S:L = 1:7, temperature 60°, duration 2 hours. The separation of the trisodium arsenate or regeneration of the alkali from trisodium phosphate by lime was carried out under the following conditions: S:L = 1:4-5 (with respect to lime), temperature 90°, duration 1.5 hours. The extraction of As in the solution was 98.5-99%. Nonferrous metals convert in practice wholly to the hydroxide concentrates, extraction of the metal in which is: 99.9% Co, 99.9%

1/2

USSR

NIKOLAYEV, A. V., et al., Sintez, ochistka i analiz neorgan. materialov, Novo-
sibirsk, Nauka Press, 1971, pp 171-174

Ni, and 99.7% Cu. The concentrate yield is 48-55% by weight of the arsenate
concentrate. The technological scheme was checked on a semiindustrial scale.

2/2

- 17 -

TITLE--SATURATED VAPOR PRESSURE AND ENTHALPIES OF VAPORIZATION OF
   INDIVIDUAL SODIUM AND POTASSIUM CHLORIDES -U-
AUTHOR-(03)-LUKASHENKO, E.YE., KOROBEYNIKOV, A.P., KHOMAYKO, I.A.

COUNTRY OF INFO--USSR

SOURCE---ZH. FIZ. KHIM. 1970, 44(2), 341-3

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--SODIUM CHLORIDE, POTASSIUM CHLORATE, VAPOR PRESSURE,
   THERMODYNAMIC CALCULATION, HEAT OF VAPORIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1987/0860
                              STEP NO--UR/0076/70/044/002/0341/0343
CIRC ACCESSION NO--AP0104296
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0104296

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   SATD. VAPOR PRESSURES OF NACL(S),
NACL(L), KCL(S), AND KCL(L) WERE MEASURED AT 923-1123DEGREESK BY USING
THE METHOD OF KNUDSEN AND LANGMIUR. THE CORRESPONDING EQUATIONS, LOG P
SUBSAT. EQUALS F(T), WERE DERIVED AND THE AV. VALUES OF DELTA H
SUBEVAPN. CALCD. THE RESULTS OBTAINED BY THE LANGMUIR METHOD AT
923DEGREESK WERE LOWER THAN DATA IN THE LITERATURE.

UNCLASSIFIED

USSR

UDC 539.3:534.1

KHRISTENKO, A. S., KHOMCHENKO, A. N.

"Natural Vibrations of Orthotropic and Isotropic Cylindrical Shells With Concentrated Masses"

Translation: Free vibrations of closed cylindrical orthotropic shells with a concentrated mass rigidly fastened at some point on the surface of the shell are considered. The shell is assumed to be resting freely along the edges. Familiar equations are used. The separation method is applied in the solution: initially there is a separate consideration of the motion of the shell under the action of an unknown radial force from the side of the mass and the motion of the mass under the action of the shell. The shape of vibrations of the shell is represented in a double trigonometric series. The force of interaction of the mass and the shell is assumed to be a sinusoidal function. An analytical

1/2

USSR

representation of the spectrum of the natural frequencies of the shell and the frequencies with the connected mass is given. The expressions cbtained are investigated on a computer. The dynamic stress of the state of the shell is investigated under the condition of the introduction of an approximate concentrated shear modulus. Expressions for the bending and maximum moments are given. A. G. Ugodchikov.

2/2

KHEMCHIK, L. M.

DISPOSAL OF RADIOACTIVE WASTES

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

CONTENTS

PAGE

- a -

[I - USSR - K]

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

[Article by K. P. Zakharova, V. V. Kulichenko, Yu. P. Martynov, L. A. Sobolev, and L. M. Khomchik, State Committee for the Use of Atomic Energy of the USSR, IAEA publication SM-163 (30), Moscow, 1972, Russian pp 1—24]

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

Now already there is no doubt of the possibility of bituminization of wastes with a specific activity of up to 1 curie per liter. At the same time, works are known on the enclosure of wastes with a specific activity up to 100 curies per liter in bitumen [1].

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

1. Radiation-chemical Stability of Bitumens

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

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

- 14 -

per liter already; after two years of storage the rate of gas liberation becomes insignific nt and the pressure in the vessel does not increase, in practice. For specimens with a specific activity of 1.54 and 15.4 curies per kilogram gas liberation is still observed, but, however, its rate begins to decrease, and the tendency toward a reduction in radiation in a specimen with a specific activity of 15.4 curies per kilogram. The beginning of noticeable gas liberation and an increase in pressure in a tank for blocks with a specific activity of 1.5 curies per kilogram is noticeable considerably earlier than for blocks of a specific activity of 15.4 curies per kilogram. At the present time, specimens have been prepared with a specific activity of 55 and 52 curies per kilogram with respect to strontium-70 on the basis of bitumen BN-III (60% BN-III + 40% NaNo₃). The volume of the specimen was 83 cubic centimeters (weight 100 grams, free volume in the tank 157 cubic centimeters). During the first forty days, after which gas liberation began. After 150 days the pressure somewhat exceeded the pressure in the tank.

For pure bitumen BN-III and two specimens based on it, irradiated in a Co-60 installation with a power of the dose of 2.1 x 10⁵ rad per hour, the composition of the gaseous phase formed as a result of radiolysis was determined (Table 1).

A comparison of these results with some obtained earlier [2] with a dose of absorbed energy of 7 x 10⁶ rad and a power of the dose of 2.9 x 10⁴ rad per hour demonstrated that the increase in the power of the dose and the dose of absorbed energy leads to an increase in the content of hydrogen and the appearance of methane, hydrocarbons of group C₂, and carbon dioxide in the gaseous phase.

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

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

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

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

- 15 -

TITLE--VOLT AMPERE CHARACTERISTICS OF GALLIUM ARSENIDE P-N TUNNEL
JUNCTIONS IRRADIATED BY FAST NEUTRONS -U-

AUTHOR-(05)-ALEKSEYEVA, Z.M., BRUDNYY, V.N., KRIVOV, M.A., MALYANOV, S.V.,
KHOMCHUK, O.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., FIZ. 1970, 13(3), 146-9

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--VOLT AMPHERE CHARACTERISTIC, GALLIUM ARSENIDE PN JUNCTION,
NEUTRON IRRADIATION, TUNNEL DIODE, FAST NEUTRON, RADIATION DOSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/1218   STEP NO--UR/0139/70/013/003/0146/0149

CIRC ACCESSION NO--AT0133215

UNCLASSIFIED

CIRC ACCESSION NO--AT0133215   UNCLASSIFIED   PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LIMITING RADIATION DOSES WERE STUDIED FOR EXPTL. TUNNEL DIODES PREPD. AT DIFFERENT TEMPS. FOR FUSION IN A VACUUM (500-650DEGREES), USING A GAAS BASE ALLOYED WITH ZN UNTIL A CARRIER CONCN. OF (5-6) TIMES 10 PRIME19-CM PRIME3 WAS REACHED. THE P-N JUNCTION WAS CREATED BY THE FUSION OF SN ON THE (111) SIDE, AND THE OHMIC CONTACT BY THE FUSION OF IN. AS THE RADIATION DOSE IS INCREASED, THERE IS A SMOOTH INCREASE IN THE EXCESS CURRENT. AT A DOSE OF 1 TIMES 10 PRIME16 NEUTRONS-CM PRIME2 THE CHARACTERISTICS CHANGE MARKEDLY; THE SEGMENT WITH A NEG. RESISTANCE DISAPPEARS ON THE RIGHT BRANCH. ISOTHERMAL HEATING AT 473DEGREES K BRINGS ABOUT THE APPEARANCE OF A "HILLY" STRUCTURE AT 0.9-1.1 V ASSOCD. WITH THE REARRANGEMENT OF GROUP DEFECTS AND PARTIAL ANNEALING OF THE DEFECTS INDUCED BY THE RADIATION. DIODES OBTAINED AT HIGH FUSION TEMPS. HAVE THE GREATEST RADIATION STABILITY.   FACILITY: TOMSK. GOSUNIV., TOMSK, USSR.

UNCLASSIFIED

KHOMENKO, B. G.

HYDROLOCATION CAPACITY OF DOLPHINS

Much attention is now being devoted to the echolocation of dolphins because the acoustic system of a dolphin is exceed-ingly well developed and many of its components can be used in engineering.

The ranging system of a dolphin consists of two parts: transmitting -- a system of air bladders, larynx, fatty lens, reflector (skull bones), and receiving system -- organs of hearing, mechanoreceptors in the head, upper and lower jaws.

Transmitting part of dolphin ranging system. Along the nasal passage there are three pairs of sacs or bladders (pre-maxillary, tubular and vestibular). We will assume that sound generation occurs during passage of air from a sac into the nasal passage. The air bladders are surrounded by a system of fine, well-differentiated muscles regulating the air flow. In accordance with the nature of the sounds uttered by the dol-phin and the complexity of the sound-forming system, one can postulate presence of a complex semantic-information process in the articulation of the sounds used in intercourse and navi-gation. The tubular and premaxillary sacs evidently partici-pate in formation of the directional diagram, since the ves-tibular sacs protrude from the frontal part of the skull, playing the principal role in focusing of sounds (5,9). The system of air sacs, without taking into account the influence of the skull and lens, should have a directional characteris-tic different from circular.

Shifting of the directional characteristic is neces-sary for a total scanning of space. It is evidently possible to bring about some displacement of the ray by changing the

75

USSR

UDC 591.8:591.483:599:573

KHOMENKO, B. G., Institute of Zoology, Academy of Sciences UkrSSR

"Histological Structure and Innervation of the Sound Apparatus (Nasal Sacs) of Dolphins" (Presented by V. G. Kas'yanenko, Member of the Academy of Sciences UkrSSR)

Kiev, Doklady Akademii Nauk Ukrainskoy SSR, Seriya B-Geologiya, Geofizika, Khimiya i Biologiya, Vol 32, No 1, Jan 70, pp 83-87

Abstract: The structure and innervation of the air-bearing nasal sacs of Black Sea dolphins were studied. These sacs form a part of the respiratory apparatus and also function as generators of sonic oscillations. A morphological study showed that the wall of the air-bearing sacs consists of three histologically distinct zones: the epithelium forming the lining of the sac cavity; the muscular layer; and an elastic membrane that is bound to the muscles which regulate the activity of the sacs. The source of innervation of the sacs is a branch of the upper jaw portion of the trigeminal nerve. The dorsal cheek branch of the facial nerve innervates the muscles of the sacs. The intraorgan innervation of the sacs is represented by terminal receptor structures of various forms. In addition to simple button-like, mace-like, and pear-shaped receptors, complex encapsulated efferent endings and efferent

1/2

USSR

KHOMENKO, B. G., Doklady Akademii Nauk Ukrainskoy SSR, Serioya B-Geologiya, Geofizika, Khimiya i Biologiya, Vol 32, No 1, Jan 70, pp 83-87

endings of the Krause bulb type are present. Most of the sensory endings of the types mentioned function as baro-, tropho-, and mechanoreceptors. The structure of the sensory and motor nerve endings is similar to that found in terrestrial mammals.

2/2

Miscellaneous

1

USSR

UDC: 539.21:536.42

BARANOVSKIY, V. M., GUREVICH, M. Ye., LARIKOV, L. N., KHOMENKO, B. S., SHMATKO, O. A.

"Investigation of Spatial Effects During Aging"

Metallofizika. Resp. mezhved. sb. (Physics of Metals, Republic Interdepartmental Collection), 1970, vyp. 27, pp 65-79 (from RZh-Fizika, No 9, Sep 70, Abstract No 9Ye477)

Translation: The article is a brief survey of methods of studying spatial effects, with a description of the EAD-65 and AD-2 automatic dilatometers developed at the Institute of Physics of Metals, Academy of Sciences of the Ukrainian SSR. The data obtained on the automatic equipment are compared with those obtained on an optical dilatometer. The spatial effects during aging of an alloy of cobalt with 31.89 percent tungsten is calculated. The calculation is compared with experimental data. Authors' abstract.

1/1

USSR

UDC 539.194 + 547.558.1

PEN'KOVSKIY, V. V., YEGOROV, Yu. P., and KHOMENKO, D. P., Institute of
Organic Chemistry, Acad. Sc. Ukrainian SSR, Kiyev

"Electronic Structure of Cyclotriphosphazenes and Phosphadiazines"

Abstract: The Hofmann's method was used to calculate energy properties and
the distribution of electron density of cyclotriphosphazenes and phospha-
diazines with various substituents. Phosphonitrile chloride trimer is not
an aromatic system; furthermore, no intracyclic P-P bonds have been observed.
The phosphodiazine molecules may be viewed as π-systems based on the pyrimi-
dine group with participation of the phosphorus atom; in this compound the
σ- and π-electron density is shifted towards the pyrimidine fragment. The
effect of substituents on the distribution of electronic density in phosphorus
containing cycles has been discussed.

1/1

USSR

UDC 547.558.1:543.42

DYADYUSHA, G. G., KOZLOV, E. S., and KHOMENKO, D. P., Institute of Organic Chemistry, Acad. Sc. Ukrainian SSR, Kiyev

"IR Spectra and Calculations of the Vibrations of Phosphonitrile Chloride Trimer and of the Phosphorus Acid Phosphazo Derivatives With Isotopes ^{14}N and ^{15}N"

Abstract: An investigation was carried out of the IR spectra of phosphonitrile chloride trimer $(PNCl_2)_3$ (I), trichlorophosphazotrichlorophosphonium hexachlorophosphonate $[Cl_3PNPCl_3]^+PCl_6^-$ (II) and trichlorophosphazodichlorophosphonyl $Cl_3P=NPOCl_2$ (III) with nitrogen isotopes ^{14}N and ^{15}N and the relationship between the absorption bands in (I) has been refined. Calculations of the vibrations of (I) were used in determining the force constants of the rings (10^6 cm^{-2}): $K_{PN} = 10.13$; H^{PN}_{PN} (through the phosphorus) = -0.35; H^{PN}_{PN} (through the nitrogen) = 0.266. The value of the PN bond interactions through the nitrogen was used to calculate the vibrations in II and III. It was shown that the PNP angle in these compounds should be in the range of 130-140°. The $POCl_2$ group in compound III should be capable of conjugation with the P=N bond.
1/1

USSR   UDC 616.981.25-092.9-085.371-039.71]-092

LEVINA, M. N., and KHOMENKO, I. M., Rostov-na-Donu Institute of Epidemiology
Microbiology, and Hygiene

"The Effect of Some Vaccines on the Course of Experimental Staphylococcal
Infection"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1971,
pp 68-72

Abstract: Nonspecific sensitization of mice and rabbits with whooping cough
and BCG vaccines, respectively, considerably aggravated the course of in-
fection produced by a mixture of virulent Staphylococcal strains whether the
Staphylococci were inoculated simultaneously or several days after injection
of the vaccine. Phagocytosis was markedly depressed and over half the mice
died (compared with 20 to 30% in the control). However, a single immuniza-
tion of mice with typhoid vaccine had no appreciable effect on the course
or outcome of infection with Staphylococci.

1/1

USSR

UDC 616.61-002.151

GRINSHPUN, O. Ya., Col Med Serv, Candidate of Medical Sciences;
VAS'KOV, V. G., Lt Col Med Serv; MAKSIMOV, Ye. V., Lt Col Med
Serv; ANDRONOV, A. S., Capt Med Serv; MARAKUSHEV, M. I.;
KHOMENKO, L. M.; TSEY, A. L.

"Some Clinical Data on Hemorrhagic Nephrosonephritis"

Abstract: Observation of 17 cases of hemorrhagic nephrosone-
phritis (HNN) sporadically occurring in the Transcarpathian
Region revealed a typical progress of this disease through
three stages. In the first stage, lasting 2-4 days, body tem-
perature rapidly rose to 38-40°C, the patients complained about
headache, pain in muscles and joints, and general weakness:
they were photophobic, had cutaneous hyperemia in the face and
upper trunk, and some developed dry noises in their lungs. An
incorrect diagnosis was made in all cases, partly because this
disease is very rare in Transcarpathia. In the second stage,
lasting 4-8 days, clinical signs characteristic of HNN developed

1/2

USSR

GRINSHPUN, O. Ya., et al, Voyenno-Meditsinskiy Zhurnal, No 8, Sep 71, pp 50-51

in all patients, and the proper diagnosis was established in all. Only four patients had hemorrhagic conjuctiva or nosebleed. All suffered from gastrointestinal disorders and from oliguria (down to 200 ml per day) with hematuria and proteinuria. The third stage -- convalescence -- began on the 9th - 11th day with the onset of diuresis, which soon reached 6-8 liters per day. Hemorrhages, vomiting, fever, and other discomfort subsided, and the patients regained appetite and thirst. In the initial days of polyuria, concentration of gamma globulins in the protein fraction increased to 27.9%, while plasma potassium decreased to 9.3 mg% and plasma calcium to 6.8 mg%. The patients lost 5-8 kg body weight. The stage of convalescence lasted 2-3 weeks. The treatment was symptomatic, and all patients recovered without complications.

2/2

USSR

KHOMENKO, N. R.

"Effect of Sevin and Chlorophos on the Single and Rhythmic Terminal Lamella Potentials of the Muscle Fibers of the Skeletal Muscles of White Rats"

Translation: The terminal lamella potentials of the lateral tail muscle of rats injected intraperitoneally with chlorophos (I) 425 mg/kg (1/2 DL_{50}; first group), sevin (II; 400 mg/kg, 1/2 DL_{50}; second group) or I 40 mg/kg (third group) and II 42.5 mg/kg (fourth group) over a 3 month period were studied (method given).   In the control group the duration of the terminal lamella potential was 60 milliseconds, in the second group, 87 milliseconds, in the first group, 103.7 milliseconds, in the third group, 165 and in the fourth group, 123.   In the control group the maximum amplitude was detected after 19 milliseconds, in the first group, after 13.63 milliseconds, and in the second group, after 15.97 milliseconds. The variations in duration of the terminal lamella 1/2

USSR

KHOMENKO, N. R., Gigiyena primeneniye, toksikol. pestitsidov i klinika otravl., vyp. 9, Kiev, 1971, pp 202-206

potential and the rate of development of the maximum pulse were also detected for rhythmic stimulation of the nerve. It is considered that on injection of small doses of I and II, the anticholinesterase effect prevails; for large doses, their effect on the chemoreceptor plays a role.

2/2

- 91 -

USSR   UDC 669.1:548.53

KHOMENKO, O. A., TSEYTLIN, A. M., and KHIL'KEVICH, I. F., Ural Scientific
Research Institute of Ferrous Metallurgy

"Effect of Recovery and Recrystallization on Young's Modulus and Its Tempera-
ture Function in Invar-Type Fe-Ni Alloys"

Abstract: The effect of plastic deformation and tempering (annealing) temper-
ature on the modulus of elasticity and its components was studied for alloys
N36T and N45T which do have a tendency to be precipitation hardened. The
nickel content in these two alloys was 36.4 and 45.5% respectively. Along
with the effect of plastic deformation, recovery, and recrystallization on the
temperature function of magnetized and unmagnetized samples, the invar anomaly
of elasticity and E-effect were also examined. Results of this study showed
that in the deformed and low-tempered states the anomaly of the temperature
function of Young's modulus is mainly determined by the invar effect of
elasticity. The contribution of the E-effect and invar anomaly in E(T) for
alloy N36T is practically the same in the recrystallized state (annealed at
1100°C), while for alloy N45T the chief component is the E-effect. Stable
elinvar properties are realized for specified compositions of invars with the
1/2

USSR

KHOMENKO, O. A., et al., Fizika Metallov i Metallovedeniye, Vol 35, No 2,
Feb 73, pp 309-317

aid of deformation and incomplete annealing. 6 figures, 3 tables, 14
bibliographic references.

2/2

Superalloys

USSR

UDC 620.193.91

KHOMENKO, O. A., Ural Scientific Research Institute of Ferrous Metallurgy

"Influence of Aging Elinvars on Young's Modulus and Its Temperature Dependance"

Abstract: A study was made of the influence of different types of aging (hardening, hardening strain, deformation hardening) on the modulus of elasticity, the coefficient of thermal elasticity, and their components in high-temperature N49T3, N44KT2, and N44KT3 Elinvars. It is demonstrated that the behavior of the modulus of elasticity and of the coefficient of thermal elasticity at aging is determined by individual effect of the change in processing the composition of the solid solution, of the texture, the degree of heterogeneity, the level of internal stresses, and the processes of recovery and recrystallization on the "paramagnetic" modulus of elasticity and the Invar and ΔE effects.
1/2

USSR

Characteristics of magnetized and nonmagnetized specimens of N49T3, N44KT2, and N44KT3 alloys and the variations of Young's modulus after different types of aging are analyzed by reference to diagrams. Seven figures, two tables, twelve bibliographic references.

2/2

Pharmacology and Toxicology

"Change in Membrane Potential of Spinal Cord Motoneurons in Rats Treated With Sevin and Chlorophos"

Abstract: The insecticides sevin and chlorophos (Dipterex) increased the membrane potential of rat spinal motoneurons, the extent varying with the dose. Single doses of 425 and 400 mg/kg of sevin and chlorophos increased membrane potential by 37.3 and 33.3%, respectively, compared with the baseline values. Daily doses of 42.5 and 40.0 mg/kg for 3 months increased the potential by 14.9 and 16.1%. Daily doses of 8.5 and 8 mg/kg for 6 months increased membrane potential by 4.9 and 6%. The hyperpolarization of the motoneuron membranes is ascribed to the increased permeability of nerve cell membranes to calcium and sodium.

1/1

KHOMENKO   O. A.

O. A. Khomenko and A. V. Sizykikh, Ural Scientific Research Institute of
Ferrous Metallurgy; submitted to press 8 October 1971, final version
22 June 1972.

UDC 669.1:539.32

ANOMALY OF YOUNG'S MODULUS IN DISPERSION-HARDENED INVARS

pages 1170-1177

The anomaly of the modulus of elasticity in dispersion-
hardened invars treated for maximum strength is considered.
It is demonstrated that the anomaly of the modulus of
elasticity and its temperature coefficient in alloys containing
titanium is determined mainly by the invar effect. The
amplification of the concentration heterogeneity of austenite
in the formation of zones of the Guignet-Preston type and
the liberation of the intermetallides causes an increase in
the contribution of mechanostriction of the paraprocess
to the elastic behaviour of the invars.

The anomaly of the modulus of elasticity in binary and alloyed single-
phase invars of a Fe--Ni system was considered in many works [1--6].
However, information concerning the contribution of invar and E-effects
to the anomaly of Young's modulus in dispersion-hardened invars are
limited [7], although it is precisely this class of alloys that presents the
greatest interest for practical purposes.

In this work the anomaly of Young's modulus is investigated at room
temperature and at increased temperatures in alloys of a Fe--Ni--Ti system,
which is the basis for the majority of industrial alloys of the elinvar type.

- 26 -

Table 1

Chemical Composition of Alloys, % by Weight

(1) Group	Ti			Ni		
A	1.4—1.5	32.0	15.0	27.0	34.6	41.0	41.4
B	1.2—2.0	34.2	39.7	41.6	43.6	43.6	47.9
C	2.9—3.4	37.8	40.1	42.9	43.5	48.2	51.2	50.2

Key: (1) group of alloys.

The chemical composition of experimental alloys is given in Table 1. The content of titanium in alloys of group A corresponds to the limit of solubility[1], and alloys of groups B and C are dispersion hardened. The alloys were smelted in an open induction furnace with a basic lining. The ingots forged into rods with a diameter of 15 millimeters specimens were fabricated which were subjected to heat treatment for maximum strength according to the following regime: hardening from 1000°Centigrade in water, tempering at 700°, soaking 6 hours.

Young's modulus in the demagnetized E and magnetized En states was determined without a field and in a saturation field (up to 700 oersteds) in the temperature range from room temperature to 600° according to the methodology described earlier[5] [En = En + En magnetized]. Young's modulus in the paramagnetic state En was obtained by extrapolation of the curve E(T) from the region of temperatures above the Curie point to the ferromagnetic region[4, 5]. The magnitude of the ΔE-effect was calculated according to the formula $\Delta E_s = \frac{E_n - E}{E}$, and the invar effect of elasticity from the

$$VE_{s..} = \frac{E_s - E}{E_s},$$

$$[E_m = E_{mi}; E_s = E_{pi}; E_s = E_{(s...} - E_{(s...}...}]$$

Thermal expansion was measured on a dilatometer of type UVD with a gain of 485. From the dilatograms the coefficient α of thermal expansion and the spontaneous volumetric magnetostriction ω = 3 λ₅ were calculated [λₛ...spontaneous magnetostriction).

of the specimen: Δl_n is the linear spontaneous $(l$ is the length l—p where l—p is the length of Δl_{sp} was found from the expression $\Delta l_{sp} =$ temperatures below the Curie point, obtained by means of "paramagnetic" state at of the length of the specimen from the extrapolation $\Delta l_{sp} =$ magnetic region [l_p — l_p = l_paramagnetic]. The magnetostriction in the ferro-measured by the tensometric bridge method at an intensity of the magnetic field of up to 1200 oersteds. The sensitivity of the installation amounted to

- 27 -

KHOMENKO, P. V.

CONCERNING YA.I. DREYERMAN'S ARTICLE ENTITLED "SOME DEBATABLE ISSUES PERTAINING TO METHODS OF EVALUATING THE EFFECTIVENESS OF DISPENSARY CARE"

[Article by P. V. Khomenko, candidate of medical sciences, and V.A. Vasilenko, Chair of Social Hygiene and Organization of Public Health (header by Professor I.D. Khoroah), Kiev Medical Institute; Moscow, Sovetskoye Zdravookhrane-nive, Russian, No 5, 1971, submitted 3 December 1970, pp 45-47]

In an article published in the journal, Sovetskoye Zdravookhraneniye, (1970, No 9), Ya.I. Dreyerman voiced a number of debatable proposals dealing with methods of evaluating the effectiveness of dispensary care.

We share this author's view, that to date the number of patients under dispensary care does not average more than 60-80 per physician at many therapeutic institutions, and 20-30 per physician in a narrow specialty (surgeon, neuropathologist, and others). However, we cannot agree that one of the main causes of the relatively inadequate coverage of the population with dispensary care is that doctors are overloaded in the outpatient service. With today's load and proper organization of the one doctor can render satisfactory dispensary care to 150-200 people per year. If he sees 2-3 people out of the total number under dispensary care every day, he will receive about 50 visits per month, and about 500 per year. If one patient under dispensary care makes three visits on an average, the doctor will be able to take care of 166 people per year.

In medical institutions where less than 100-150 people are under dispensary care by one doctor, the quality of organization of his work in general and dispensary service in particular is poor. With such a work load, according to estimates, about 30 percent of the entire population is covered by dispensary care.

Further increase in number of individuals subject to dispensary care is directly related to a decrease in the doctor's total load.

It would be expedient to analyze dispensary services with due consi-

- 60 -

*Published for the purpose of discussion.

USSR

UDC 547.917+639.94

KHOMENKO, V. A., PAVLENKO, A. F., SOLOV'YEVA, T. F., and OVODOV, YU. S.,
Institute of Biologically Active Substances, Far Eastern Scientific Center of
the USSR Academy of Sciences

"Polysaccharides if the Brown Algae. IV. Fragmentation of the Sargassan and
Pelvetian Molecules"

Abstract: It was desired to discover simpler fragments of sargassan and pelve-
tian, which are polysaccharides previously investigated by this research group
and derived from the algae Sargassum pallidum and Pelvetia Wrightii, respec-
tively.

Assuming the presence of a glucoronide chain, the authors subjected
these biopolymers to alkali degradation (with NaOH) in the presence of sodium
borohydride, and also induced hydrolysis in these substances. Treating sar-
gassan and pelvetain with dilute sulfuric acid produced xylose, fucose and
a series of digosaccharides, with detachment of a polypeptide in the form of
a dark-brown precipitate. When degraded with alcohol and subjected to complete
acid hydrolysis, these polysaccharides yielded galactose, mannose, xylose,
fucose and glucoronic acid, along with glucoronolactone.

1/2

USSR

KHOMENKO, V. A., et al., Khimiya Prirodynkh Soyedineniy, No 4, 1971, pp 393-396

Based on these results and on chromatographic data, the presence of a linear, high-molecular fragment in both the sargassan and the pelvetian molecules was concluded.

2/2

USSR

UDC 547.917+639.64

SOLOV'YEVA, T. F., KHOMENKO, V. A., PAVLENKO, A. F., and OVODOV, YU. S., Institute of Biologically Active Substances, Far Eastern Scientific Center of the USSR Academy of Sciences

"Polysaccharides of the Brown Algae. V. Smith's Degradation of Sargassan and Pelvetian"

Tashkent, Khimiya Prirodnykh Soyedineniy, No 4, 1971, pp 396-398

Abstract: This study is an extension of earlier work on the fragmentation of sargassan and pelvetian with use of partial hydrolysis; here, degradation by F. Smith's method was used.

Polyaldehydes, obtained by per-iodic oxidation of sargassan and pelvetian, were reduced to polyalcohols, which were then subjected to both complete and partial hydrolysis. In the complete hydrolysis, a mixture of monosaccharides obtained by evaporation of the polyalcohols was studied by gas-liquid chromatography in the form of the corresponding acetates and aldonitryl acetates; here glycol and glycerine aldehydes, glycerine, fucose, mannose and galactose were produced, along with minute amounts of xylose, threite, erythrite and propylane glycol (this result was obtained for both the sargassan- and the pelvetian-derived polyalcohols). Similarly, partial hydrolysis yielded fucose, galactose, mannose, glucoronic acid, and a small amount of propylane glycol.

1/2

USSR

SOLOV'YEVA, T. F., et al., Khimiya Prirodnykh Soyedineniy, No 4, 1971, pp 396-398

It was thus demonstrated that in pelvetian and sargassan, the monosaccharide groups exhibit a high degree of substitution (sulfate groups, branching); while those groups of xylose which are part of the polysaccharides are to a considerable degree oxidized by the periodate.

2/2

- 54 -

Glass and Ceramics

PUKO, R. A., PINAYEVA, M. M., KUZNETSOVA, V. V., KOZHAN, T. M., DEMIDOVICH,
B. K., and KHOMENKO, V. S., Institute of Physics, Academy of Sciences,
Belorussian SSR

"Luminescence of Terbium-Activated Glass"

Abstract: Results are presented from a study of the adsoption spectra
and luminescence as well as the kinetics of luminescence of sodium-silicate
glass with additions of Al_2O_3, CaO and MgO and activated with Tb^{+3} ions.
Glass compositions were selected close to industrial glasses used in the
technology of structural materials. The spectra in kinetics of silicate
glass luminescence containing 15 wt % Na_2O and varying concentrations of
Al_2O_3, CaO, and MgO with Tb^{+3} ions revealed differences associated with
glass composition. The spectra of glasses containing Al_2O_3 have additional
lines at 526 and 535 microns which are absent in the other glass spectra.
There was observed a tendency of diminished luminescence damping time from
the $^5D_4$ level according to the degree of increased CaO and MgO content.

1/2

USSR

②

PUKO, R. A., et al., Neorganicheskiye Materialy, Vol 9, No 10, Oct 73, pp 1805-1808

The relaxation times were determined for luminescence levels $^5D_3$ and $^5D_4$ of the Tb^{+3} ion in the glasses and it was shown that the kinetics of $^5D_4$ level colonization in the case of nonresonant excitation determines the transitions from the $^5D_3$ level. Two figures, two tables, seven bibliographic references.

2/2

2

USSR

SEVCHENKO, A. N., KUZNETSOVA, V. V., PUKO, R. A., KHOMENKO, V. S.,
RAZVINA, T. A., and KOZHAN, T. M.

"Intramolecular and Intermolecular Transfer of Excitation Energy
in Complex Compounds of Rare-Earth Metals"

Abstract: This paper gives the results of experiments for deter-
mining, through the kinetic method, the probability of intramole-
cular and intermolecular transfers of excitation energy in crys-
tals of rare-earth element (REE) complexes. With excitation by
short light pulses, the kinetics of the luminescence reflects the
trend of the population and the deactivation of the luminescence
level and yields direct information concerning the probability of
these processes. A pulsed laser with molecular nitrogen was used
as the excitation source, with a pulse duration of $2 \cdot 10^{-8}$ sec and
a wavelength of 337.1 nm in the long-wave band of ligand absorp-
tion. The authors are connected with the Physics Institute of
the USSR Academy of Sciences.

1/1

1/2   008   UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--PURIFICATION OF LEUCOPARAFUCHSINE -U-

AUTHOR-(05)-ILMUSHKIN, V.M., LAZARENKO, L.I., KHOMENKO, V.V., KOLCHEV,
   V.D., FOTCHENKO, A.S.
COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 266,977
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CHEMICAL PATENT, CHEMICAL PURIFICATION, BIOLOGIC PIGMENT, DYE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/1809   STEP NO--UR/0432/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132075
                            UNCLASSIFIED

CIRC ACCESSION NO--AA0132075
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. LEUCOPARAFUCHSINE (I) WAS PURIFIED
BY TREATING TECH. I WITH HCL AND NACL IN THE PRESENCE OF 5-20PERCENT NA
SUB2 S SUB2 O SUB4.2H SUB2 O (ON THE WT. OF I) AT 20-110DEGREES. THE
RESULTING I.3HCL WAS FILTERED, DISSOLVED IN DISTD. WATER IN THE PRESENCE
OF AACTIVATED C, AND REFILTERED. THE RESULTING FILTRATE WAS TREATED
WITH NH SUB4 OH AND PURE I FILTERED AND DRIED.

UNCLASSIFIED

1/2   018   UNCLASSIFIED   PROCESSING DATE--11DEC70
TITLE--USING A DFZ-402 TYPE HIGH FREQUENCY SHIELD IN CONJUNCTION WITH THE
OAPV-401 UNIT ON A LINE WITH A TAP -U-
AUTHOR--KHOMENKO, YU.YE.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, ELEKTRICHESKIY STANTSII, NO 3, 1970, PP 84-86

DATE PUBLISHED-------70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRONIC SHIELDING, TRANSMISSION LINE, HIGH
FREQUENCY/(U)DFZ401 HIGH FREQUENCY SHIELD, (U)DFZ402 HIGH FREQUENCY
SHIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1227   STEP NO--UR/0104/70/000/003/0084/0086

CIRC ACCESSION NO--AP0123191
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0123191
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OPERATION OF THE DFZ 402 TYPE
HIGH FREQUENCY SHIELD USED ON LINES WITH A TAP IS ANALYZED. THE SHIELD
IS EQUIPPED WITH THE OAPV 401 DEVICE. A CIRCUIT IS DESCRIBED FOR THE
MUTUAL INTERRUPTION OF DFZ 402 HIGH FREQUENCY PROTECTION TRANSMITTERS.
METHODOLOGY IS PRESENTED FOR TESTING CIRCUITS WITH SHORT CIRCUIT K. Z.
IMMITATION AND MONFULLPHASE REGIME CN OVERHEAD LINES (VL). TEST RESULTS
ARE GIVEN.

UNCLASSIFIED

TITLE--COPOLYMERIZATION OF BUTYL METHACRYLATE WITH 5,ALKYL,1,3,DIALLYL
   ISOCYANURATES -U-
AUTHOR-(04)-CHOVNIK, L.I., KHOMENKOVA, K.K., PAZENKO, Z.N., KORNEV, K.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. UKR. 1970, (1) 9-10

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--COPOLYMERIZATION, ACRYLATE, HEAT RESISTANCE, TENSILE STRENGTH,
   ELONGATION, HETEROCYCLIC NITROGEN COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1509   STEP NO--UR/0436/70/000/001/0009/0010

CIRC ACCESSION NO--AP0112503
                          UNCLASSIFIED

CIRC ACCESSION NO--AP0112503
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COPOLYMN. OF H SUB2 C:CMECO
SUB2 BU (I) WITH 5,ALKYL,1,3,DIALLYL ISOCYANURATES (II) (U.S.S.R.
165,460) GAVE HEAT RESISTANT COPOLYMERS. THE BEST I-II RATIO WAS 95:5.
THE BULK COPOLYMN. WITH 0.3PERCENT BZ SUB2 O SUB2 AT 60-8ODEGREES GAVE
COPOLYMERS WITH THE FOLLOWING PROPERTIES (ALKYL, PERCENT WT. LOSS AT
210DEGREES IN 150 MIN, TENSILE STRENGTH AT BREAK IN KG-MM PRIME2,
PERCENT ELONGATION AT BREAK GIVEN): ME, 2.11, 0.300, 455; ET, 3.29,
0.658, 362.5; BU, 3.35, -; -; AMYL, 3.41, 0.4005, 4416.5; OCTYL, 5.73,
0.5280, 448; BROMOETHYL, 2.73, 0.6501, 198. THE EXPTL. VALUES FOR
POLY(BU METHCRYLATE) WERE 55.97, 0.4897, AND 510 (IN THE ABOVE ORDER).

UNCLASSIFIED

USSR

TRUKHAYEV, R. I. and KHOMENYUK, V. V.

"The Theory of Nonclassical Games Problems"

Teoriya Igr [Games Theory -- Collection of Works], Yerevan, 1973, pp 304-309 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V451)

Translation: Games are studied in which the sets of strategies are subsets of Hilbert spaces. Necessary conditions for optimality are produced. Algorithms for the solution based on continuous gradient methods are studied.

1/1