UNCLASSIFIED   PROCESSING DATE--02OCT70

2   025

TITLE--ANIONIC POLYMERIZATION OF EPSILON CAPROLACTAM IN THE PRESENCE OF
ACTIVATORS WITH UNSATURATED GROUPS -U-

AUTHOR-(05)-KOLYASHAK, V.V., FRUNZE, T.M., ZAITSEV, V.I., KURASHEV, V.V.,
BABCHINITSER, T.M.

COUNTRY OF INFO--USSR

Babchinitser T M

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(2) 416-23

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--POLYMERIZATION, CAPROLACTAM, SODIUM, POLYMER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0324   STEP NO--UR/0459/70/012/002/0416/0423

CIRC ACCESSION NO--AP0111518
                    UNCLASSIFIED

RC ACCESSION NO--AP0111518
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE POLYMN. OF EPSILON CAPROLACTAM
(I) IN THE PRESENCE OF NA IS ACCELERATED BY N,METHACRYLOYL,
EPSILON,CAPROLACTAM (II) AND H SUB2 C:CHCONPH SUB2 (III).   THE
PROPERTIES OF POLY,EPSILON,CAPROLACTAM DEPEND ON THE AMT. OF II OR III
USED.   VERY SATISFACTORY POLYMER BLOCKS WERE OBTAINED WHEN 0.35-1.00
MOLE PERCENT II OR 0.50-2.00 MOLE PERCENT III WERE ADDED TO I TOGETHER
WITH 1 EQUIV. (WITH RESPECT TO II OR III) NA.   LARGER OR SMALLER AMTS.
OF II OR III GAVE BLOCKS WITH SURFACE CRACKS.   THE INCREASE IN THE AMT.
OF II OR III INCREASES THE INSOLY. OF THE POLYMER IN HCONME.SUB2.   THIS
IS DUE TO THE PARTIAL COPOLYMN. OF I WITH II OR III.   THE MECHANISM OF
ACCELERATION OF POLYMN. BY II OR III INVOLVES FORMATION OF POLYMERIC
ACTIVATOR MOLS., SUCH AS IV.

Acc. Nr.
AP0048857

Abstracting Service:
CHEMICAL ABST.

Ref. Code
UR 0459

90918u   Viscometric and electron-microscopic studies of the polypyromellitimide of anilinephthalein. Korshak, V. V.; Pavlova, S. A.; Boiko, L. V.; Babchinitser, T. M.; Vinogradova, S. V.; Vygodskii, Ya. S.; Golubeva, N. A. (Inst. Elementoorg. Soedin., Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 56-62 (Russ). The hydrodynamic properties of the title polymer (I) (prepd. from pyromellitic dianhydride and aniline-phthalein by a high temp. polycyclization in $PhNO_2$ or by a 2-stage procedure) were studied. Viscosity and mol. wt. measurements indicated that the reaction conditions had no effect on the structure of I. The intrinsic viscosity of I was proportional to the mol. wt. (2000-160,000). The rigid I macromols. had a linear structure and were present in soln. as assocd. globules. The dimensions of the globules (as measured by electron microscopy) were similar to those calcd. from viscometric data using the P. Debye-A. M. Bueche equation (1948).   CKJR

LD

REEL/FRAME

19800624

USSR   UDC   591.1

GENIN, A. M., BABCHINSKIY, F. V. and KOTOVSKIY, Ye. F.

"The Effect of Pure Oxygen Under Normal Atmospheric Pressure
on Animals"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya,
No 1, 1971, pp 69-73

Abstract: Mice and rats were exposed to a mixture of gases con-
sisting of 94 to 98% oxygen and about 0.8% carbon dioxide (rela-
tive humidity 60 to 90% and temperature 18 to 23°C) for 5 days
to determine whether shifts resulting from the inhalation of pure
oxygen are due to increased partial pressure of oxygen in the
blood or to pulmonary disturbances and development of asphyxia.
During the first 6 hours, inhalation of pure oxygen had a stim-
ulating effect on motor and sexual activity and metabolism.
Signs of pathological disorders in the lungs and other organs
(perivascular edema and small diapedetic hemorrhages) appeared
after 6 to 12 hours' exposure. During the next 12 hours patho-
logical disorders in the lungs intensified although external
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USSR

GENIN, A. M., BABCHINSKIY, F. V., and KOTOVSKIY, Ye. F.,
Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1,
1971, pp 69-73

respiration remained adequate. Thereafter pathological changes
became severe enough to impair gas exchange between the alveoli
and blood and gave rise to hypoxia. Hypoxia together with the
inhibition of enzymatic activity and hematopoiesis led to the
accumulation of toxic substances, metabolic acidosis, and
degenerative changes in the parenchymatous organs. It was con-
cluded that inhaling pure oxygen under normal pressure first
causes systemic disturbances resulting from increased oxygena-
tion of the blood and then pulmonary disorders, secondary changes
in the heart, liver, kidneys, etc., and death.

2/2

Agriculture

USSR   UDC 632.4:582.285.1

BABCHUK, I. V., Director of the Plant Protection Administration,
Ministry of Agriculture Ukrainian SSR and NOVICHENKO, L. G., Senior
Agronomist

"Controlling Smut in the Ukraine"

Moscow, Zashchita Rasteniy, No 1, 1970, pp 11-12

Abstract: Measures used to control covered smut of barley and wheat
in the Ukraine in 1969 are described. A 0.3-1.2% incidence of
covered smut was reported in the area, with an insignificant degree
of damage on farms in six oblasts, and complete absence of the
disease in two oblasts. Two other oblasts had rayons without any
sign of disease. The majority of farms in the Ukraine have switched
to seed treatment with suspensions and moistening. It is noted that
the kolkhozes and sovhozes must be better equipped with all-purpose
machinery to improve covered smut control. Measures are now being
taken for broader introduction of thermal decontamination at farms
of scientific research institutes and experimental stations equipping
the kolkhozes and sovhozes with high-quality seed to improve control
1/2

BABCHUK, I. V., et al., Moscow, Zashchita Rasteniy, No 1, 1970,
pp 11-12

of loose smut. This led to reduction in development of the disease
in 1969, although more radical measures are required. The 40 instal-
lations in the republic for decontaminating seeds with respect to
loose smut are inadequate. In view of the fact that the All-Union
Corn Institute has been most successful in controlling smut, the
Ukrainian SSR Ministry of Agriculture held a three-day seminar on
smut at this institute in 1969. Special recommendations were pre-
pared for heat treatment of seeds, which will be published in early
1970.

2/2

USSR

NOVOSELOVA, L. V., ZUBTSOVA, L. I., BABEL', V. G., and PROSKURYAKOV, V. A.

"Study of the Conversions of Dialkylphosphites in Synergistic Mixtures with MB-1 in the Process of Inhibited Oxidation of Decane"

Abstract: An attempt has been made to investigate the chemical conversions of diisopropylphosphite $\sqrt{DIP}$ and diisooctylphosphite $\sqrt{DOP\_}$ in the process of inhibited oxidation of decane at 175^0 by means of IR and PMR spectroscopy. On the basis of spectral data it has been shown that the hydrocarbon portion of DIP and DOP are eliminated in pure state and in the hydrocarbon medium (175^0) with the formation of phosphorus acid. An effect of synergism has been established for the composition of phosphorus acid with 4,4'-methyl-bis-2,6-di-tert-butylphenol $\sqrt{MB-1\_}$ during the process of inhibited oxidation of white oil, the reaction being carried out at 175^0, with total concentration of 0.005 g-mole/l.

1/1

USSR .   UDC 665.4:542.943

NOVOSELOVA, L. V., BABEL', V. G., ZAYCHENKO, L. P., PROSKURYAKOV, V. A.

"Synergism of Mixtures of Alkylphenol and Phosphonate Antioxidants in the Process of Oxidation of White Paraffin Oil"

Leningrad, Zhurnal prikladnoy khimii, Vol 64, No 10, Oct 71, pp 2349-2352

Abstract: This paper deals with new antioxidants, their mixtures and synergistic properties. Alkylphenols are the basic antioxidants; thiocarbonates, sulfides, phosphites and phosphonates are the synergists which enhance the inhibiting action of alkylphenols. An attempt to explain the mechanism and factors responsible for the synergistic effect is described here. The experiment involved dialkylphosphonate (as the synergist) and alkylphenol (antioxidant). Mixtures of both were tested on white paraffin oil as a readily oxidizable medium. The total concentration of the inhibitors in the oil was constant and equal to 0.005 mol/l. Only the "phosphite-phenol" ratio was varied. Binary diagrams were plotted on the basis of the test data for
1/2

each individual component and of the phosphite-phenol mixtures
as functions of concentration. The results show ionol:MB-1 in
ratios of 0.001:0.004 and 0.002:0.003 to have the highest syn-
ergistic effect. The maximum induction period exceeded that of
the most effective inhibitor, at a concentration of the latter
equal to the total, by a factor of 2.0-2.5. When used independ-
ently, the antioxidants were not very effective. In mixtures
with thiophosphonate they inhibit oxygen absorption, with the
effect directly proportional to the content of thiophosphonate.
Curves are shown to demonstrate the kinetics of oxygen absorption
during oxidation of paraffin oil in the presence of different
mixtures of inhibitors at 175°C; the induction period of paraffin
oil oxidation as a function of phosphonate: ionol molar ratio.

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Acc. Nr: AT0048673   Abstracting Service: Ref. Code:
                       INTERNAT. AEROSPACE ABST. 5-70 UR 3663

A70-25294 #   Low-cycle fatigue of heat-resistant materials EI612 and EI437B at normal and high temperatures (Malotsiklovaia ustalost' zharoprochnykh materialov EI612 i EI437B pri normal'nykh i povyshennykh temperaturakh). A. E. Babenko (Kievskii Politekhnicheskii Institut, Kiev, Ukrainian SSR). Problemy Prochnosti, vol. 2, Feb. 1970, p. 35-39. In Russian.

Results of low-cycle fatigue tests of heat-resistant materials EI612 and EI437B under soft loading conditions in the temperature range from 20 to 800 C. It is established that at all the temperatures considered the dependence of the number of cycles to failure on the value of the amplitude stress in logarithmic coordinates can be approximated by straight lines the slopes of which do not depend on temperature. The patterns of change in the residual strain per half-cycle as a function of stress and temperature are established.

A.B.K.

REEL/FRAME
19800402

USSR

UDC 632.951

PERMYAKOVA, N. M., SANIN, V. A., BABENKO, A. I., TKACHENKO, I. V., BIT'KO, I. YA., TOPOROV, A. N., Ukrainian Scientific Research Institute of Plant Protection

"On the Effectiveness of Dilor Compound"

Abstract: The article is a report on tests conducted in 1968 and 1969 to determine the effectiveness of dilor (β-dihydroheptachlorine) against the common and gray beet weevils, as well as the Colorado beetle. The experiments were conducted on collective farms in the Mironovskiy Rayon of the Kiyevskaya Oblast. Contact and enteric action of the chemical was studied as well as the speed and duration of the effect of dilor alone and in combination with polychloropinene and DDT. When sprayed in warm weather (20-24°C), dilor was found to be as effective as DDT and polychloropinene, and even better than DDT with respect to speed. In hot weather, dilor was more effective than DDT and equivalent to polychloropinene, and at low temperatures the chemical was more active than polychloropinene and at least as

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USSR

PERMYAKOVA, N. M., et al., Khimiya v S l'skom Khozyaystve, Vol 8, No 10 (83), Oct 70, pp 33-34

effective as DDT. Both binary mixtures were more rapid-acting than their separate components. Dilor has little effect against beet weevils, killing no more than 30% of this pest with maximum doses. Experiments in 1968 showed that dilor is effective against the Colorado beetle in all stages of development. In view of its low toxicity for warm-blooded animals (mean lethal dose 2000-9000 mg/kg), dilor should be considered as a substitute for DDT.

UNCLASSIFIED   PROCESSING DATE--13NOV70
TITLE--SOLUBILITY IN A UREA,AMMONIUM NITRATE,AMMONIUM DIHYDROGEN
    PHOSPHATE,WATER QUATERNARY SYSTEM -U-
AUTHOR-(02)-KAGANSKIY, I.M., BABENKO, A.M.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 742-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SOLUBILITY, UREA, AMMONIUM NITRATE, PHOSPHATE, WATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3004/2016   STEP NO--UR/0080/70/043/004/0742/0749

CIRC ACCESSION NO--AP0132277
                    UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY. IN THE 5 QUATERNARY MIXTS. CONSISTING OF UREA, $NH_4H_2PO_4$, AND AQ. SOLN. OF NH_4NO_3 (CONTG. 10, 20, 30, 40, AND 50PERCENT NH_4NO_3) WAS MEASURED. LIQ. PHASE COMPN., EQUIL. SOLID PHASES, AND CRYSTN. TEMPS. WERE DETD. NO FORMATION OF DOUBLE SALTS TAKES PLACE. THE COMPNS. OF SOLNS. CONTG. MAX. (N PLUS P_2O_5) (25.5-29.2PERCENT AT 0DEGREES AND 24-1-23.0PERCENT AT MINUS 10DEGREES) ARE TABULATED. FACILITY: SEVERODONETSK. FILIAL, GIAP, SEVERODONETSK, USSR.

UNCLASSIFIED

1/2   016   UNCLASSIFIED   PROCESSING DATE--11DEC70
TITLE--MUTUAL SOLUBILITY IN A UREA POTASSIUM NITRATE WATER SYSTEM -U-

AUTHOR-(03)-BABENKO, A.M., KAGANSKIY, I.M., VAKHRUSHEV, YU.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 749-53

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES, AGRICULTURE

TOPIC TAGS--SOLUBILITY, UREA, POTASSIUM NITRATE, FERTILIZER, LOW
   TEMPERATURE EFFECT, CRYSTALLIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/1499   STEP NO--UR/0080/70/043/004/0749/0753

CIRC ACCESSION NO--AP0134500
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0138500
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE PURPOSE OF THIS INVESTIGATION
  WAS TO ESTABLISH COMPNS. WHICH WOULD YIELD THE MAX. PLANT NUTRIENTS.
  USING SOLNS. IN WHICH THE N DOUBLE BOND K SUB2 O WAS APPROX. 0.42:1, A
  LIQ. FERTILIZER WAS OBTAINED WITH A CRYSTN. TEMP. OF MINUS 10DEGREES
  CONTG. 49PERCENT OF N PLUS K SUB2 O AND A MIXT. WITH A CRYSTN. POINT OF
  MINUS 2DEGREES CONTG. 40PERCENT OF N PLUS K SUB2 O.   A MIXT. WITH A
  CRYSTN. POINT OF ODEGREES CONTG. N PLUS K SUB2 O 52.3PERCENT WAS ALSO
  OBTAINED BY STARTING WITH A N DOUBLE BOND K SUB2 O RATIO OF 0.42:1.
  SOLNS. CONTG. A N DOUBLE BOND K SUB2 O RATIO OF 1:1 WERE ALSO OBTAINED
  BUT THEIR TOTAL CONTENT OF NUTRIENTS WAS LOWER.   THUS, SOLNS. WITH A
  CRYSTN. TEMP. OF ODEGREES CONTAINED N PLUS K SUB2 O 33.6PERCENT, AND
  WITH A CRYSTN. POINT OF MINUS 10DEGREES THE N PLUS K SUB2 O WAS
  29.2PERCENT.   FACILITY: SEVERODONETSK. FILIAL, GIAP,
  SEVERODONETSK, USSR.

UNCLASSIFIED

USSR   UDC 621.357.7.035.4:669.128(088.8)

BABENKO, B. A., DUNISHCHEV, P. A., MITRYAKOVA, A. V., CHECHETKINA, V. A., and
SHILOVSKIYA, V. P., Saratov Polytechnical Institute

"A Process for the Reduction of Oxidized Chloride Electrolyte for Iron Plating"

Translation: The process is patented for the reduction of oxidized chloride
electrolyte of iron plating during its purification by electrolysis. It is
improved in that in order to increase the speed of the reduction, the process
is carried out with the application of ultrasonic vibrations having fre-
quencies of 18-22 kHz and an intensity of 0.8-1.5 watts/cm^2 for a ratio of
the anode to cathode surface of 3:1 and D_a 10-30 amps/$decimeter^2$. The
application of the ultrasonic vibrations speeds up the process of the reduction
of the oxidized chloride electrolyte during the iron plating 7 to 10 fold.

1/1

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BABENKO G.O. UNCLASSIFIED   PROCESSING DATE--03JUL70

TITLE--CONTENT OF ZINC AND ACTIVITY OF CARBON ANHYDRASE IN TISSUES OF AN
ORGANISM WITH EXPERIMENTAL LEUCOSIS -U-

AUTHOR--BABENKO, G.O., MAZEPA, I.V.

COUNTRY OF INFO--USSR

SOURCE--UKRAYINS'KIY BIOKHIMICHNIY ZHURNAL, 1970, VOL 42, NR 1, PP 108-112

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--WHITE RAT, ZINC, BLOOD CHEMISTRY, LIVER, SPLEEN, BONE, BLOOD
SERUM, ECLABOGRAPHY, MUSCULOSKELETAL SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1979/0861   STEP NO--UR/0300/70/042/001/0108/0112

CIRC ACCESSION NO--AP0047337

UNCLASSIFIED

CONTENT OF ZINC AND ACTIVITY OF CARBON ANHYDRASE IN TISSUES OF AN ORGANISM WITH EXPERIMENTAL LEUCOSIS

G. O. Babenko, I. V. Mazepa

Medical Institute, Ivano-Frankivsk

S u m m a r y

In experiments with 195 albino mongrel rats with the transplanted Shvets erythro-myelosis dynamics of the quantitative content of zinc in blood and its fractions, liver, spleen, bones and muscular tissue, the form in which this metal is present in blood serum and liver as well as activity of carbon anhydrase of blood were studied in the development.

The content of zinc in blood and organs was determined by the polarographic method by Babenko, the activity of carbon anhydrase — by the method of Vendt and coauthors blood serum and liver was obtained by filtration through colloidal sacks.

It is established that concentration of zinc in blood and serum lowers with the development of the leucosis process.

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REEL/FRAME
19790861

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AP0047337

The content of zinc, being in the blood serum in a form which is not found with protein components, sharply increases with leucosis, that is especially pronounced in the period of generalization and therminal states of the mentioned disease. The content of zinc in the formed elements is not essentially changed in the development of the leucosis process.

The activity of carbon anhydrase of blood in the process of leucosis development in rats is sharply inhibited after strain transplantation.

In liver and its ultrafiltrate the level of zinc falls with leucosis whereas the intensity of incorporation of this metal into the organic complexes of the organ under investigation, vice versa, rises.

The content of zinc in bone tissue of leucous rats decreases whereas in muscular tissue of these animals the level of the element under study considerably increases.

19790862

USSR   UDC 532.516

BABENKO, K. I., Institute of Applied Mathematics, Academy of Sciences USSR, Moscow

"Steady-State Solutions of the Problem of Incompressible Fluid Flow Past a Body"

Abstract: The article considers the flow of a viscous incompressible fluid past a finite body $B \subset R^3$. By virtue of density constancy, the flow is described by velocity vector u and pressure p, which satisfy the system of Navier-Stokes equations

$$u \cdot \nabla u + \operatorname{grad} p = \frac{1}{Re} \Delta u,$$
$$\operatorname{div} u = 0$$

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USSR

BABENKO, K. I., Doklady Akademii Nauk SSSR, Vol 210, No 2, 1973, pp 294-297

and the boundary conditions on the body

$$u\big|_{\partial B} = u_0$$

and at an infinitely remote point

$$\lim_{|x|\to\infty} u(x) = u_\infty$$

The system of coordinates can always be selected so that $u_\infty = (1, 0, 0)$. In accordance with (1) the unit of length is taken to be the diameter of region B. If the following condition is fulfilled:

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BABENKO, K. I., Doklady Akademii Nauk SSSR, Vol 210, No 2, 1973, pp 294-297

$$\int_{\partial n} u_0 \cdot n \, d\sigma = 0,$$

where n is the normal to ∂ B and $d\sigma$ the Lebesgue measure on ∂ B, then the existence of a solution to a flow problem for which the Dirichlet integral

$$\int_{G} |\nabla u|^2 dx < \infty, \quad G = R^3 \setminus B.$$

is finite is proved.

The article outlines the proof of a theorem whereby for any solution of the flow problem with a finite Dirichlet integral the following relation,

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USSR

BABENKO, K. I., Doklady Akademii Nauk SSSR, Vol 210, No 2, 1973, pp 294-297

postulated by R. FINN, is fulfilled:

$$u(x) - u_\alpha = O(|x|^{-\alpha}), \quad \alpha > 1/2.$$

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USSR

BABENKO, K. I., IVANOVA, V. N., KAZANDZHAN, E. P., KUKARKINA, M. A., RAD-
VOGIN, Yu. B.

"Concerning Nonstationary Flow Around the Head Part of a Blunt Body"

Tr. II Resp. konf. po aerogidromekh., teploobmenu i massoobmenu. Sekts. "Aero-
dinamika bol'sh. skorostey" (Works of the Second Republic Conference on Aero-
hydromechanics, Heat Exchange and Mass Exchange. "High-Velocity Aerodynamics"
Section), Kiev, Kiev University, 1971, pp 29-43 (from RZh-Mekhanika, No 5, May
72, Abstract No 5B325)

Translation: A numerical solution is found for the problem of unsteady flow
at supersonic velocity around the head part of a blunt body which has a
plane of symmetry and is located in a flow of ideal gas. A normalizing system
of curvilinear coordinates is used in which the region to be calculated has
fixed boundaries. A finite-difference method close to the traditional pro-
cedure is generalized and developed (Babenko, K. I., Voskresenskiy, G. P.,
Zh. vychisl. matem. i matem. fiz., 1961, 1, No 6, pp 1051-1060 -- RZhMekh.
1962, 6B123; Babenko, K. I., Voskresenskiy, G. P., Lyubimov, A. N., Pusanov,
V. V., Prostranstvennoye obtekaniye gladkikh tel ideal'nym gazom [Three-

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USSR

BABENKO, K. I. et al., Tr. II Resp. konf. po aerogidromekh., teploobmenu i massoobmenu. Sekts. "Aerodinamika bol'sh. skorostey", Kiev, Kiev University, 1971, pp 29-43

-Dimensional Flow of an Ideal Gas Around Smooth Bodies], Moscow, "Nauka", 1964, RZhMekh, 1965, 4B270K). The main difference of the proposed method involves calculation of the head shock wave and construction of a well--conditioned system of difference equations. A finite-difference approximation is used for the derivatives together with the corresponding coefficients of the equations. The resultant nonlinear system of difference equations is solved by an iteration method, the overall system being broken down into subsystems which relate to each of the three spatial variables. Indeterminacies are discovered in the difference equations which take place on the zero ray. The algorithm which is developed is used for determining stationary supersonic flow around triaxial ellipsoids and ellipsoids of revolution by the method of adjustment. The results of numerical calculations are given. P. I. Chushkin.

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BABENKO, K.I.

32

Babenko, K. I., V. N. Ivanova, E. P.
Kazandzhan, M. A. Kukarkina, and Yu. B.
Radvogin. _Nonsteady flow around the leading
section of a blunt body._ In: Trudy II
Reapublikanskoy konferentaii po aerogidromekhanike,
teploobmenu i massoobmenu. Sektsiya "Aerodinamika
bol'shikh skorostey". Kiyev, Kiyevskiy universitet,
1971, 29-43. (RzhMekh, 5/72, no. 5B125)

A numerical solution is given for the problem of supersonic flow
around the leading section of a blunt body with a plane of symmetry in incr-
gas flow. A normalizing system of curvilinear coordinates is used, in
which the calculated region has fixed boundaries. A finite-difference
method is generalized and developed similar to an established one. The
principal variation of the proposed method is associated with calculation
of the frontal shock wave and the construction of a well-defined system of
difference equations. Finite-difference approximation is employed for the
derivatives together with the corresponding equation coefficients. The
nonlinear system of difference equations obtained is solved by an iteration
method, the complete system being divided into subsystems pertaining to
each of the three spatial variables. The indeterminate form of the
difference equations on the zero radial line is shown. The algorithm
developed is used for the determination of steady supersonic flow around
triaxial ellipsoids and ellipsoids of revolution. Results of numerical
calculations are presented.

USSR   UDC 517.5

BABENKO, K. I., Moscow

"Some Notes on the Approximation of Functions of Many Variables"

Abstract: In questions of the approximation of functions of many variables the problem of diameters is immediately encountered. The problem of the optimal choice of an approximating finite-dimensional subspace is the problem of A. N. KOLMOGOROV's diameter. It is a very difficult problem to calculate diameters and find extremal subspaces, and so far the problem has been solved completely only in a few cases for functions of one variable. A simpler problem is that of the asymptotic behavior of $\alpha_n, \mathcal{K}_n$ and other diameters. The present article studies the asymptotics behavior of the quantity

$$\frac{n^o}{\mu} \sup_{f \in \mathfrak{W}_r(M)} \mathfrak{E}_n(f) = 2^{m\varepsilon} \mathfrak{X}_{r,n}$$

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USSR

BABENKO, K. K., Matematicheskiy Sbornik, Vol 86(128), No 4(12), Dec 71, pp 499-517

and analogous quantities for the classes $\mathcal{U}_r(M)$ and $W_r^x(M)$.   In particular it is shown that there exists $\lim\limits_{n\to\infty} \mathfrak{R}_{r,n} = \mathfrak{R}_r$, where the constant $\mathfrak{R}_r$ does not depend on M. The same relation also takes place for the classes $\mathcal{U}_r(M)$ and $W_r^x(M)$, the limits for all three classes coinciding. This is a generalization of S. N. BERNSHTEYN's result for a multidimensional case.

It is also proved that

$$\sup_{f\in\mathcal{U}_r(M)} \mathfrak{C}_n(f) \asymp a_n\{\mathcal{W}_r(M)\}.$$

2/2

USSR

YUSHCHENKO, Ye. L., BABENKO, L. P. and ROGACH, V. D.

"Basic Problems of Realization of COBOL-ALMO Translators"

Materialy Mezhvuz. Konf. po Mat. Obespecheniyu Avtomatizir. Sistem Upr.
[Materials of Inter-University Conference on Automatic Control System
Software -- Collection of Works], Moscow, 1973, pp 146-151 (Translated from
Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V702).

Translation: The peculiarities of the realization of COBOL related to the
use of ALMO are studied. First of all, the basic difficulties in this realiza-
tion in comparison to a translator from COBOL to a specific machine are noted:
the need to "orient the output programs to a certain universality, making them
equally suitable for an entire class of machines" and the orientation of ALMO
language "to second-generation machines, little suited for the solution of
automatic data processing problems." These difficulties are partially over-
come by means of the insertion apparatus of ALMO and partially by means of a
system of interpreting programs. The set of standard programs suggested was
selected considering the provision of both convenience in writing of working
programs and in programming of translators.

1/2

USSR

Yushchenko, Yu. L., Babenko, L. P. and Rogach, V. D., Materialy Mezhvuz. Konf. po Mat. Obespecheniyu Avtomatizir. Sistem Upr., Moscow, 1972, pp 146-151.

The exchange of information with external storage (input-output in particular) is largely included among the functions of the operational systems of modern computers. Therefore, in producing input-output verbs in the COBOL programs, the thousands channel of ALMO is used, connecting the ALMO program to the operational systems of specific machines.

The work features a more detailed presentation of problems of programming of the descriptions of data, work with structures, input-output verbs and sequence control.

The insertion apparatus, a direct element in most macrogenerators in ALMO, is used not only for adjustment of working programs to the parameters of specific machines, but also to reduce the number of jumps in the translator, and also for many other purposes.

In the end, it is specially emphasized that "in designing the output program for the COBOL-ALMO translator, interpreting subroutines are used quite broadly: of the 16 COBOL operators, 6 are fully and 5 partially realized by these subroutines."

L. Khizder

2/2

.USSR   UDC 8.74

BABENKO, L. P., BATRAK, YE. T., YUSHCHENKO, YE. L.

"Basic Problems of Executing the A-COBOL Language"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir (Language Theory
and Methods of Constructing Programming Systems--collection of works), Kiev-
Alushta, 1972, pp 150-161 (from RZh-Kibernetika, No 12, Dec 72, Abstract No
12V481)

Translation: The algorithms for the A-COBOL-ALMO translator created on the
basis of the COBOL-ALMO translator is described. The memory allocation
algorithms in the COBOL-translator is based on compiling special information
tables about the data containing the information about their size, properties,
location and hierarchy. The dimensions of the elementary data are defined by
their standards; the dimensions of the group data are defined by the dimensions
of their elementary components. In the algorithm for calculating the data
dimensions, the stack memory system is used. When determining the location of
the data, the accepted relative addressing principle is considered for which
each recording is allotted a separate address file. As the beginning of the
reckoning, the beginning of the write is taken, and as the reckoning unit, the
bit . For data of a new type -- bit data in the A-COBOL execution -- a special
system has been developed with the beginning of reading at the beginning of
1/3

- USSR

BABENKO, L. P., et al., Teoriya yazykov i metody postroyeniya sistem programmir.,
Kiev-Alushta, 1972, pp 150-161

writing; the read unit is a bit. The bit (boolean) data are packed densely in
the memory of the ALMO machine. When loading such data, special load files are
formed which contain the allocation constants and the relative distances of
each of the pieces of data from the beginning of write. These files are
formed by the interpreting subprograms of the translator on the basis of the
table of lengths of elements of the bit writes compiled when examining the
data information tables considering the data hierarchy and their recurrence
rate. The stack memory is also used here complicated by the algorithm for con-
sidering the recurrence of the bit data when compiling the element length table.
For translation of the basic operators of A-COBOL combining the operations of
corresponding COBOL operators and the address operations on the indexes, an
algorithm was developed which forms the reference in the operating program to
the corresponding subroutines of the interpreting system. For translation of
the descriptions of the fields, an algorithm was developed which defines their
parameters (the field dimension, the field index dimension, and so on) which
are used when placing (selecting) an object in the field. The description of
the syntax of the A-COBOL media supplementing the translator from COBOL to the
translator from A-COBOL to the output language is presented. The description
is presented in Bacus normal form supplemented by the indexes of the semantic
2/3

USSR

BABENKO, L. P., et al., _Teoriya yazykov i metody postroyeniya sistem programmir._,
Kiev-Alushta, 1972, pp 150-161

modules given in brackets and located directly behind the correspondent syntac-
tic structural elements. A description of the semantics of the A-COBOL media
is presented by describing their translation algorithms. This description is
executed in the A-COBOL language in machine-independent form.

3/3

USSR

BABENKO, L. P., DOVGOPOLAYA, L. I., TROKHIMENKO, V. S., USENKO, R. D., YUSHCHENKO, YE. L.

"Debugging Media in a Programming System"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems--collection of works), Kiev-Alushta, 1972, pp 309-314 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V486)

Translation: A study was made of means controlled by the user in the COBOL programming system for the Dnepr-21. In order to retain the general organization of the COBOL program the debugging instructions in the indicated system are in the form of an auxiliary division of the COBOL program, the so-called debugging section which is an instruction for the operations system with respect to the problem statement mode on the computer. The language of giving this instruction is similar with respect to form to the COBOL language and is based on its concept and terminology. All of the debugging operators in the COBOL-Dnepr-21 system are divided into the following categories: 1) the operator for initial running of the program; 2) the operators for interrupting the normal course of execution of the program on occurrence of certain situations which are provided for; 3) operators permitting additional information

1/2

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BABENKO, L. P., et al., <u>Teoriya yazykov i metody postroyeniya sistem programmir.</u>, Kiev-Alushta, 1972, pp 309-314

to be obtained on the process of execution of the program on occurrence of an interruptsituation or before beginning its execution; 4) operators permitting halting of execution of the program or continuation of it after an interrupt by transferring control to a section of the COBOL program. The syntax of the debugging section of the COBOL program is presented as an example.

2/2

USSR   UDC 911.3.616.9.576.895.42(42+57)

BABENKO, L. V., NAUMOV, R. L., USPENSKIY, I. V., MERINOV, V. A., RUBINA,
M. A., VASIL'YEVA, I. S., IOFFE, I. D., OBLESOVA, L. N., and RAZUMOVA, I. V.

"A Biological Study of Ixodes Ticks -- Disease Vectors -- and a Scientific
Study of Countermeasures in Natural Foci"

V sb. Materialy Nauchn. konferentsii, posvyashch. 50-letiyu In-ta med. para-
zitol. i tropich. med., 1970 (Proceedings on the Conference Commemorating
the 50th Anniversary of the Institute of Medical Parasitology and Tropical
Medicine 1970 -- collection of works), Moscow, 1970, pp 52-53 (from RZh-
36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No. 1.36.67)

Translation: This study has four objectives: a) study of the ecology and
population biology of the prevalent Ixodes and Dermacentor tick species; b)
complex study of biological laws in natural foci of tickborne encephalitis
and in one focus of Asian tickborne rickettsiosis (in Krasnoyarskiy Kray);
c) study and practice of countermeasures against tickborne encephalitis for
residents of large, newly-constructed housing developments in the hill rayons
of Krasnoyarskiy Kray; and d) study of the effect of pesticides on ticks
(I. persulcatus, for example). A proposal is advanced for research on the
1/2

USSR

BABENKO, L. V., et al, V sb. Materialy Nauchn. konterentsii, posvyashch. 50-letiyu In-ta med. parazitol. i tropich, med., 1970 (Proceedings on the Conference Commemorating the 50th Anniversary of the Institute of Medical Parasitology and Tropical Medicine 1970 -- collection of works), Moscow, 1970, pp 52-53 (from RZh-36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.67)

characteristics of the population biology, morphology, and physiology of ticks within various geographic conditions.

2/2

USSR

UDC 621.382.2

BABENKO, S.P., VELICHKO, B.V., DRYDO, I.M., MIKHAYLOVA, E.A., STRUKOV, I.A.,ETKIN,V.S.

"Experimental Investigation Of The Frequency Dependence Of The Impedance Of A P-N Junction In A Wide Range Of Frequencies"

Translation: An investigation is conducted of the frequency dependence of the impedance of a p-n junction in the 10--3600 MHz frequency range. The behavior is observed of such parameters of the p-n junction as total capacitance, conductance, and the Q-factor of the excess capacitance. A comparison is given of the experimental dependences with the frequency dependence of the computed diffusion conductivity of a p-n junction with a retarding field in the base. Conclusions are made with reference to the nature of the impedance of a p-n junction. 3 ill. 1 tab. 3 ref. Author's Abstract.

1/1

USSR

UDC 621.375.82

BABENKO, V. A., ZEL'DOVICH, B. YA., MALYSHEV, V. I., and SYCHEV, A. A.

"Radiation Spectrum of Giant Laser Pulse With Allowance for Self-Frequency Modulation"

Translation: The article deals with a theoretical consideration of the broadening of the spectrum of a giant laser pulse due to the dependence of the refractive index of the matrix of the active medium on the light intensity. A calculation is performed for the integral effect for the entire giant pulse, assuming that the initial radiation is a Gaussian random process. Experiments are performed, the results of which agree with the theoretical estimates. Bibliography with eight titles.

1/1

USSR

BABENKO, V. I.

UDC: 539.3:534.1

"Criteria for Instability of Zero-Moment Conservative Envelopes"

4-Ya Vses. Konf. po Probl. Ustoychivosti v Stroit. Mekh., Tezisy Dokl.
[Fourth All-Union Conference on Problems of Stability and Structural
Mechanics, Abstracts of Reports -- Collection of Works], Moscow, 1972,
pp 71-72 (Translated from Referativnyy Zhurnal Mekhanika, No 12, 1972,
Abstract No 12V301, by V. A. Shamina)

Translation: For a thin, elastic, strictly convex envelope, under the
influence of conservative forces, a criterion of instability of the zero-
moment equilibrium state is formulated as the inequality

$$[Z^2 + 4K(T_2^1 T_1^2 - T_1^1 T_2^2)]^{1/2} - Z \geq 2E\delta^2 K[3(1-\nu^2)]^{1/2}$$

Here Z is the normal surface load; T_k^i are the components of the force tensor
of the stress state studied; K is the Gaussian curvature of the nondeformed
middle surface, δ is the thickness of the envelope; E and ν are Young's
modulus and Poisson's coefficient. The inequality presented is produced

1/2

USSR

Babenko, V. I., 4-Ya Vses. Konf. po Probl. Ustoychivosti v Stroit. Mekh., Tezisy Dokl., Moscow, 1972, pp 71-72.

on the assumption that the forms of the middle surface before and after deformation are quite similar. Formulas are produced from the criterion formulated for the maximum critical loads.

USSR

UDC: 621.375.82

BABENKO, V. P., MAKAROV, V. I., NAPERSTAK, Yu. A., RUBINCHIK, B. Ya.,
TYCHINSKIY, V. P.

"A Laser apparatus With Preset Control for Cutting Materials"

Moscow, Kvant. elektronika--sbornik (Quantum Electronics--collection of works),
No 1(13), "Sov. radio", 1973, pp 132-133 (From RZh-Fizika, No 8, Aug 73,
abstract No 8D1174 by the authors)

Translation: An automatic apparatus has been developed for gas-laser cutting
of materials. The unit includes a carbon dioxide laser with power of about
500 w and a series-produced coordinate indexer with preset control (EM-703).
The basic parameters of the apparatus and results of technological tests are
given.

1/1

Instrumentation and Equipment

USSR

UDC 621.791.948+621.375.8.037:
681.326.3:62-41

TYCHINSKIY, V. P., Doctor of Technical Sciences, VASIL'YEV, K. V., Candidate of Technical Sciences, TROFIMOV, A. A., BABENKO, V. P., SUKHININ, G. K., YELISEYENKOV, V. I., Engineers, Research Institute for Gas Welding and Cutting Machinery

"Program-controlled Machine for Gas-laser Cutting of Sheet Materials"

Moscow, Svarochnoye Proizvodstvo, No 4, Apr 72, pp 52-53.

Abstract: The Institute has developed a machine for cutting of alloy steels, titanium and other materials using carbon-dioxide lasers, allowing any contour to be cut in the tracking mode. Contour control of the machine is by a digital programmed device using punch tape. The machine has been tested using various materials including 1-10 mm sheets of low-carbon and alloy steels of various types. Good cutting accuracy has been achieved: parts have been cut from sheets up to 3 mm thick, with smooth, even edges, and very small zone of thermal effect near the cut. Cuts are very thin (a few tenths of a millimeter).

1/1

USSR

UDC 533.697

BABENKO, V. V., and KOZLOV, L. F., Kiev

"Experimental Investigation of Hydrodynamic Stability on a Rigid and on Elastically Damping Surfaces"

Abstract: Results are presented of an experimental investigation of the hydrodynamic stability in a water flow carried out by the tellurium method on a hydrodynamic stand of low turbulence. The developed method of determining neutral curves made it possible to investigate also the hydrodynamic stability of elastically damping surfaces. The neutral curves were plotted in traditional and in new coordinates. The neutral curves in coordinates of dimensionless frequency, wave number, and phase velocity at longitudinal streamlining of the rigid plate adequately conform with experimental and theoretical results of other authors. The measurements made at 0.32 mm vibration amplitude and turbulence less than 0.04% approved the method of experimental investigation, they complied best of all with calculations of S. F. Shen (J. Aer. Sci., 1954, Vol 21). Hydrodynamic stability investigations on three types of elastically damping surfaces show a form of neutral curves which is different

1/2

USSR

BABENKO, V. V., and KOZLOV, L. F., Izvestiya Akademii Nauk USSR, Mekhanika
Zhidkosti i Gaza, No 1, Jan-Feb 73, pp 122-127

from the streamlining of a rigid surface. Four figures, twelve bibliographic
references.

USSR

UDC 532.526

BABENKO, V. V., and KOZLOV, L. F., Hydromechanics Institute, Academy of Sciences USSR

"Experimental Investigation of Hydrodynamic Stability of Laminar Boundary Layer With Water Flow Along Rigid Surface"

Kiev, Gidromekhanika, Akademiya Nauk Ukrainskoy SSR, No 21, 1972, pp 70-73

Abstract: Investigation was conducted of a flow through a pipe with low initial turbulence (0.03%). The turbulence was excited by a vibrator and recorded on film by means of electronic equipment.

It has been established that exciting oscillations propagating into the unstable region increase in proportion to the exciting amplitude. The build-up starts at the neutral line and is maximum in the center of the unstable region. The neutral line obtained by varying the frequency of excitation agrees closely with the theoretical one.

The turbulence amplitude is maximum at 15-30% of the boundary layer thickness.

1/1

SOME MECHANICAL CHARACTERISTICS OF THE SKIN COVER OF DOLPHINS

Some criteria necessary for determining the principal characteristics of the skin cover of dolphins were examined in [1] and the creation of optimum artificial covers was examined.

The parameters of elasticity E_S and oscillating mass M of the skin of dolphins are given in [2,3]. We will determine the parameters of the limiting frequency, stress and strain. The limiting frequency parameter is characterized by the expression

$$\lambda_* = \left(\frac{E_S}{M}\right)^{\frac{1}{2}} \frac{1}{U_\infty Re_1} = \left(\frac{\lambda_*}{k_*}\right)^{\frac{1}{2}} . \qquad (1)$$

where E_S is the rigidity of an element of the skin cover, n/m3; M is the oscillating mass, kg·sec2/m3; U_∞ is the speed at which the dolphin swims, m/sec; Re1 is the Reynolds number, $Re_1 = U_\infty/\nu\ m^{-1}$, ν is the kinematic viscosity of water, m2/sec.

The limiting frequency parameter can be written in the form

$$\frac{\lambda_*}{k_*} \qquad (2)$$

where λ_δ is the dimensionless limiting frequency of oscillation of the skin of a dolphin with zero damping; Re_δ is the Reynolds number, computed from the boundary layer thickness.

Formulas (1) and (2) were used in computing the parameters k, and λ_δ for three species of dolphins. The ke,

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JPRS 55982
15 May 72

DETERMINING THE OSCILLATING MASS PARAMETER FOR THE SKIN COVER OF SOME MARINE ANIMALS

Elasticity, damping, oscillating mass and tension exert an influence on stabilization of the laminar boundary layer during flow over flexible covers /4/. Assuming that the skin of dolphins also interacts with flow in the boundary layer, we will determine the oscillating mass parameter for their skin cover.

The oscillating mass parameter is expressed in the following way /2/:

$$\lambda_H = \frac{Re_l}{\rho} M_T.$$

where Re_l is the Reynolds unit number, $Re_l = U_\infty/\nu$, m^{-1}; ρ is sea water density, kg/m^3; M_T is the total oscillating mass, $M_T = M_1 + M_2$, $kg\ sec^2/m^2$.

According to the mechanical model of the skin covers of dolphins /2/, the oscillating mass M_1 is the mass of a unit area of the epidermis (layer 1) and M_2 is the mass of a unit area of the subpapillary layer (layer 3). The thickness of layers 1 and 3 must be known for determining M_1 and M_2.

The figure shows the results of measurements of the thickness of individual layers of skin along the body of a common dolphin 1.45 m in length. The measurements were made using samples of skin taken at points of intersection of lateral and longitudinal planes passed through the body. In the figure the lateral sections are numbered, whereas the planes passed longitudinally through the body are designated by solid and dot-dashed lines and by dots. Since the measurements were made using samples fixed in formalin (see figure, c, d, e) and colloidin was used in setting the specimens (see figure,

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BABENKO, V. V.

PART IV. SKIN COVER STRUCTURE

PRINCIPAL CHARACTERISTICS OF FLEXIBLE COVERINGS AND SIMILARITY CRITERIA

The specific properties of the skin cover of dolphins is one of the most important factors exerting an influence on boundary layer stabilization during their swimming /1, 2, 7, 8, 9/. In its structure and properties the skin cover of dolphins is similar to polymers. Polymers are characterized by great deformations under low stresses, a considerable dependence of stress on duration of exposure to a force and on the deformation rate, a marked dependence of the entire complex of mechanical properties on temperature, and a volumetric anisotropy of the properties of polymers. The physicomechanical properties of polymers are divided into three principal groups: mechanical, physical and technological. Some physical properties of the skin of dolphins were examined in /4/.
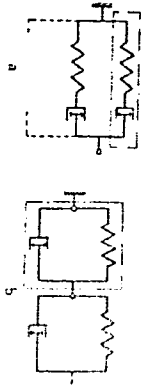
In comparing the structure of polymers and the skin of dolphins, among the great number of mechanical properties we will select the most important, necessary in the first stage of a study of the skin cover: distribution functions $\Sigma(\tau)$

Fig. 1. Diagrams of mechanical models of polymers.

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USSR   'UDC 621.395.66

BONDARENKO, P. S., ROMANENKO, A. I., BABENKO, YE. YA. and TKACHENKO, N. D.

"Device for Control of the Reliability of Telegraph Information"

Mekhaniz. i avtomatiz. upr. Nauchno-proizv. sb. (Mechanization and Automation of Administration. Scientific-Industrial Collection), 1969, No 4,(46), pp 58-60 (from RZh-Elektrosvyaz', No 1, Jan 70, abstract No 1.64.221

Translation: A system is considered for transmission of telegraph information with the use of unit-type protection, based on the fact that monitoring information is determined as a code combination, the elements of which are added to the oddness sums modulo 2 or the elements for each path. The system under consideration passed tests in a system of information transmission from enterprises of the Ministry of Ferrous Metallurgy, Ukrainian SSR (MChM USSR) to the leading information computing center of the Ministry. B. B.

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Acc. Nr.: ΛR0046033

USSR

Ref. Code: UR0000

UDC 621.395.66   JPRS 50248

BONDARENKO, P. S., ROMANENKO, A. I., BABENKO, YE. YA. and TKACHENKO, N. D.

"Device for Control of the Reliability of Telegraph Information"

Mekhaniz. i avtomatiz. upr. Nauchno-proizv. sb. (Mechanization and Automation of Administration, Scientific-Industrial Collection), 1969, No 4, (46), pp 58-60 (from RZh-Elektrosvyaz', No 1, Jan 70, abstract No 1.64.221

Translation: A system is considered for transmission of telegraph information with the use of unit-type protection, based on the fact that monitoring information is determined as a code combination, the elements of which are added to the oddness sums modulo 2 or the elements for each path. The system under consideration passed tests in a system of information transmission from enterprises of the Ministry of Ferrous Metallurgy, Ukrainian SSR (MChM USSR) to the leading information computing center of the Ministry. B. B.

Reel/Frame
19781102

USSR

SIGAL, I. YA., and BABENKO, YU. A.

"Toxic Emissions in the Atmosphere"

Kiev, Energetika i Elektrifikatsiya, No 4 (70), Jun/Jul 73, pp 6-8

Abstract: One of the most effective ways of reducing the air pollution is to substitute gas fuel for solid or oil fuel. It has been established that after such a change is made, the emissions into the atmosphere from a municipal power plant with boiler capacity of 22 t/hr are lowered on the average by a factor of five. At power stations with energy blocks of 300 Mv this decrease is about 50%. It is recommended to consider these findings in selection of fuels for the power stations.

1/1

1/2   013   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--ANOMALOUS ANGULAR DISTRIBUTION OF FRAGMENTS FROM THE FISSION OF
   RADIUM BY 14-16 MEV NEUTRONS -U-
AUTHOR-(05)-BABENKO, YU.A., NEMILOV, YU.A., PLESKACHEVSKIY, L.A.,
   SELITSKIY, YU.A., FUNSHTEYN, V.B.
COUNTRY OF INFO--USSR

SOURCE--YAD. FIZ. 1970, 11(5), 1006-11

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--ANGULAR DISTRIBUTION, NUCLEAR FISSION, RADIUM ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0577   STEP NO--UR/0367/70/011/005/1006/1011

CIRC ACCESSION NO--AP0137662
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0137662
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FRAGMENT ANGULAR DISTRIBUTIONS FOR
  THE FISSION OF PRIME226 RA BY N WITH ENERGIES 12.6-19.5 MEV WERE
  MEASURED. AS THE SOURCE OF N, THE REACTIONS (D(D,N) PRIME3 HE AND
  T(D,N) PRIME4 HE WERE USED. THE ANOMALOUS SHAPE OF THE DISTRIBUTION,
  MANIFESTING ITSELF AS A FRAGMENT YIELD AT AN ANGLE OF SIMILAR TO
  60DEGREES AT E SUBN EQUALS 14.6-15.6 MEV, IS EXPLAINED AS DUE TO THE
  "CHANNEL" STRUCTURE OF THE FISSION BARRIER OF THE PRIME226 RA NUCLEI
  PRODUCED FROM PRIME 227 RA AFTER EVAPG. 2 N. THE FISSION BARRIER OF
  PRIME226 RA IS 7.0 PLUS OR MINUS 0.5 MEV. THE TOTAL CROSS SECTION
  VARIES SLIGHTLY FROM 21 TO 33 MB IN THE ENERGY INTERVAL E SUBN EQUALS
  15.6-19 MEV. EXPTS. PERFORMED ON PRIME233 U GAVE A NEG. ANSWER TO THE
  QUESTION OF THE EXISTENCE OF ANOMALOUS ANGULAR DISTRIBUTIONS. FOR FISSION
  OF OTHER NUCLEI.

UNCLASSIFIED

USSR   UDC 632.95

VASHKOV, V. I., BABENKO, Z. I., and PERMYAKOVA, N. M.

"Insecticidal Properties of Dilor"

Tr. VNII dezinfektsii i steriliz. (Works of the All Union Scientific
Research Institute of Disinfection and Sterilization), 1971, vyp. 21, t. 2,
pp 77-81 (from RZh-Khimiya, No 18, Sep 72, Abstract No 18V421)

Translation: The results of experiments on studying the insecticidal
activity of dilor by the method of enforced contact of insects with the sur-
face of glass treated with a solution of dilor in acetone show that dilor
is an insecticide equal in the strength of toxic effect to DDT and hexachloro-
cyclohexane on red cockroaches and bedbugs, and equivalent to DDT on house-
flies. The minimum dose of dilor which ensures 100% destruction of lice with
a one-hour exposure is 0.5 g/m^2; for 100% destruction of the tick Ixodes
persulcatus, the dose is 1.4 g/m^2. Heating the precipitated dilor for 2
hours at 60°C and exposure of the precipitate for 6 hours to ultraviolet
rays (9000 luxes) causes almost no reduction in its toxicity for grain weevils.
T. A. Belyayeva.

1/1

USSR

BABENKO, Z. I., VOYTENKO, A. N., LINNIK, L. I., PERMYAKOVA, N. M.,
SERGEYEV, YE. V., Ukrainian Scientific Research Institute of Plant
Protection, Kiev, Ukrainian Academy of Agricultural Sciences

"Study of the Acaricidal Properties of 1,1-Diphenyl-2,2,2-trichloro-
ethanol"

Abstract: The compound 1,1-diphenyl-2,2,2-trichloroethanol (I) is
an analogue of a known acaricide, kel'tan, a long lasting contact
agent. The effect of (I) on the mites Tetranychus urticae and
Tetranychus viennensis Zacher was studied under laboratory and
field conditions, respectively. In laboratory experiments (I) was
slightly less effective than kel'tan. The opposite held true for
the field tests: 90% of the mites had died by the second day when
treated with (I), but only 48% died in three days when treated with
kel'tan. After 15 days of treatment the activity of both compounds
equilibriated with the number of surviving mites remaining around
10%. Phytotoxic properties of both compounds were about the same.
1/1

USSR   UDC 621.357.1.035.2.001.5

BABENKOV, YE. D.

"Performance of Electrolyzers with Charging Bipolar Electrodes"

Tr. VNII zh.-d. transp. (Collection of Works of All-Union Scientific Research
Institute of Railroad Transportation), Vyp 468, 1972, pp 47-64 (from
Referativnyy Zhurnal -- Khimiya, Svodnyy Tom, No 23 (II), 1972, Abstract No
23I203)

Translation: Performance features of the graphite and chip charging uniform
and porous electrodes as function of geometric characteristics, the ratio of
electroconducting liquid and solid phases, the electrochemical properties of
charging materials, and the feeding regime with the initial reagents were studied.
Requirements were worked out for the optimal conditions of charging and for the
best design for such electrolyzers.

1/1

1/2   016   UNCLASSIFIED   PROCESSING DATE--20NOV70
TITLE--CATALYTIC REDUCTION OF NITROBENZENE DERIVATIVES -U-

AUTHOR-(03)-SOKOLSKIY, D.V., BABENKOVA, L.V., POPOVA, N.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(6), 1299-310 (CHEM)

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITROBENZENE, CLAY, CHEMICAL REDUCTION, HYDROGENATION, NICKEL,
  PLATINUM, CATALYST ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0216   STEP NO--UR/0020/70/191/006/1299/1301

CIRC ACCESSION NO--AT0132468
                            UNCLASSIFIED

CIRC ACCESSICN NO--AT0132488
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. KINETIC DATA WERE SHOWN
GRAPHICALLY FOR REDN. OF ARNO $SUB2$ ON NI-BENTONITE CLAY CATALYST USING
FOLLCWING AR: M,O $SUB2$ NC $SUB6$ H $SUB4$, M,HCOC $SUB6$ H $SUB4$, M,HOC $SUB6$ H
$SUB4$, P,MEC $SUB6$ H $SUB4$, P,ETOC $SUB6$ H $SUB4$, P,HOC $SUB6$ H $SUB4$. THE
CATALYSTS USED WERE NI-BENTCNITE CLAY AND NI-CU-FE-BENTONITE CLAY. THE
RATE OF HYDROGENATION WAS FOUND TO INCREASE WITH DECREASING VALUE OF THE
CATALYST POTENTIAL VS. SCE, AND A LINEAR RELATION WAS FOUND BETWEEN THE
SHIFT OF THE CATALYST POTENTIAL, CHARACTERISTIC OF RELATIVE ADSORPTION
ABILITY OF THE VARIOUS NITRO COMPDS., AND THE REACTION RATE. THE SAME
RELATIONSHIP WAS FOUND BETWEEN REACTICN RATE COEFFS. AND THE HAMMETT
SUBSTITUENTS CONSTS. IN THE SUBSTRATES. THE RESULTS INDICATE A HIGH
ENERGY OF BONDING OF THE ADSORBED H BY THE NI CATALYSTS ON THESE
SUPPORTS, WHICH BRINGS SUCH CATALYSTS INTO THE AREA OF ACTION OF PT
CATALYSTS.   FACILITY: INST. KHIM. NAUK, ALMA-ATA, USSR.

UNCLASSIFIED

1/2   029   UNCLASSIFIED   PROCESSING DATE--09OCT70
TITLE--THE CONTEMPORARY STATE OF PROBLEMS OF HEMISPHERE DOMINANCY -U-

AUTHOR--BABENKOVA, S.V.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL NEVROPATOLOGII I PSIKHIATRII IMENI S. S. KORSAKOVA 1970,
  VOL 70, NR 4, PP 521-527
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BRAIN, SPEECH, VISION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1663   STEP NO--UR/0246/70/070/004/0521/0527

CIRC ACCESSION NO--AP0106409
                         UNCLASSIFIED

CIRC ACCESSION NO--AP0106409

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR ANALYSES THE LITERATURE
AND PERSONAL DATA, WHERE IT IS ATTEMPTED TO SHOW THAT THE IDEA OF
HEMISPHERE DOMINANCY AT THE PRESENT TIME DOES NOT REFLECT THE ACTUAL
STATE OF THINGS.   IT SHOULD BE SUBSTITUTED BY THE CONCEPT OF FUNCTIONAL
ASYMMETRY, FUNCTIONAL HEMISPHERE SPECIALIZATION. IT HAS BEEN SHOWN ON
ONE HAND, THAT THE DOMINANCY OF THE LEFT HEMISPHERE IN RELATION TO
SPEECH MOTOR AND VISUAL FUNCTIONS IS RELATIVE, LIMITED. ON THE OTHER
HAND, THE RIGHT HEMISPHERE IS DOMINANT IN RELATION TO THE GNOSIS OF
ONE'S OWN BODY AND ENVIRONMENT, SOME TYPES OF PRAXIS, AND THE WORK OF
THE LOCOMOTOR APPARATUS. THE FOCAL PATHOLOGY OF THE RIGHT BODY, CHANGED
MENTAL FUNCTIONS, AUTOMATIZED MOVEMENTS) WHICH ARE TO THE SAME DEGREE
SPECIFIC FOR DEXTRAL HEMISPHERE LESIONS, AS THE APHATICAL DISORDERS ARE
SPECIFIC FOR THE SINISTRAL HEMISPHERE. THE AUTHORS COMES TO THE
CONCLUSION THAT EACH HEMISPHERE IS DOMINANT IN ITS SPHERE OF THE PROCESS
OF COGNITION AND REGULATING THE VITAL FUNCTIONS OF THE ORGANISM.

UNCLASSIFIED

Publications

USSR

UDC 616.9-036.2-07(049.3)

BABENYSHEV, V. P., (Reviewer)

Vremennoye Nastavleniye Po Epizootologicheskomu obsledovaniyu v Prirodnykh Ochagakh Chumy Zakavkaz'ya (Provisional Instructions for Epizootological Studies in the Natural Plague Foci in the Transcaucasus), by Nayden, P. Ye. (Editor), Stavropol', 1971, 86 pp, 14 ill

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 6, 1973, pp 140-142

Abstract: The publication under review was an effort by a group of staff members of the Stavropol' Antiplague Institute, the Azerbaydzhan Antiplague Station, and the Armenian Antiplague Station to update previous publications on plague epizootics in the Transcaucasus, as well as to provide new insight into the methods and techniques of such investigations. Unfortunately, the book present a forum for opinionated discussions, and presentation of per- sonal observations of the participants as proven facts. The book contains numerous factual errors of both biological and geographical nature. In addition, the authors have taken it upon themselves to supplant accepted terminologies and expressions with those of their own creation. This publication presents evidence in support of the orders of the Ministry
1/2

USSR

BABENYSHEV, V. P., (Reviewer), Zhurnal Mikrobiologii Epidemiologii i
Immunobiologii, No 6, 1973, pp 140-142

of Health of the USSR which provides directives for the publication of
instructional manuals, and forbids the publication of such material without
prior approval by the Ministry.

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USSR

BUTKOV, YU. G. and BABER, A. I.

"Layout Density of the Elements of Large Integrated Circuits"

Translation: Methodology is proposed for determining the possible degree of integration of elements and couplings on the plate of a monolithic, large integrated circuit with preferred connection orientation.   Resume.

1/1

USSR

BABERE, G. M., and SHVAREVA, N. V.

"The Functional State of the Hypothalamus-Hypophysis Complex Upon Immunization"

Abstract: Rats were immunized with daily intraperitoneal injections of adsorbed tetravaccine (containing the antigens of typhoid, paratyphoid A and B and also tetanus toxoid) in the amount of 0.5 ml/kg. The animals were sacrificed on the 7th, 10th, and 30th day after the first administration of the vaccine. The effects of immunization on the hypothalamus-hypophysis system were studied by histochemical determinations of neuro-secretion   in the supraoptic nucleus and both parts of the neurohypophysis and by determination of glucoproteins in the anterior hypophysis. The number of basophils in sections of the middle part of the anterior hypo-physis was counted. On the 7th day after immunization, the neurosecretion of neurocytes of the supraoptic nucleus increased. On the 10th day the adenohypophysis was involved in the response to immunization; the number of basophils in it increased considerably. On the 30th day the synthesis
1/2

USSR

BABERE, G. M., and SHVAREVA, N. V., Izvestiya Akademii Nauk Moldavskoy SSR, Seriya Biologicheskikh i Khimicheskikh Nauk, No 4, 1971, pp 50-51

of neurosecreted substance returned to normal, while dysfunction phenomena remained in the adenohypophysis. Correlation of the data obtained with earlier results on the effect of immunization on the thyroid gland, in which hyperplasia was produced, indicated that the neurosecretion of the supraoptic nucleus participated in altering the functioning of the thyroid gland in immunization, and that the effect of the neurosecretion was . transmitted over the adenohypophysis.

2/2

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Acc. Nr: Abstracting Service: Ref. Code:
AP0048185   CHEMICAL ABST. 5-70   UR0007

102491q Study of iron oxidation in cummingtonite by the γ-resonance (Moessbauer) spectroscopic method. Ershova, Z. P.; Babeshkin, A. M.; Perfil'ev, Yu. D. (Inst. Geol. Rud. Mestorozhd., Petrogr., Mineral. Geokhim., Moscow, USSR). Geokhimiya 1970, (2), 252-6 (Russ). The Fe^{1+} oxidn. in amphibolite was studied with cummingtonite samples from Krivoi Rog by detn. of chem. and optical characteristics and γ-resonance by the Moessbauer method. The areas of Moessbauer spectra were measured graphically. The amt. of Fe^{2+} in cummingtonite, detd. from the spectral areas, agreed well with the chem. detns. The value of the peak area, corresponding to Fe^{1+} in the M_4 position, remained unchanged during heating of cummingtonite under dynamic conditions up to the solid phase transformation at 900° accompanied by the disintegration of mineral structure and formation of new phases: magnesioferrite $(MgFe_2O_4)$ and hematite. This substantiated the S. Ghose theory (1961) on the stronger M-O bond in the position M_4. Oxidn. of Fe in cummingtonite during heating >500° occurred at the expense of Fe^{1+} in the M_1, M_2, and M_3 positions. The degree of cummingtonite oxidn. at various temps. can be calcd. from the value of the spectral area.   BLJR

REEL/FRAME
19791897

TITLE--EUROPIUM AND DYSPROSIUM VALENCE STATES IN LAVES PHASES AND ISOMER
   SHIFTS IN MOESSBAUER SPECTRA -U-

AUTHOR-(03)-YEFREMOV, E.N., BABESHKIN, A.M., NESMEYANOV, A.N.

COUNTRY OF INFO--USSR

SOURCE--VESTN. MOSK. UNIV. KHIM. 1970, 11(1), 46-8

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ELECTRON DENSITY, ISOMER, ELECTRON STRUCTURE, RARE EARTH
   METAL, ZINC COMPLEX, NICKEL COMPLEX, ALUMINUM COMPLEX, COPPER COMPLEX,
   DYSPROSIUM, EUROPIUM, GALLIUM, RHODIUM, PALLADIUM, MOSSBAUR SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0610   STEP NO--UR/0189/70/011/001/0046/0048

CIRC ACCESSION NO--AP0107207
                         UNCLASSIFIED

2/2   020   UNCLASSIFIED   PROCESSING DATE--02OCT70
CIRC ACCESSION NO--AP0107207
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ISOMER SHIFTS AND ELECTRON DS. ARE
   TABULATED FOR THE INTERMETALLIC COMPDS. OF DY AND EU WITH GA, CU, PT,
   AL, RH, NI, PD, AND ZN. THE VALENCE OF EU DEPENDED ON THE POPULATION OF
   THE D LEVEL IN THE TRANSITION METALS WHICH WERE THE 2ND CONSTITUENT OF
   THE LAVES PHASES. THE ELECTRON D. AND THE VALENCE STATE FOR A RARE
   EARTH METAL DEPENDS ON THE ELECTRONIC STRUCTURE OF THE 2ND COMPONENT.

UNCLASSIFIED

1/2   037
UNCLASSIFIED   PROCESSING DATE--02OCT70
TITLE--CHEMICAL EFFECTS OF ELECTRON CAPTURE BY CERTAIN IODINE-125
  COMPOUNDS STUDIED BY THE MOSSBAUER EFFECT ON TELLURIUM-125 -U-
AUTHOR-(04)-BABESHKIN, A.M., LAMYKIN, E.V., LEBEDEV, V.A., NESMEYANOV,
  A.N.

COUNTRY OF INFO--USSR

SOURCE--VESTN. MOSK. UNIV. KHIM. 1970, 11(1), 117-18

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SPECTROSCOPIC ANALYSIS, MOSSBAUER EFFECT, TELLURIUM, IODINE,
  FROZEN FLOW, NITRIC ACID, AQUEOUS SOLUTION, ELECTRON CAPTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0615   STEP NO--UR/0189/70/011/001/0117/0118

CIRC ACCESSION NO--AP0107212
                    UNCLASSIFIED

CIRC ACCESSION NO--AP0107212
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A STUDY WAS MADE OF THE MOESSBAUER
  EFFECT OF PRIME125 TE, WITH THE ABSORBER BETA PRIME125 TE0 SUB3 AND THE
  SOURCE PRIME125 I, IN VARIOUS CHEM. FORMS (NAI, NAI.2H SUB2 O, KIO SUB3,
  NA SUB3 H SUB2 IO SUB6, FROZEN SOLNS. OF NAI IN H SUB2 O, AND OF NA SUB3
  H SUB2IO SUB6 IN 0.1 N HNO SUB3). FOR NAI A SINGLET LINE OF REGULAR
  SHAPE AND WITHOUT BROADENING WAS FOUND. FOR NAI.2H SUB2 O AND THE
  FROZEN SOLN. OF NAI IN H SUB2 O, A SPECTRUM WITH QUADRUPOLE SPLITTING
  WAS OBTAINED, DELTA IS GREATER THAN 10 MM-SEC. FOR KIO SUB3 THE
  SPECTRUM WAS BROADENED GREATLY, ASYM., AND SEPD. INTO 2 SINGLETS WITH AN
  INTENSITY RATIO OF SIMILAR TO ONE HALF, INDICATING THAT, AFTER ELECTRON
  CAPTURE IN KIO SUB3, THE TE IS STABILIZED IN MORE THAN 1 FORM. FOR THE
  FROZEN SOLN. OF NA SUB2 H SUB2 IO SUB6 IN 0.1 N HNO SUB3, THE SPECTRUM
  WAS GREATLY BROADENED AND ASYM. DUE TO THE PRESENCE OF MORE THAN 1
  STABILIZED FORM OF TE.

UNCLASSIFIED

USSR

ANZON, Z. V., et al, Institute of Nuclear Physics, Academy of Sciences, Kazakh
SSR, Alma-Ata; BOZOKI, G., et al, Central Research Institute of Physics, Budapest;
DALKHAZHAV, N., et al, High-Energy Laboratory, Joint Institute of Nuclear Research,
Dubna; BABETSKIY, Ya., et al, Laboratory of High-Energy Physics, Institute of
Nuclear Research, Krakow; ZHDANOV, G. B., et al, Physics Institute imeni P. M.
Lebedev of the Academy of Sciences, USSR, Moscow; ALEKSEYEVA, K. I., Scientific
Research Institute of Nuclear Physics, Moscow State University, Moscow; CHERNEV,
Kh., TODOROV, P. T., Institute of Nuclear Physics, Bulgarian Academy of Sciences,
Sofia; AZIMOV, S. A., et al, Institute of Nuclear Physics, Academy of Sciences,
Uzbek SSR, Tashkent; CHADRAA, V., SHARKHI, D., TUVDENDORZH, D., Institute of
Physics and Mathematics, Mongolian Academy of Sciences, Ulan-Bator

"General Characteristics of Pion-Nucleon Interactions in a Nuclear Emulsion at
Energies of 45 and 60 Gigaelectron-Volts"

Abstract: In the paper are presented the general characteristics of ion-nucleon
interactions in nuclear emulsions irradiated on the accelerator in Serpukhov.
The preliminary experimental data, obtained in various groups coordinated by the

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USSR

ANZON, Z. V., et al, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, No 9,
1970, pp 1934-1937

Photoemulsion Committee of the Joint Institute of Nuclear Research, were pre-
sented simultaneously to the International Conference on the Physics of Elemen-
tary Particles in Lund and at the 11th International Conference on Cosmic Rays
in Budapest. In the present paper are presented results obtained on the basis
of extensive statistical material. Approximately 1500 π-N-interactions at
energies of 60 and 45 gigaelectron-volts are analyzed. The free paths of in-
elastic interaction are 43.7 $\pm$ 0.5 and 42.8 $\pm$ 1.2 cm long respectively. The
average multiplicity for π-p-interactions at 60 gigaelectron-volts equals 6.4 $\pm$
0.3. 4 figures, 6 bibliographic entries.

2/2

USSR   UDC 621.3.035

GOYAN, YE. B., MINDYUK, A. K., BABEY, YU. I., Physical-Mechanical Institute of
the Ukrainian SSR Academy of Sciences, L'vov

"Electrochemical Cell for Studying the Electrode Processes in Acids at Elevated
Temperatures"

Abstract: An electrochemical cell is described which is used to study the elec-
trode processes taking place from metal surfaces in acids at elevated tempera-
tures (20-90° C). The schematics of a two-channel heat regulator and a device
for recording the polarization curves under galvanostatic and potentiostatic
conditions are presented. A Luggin capillary with an inside diameter of 1-1.5
mm is placed at a distance of 1-1.5 mm from the investigated electrode, and the
electrolytic bridge of the auxiliary electrode (inside diameter 4.5 mm) is at
a distance of 15 mm. The distances of the electrolytic switches from the elec-
trodes are constant since the switches are soldered to the cell. The specimen
is placed in a teflon holder screwed into a plug. Thus, the specimen can be
placed in a given position for each measurement. For thermostating, a two-
channel heat regulator has been developed which permits the temperature of the
investigated solution, the comparison electrode and the auxiliary electrode to
be regulated with an accuracy of +0.3° C.
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USSR

UDC 620.194.2

KARPENKO, G. V., ZAGORUYKO, R. F. and BABEY, YU. I., Physics and Mechanics Institute, Academy of Sciences Ukrainian SSR, L'vov and the Novyy Rozdol Mining and Chemical Combine

"Effect of Heat Treatment on the Resistance of Steel Kh18N10T to Corrosion Cracking in a Sulfur Pulp"

Abstract: To study the resistance of stainless steel Kh18N10T to stress corrosion cracking, samples of the steel were subjected to the following heat treatment: heated to 1100°C and water quenched; annealed at 820°C for two hours and furnace cooled; normalized at 820° C for two hours and air cooled. The samples were then placed in the sulfur pulp under 45 kg/mm² of stress. An as-supplied sample was also tested (not heat treated). The tests showed that the as-supplied and quenched samples suffered severe corrosive attack and suffered brittle failure after 70 hours of testing. The annealed and normalized samples did not fracture even after 500 hours of testing. 3 figures, 3 bibliographical references.

1/1

USSR ,   UDC: 620.178.162

BABEY, YU. I., GOLUBETS, V. M., VYGOVSKIY, I. P., RYABOV, B. F., and
GHATYSHAK, N. N.

"Effect of White Layer on Wear Resistance of 50X Steel"

Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 7, No 5, 1971, pp 7-10

Abstract: An experimental investigation of the effect of white layer on the
wear resistance of 50X(0.49% C, 0.21% Si, 0.65% Mn; 1% Cr, 0.24% Ni) steel was
conducted.
    The white layer was formed by turning the specimen journal ring on the
lath, with 83 meter/min cutting speed and 0.15 mm depth of cut, or by means of
mechanical-ultrasonic treatment.
    Test showed that the wear resistance of the specimens with white layer
was equal to the ones, which were quenched at 850°C and drawn at 180°C. The
wear of these specimens was about one third of the wear of unimproved specimens.
The wear of the bronze and steel bushings rubbing against these specimens was
reduced by about the same amount.
    The white layer is formed by quenching and drawing due to the heat gener-
ated by the cutting tool.
    The microradiographic spectral analysis showed that the content of carbon,
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USSR

BABEY, YU, I., et al., Fiziko-Khimicheskaya Mekhanika Materialov, Vol 7, No 5, 1971, pp 7-10

chrome and other carbide-forming elements is higher in the white layer and lower in the sublayer than in the original metal.

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USSR

UDC 620.194:669.15

ZAGORUYKO, R. F., BABEY, Yu. I., KARPENKO, G. V., Physicomechanical Institute, Academy of Sciences, Ukrainian SSR, L'vov; Chemical Mining Combine, Novyy Rozdol

"The Influence of Rolling on the Resistance of Steel Kh18N10T to Corrosion Cracking in Sulfur Pulp"

Abstract: Parts of machines and mechanisms working under conditions of sulfur mining are made of stainless steels of the type Kh18N10T. Steels of this class at delivery are vulnerable to corrosive cracking in a sulfur pulp. The question of increasing the resistance of steel to corrosive cracking in such a medium has been insufficiently studied up to now, and is almost not at all reflected in the literature. An investigation is made in this article concerning the influence of the increasing the resistance of steel Kh18N10T to corrosive cracking under the indicated conditions by rolling with rollers in the state of delivery. Experiments showed that in pure sulfur the initial samples do not crack at all. The surface of the samples is covered with a dense film of grayish color. No signs of corrosive cracking of the surface

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USSR

ZAGORUYKO, R. F., et al, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 7, No 4, 1971, pp 107-108

layer nor of cracks are detected. In a sulfur pulp with a 30% aqueous solution of $MgCl_2$, the steel undergoes more intensive cracking than in 30% $MgCl_2$. The origination of cracks and their development in steel Khl8N1OT in testing for corrosion cracking in sulfur pulp may be explained from the point of view of adsorption-electrochemical theory, where the essential part is played by adsorption, anode and cathode processes. During testing in sulfur pulp, hydrogen sulfide is formed in the medium, and the diffusion of hydrogen into the metal is entirely probable. Experiments have shown that rolling by rollers effectively increases the resistance of steel to corrosion cracking, the resistance being twice as great as samples that are ground. The increased resistance of the steel to corrosion cracking by rolling is caused by the favorable texture of the metal and the positive influence of the residual compression stresses in the surface layers of the samples. 4 figures. 2 references.

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USSR

VORONINA, L. V., SHPEYZMAN, V. M., BABEY, YU. I., and VEYNGARTEN, A. M.

"Influence of Surface Hardening on Properties of Structural Steels"

Abstract: Studies were performed to determine the influence of the form of microirregularities on the physical properties of surface-hardened steel specimens. Specimens of type 20 steel and type 12 KhN3A steel were subjected to carburizing with surface rolling, while specimens of type 40 Kh steel were subjected to induction hardening. Microhardness and surface smoothness of the specimens were measured. Carburized type 20 steel was found to have a maximum microhardness of about 900 kg/mm^2 at 0.1-0.3 mm from the surface. Surface rolling was found to increase surface smoothness, increasing the radius of curvature of peaks and hollows, thus improving the operational properties of the metal. Fatigue tests were also performed in air and in a 3% aqueous solution of sodium chloride. The surface rolling increased
1/2

USSR

VORONINA, L. V., et al., Sudostroyeniye, No 2, Feb 71, pp 47-53

fatigue strength, particularly in the salt solution. Type 20 steel
carburized with subsequent surface rolling was found to be equal to
alloy steels in fatigue strength. The fatigue strength of type
40 Kh steel was increased by almost 50% by induction hardening. The
hardening processes were also found to decrease the coefficient of
friction of the metal surfaces. Corrosion resistance was little
changed by the treatment, however.

2/2

1/3   042   UNCLASSIFIED   PROCESSING DATE--11SEP70
TITLE--EFFECT OF ULTRASONIC TREATMENT ON THE PHYSICOMECHANICAL PROPERTIES
   OF SOME PRECISION ALLOYS -U-
AUTHOR--BABEY, YU.I., YAREMKEVICH, S.K., SHULGA, N.G., VYGOVSKIY, I.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ.-KHIM. MEKH. MATER. 1970, 5(6), 656-60

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--MECHANICAL PROPERTY, ULTRASONIC EFFECT, METAL INTERNAL
   FRICTION, MAGNETIC PROPERTY, IRON ALLOY, NICKEL ALLOY, MAGNETIC
   MATERIAL, ALUMINUM ALLOY, COBALT ALLOY, THERMOMAGNETIC EFFECT, PRECISION
   ALLOY, MAGNETIC FIELD, DISPERSION HARDENING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1938/0661   STEP NO--UR/0369/70/005/006/0656/0660

CIRC ACCESSION NO--AP0105639
                       UNCLASSIFIED

CIRC ACCESSION NO--AP0105639
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELEVEN DISPERSION HARDENED,
  PRECISION ALLOYS FE-NI-AL-CO (RANGES NI 13.5-19.6, AL 7.0-12.27, CO
  12.0-36.5, SI 0.0-0.5, TI 0.24-7.0 OR NB 0.5-0.8 WT. PERCENT, FE REST)
  WERE STUDIED AS TO THE EFFECT OF ULTRASOUND ON PROPERTIES AND STRUCTURE.
  ALL SPECIMENS WERE HEATED TO 1250-80DEGREES, HELD FOR 15-20 MIN, AND
  COOLED TOGETHER WITH THE FURNACE AT 20DEGREES PER HR. THE
  THERMOMAGNETIC TREATMENT WAS CARRIED OUT BY HEATING IN A BACL SUB2 BATH
  AT 800-40DEGREES FOR 10 MIN, FURTHER HEATING ALSO IN BACL SUB2 AT
  1280DEGREES FOR 10-15 MIN COOLING IN LOWER TEMP. RANGE AT THE CRIT. RATE
  40-60DEGREES PER MIN IN A MAGNETIC FIELD. BEFORE THE ULTRASONIC
  TREATMENT THE FOLLOWING ALTERNATIVE THERMAL TREATMENTS WERE APPLIED: (1)
  HEATING TO 1250-80DEGREES, COOLING IN THE LOWER TEMP. RANGE
  (400-850DEGREES) AT 40-60DEGREES PER MIN AND TEMPERING AT 600DEGREES,
  (2) STEPWISE HEATING AND COOLING AT CRIT. RATE FROM 1280DEGREES IN A
  MAGNETIC FIELD, (3) THE ABOVE MENTIONED THERMOMAGNETIC TREATMENT WITH
  TEMPERING FOR 4 HR AT 600DEGREES, AND (4) STEPWISE HEATING AND COOLING
  WITH CRIT. RATE IN MAGNETIC FIELD (WITHIN THE REGION OF SOLID SOLN.)
  WHILE APPLYING ULTRASOUND DURING TEMPERING AT 600DEGREES WITH VARYING
  TIME PERIODS. THE IRRADN. WITH ULTRASOUND WAS CARRIED OUT AT 18-20 KHZ
  IN A MAGNETIC FIELD OF 1500-2000 OE. AFTERWARDS, THE MICROSTRUCTURE,
  MAGNETIC PROPERTIES, SP. ELEC. RESISTANCE, THERMAL EXPANSION,
  MICROHARDNESS, INTERNAL FRICTION, HEAT COND., AND YOUNG MODULUS WERE
  DETD. THE ULTRASOUND AFTER TREATMENTS (1) AND (3) HAD NO EFFECT, WHILE
  TREATMENT (2) AND ULTRASOUND HAD A WEAK EFFECT ON MAGNETIC PROPERTIES.

                          UNCLASSIFIED

CIRC ACCESSION NO--AP0105639

ABSTRACT/EXTRACT--TREATMENT (4) WAS MORE EFFECTIVE IN INCREASING THE
COERCIVE FORCE AND MAX. MAGNETIC ENERGY BY 25-30PERCENT; HOWEVER, WITH 2
ALLOYS (CONTG. CO 24 AND 35PERCENT) THE MAGNETIC ENERGY AND RESIDUAL
INDUCTION DECREASED BY 20-5PERCENT, (WHICH IS EXPLAINED BY THE
DISINTEGRATION OF SINGLE DOMAIN STRUCTURE AND ANISOTROPY). THE FAVORABLE
ACTION OF ULTRASOUND ON THE OTHER ALLOYS IS EXPLAINED BY THE CYCLIC
DEFORMATION OF CRYST. LATTICE, WHICH FACILITATES DIFFUSION; WHILE
ACCELERATING THE FORMATION OF SUBMICROSCOPIC PHASES FROM THE SOLID   -
SOLN., THE ULTRASOUND HAD NO EFFECT ON THE COAGULATION RATE.

UNCLASSIFIED

1/2   023   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--EFFECT OF A THREADED SECTION AND THE METHOD OF PRODUCING IT ON THE
   RESISTANCE OF ,CARBON, STEEL SAMPLES TO CORROSION CRACKING -U-
AUTHOR-(03)-DUTSYAK, Z.G., KHITARISHVILI, M.G., BABEY, YU.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (1), 112-113

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CORROSION CRACKING, CARBON STEEL, AMMONIUM NITRATE, STRESS
   ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0218   STEP NO--UR/0369/70/006/001/0112/0113

CIRC ACCESSION NO--AP0129474
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0129474
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESISTANCE OF C STEEL (ST. 45)
  SAMPLES TO CORROSION CRACKING IN A BOILING NH SUB4 NO SUB3 SOLUTION WAS
  STUDIED AS A FUNCTION OF THE TYPE OF STRESS RAISER INCORPORATED IN THE
  SAMPLE (SCREW THREADS, GROOVES, ETC.) AND THE MANNER OF PRODUCING SUCH
  STRESS CONCENTRATIONS. SAMPLES WITH CUT SCREW THREADS HAVE A LOWER
  RESISTANCE TO CORROSION CRACKING THAN THOSE CONTG. A GROUND THREAD. THE
  DIFFERENCE BETWEEN GRINDING AND MACHINING WITH A STEEL TOOL WAS GREATEST
  IN THE CASE OF A SINGLE GROOVE AND LEAST IN THAT OF A COMPLETE THREAD,
  THERE BEING A CERTAIN "AVERAGING" EFFECT IN THE LATTER CASE.

UNCLASSIFIED

1/2   032   UNCLASSIFIED   PROCESSING DATE--27NOV70
TITLE--MECHANISM OF THE WORK HARDENING OF HARDENED STEEL DURING
   DEFORMATION AGING -U-
AUTHOR-(03)-BABEY, YU.I., MOISEYEV, R.G., KUKLYAK, M.L.

COUNTRY OF INFO--USSR

SOURCE--FIZ.-MEKH. MATER. 1970, 6(1), 100-2

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--METAL AGING, ALLOY DESIGNATION, CHROMIUM STEEL, ALLOY
   COMPOSITION, IMPACT STRENGTH, METAL INTERNAL FRICTION, CYCLIC ENDURANCE
   LIMIT, TORSION STRESS, METAL DEFORMATION/(U)40KH CHROMIUM STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0331   STEP NO--UR/0369/70/006/001/0100/0102

CIRC ACCESSION NO--AP0126087
                            UNCLASSIFIED

2/2   032   UNCLASSIFIED   PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0126087
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. STEEL 40KH (C 0.36, MN 0.7, SI
   0.24, S 0.024, P 0.018, CR 0.90, AND NI 0.14 WT PERCENT) AFTER QUENCHING
   IN OIL FROM 850DEGREES AND TEMPERING FOR 2 HR AT 180DEGREES, WAS
   DEFORMED BY TORSION (0-4PERCENT) AT 8-10DEGREES-MIN, HELD IN THE
   STRESSED STATE FOR 5-7 MIN, AND UNLOADED AT THE SAME RATE. DEFORMED
   SPECIMENS WERE AGED FOR 2 HR AT 100DEGREES, AND AFTERWARDS THE IMPACT
   STRENGTH, INTERNAL FRICTION, AND ENDURANCE WERE DETD. THESE PROPERTIES
   WERE ALL INCREASED WITH DEFORMATION DEGREE UP TO 2DEGREES, AND WITH
   LARGER DEFORMATION DEGREES THESE PROPERTIES DECREASED, TO INITIAL OR
   BELOW INITIAL VALUES. TORSIONAL DEFORMATION WITH SUBSEQUENT AGING
   CAUSED THE FORMATION OF CONSIDERABLE RESIDUAL STRESSES (150-250 KG-MM
   PRIME2) IN SURFACE LAYERS OF TESTED SPECIMENS, WHICH CONTRIBUTED TO THE
   INCREASE OF CYCLIC STRENGTH OF DEFORMED AND AGED STEEL.
   FACILITY: FIZ.-MEKH. INST., LVOV, USSR.

                              UNCLASSIFIED

TITLE--ON THE ADSORPTION CHARACTERISTICS OF METALS -U-

AUTHOR-(03)-MINDYUK, A.K., BABEY, YU.L., KARPENKO, G.V.

COUNTRY OF INFO--USSR

SOURCE--FIZ. KHIM. MEKHAN. MAT., 1970, 6, (1), 97-100

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ADSORPTION, ELECTRON STRUCTURE, METAL SURFACE PROPERTY,
  CHEMISORPTION, IRON, MERCURY, ELECTROLYTE, SODIUM HYDROXIDE,
  HYDROCHLORIC ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1680   STEP NO--UR/0369/70/006/001/0097/0100

CIRC ACCESSION NO--AP0129050
                            UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0129050
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RELATIONSHIP BETWEEN THE
   ELECTRON STRUCTURE AND ADSORPTION CHARACTERISTICS OF METALS IS DISCUSSED
   IN THE LIGHT OF ACCUMULATED THEORETICAL AND EXPERIMENTAL DATA.
   DEPENDING ON THE NATURE OF THE METAL (WHETHER IT IS A DONOR OR AN
   ACCEPTOR OF ELECTRONS, ETC.), ADSORPTION MAY TAKE PLACE IN SEVERAL
   DIFFERENT WAYS, E.G. THE ELECTRONS OF THE ADSORBED PARTICLES MAY OR MAY
   NOT BE LOCALIZED BY THE IONS OF THE METALLIC LATTICE (STRONG AND WEAK
   CHEMISORPTION, RESP.). PRACTICAL EXAMPLES ARE GIVEN FOR FE AND HG IN
   RELATION TO VARIOUS ELECTROLYTES (NAOH, HCL, ETC.).

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USSR

UDC 669.14.018.44:539.4

BABICH, B. N., BULYGIN, I. P., ZHUKOV, N. D., KRIVENKO, M. P., and PARFENOVA,N.I.
All-Union Scientific Research Institute of Aviation Materials (Moscow)

"The High-Temperature Strength of Dispersion-Hardening Composition Alloys Potentially Suitable for Use in Engines"

Kiev, Problemy Prochnosti, No 11, Vol 73, pp 73-77

Abstract: An investigation is made of the high-temperature strength of the nickel-based dispersion-hardened alloys VDU-1 and VDU-2, hardened by finely dispersed, uniformly distributed particles of high-melting oxides of the ThO_2 type in the amount of 2-3% by weight. A study was made of the strength of semi-finished products in the form of rods 6-12 mm in diameter and sheets 0.8-1.2 mm in thickness, obtained from powders of the components via shaping, baking, and hot extrusion. Results are presented of an investigation of the short- and long-term strength, the creep, fatigue, and heat resistance of the alloys to establish their suitability for use in gas-turbine engines. An analysis was made of such strength features of these alloys as the nature of the temperature-time relationship of the strength, the scattering of the heat-resistance indicators, the sensitivity to loading instability, etc. in comparison to the strength properties of series-produced highly heat-resistant alloys. The
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USSR

BABICH, B. N., et al., Problemy Prochnosti, No 11, Vol 73, pp 73-77

obtained results demonstrate the fact that with regard to their high-temperature strength, dispersion-hardened alloys are potentially suitable for use in gas-turbine engines. 8 figures. 2 tables. 5 references.

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USSR

UDC 621.762.1.01:669. 18.95

PORTNOY, K. I., GOROBETS, B. R., ROMANOVICH, I. V., and BABICH, B. N.,
All-Union Scientific Research Institute of Aviation Materials

"Relation of Precipitation-Hardened Nickel Heat Resistance to Structure Parameters"

Abstract: In conjunction with the fact that precipitation-hardened nickel alloys VDU-1 and VDU-2 have a different level of heat resistance despite identical conditions of heat treating, a study was conducted on the structure of these alloys subjected to the same treatment, which differed in dispersity of the hardening phase in the amount of 2.5 vol %. Experiments confirmed a linear relationship of long-time strength to inverse magnitude of mean interparticle distance. It was also determined that there is a linear relationship between long-time strength to relative volume percentage of "coarse" dispersed particles. These results confirmed the hypothesis that the rise in strength increases with temperature due to the unchanged shear modulus with increased temperature and that the number of active slip systems is decreased with increased temperature, which in turn is the result

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USSR

PORTNOY, K. I., et al., Poroshkovaya Metallurgiya, No 1, Jan 74, pp 96-100

of the role of be dispersed hardening particles which hinder the movement
of mobile dislocations. Four figures, one table, nine bibliographic
references.

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USSR   UDC: 669.71

PORTNOY, K. I., BABICH, B. N., ROMANOVICH, I. V., ROMASHOV, V. M., Moscow

"The Growth of Particles of Hardening Phases in Processes Producing Dispersion Hardened Alloys"

Abstract: X-ray and electron microscope methods are used to determine the mean diameter of particles of the hardening phase in an alloy of nickel with three vol. % hafnium dioxide during stages of its production from an initial powder mixture of oxides to a compact deformed bar. The greatest growth of the mean particle diameter of the hardening phase is observed during the operations of sintering and hot extrusion. The main reason for enlargement of particles in processes involved in producing the dispersion hardened alloy is the unevenness of the distribution, allowing direct contact between particles. The electron microscope method is recommended for determination of the mean diameters of hardening-phase particles in a dispersion hardened alloy, since it gives more reliable information than the x-ray method.

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BABICH, B. N., BERESTEN', N. Ye., LYUKEVICH, V. I., ROMANOVICH, I. V.,
TIMOFEYEVA, N. I.

"Influence of Distribution of Hardening Phase Particles in Powders on Thermal Stability of Dispersion-Hardened Nickel"

Abstract: This article studies the structural stability and strength proper-
ties of compositions produced of powders made by various methods providing
near-identical hardening phase particle dimensions but different distribu-
tions of these particles in the matrix. It was found that achievement in
initial powders of the most even possible distribution of ultrafine particles
of the hardening phase assures thermal stability of dispersion-hardened
nickel. The level of high-temperature properties of dispersion-hardened
nickel depends on the presence of a certain quantity of oriented recrystalli-
zation areas in the structure with total absence of equiaxial grains. Uneven-
ness of particle distribution of the hardening phase particles in the initial
powders causes an increase in the mean particle size when the compact material
is produced and a change in the nature of recrystallization, with the forma-
tion of equiaxial grains. The tests were based on nickel powder with 2%
hafnium dioxide. The powders were produced by carbonate precipitation of
nitrate solutions and evaporation concentration. Following hot extrusion
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and cold drawing, the batch with poorer distribution showed intensive parti-
cle growth, probably as a result of accumulation of particles into conglo-
merates.

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Superalloys

USSR   UDC 669.24'298:620.185.5

BABICH, B. N., LYUKEVICH, V. I., LEVINSKAYA, M. KH. and ROMASHOV, V. M.

"Recrystallization of Nickel Strengthened With Thorium Dioxide"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 3, 1972,
pp 36-40

Abstract: The study deals with the recrystallization of nickel strengthened
with thorium dioxide following cold drawing and anneals of extruded metal
powder rods. The material's composition was 96.89% Ni; 2.81% ThO_2; 0.07%
C; 0.008% S; 0.003% P; 0.08% Fe; 0.037% Cu. Precipitation-hardened nickel
has an extremely stable structure which explains the preservation of a
considerable strengthening effect as a result of cold drawing after high-
temperature annealing. The material features a wide temperature interval
between the recovery occurring at 400-600°C and the recrystallization which
develops at 1200-1400°C. On recrystallization, the precipitation-hardened
nickel develops a structural inhomogeneity which is stable up to 1400°C.
The amount of large recrystallized grains is governed by the preliminary
deformation ratio and annealing temperatures. An increase in cold deforma-
tion activates the recrystallization of nickel strengthened with ThO_2.

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