

1/2 071 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--DEVELOPMENT OF PRODUCTION TECHNOLOGY FOR CERMET ALUMINUM AND
INVESTIGATION OF ITS PROPERTIES -U-
AUTHOR--(05)-FEDORCHENKO, I.M., BELOBORODOV, I.I., AFANASYEV, V.F.,
NENAKHOV, A.V., MANYKIN, E.T. **6**
COUNTRY OF INFO--USSR, UNITED STATES
SOURCE--KIEV, POROSHKOVAYA METALLURGIYA, NO 3, MAR 70, PP 39-42
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--ALUMINUM, POROUS, HEAT TRANSFER, FLUORINE, GRAPHITE, LEAD,
ANTIFRICTION ALLOY, ANTIFRICTION MATERIAL, IMPACT STRENGTH, MECHANICAL
PROPERTY, CERMET
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0409 STEP NU--UR/0226/70/000/003/0039/0042
CIRC ACCESSION NO--AP0119351
UNCLASSIFIED

2/2 071

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119351

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY IS MADE OF THE POSSIBILITY OF PRODUCING A POROUS ALUMINUM SKELETON WHICH WOULD PERMIT MANUFACTURE OF A METAL CERAMIC ANTIFRICTION MATERIAL. THE DEVELOPMENT OF A PRODUCTION PROCESS FOR POROUS ALUMINUM FROM ALUMINUM AND SODIUM CHLORIDE POWDERS OF 0.1-0.3 AND 0.1-0.2 MM PARTICLE SIZE, RESPECTIVELY, IS DESCRIBED. PELLETS WERE SINTERED IN ACCORDANCE WITH UNITED STATES PATENT NO 3276867. PELLET SINTERING QUALITY WAS DETERMINED BY MEASURING THE IMPACT DUCTILITY, HARDNESS, AND STRENGTH AT CUTOFF. THE MECHANICAL PROPERTIES OF THE CERMET ALUMINUM ARE SHOWN TO BE COMPARABLE TO THOSE OF A FILLED FLUORINE PLASTIC. THIS WILL MAKE IT POSSIBLE TO USE ALUMINUM NOT ONLY AS A HEAT TRANSFER AGENT, BUT AS A SUPPORTING SKELETON FOR METAL FLUORINE MATERIALS. ANTIFRICTION TESTS CONDUCTED IN AIR AND IN VACUUM (2 TIMES 10 PRIME NEGATIVES TO 5 TIMES 10 PRIME NEGATIVE6 MM HG) ON SAMPLES WITH A 50PERCENT POROSITY IMPREGNATED WITH FLUORINE PLASTIC 4, FILLED WITH GRAPHITE, LEAD, AND MOLYBDENUM SULFIDES, SHOWED THE POSSIBILITY OF THEIR USE AT SPEEDS UP TO 0.25 M-SEC AND AT PRESSURES UP TO 10 KG-CM PRIME2. ORIGINAL ARTICLE HAS 3 TABLES.

UNCLASSIFIED

UDC 632.95

USSR

TALIPOV, Sh. T., DZHIYANBAYEVA, R. Kh., KHALIMOVA, U. Kh., BELOBORODOVA,
N. F., SHEYNINA, R. I.

"Analysis of Butyphos in Cotton Seed and Products of Refining Raw Cotton"
Maslo-zhir. prom-st' (Oil and Fats Industry), 1972, No 10, pp 33-34 (from
RZh-Khimiya, No 2 (II), Feb 73, Abstract No 2N478)

Translation: In order to determine the butyphos residue in raw cotton, fiber, shells and the refined cotton seed oil, extraction by an organic solvent (for cotton seed oil, MeCN and for the other samples, CCl₄) and purification of the extract in a column filled with Al₂O₃ with SG KSK [expansion unknown] (3:1) [the sorbent was first treated with HCl (acid)] were carried out. Thin layer chromatography was performed using a fixed layer of SG in the n-hexane-acetone system (4:1). It was developed with a solution of Ac-OH. The sensitivity of the method when analyzing butyphos in raw cotton and fiber is 0.1 mg/kg; in the hulls it is 0.6 mg/kg and in the refined cotton seed oil, 1 mg/kg.

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USSR

UDC 632.95

DZHIYANBAYEVA, R. KH., TALIPOV, SH. T., KHALIMOVA, U. KH., and BELOBORODOVA, N. F.

"Qualitative and Quantitative Measurement of Magnesium Chlorate in Cottonseed Oil"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, kormov i vnesh. sredy (Works of the Second All-Union Conference on the Study of Pesticide Residues, and the Prevention of Contamination by Them of Food Products, Fodders and the Environment), Tallinn, 1971, p 280 (from Referativnyy Zhurnal -- Khimiya, No 10 (II), 1972, Abstract No 10H584 by T. A. Belyayeva)

Translation: The cotton plant defoliant $Mg(ClO_3)_2$ (I) is extracted from cotton seed oil with 0.05 N HCl and the extract is passed through anion exchange AB-17 (in OH form) and washed with 2N H_2SO_4 . I is determined in

in an eluant photometrically with benzidine hydrochloride. Sensitivity of the measurement is 0.05-1 mg/kg.

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USSR

UDC 543.544

TALIPOV, SH. T., DZHAYANBAYEVA, R. KH., KHALIMOVA, U. Kh., BELOBORODOVA, N. F.,
and SHEYNINA, R. I., Tashkent State University imeni V. I. Lenin

"Thin-Layer-Chromatographic Determination of Butyphos in Cottonseed Oil"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 4 (90), 1971, p 20

Abstract: KSK silica gel was used for determination of butyphos in cottonseed oil, it is more selective than alumina. Butyphos was extracted from cottonseed oil with acetonitrile, passed through a 3:1 column of alumina:silica gel and chromatographed in the system n-hexane-acetone (4:1). The spots were developed with 0.05% bromphenol blue; impurities do not show up in this system.

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USSR

UDC 669.715'782

BATALIN, G. I., BELOBORODOVA, YE. A., and STUKALO, V. A., Kiev

"Study of Thermodynamic Properties of Al-Si Melts"

Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 69-74

Abstract: The thermodynamic properties of liquid alloys of aluminum with silicon were determined over a broad concentration range by the emf method. Two series of experiments were performed: the first series involved seven alloys with silicon contents up to 35 at. % in the 950-1270°K temperature range; in the second series of experiments, five alloys with high silicon contents (from 45 to 80 at. % Si) were studied in the 1350-1650°K temperature range. The data produced agree well with the phase diagram of the Al-Si system. Throughout the entire range of concentrations, the isotherms of activity of the components show negative deviations from ideal solutions. Al-Si liquid alloys are characterized by significant positive values of integral heats and excess entropies of formation. The maximum values of these functions are strongly shifted toward the alloys rich in aluminum.

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1/2 034
UNCLASSIFIED
PROCESSING DATE--27NOV70
TITLE--THERMODYNAMIC PROPERTIES OF GERMANIUM ZINC MOLTEN ALLOYS -U-
AUTHOR--(03)-BATALIN, G.I., BELOBORODOVA, YE.A., STUKALO, V.A.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (2), 147-51.
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, MATERIALS
TOPIC TAGS--THERMODYNAMIC PROPERTY, GERMANIUM ALLOY, ZINC ALLOY,
NONFERROUS LIQUID METAL, ENTHALPY, ENTROPY, ELECTROCHEMISTRY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1613
STEP NO--UR/0370/70/000/002/0147/0151
CIRC ACCESSION NO--AP0125235
UNCLASSIFIED

2/2 034

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125235

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERMODYNAMIC PROPERTIES OF LIQ. SOLNS. OF GE AND ZN WERE STUDIED BY MEASURING OF EMF. OF THE ELECTRODE, CONCN. CELL ZN(L), ZHCL SUB2 IN MELT (KCL PLUS NA CL), (GE,ZN)(L), WHERE THE AT. FRACTION OF ZN AND THE TEMP. RANGE WERE 0.9079-0.2240 AND 950-1230DEGREESK, RESP. FOR THE ABOVE AT. FRACTION OF ZN AT 1230DEGREESK THE TEMP. COEFF. OF EMF. AND THE EMF. WERE 0.00649 TO 0.11112 MV-DEGREE AND 6.322 TO 91.305 MV. THERMODYNAMIC QUANTITIES WERE CALCD. FROM THE DATA OBTAINED FOR ZN AND GE AT 1230DEGREESK. FOR THE AT. FRACTION OF GE OF 0.1-0.9 AT 1230DEGREESK THE VALUES OF INTEGRAL FREE ENERGY, ENTHALPY, ENTROPY, EXCESS FREE ENERGY, AND EXCESS ENTROPY ARE GIVEN. THE EMF. WAS A FUNCTION OF THE TEMP. IN HOMOGENEOUS SOLNS. AND DEVIATED FROM THE STRAIGHT LINE WHEN THE SOLNS. STARTED TO BE HETEROGENEOUS. THE TEMP. CORRESPONDING TO THE BEGINNING OF THE DEVIATION IS THE CRIT. TEMP. OF CRYSTN. OF THE SOLN. IN QUESTION. IN THIS WAY, FOR THE SOLNS. CONTG. 0.49, 0.57, 0.62, AND 0.68 AT. FRACTION OF GE, THE TEMPS. OF CRYSTN. WERE FOUND TO BE 723, 773, 798, AND 824DEGREESC, RESP.

UNCLASSIFIED

USSR

UDC 669.017.620.18

BELOBRAGIN, YU. A., KRISHTAL, M. A., MOKROV, A. P., and STRELKOV, V. I., Tula

"Interdiffusion in the Iron-Nickel System During the Investigation of the Kirkendall Effect"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan-Feb 72, pp 108-113

Abstract: The Kirkendall effect was experimentally investigated on multilayer Fe-Ni specimens with passive marks located both on the welding surface and inside the metals at specific distances. The dislocations of the marks in the diffusion zone in the whole area of concentrations of the Fe-Ni system were tested. The results are discussed by reference to diagrams showing dislocations of the marks relative to the x-coordinate, the length variations of specimens as a function of time, and the distribution of non-equilibrium concentration of vacancies in the diffusion zone of the specimen. A sign change of the Kirkendall effect in the area of high Ni concentrations was observed in long-term annealing and at the maximal temperature of 1340°C, which is explained by the high diffusion mobility of Ni atoms. The development of a diffusion porosity from the Fe side (Frenkel effect), resulting in an elongation of the specimen during annealing according to a parabolic rule, was observed. The non-equilibrium concentration of vacancies along the diffusion area is estimated. Four illustrations, 10 formulas, 11 biblio. refs.

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Public Health, Hygiene and Sanitation

USSR

UDC 616.24-003.667.6-092-008.939.15

BELOBRAGINA, G. V., and YEL'NICHNYKH, I. N., Institute of Labor Hygiene and Occupational Diseases, Sverdlovsk

"Localization of Lipids in the Lungs During Experimental Asbestosis"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 9, 1972, pp 55-57

Abstract: The process of node formation and invasion by lipid-containing macrophages in the lungs of white rats exposed to chrysotile asbestos dust was studied microscopically over a 1-year period and compared to processes occurring during silicosis. As in silicosis, lipid-containing macrophages accumulated in perivascular and peribronchial tissues, in interalveolar septase, and under the pleura, appearing on the periphery of dust nodes consisting of macrophages, plasma cells, histiocytes, fibroblasts, and fibrocytes in 30 days. In contrast to silicosis, however, the nodes were not subsequently invaded by lipid-containing macrophages, and sclerotization did not occur. This suggests a pathogenic involvement of lipid-containing macrophages in the development of pneumosclerosis.

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USSR

UDC 613.633+613.648]:666.76

LEMYASEV, M. F., BABUSHKINA, L. G., SEMENOV, G. V., (Deceased), KATSNEL'SON, B. A., KARAGODINA, I. V., TREYGER, S. I., and BELOBRAGINA, G. V., Scientific Research Institute of Hygiene and Occupational Diseases, Medical Institute, Oblast Sanitary-Epidemiological Station, Sverdlovsk

"Dust and Radiation Factors in the Production of Fireproof Articles From Zirconium Dioxide"

Moscow, Gigiyena i Sanitariya, No 10, Oct 1970, pp 38-41

Abstract: Tests with rats confirmed that the fibrogenic character of "pure" ZrO_2 dust is lower than that of the commercial product. This difference is attributed to the admixture of radioactive elements in the dust of the insoluble commercial ZrO_2 , which is used as raw material in the production of various fireproof objects, so that the fibrogenic action of this dust on the lungs is intensified. On the basis of data from this experiment and from studies in an industrial environment, it is recommended that maximum permissible concentrations of ZrO_2 dust and similar substances be established which taken into account the radioactive contamination present in these dusts.

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USSR

UDC 547.63 + 547.562.4'562.1

GITIS, S. S., SEINA, Z. N., KAMINSKAYA, E. G., IVANOVA, V. M.,
~~BELOBRAGINA, V. V.~~, SOSONKIN, I. M., and KAMINSKIY, A. YA.,
VNIPIIM [All-Union Scientific Research and Planning Institute of
(unknown; possibly Monomers)], Tula, and CHIKURINA, L. V., VNIIV
[All-Union Scientific Research Institute of Synthetic Fibers.]

"p,p'-Bis-(carboxyphenylsulfonyl)-diphenyl Oxide and Some of Its
Derivatives -- Monomers for the Production of Thermostable
Fibers"

Moscow, Khimicheskiye Volokna, No 1, 1971, pp 45-47

Abstract: The article suggests the synthesis of new monomers,
viz. derivatives of p,p'-bis-(carboxyphenylsulfonyl)-diphenyl
oxide, for the production of thermostable polymer materials. A
study of the first stage of the synthesis -- tosylation of di-
phenyl ether -- showed that the process yields two principal
products whose elementary composition corresponds to the general
formula $CH_3-Ar-SO_2-Ar-O-Ar-SO_2-Ar-CH_3$, as well as a
third substance whose composition corresponds to the composition

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USSR

GITIS, S. S., et al., Khimicheskiye Volokna, No 1, 1971, pp 45-47

of the monotosylation product $Ar-O-Ar-SO_2-Ar-CH_3$. The structure of the synthesized products was confirmed by IR and electron spectroscopy, as well as polarography. Fibers based on the resultant monomers are strong and elastic.

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1/2 006

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--ON THE CHEBYSHEV POINT OF A SYSTEM OF HYPERPLANES IN A NORMED SPACE

-U-
AUTHOR--BELOBROV, P.K.

B

COUNTRY OF INFO--USSR

SOURCE--KAZAN', IZVESTIYA VYSSHIKH UCHEBNVXH ZAVEDENIY, MATEMATIKA, NO 2,
FEB 70, PP 3-9
DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES

TOPIC TAGS--MATHEMATIC SPACE, LINEAR EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/1434

STEP NO--UR/0140/70/000/002/0003/0009

CIRC ACCESSION NO--AP0125068

UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125068
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOME QUESTIONS RELATING TO THE
EXISTENCE AND FINDING OF THE CHEBYSHEV POINT OF A SYSTEM OF HYPERPLANES
ARE CONSIDERED BY REDUCTION TO THE SOLUTION OF A SYSTEM OF LINEAR
EQUATIONS POSSESSING A SOLUTION.

UNCLASSIFIED

USSR

Higher Algebra and Geometry & Topology

BELOBROV, P. K., Rostov-on-Don

B

UDC 519.55

"On the Chebyshev Point of a System of Hyperplanes in a Normed Space"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy -- Matematika, No 2, Feb 70, pp 3-9

Abstract: Some questions relating to the existence and finding of the Chebyshev point of a system of hyperplanes are considered by reduction to the solution of a system of linear equations possessing a solution.

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USSR

UDC [621.362:538.4]:621.565.001.24

BELODED, M.I., BOTUK, YU.S., GUTMAN, I.I., ZUBATOV, N.G., TETEL'BAUM, S.D.

"Thermodynamic Analysis Of Some Schemes For A Magnetohydrodynamic Installation With An Energy Exchanger"

V sb. Teplotekhn. probl. pryamogo preobrazov.energii (Heat-Engineering Problems Of Direct Energy Conversion--Collection Of Works), Issue 2, Kiev, "Nauk.dumka," 1971, pp 44-52 (from RZh--Elektrotehnika i energetika, No 12, Dec 1971, Abstract No 12A178)

Translation: A comparative analysis is presented of a scheme for a magnetohydrodynamic (MHD) installation in which, after a preliminary regenerative heating of the air to 1100--1300° K (which can be accomplished in actual available heat exchange apparatus of the recuperative type), a subsequent increase of the temperature to the level of 1700--2000° K takes place in the energy exchanger "air--air," and of an ordinary scheme of a MHD installation in which high-temperature heating of the air is conditionally assumed possible. The values of the efficiency obtained for a scheme with an energy exchanger "air--air" is 54.7 percent; without an energy exchanger, 55.9 percent. A thermodynamic analysis and optimization are presented. A conclusion is made concerning the prospects of schemes with energy exchangers with low-temperature heating of air. 3 ill. 3 ref. [Odessa Technological Institute] V.P. Bogatyrev

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"APPROVED FOR RELEASE: 09/17/2001 UDC ~~CIA-RDP86-00513R002200320012-9~~"

BELODED, M.I., BOTUK, YU.S., GUTMAN, I.I., ZUBATOV, N.G., TETEL'BAUM, S.D.

"Direct Energy Exchange And Its Application To Magnetohydrodynamic Installations"

V sb. Teplotekhn. probl. pryamogo preobrazov.energii (Heat-Engineering Problems Of Direct Energy Conversion--Collection Of Works), Issue 2, Kiev, "Nauk.dumka," 1971, pp 37-44 (from RZh--Elektrotehnika i energetika, No 12, Dec 1971, Abstract No 12A177)

Translation: The scheme of the device is presented and the operation is considered of a tubular energy exchanger which assures a direct energy exchange between the working media and which makes it possible to exclude from the thermal scheme of an open-cycle magnetohydrodynamic (MHD) installation the high-temperature stage air heater. The computations show that with the aid of such an energy exchanger it is possible to increase the air temperature by 200--700° K. The range of air pressures at the output of the energy exchanger satisfies the condition of operation of the open-cycle MHD installation, and the theoretical efficiency of the energy exchanger reaches a magnitude of 0.9. 2 ill. 2 ref. [Odessa Technological Institute] V.P. Bogatyrev

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UDC:622.7:321.9.004

USSR

AKOPOVA, K. S., DOKSHINA, I. D., TYUTYUNNIK, N. D., YAKUBOVICH, I. A.,
ZADOROZHNYI, V. G., BELOGAY, P. D., DEGTYARENKO, A. V., TISHCHENKO, A. G.

"Use of Ultrasound in Enrichment of Titanium-Zirconium Deposits"

Moscow, Tsvetnyye Metally, No. 11, Nov 70, pp. 86-89

Abstract: A method has been developed for application of acoustical oscillations to minerals to change their surface properties before enrichment. This article presents results of an investigation of the influence of ultrasonics on the minerals in titanium-zirconium placer deposits. It has been established that 1-3 minutes action of ultrasound at 20 Khz and an intensity of 3.8 W/cm² greatly activates the flotation of minerals by the flotation oil. The yield of minerals in the foam product increases as follows: zirconium from 18.6 to 98.9%, rutile from 3.0 to 97.5%, ilmenite from 0 to 94%, staurolite from 0 to 90%. The expenditure of collectors is also reduced and the flotation properties of minerals from different deposits are made more similar.

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USSR

UDC: 621.391.883.2

BELOGLAZOV, M. I.

"On the Resistance to Interference in the Reception of Frequency Telegraphy Signals in the Presence of Lumped Interference"

Tr. uchebn. in-tov svyazi. M-vo svyazi SSSR (Works of Academic Institutes of Communications. Ministry of Communications of the USSR), 1970, vyp. 51, pp 33-38 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A46)

Translation: The paper deals with the resistance to interference of isolated and spaced reception of frequency telegraphy signals in the presence of lumped interference in the channel. It is assumed that the amplitudes of signal and noise have m-distribution. Formulas and the corresponding graphs are given for evaluating the resistance to interference of frequency telegraphy signals for various signal and noise parameters. Resumé.

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Coatings

UDC 621.357

USSR

BELOGLAZOV, S. M., and MILUSHKIN, A. S., Chair of Physical Chemistry, Perm
Pharmaceutical Institute

"Reducing Hydrogen Absorption By Steel on Electrodeposition of Copper Using
Organic Inhibitors"

Ivanovo; Khimiya i Khimicheskaya Tekhnologiya, Vol 14, No 4, 1971, pp 575-577

Abstract: It was shown that the addition of polyvinyl alcohol and anion-
active "Progress" additive to the sulfate and cyanide electrolytes consider-
ably reduces hydrogen absorption by the substrate and increases the smoothness
of the copper coating while reducing its porosity. Anion-active "Progress"
was much less effective on negatively charged copper deposits when a cyanide
electrolyte was used. It is suggested that appropriate organic additives
prevent a close approach by hydronium ions on water molecules to the metal
surface during the discharge.

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USSR

B

UDC 539.4.019.1:620.178.311.6

RAK, YU. I., and BELOGLAZOV, S. M., Perm Polytechnical Institute and Perm Pharmaceutical Institute

"Delayed Failure of Titanium Alloys under Cyclic Strain"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70, pp 883-885

Abstract: External loads, temperatures (causing internal friction), and time are all factors in the cyclic loading of metals which suggest the possibility of the development of delayed failure and relaxation via processes of the formation of vacancies and their interaction with dislocations.

A study of this question was done for the VT3-1 titanium alloy which, after mechanical working, was vacuum annealed at 700°C for two hours. The mechanical properties of the alloy after treatment were: elastic limit = 78 kg/mm², YS = 92 kg/mm², TS = 112 kg/mm², elongation = 11%, and reduction in area = 27%. It should be possible to observe the phenomenon of delayed failure and relaxation by means of comparing the results of fatigue tests from continuous and interrupted cyclic stresses. If the conditions of conducting fatigue tests promotes the advent of delayed failure and relaxation, then for continuous cyclic stress the durability of the samples should be greater than for those subjected to interrupted cyclic loading. Results of the fatigue tests proved the above statement inasmuch as the

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USSR

RAX, Yu. I., and BELOGLAZOV, S. M., Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70, pp 883-885

durability of samples undergoing continuous cyclic stressing was much greater than the opposite case.

From the experimental data the authors conclude that two processes are involved in the delayed failure of the VT3-1 titanium alloy. The first process takes place during heating up of the metal to a point which is the temperature of atomic activation and vacancy formation which leads to a weakening of the metal. The second process (resulting from the action of the same thermal source) is the ordering of the atomic structure and annihilation of vacancies which strengthen the metal. In addition, evidently, a specific critical stress value exists below which the formation of microbands, as a result of the formation and coalescence of vacancies, is highly improbable.

The phenomenon of delayed failure during cyclic loading can be explained by the "closing up" of micropores which were created by vacancies as a result of advancing dislocated atoms owing to increased thermal activity of the metal atoms. The phenomenon of relaxation can probably be explained by the fact that in the test period the formation and joining of vacancies into colonies with the formation of microbands is not completed. Since the action of the thermal source is sharply diminished upon completion of the tests, conditions are created for the formation

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USSR

RAK, YU. I., and BELOGLAZOV, S. M., Fizika Metallov i Metallovedeniye, Vol 29,
No 4, Apr 70, pp 883-885

of micropores of critical dimensions which notably reduce the fatigue strength of
the sample upon subsequent loading.

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1/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--DELAYED RUPTURE OF TITANIUM ALLOYS DURING CYCLIC DEFORMATION -U-

AUTHOR--(02)-RAK, YU.I., BELOGLAZOV, S.M.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, VOL. 29, APR. 1970, P. 883-885

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TITANIUM ALLOY, BIBLIOGRAPHY, METAL STRESS, CYCLIC FATIGUE
LIFE, METAL DEFORMATION, STRESS RELAXATION, METAL RELAXATION, ALLOY
DESIGNATION, RESEARCH FACILITY/(U)UT31 TITANIUM ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0388

STEP NO--UR/0126/70/029/000/0883/0885

CIRC ACCESSION NO--AP0126143

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0126143
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE OCCURRENCE OF DELAYED RUPTURE AND RELAXATION IN VTZ 1 TITANIUM ALLOY BY COMPARING THE RESULTS OF FATIGUE TESTS DURING CONTINUOUS AND DISCONTINUOUS CYCLIC LOADINGS. IT IS FOUND THAT CONTINUOUS CYCLIC LOADING SUBSTANTIALLY INCREASES THE FATIGUE LIFE IN COMPARISON WITH DISCONTINUOUS LOADINGS IN THE CASE OF LOADINGS ABOVE THE FATIGUE LIMIT. WITH AN INCREASE IN THE EXTERNAL LOAD ON THE SPECIMENT THE DIFFERENCE BETWEEN CONTINUOUS AND DISCONTINUOUS LOADING INCREASES. AT STRESSES BELOW THE FATIGUE LIMIT THE PHENOMENON OF DELAYED RUPTURE AND RELAXATION IS NOT OBSERVED. ON THE BASIS OF THESE FINDINGS, A MECHANISM GOVERNING THE STRENGTH OF TITANIUM ALLOYS UNDER CONDITIONS OF CYCLIC LOADING IS SUGGESTED. FACILITY:
PERMSKII POLITEKHNICHESKII INSTITUT, PERM, USSR. FACILITY:
PERMSKII FARMATSEVTICHESKII INSTITUT, PERM, USSR.

UNCLASSIFIED

USSR

UDC 622.241.8

SHCHERBAN', A. N., FURMAN, N. I., BELOGOLOVIN, N. S., CHERNYAK, V. P.

"Depth Relay-Telemetering Thermometer-Thermosonde"

Teplofiz. i teplotekhnika. Resp. mezhved. sb. (Thermophysics and Power Engineering-republic interdepartmental collection of works), 1970, vyp 17 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 8, Aug 70, Abstract No 8.32.588)

Translation: The schematic of a telemetering thermometer-thermosonde in the form of linear thermistor, bridged by tunnel diode, is considered. Two-wire cable link of reduced reliability ensures simultaneous power supply from the surface of the thermometer-thermosonde or thermometer-thermosonde, placed at specific intervals in the well, and selective reading from the surface of information using an automatic readout device. The readout of the measured temperature from the surface is relayed (by means of non-contact relay-trigger) in the process of fusion automatic search of the power supply of thermosonde for the given relay point of its volt-ampere characteristic which equals the calibrated current of given temperature scale of secondary instrument. The

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USSR

SHCHERBAN', A. N., et al., Teplofiz. i teplotekhnika, Resp. mezhved. sb., 1970, vyp 17

depth telemetering thermometer as compared with known prototypes possesses much higher portability, increased reliability, low threshold of sensitivity and invariance of readings with the change in parameters of the two-wire cable link of the telemetering thermometer-thermosonde with the surface.
4 ill. 5 bibl. entries. Resume

2/2

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USSR

UDC: 537.312.62:539.89

GALKIN, A. A., Academician Ukrainian Academy of Sciences;
SVISTUNOV, V. M.; CHERNYAK, O. I.; and BELOGOLOVSKIY, M. A.

"Effect of Pressure on the Phonon Impurity Zone of a Pb-In Alloy"

Moscow, Doklady Akademii nauk SSSR, No 4,1 Jun 73, pp 815-817

Abstract: The purpose of this study is to determine experimentally the change of characteristics in the oscillatory spectrum of lead with a slight impurity of indium when the substance is put under pressure. As in experiments executed earlier by the same authors (e.g., Phys. Stat. Sol., 30, KI 07, 1968) fine-film tunnel materials of the superconductor-dielectric-superconductor type, as the most sensitive detectors of changes in density of the material, were used. Methods of preparing these materials and their Al-Al₂O₃-PbIn contacts are described. It is found that under pressure, with a reduction in volume, the phonon spectrum of the metal is shifted in the high-energy direction. An illustration is given of the shift of the second harmonic for an Al-Al₂O₃-Pb_{0.93}In_{0.07} specimen under pressures of zero and 9 kbar. The results of this work were reported to the 17th All-Union Conference on Low-Temperature Physics, held in Donetsk, 26-30 June 1972. The authors thank
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USSR

UDC: 537.312.62:539.89

GALKIN, A. A., et al, Doklady Akademii nauk SSSR, No 4, 1973,
pp 815-817

V. G. Bar'yakhtar and V. V. Shevtsov for their assistance.

2/2

USSR

BELOGOLOVTSEV, S. D.

"Optimal Control of Reserves with Two Levels of Demand and Random Arrival of Orders"

Mat. Metody Resheniya Ekon. Zadach [Mathematical Methods of Solution of Economics Problems -- Collection of Works], No 3, Moscow, Nauka Press, 1972, pp 172-177 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V586, from the introduction).

Translation: A warehouse with initial level of reserves x receives independent random requests at equal time intervals. It is assumed that at moment $i = 1, 2, \dots$ the random value of a request may take on either of two values s_1 and s_2 with probabilities p_1 and p_2 respectively. The values s_1 and s_2 are called low and high levels of demand respectively. Before arrival of the i th request, an order of size z_i is made to supplement the supplies at the warehouse. The order is delivered immediately with probability p and is delayed by l operating period with probability q . If the request which

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Belogolovtsev, S. D., Mat. Metody Resheniya Ekon. Zadach, No 3, Moscow, Nauka Press, 1972, pp 172-177.

arrives exceeds the available level of supplies at the warehouse, a penalty must be paid for the shortage; in this case, the shortage is considered a negative level of reserve. If, however, the request which arrives does not exceed the available level of supplies, the remaining group of supplies is stored at the warehouse through the following period. The price of the order, penalty and cost of storage are all proportional to the size of a batch of items stored or ordered.

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USSR

BELOGOLOVTSEV, S. D.

"Problem of Optimal Control of Reserves for Discrete Distribution of Random Demand"

Vestn. Mosk. Un-ta. Mat., Mekh. [Moscow University Herald, Mathematics, Mechanics], No 6, 1971, pp 66-70, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V458 by the author).

Translation: The optimal behavior of control of reserves is studied on the assumption that the sequence of levels of consumption forms an arithmetic progression, finite or infinite. The following expenses are considered: pay for the order, cost of storage of reserves at the warehouse, penalty for unsatisfied demand. All expense functions are assumed linear. Two theorems are formulated and proven, each of which indicates conditions for the coefficients of the cost functions and the probability of delay in delivery of an order by one period in order that the optimal behavior might have a predetermined form. The formulas produced can be used for approximate calculation of the optimal behavior if the random value of demand is distributed continually with a certain non-zero density.

1/2 019 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--POLYMERIZATION OF METHYL METHACRYLATE IN AN EMULSION FORMED BY THE
POTASSIUM SALT OF POLY,N,VINYLSUCCINAMIC ACID -U-
AUTHOR--(03)-NIKOLAYEV, A.F., BELOGORODSKAYA, K.V., ROMANOVA, O.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKL. KHIM. (LENINGRAD) 1970, 43(4), 866-70
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--POLYMERIZATION, METHYL METHACRYLATE, EMULSION, REDOX REACTION,
ORGANOPOTASSIUM COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3004/1949 STEP NO--UR/0080/70/043/004/0866/0870
CIRC ACCESSION NO--AP0132210
UNCLASSIFIED

2/2 019

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0132210

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EMULSION POLYMN. OF ME
METHACRYLATE AT 50-70DEGREES IN THE PRESENCE OF THE TITLE EMULSIFIER (I)
SHOWED THAT I REACTED WITH THE PROPAGATING RADICALS AND INHIBITED
POLYMN. I TOOK PART IN A REDOX REACTION WITH K SUB2 S SUB2 O SUB8 AND
ENHANCED ITS DECOMPN., BUT AFTER A 20 HR INDUCTION PERIOD GAVE POLY(ME
METHACRYLATE) IN 20PERCENT YIELD. FACILITY: LENINGRAD. TEKHNOL.
INST. IM. LENSOVETA, LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr.

AP0055624

Abstracting Service:

CHEMICAL ABST.

6-70 B

Ref. Code

UR 0460

112019f Kinetic principles of the bulk polymerization of styrene in the presence of trifluoroacetic acid. Nikolaev, A. F.; Belogorodskaya, K. V.; Dukhnenko, E. M.; Popova, L. V.; Karakash, A. F. (Leningrad. Tekhnol. Inst. im. Lensoveta, Leningrad. USSR). *Vysokomol. Soedin., Ser. B* 1970, 12(1), 24-7 (Russ). The polymn. rate (V) of $\text{PhCH}=\text{CH}_2$ (I) in PhEt contg. $\text{CF}_3\text{CO}_2\text{H}$ (II) as the catalyst obeys the relation $V = k[\text{concn. II}]^a[\text{concn. I}]^b$ (k is a const.; temp., k in $\text{l. mole}^{-1} \text{sec}^{-1}$, a, b , given): 0° , 9.7×10^{-5} , 1.5, 1.9; -10° , 3.2×10^{-5} , 1.2, 2.8; 20° , 18.7×10^{-5} , 2.2, 1.4. The activation energy is 9.6 kcal/mole. The decrease of a with temp. shows that the solvation of polystyrene ions with II decreases with the temp. The mol. wt. of polystyrene increases with the II concn. CPJR

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UDC 620.179.16

BABIN, L. V., BELOGORODSKIY, B. A., ZHELEZNOV, I. M., and KHOPOV, V. V.,
Physicotechnical Institute imeni A. P. Yoffe, Academy of Sciences, USSR

"A Multi-element Scanning Device for Acoustic Holography"

Sverdlovsk, Defektoskopiya, No 2, 1972, pp 100-104

Abstract: The multi-element scanning device described here is intended for nondestructive inspection and flaw detection by methods of acoustic holography. A simple electronic device was developed for discrete interference processing of the obtained signals. This is a device of a mixed type, which to a certain degree combines the simplicity and reliability of a mechanical scanning system with the rapid selection of an acoustic field that is inherent in electronic scanning systems. This effect is obtained by means of mechanical scanning by a large number of pickups situated in a line, with simultaneous electronic commutation of the pickups along the line. The described device was tested during operation with commutating pulses 30-50 microseconds in duration; the duty cycle was varied within the limits of 1-5 megahertz; the number of circulation cycles was on the order of 80-100. 3 figures. 1 reference.

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USSR

UDC: 622.316.722.1

BELOGORSKIY, A. L., NASIBULLIN, I. A., ROZHENTSEV, Ye. D.

"A Switching Stabilizer"

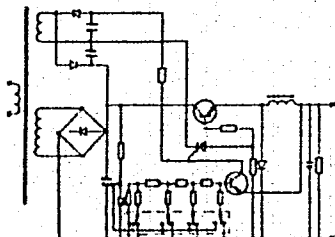
Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 11, Apr 72, Author's Certificate No 333661, Division H, filed 20 Jul 70, published 21 Mar 72, p217

Translation: This Author's Certificate introduces a switching stabilizer which contains a reference voltage source, and measuring and control elements. As a distinguishing feature of the patent, in order to automate control of the change in output voltage in accordance with a given program, the base of the transistor in the measuring element is connected to a resistive code-to-voltage converter, which is connected in turn through controlling switches in the program unit to the tie-point between a resistor and stabilatron (which is the reference voltage source). The resistor is connected to the collector of the transistor in the regulating element, and the stabilatron is connected through a resistive divider to the base of this same transistor, and to the anode of a thyristor in the measuring element.

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BELOGORSKIY, A. L., USSR Author's Certificate No 333661, Division H



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1/2 019 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--REINFUSION OF BLOOD -U-
AUTHOR--(02)--BELOGURGV, V.A., TSVIRKO, YE.A.
COUNTRY OF INFO--USSR
SOURCE--KHIRURGIYA, 1970, NR 6, PP 118-119
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--BLOOD TRANSFUSION, INJURY, ABDOMEN, OBSTETRICS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1785 STEP NO--UR/0531/70/000/006/0118/0119
CIRC ACCESSION NO--AP0129153
UNCLASSIFIED

B

2/2 019

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129153

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER DESCRIBES 22 BLOOD REINFUSIONS PERFORMED IN INJURY OF ABDOMINAL AND THORACIC ORGANS, DISTURBED ECTOPIC PREGNANCY. COMPLICATIONS ASSOCIATED WITH BLOOD REINFUSION WERE NOT OBSERVED. TWO PATIENTS DIED FROM CAUSES NOT ASSOCIATED WITH RETRANSFUSION OF BLOOD. THE AUTHORS DESCRIBE IN DETAIL THE TECHNIQUE OF BLOOD REINFUSION, AS WELL AS THE CONTRAINDICATIONS AND INDICATIONS. FACILITY: KHIRURGICHESKOYE OTDELENYE BOBRUYSKOY GORODSKOY BUL'NITSY, BELORUSSKAYA SSR.

UNCLASSIFIED

USSR

UDC: 51

KUZ'MIN, I. V., BELOGUROV, V. P., MIROSHNICHENKO, V. T.

"Determining Optimum Inventories for Steady-State Production Processes"

Pribory i sistemy avtomatiki. Resp. mezhved. temat. nauch.-tekhn. sb.
(Devices and Systems of Automation. Republic Interdepartmental Thematic
Scientific and Technical Collection), 1973, vyp. 26, pp 103-106 (from
RZh-Kibernetika, No 7, Jul 73, abstract No 7V549 by the authors)

Translation: The paper investigates the problem of determining optimum
inventories for stationary production processes. Analytical expressions
are presented which enable determining the advisability of introducing
reserves and the capacity of warehouses.

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USSR

UDC: 51

KUZ'MIN, I. V., BELOGUROV, V. P., and MIROSHNICHENKO, V. T.

"Determining the Optimal Reserves for Stationary Productive Processes"

Pribory i sistemy avtomatiki. Resp. mezhved. temat. nauch.-tekhn. sb. (Automation Systems and Instruments, Republic Interdepartmental Thematic Scientific-Technical Collection) No 26, 1973, pp 103-106 (from RZh--Matematika; July, 1973; Abs. No. v549)

Translation: The authors investigate the problem of determining the optimal reserves for stationary productive processes. Analytic expressions are given which permit determination of the best way for introducing the reserves and the capacity of warehouses. Authors' abstract.

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1/2 015 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--MOESSBAUER STUDY OF THE IRON GARNET ER SUB3 FE SUB5 O SUB12 -U-
AUTHOR--(02)-BELOGUROV, V.N., SENKOV, P.YE. *B*
COUNTRY OF INFO--USSR
SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, FIZ. TEH. ZINAT. SER. 1970, (1),
67-8
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--MOSSBAUER EFFECT, GARNET, IRON COMPOUND

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0021 STEP NO--UR/0371/70/000/001/0067/0068
CIRC ACCESSION NO--AP0119017
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0119017

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MOESSBAUER EFFECT ON PRIME57 FE NUCLEI IN ER SUB3 FE SUB5 O SUB12 WAS MEASURED AT 300 AND 80DEGREEK. THE PRIME57 CO PREPN. IN A STAINLESS STEEL ENCLOSURE HAVING AN ACTIVITY OF 5 MCI USED AS A GAMMA RADIATION SOURCE WAS KEPT AT ROOM TEMP. IN ALL THE EXPTS. THE APP. WAS OPERATED AT A CONST. ACCELERATION. THE EFFECTIVE INTENSITIES OF MAGNETIC FIELD AT THE PRIME57 FE NUCLEI (H SUBEFF) AND THE ISOMER CHEM. SHIFTS (DELTA) WERE ESTD. AS FOLLOWS (THE TEMP., H SUBEFF, AND DELTA VALUES FOR THE TETRAHEDRAL COORDINATION, AND THE VALUES FOR THE HEXAGONAL COORDINATION GIVEN): 300DEGREEK, 378 PLUS OR MINUS 10, 0.35 PLUS OR MINUS 0.05, 464 PLUS OR MINUS 10, 0.51 PLUS OR MINUS 0.05; AND 80DEGREEK, 483 PLUS OR MINUS 10 KOE, 0.34 PLUS OR MINUS 0.05 MM-SEC, 549 PLUS OR MINUS 10 KOE, 0.56 PLUS OR MINUS 0.05 MM-SEC.
FACILITY: INST. FIZ., RIGA, USSR.

UNCLASSIFIED

017 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--MOESSBAUER EFFECT ON IRON 57 IN THE SUBSTITUTED IRON GARNET CA SUB3
FE SUB3TIMES5 V SUB1TIMES5 O SUB12 -U-
AUTHOR--BELOGUROV, V.N. *B*
COUNTRY OF INFO--USSR
SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, FIZ. TEH. ZINAT. SER. 1970, (1),
72-4
DATE PUBLISHED-----70
SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS, NUCLEAR SCIENCE
AND TECHNOLOGY
TOPIC TAGS--GARNET, MOSSBAUER EFFECT, IRON, MOSSBAUER SPECTRUM, ISOTOPE,
SPECTROSCOPIC ANALYSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0585 STEP NO--UR/0371/70/000/001/0072/0074
CIRC ACCESSION NO--AP0105568
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105568

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MOESSBAUER SPECTRUM OF CA SUB3 FE SUB3TIMES5 NEGATIVE V SUBTIMES5 O SUB12 TAKEN AT 300DEGREES K SHOWS ABSORPTION LINES ASCRIBABLE TO FE PRIME3 POSITIVE IONS POSITIONED IN THE OCTAHEDRAL SUBSYSTEM AND HAVING NO MAGNETIC NEIGHBORS AND AN UNRESOLVED SEXTUPLET OWING EVIDENTLY TO FE PRIME3 POSITIVE IONS HAVING A MAGNETIC NEIGHBOR EACH; THE MAGNETIC FIELD INTENSITY ON THE PRIME57 FE NUCLEI WAS 80 PLUS OR MINUS 15 KOE. IN THE SPECTRUM TAKEN AT 80DEGREES K NONE OF THESE ABSORPTION LINES ARE FOUND WHICH INDICATES THAT ALL FE PRIME3 POSITIVE IONS ARE ORDERED IN A MAGNETIC SYSTEM, AT 80DEGREES K THE FE PRIME3 POSITIVE IONS INCORPORATED IN THE OCTAHEDRAL SUBSYSTEM HAVING NO MAGNETIC NEIGHBORS TAKE PART IN SUPEREXCHANGE INTERACTIONS IN A FE-O-V-O-FE CHAIN.

UNCLASSIFIED

USSR

UDC 657.783:621.396.62

KUZ'MIN, I. V., Doctor of Technical Sciences, BELOGUROV, V. P., Candidate of Technical Sciences, MIROSHNICHENKO, V. T.

"Selecting the Optimum Capacity of Intermediate Storage Points in Mass Production"

Kiev, Mekhanizatsiya i Avtomatizatsiya Upravleniya, No 5, Sep/Oct 72, pp 22-24

Abstract: The paper deals with the problem of making a certain product which requires a number of component parts. The production quota is satisfied on the average, but not "rhythmically", i. e., sometimes the quota is not met, and sometimes there is a surplus of the product. This disruption in rhythm is determined to a considerable extent by the availability of the component parts, and can be alleviated by building up stocks. Since this involves economic losses, the problem is to find the optimum volume of reserve stocks. A criterion of optimality is proposed which gives the overall cost of losses per unit of time per component part, and a solution is found for the equation giving the derivative of this criterion with respect to the reserve stocks when this ratio is equal to zero. A numerical example is given.

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Acc. Nr: AP0034396

B

Ref. Code: UR 0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 2, pp 154-159

DRUG RESISTANCE IN MYCOBACTERIUM TUBERCULOSIS AND EFFICACY OF TREATMENT WITH SENSITIVE PREPARATIONS

(Experimental Studies)

~~V. P. Belogurova~~ N. N. Ivanitskaya

I. M. Sechenov Institute for Physical Treatment Methods and Medical Climatology, Yalta

191 guinea pigs were used in the experiments. 5 strains of Mycobacterium tuberculosis resistant to tubazid (5-25 µg/ml) or streptomycin (100 µg/ml) were studied. Resistant cultures of Mycobacterium tuberculosis isolated from the patients phlegm were previously plated out on egg media containing the drug for clearance from sensitive strains. Two weeks after the inoculation (0.01 mg of the culture administered subcutaneously) one group of the guinea pigs was treated with phthivazid administered orally in a dose of 13-15 mg/kg and the other group was treated with streptomycin administered intramuscularly in a dose of 13000-15000 Units/kg. The survived animals were sacrificed

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3-35 months after the inoculation. In the 2nd series of the experiments the guinea pigs were inoculated with a mixture resistant to tubazid in a dose 5 µg/ml of culture 801-T containing sensitive cultures of laboratory strains D1/st and H₁R₁Y of Mycobacterium tuberculosis. The experiments revealed no positive results in a number of animals treated with the drug, to which the cultures of Mycobacterium tuberculosis were sensitive in vitro. In some animals only insufficient effect of the so called reflected effect of drug resistance was observed. The presence of resistant and more virulent sensitive cultures of Mycobacterium tuberculosis in the animals made the treatment successful owing to the effect of the drugs on sensitive microbes.

D. n.

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1/2 012 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--DYNAMICS OF DRUG RESISTANCE AND REDUCTION OF SENSITIVITY IN
MYCOBACTERIA ISOLATED FROM TUBERCULOSIS CASES -U-
AUTHOR-(02)-BELOGUROVA, V.P., NOVROTSKIY, V.V. **B**
COUNTRY OF INFO--USSR
SOURCE--ANTIBIOTIKI, 1970, VOL 15, NR 5, PP 434-437
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DRUG RESISTANCE, MYCOBACTERIUM TUBERCULOSIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/0144 STEP NO--UR/0297/70/015/005/0434/0437
CIRC ACCESSION NO--AP0114540
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0114540

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DRUG RESISTANCE OF TUBERCULOSIS MYCOBACTERIA WAS DETERMINED IN DYNAMICS IN 302 PATIENTS WITH THE LUNG TUBERCULOSIS. AN INCREASE IN THE DRUG RESISTANCE ON ITS DETERMINATION OFTEN (74.0 PER CENT OF THE CASES) COINCIDED WITH A DETERIORATION IN THE PATIENT STATE. DECREASED RESISTANCE OR ABSENCE OF RESISTANT POPULATIONS OFTEN (79.1 PER CENT OF THE CASES) COINCIDED WITH AN IMPROVEMENT IN THE PATIENT STATE. SENSITIVITY REDUCTION OF TUBERCULOSIS MYCOBACTERIA WAS OBSERVED IN 6 PER CENT OF THE CASES CARRYING DRUG RESISTANT STRAINS. FACILITY: I. M. SECHENOV INSTITUTE FOR PHYSICAL METHODS OF TREATMENT AND MEDICAL CLIMATOLOGY, YALTA.

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USSR UDC 619.611.9-022.6+636.1+636.2+636.4+636.52/.58

SOBKO, A. I.; SIDOROV, I. V.; SOKOLOV, L. N.; BELOKON, I. K.;
OVCHARENKO, I. V.

"Determination of the Optimum Dose of Foot-and-Mouth Disease
Saponin Aluminum Hydroxide Formol Vaccine for Swine"

Vladimir, V sb. Yashchur. T. 1 (Foot-and-Mouth Disease, Vol 1 --
Collection of Works), 1970, pp 69-71 (from RZh-58. Zhivotno-
vodstvo i Veterinariya, No 4, Apr 71, Abstract No 4.58.572 by
A. Musin)

Translation: Three experiments in swine immunization were con-
ducted with different variants and different doses of the vaccine.
Single immunization does not guarantee stable immunity. Double
administration of the same vaccine (20 and 40-50% immunizing
doses for guinea pigs) with an interval of 14 days) produced a
high level of immunity in 100% of the 6-10 month-old pigs.

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1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--FINISHING OF WOOD WITH POWDERED POLYMER MATERIALS BY FUSING -U-
AUTHOR--(03)-BELOKON, M.E., TODORCHIK, V.S., KOZYRINA, A.P.
CGUNTRY OF INFO--USSR
SOURCE--DEREVOBRAB. PROM. 1970, 19(3), 5-7 *B*
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--WOOD, POLYVINYL ACETAL RESIN, PLASTIC COATING, COMPRESSIVE
STRENGTH, BENDING STRENGTH, PROTECTIVE COATING, THERMAL EFFECT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0978 STEP NO--UR/0489/70/019/003/0005/0007
CIRC ACCESSION NO--AP0124637

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124637

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. POWDERED POLY(VINYL BUTYRAL) (I) WAS APPLIED AS A PROTECTIVE AND (OR) DECORATIVE COATING TO WOOD BY FUSION, AND THE EFFECTS OF THE TEMP. AND TIME OF EXPOSURE DURING THE APPLICATION OF THE COATING ON THE PHSY. AND MECH. PROPERTIES OF WOOD WERE STUDIED. EXPTS. WERE CONDUCTED ON SAMPLES OF BEECH, OAK, AND SPRUCEWOODS. THE SAMPLES WITH OR WITHOUT A COATING OF POWDERED I WERE HEATED AT LESS THAN OR EQUAL TO 210DEGREES FOR VARYING TIMES, AND THE RATE OF THE TEMP. INCREASE WITHIN THE WOOD, THE COMPRESSION AND BENDING STRENGTH, AND THE IMPACT RESISTANCE WERE DETD. ALL THE TESTED PROPERTIES WERE LOWERED BY EXPOSURE TO THE REQUIRED FUSION TEMP. 180-210DEGREES AND FUSION TIME 18-20 MIN. TO PREVENT THIS DETERIORATION, POLYMERS N. 170-180DEGREES SHOULD BE USED. WHEN A HIGHER TEMP. IS NEEDED, THE FUSION TIME SHOULD BE 8-10 MIN.

UNCLASSIFIED

USSR

621.438:66.021.2

BELOKON', N. I.

"Thermodynamic Processes in Gas Turbine Engines"

Termodinamicheskiye Protsessy Gazoturbinykh Dvigatelyey [Eng. version above], Moscow, Nauka Press, 1969, 127 pp (from Referativnyy Zhurnal Turbostroyeniye, No. 4, 1970, Abstract No. 4.49.67K.)

Translation: This book is dedicated to the investigation of the cycles and thermodynamic processes in gas turbine engines. A general diagram and theory of the effectiveness of the thermodynamic cycles (internal processes) of gas turbine engines are suggested, based on precise relationships of thermodynamics and a strictly-based system of four experimental relative efficiencies. This has allowed the method of expanded versions of calculation of gas turbine engine efficiencies to be replaced by analytic solution of problems on the selection of most suitable parameters. Furthermore, the work suggests generalized equations for heat transfer in regenerators and cooling units, an equation for the throughput capacity of turbines, etc., and corrects an error in the traditional definition of the sum of irreversible losses in turbine machine processes. The book is designed for scientific workers, graduate students and students of technical universities, as well as for the designers at gas turbine factories and gas turbine operating personnel. Fourteen illustrations, 18 tables, 9 biblio. refs.

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BELOKON, YU. N.

CHEMISTRY

JRS 60575 19 Jan 75

THE CHEMICAL SYNTHESIS AND APPLICATIONS OF AMINO ACIDS

Article by Doctor of Chemical Sciences, V. M. Belikov, Moscow, Voenik Akademi Nauk SSSR, Russian, No 8, August 1973, pp 33-39

(12)

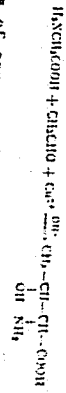
Act. U. R. UDC: 547.466

Proteins of all organisms from the virus to man consist of 24 amino acids which on the basis of their biological value are divided into the replaceable (the organism can itself synthesize them for the construction of proteins at an adequate rate) and the irreplaceable (it cannot synthesize them and must obtain them from outside in the form of food). Each protein contains a definite quantity of each amino acid. If in a consumed protein there is none or little of any irreplaceable amino acid, the protein of the organism will not be constructed. From this arises the need for balancing of the ration, that is, the addition to low-valued proteins of lacking amino acids, which leads to an increase of their nutrient value.

On the diagram on the following page, casein -- a nutrient animal protein -- was taken as a standard. The crosshatched part of each column corresponds to the nutrient value of the natural protein in BEC (protein effectiveness coefficient) units. The addition of a certain quantity of lysine, the first limiting amino acid, to the product leads to a sharp increase of nutrient value, and the addition of a second limiting amino acid increases the nutrient value to the level of animal proteins.

Balancing is widely used in agriculture, especially in animal husbandry. According to the data of N. F. Ivanov and I. Krashev, the inclusion of 0.2-0.5% lysine to the ration of young pigs and chicks permits reducing the consumption of feed protein by 25% and increasing productivity of the animals by 10-15%. Generalizing the results of research of both Soviet and foreign authors, S. D. Shestakov calculated that when the production of 20,000 tons of lysine per year has been organized it is possible to obtain an additional 1.2 million tons of meat

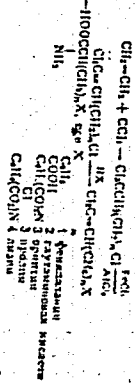
obtained from chloroacetic acid and ammonia or from formaldehyde, hydrocyanic acid, and ammonia. The intermediate in the synthesis is the copper complex.



Complexes of copper and other transition metals are very interesting from the point of view of reactivity. The author of this article, Y. N. Belokobyl and S. V. Vitt have investigated those reactions in detail and established the mechanism of obtaining threonine. As a result it has proven possible not only to improve the process but also to discover a new reaction of addition of glycine to the activated double bond, as a result of which glutamic acid is obtained.

The development of general methods of synthesis of amino acids from available raw material still remains a problem. The chemists are striving to find paths of synthesis which would permit obtaining as many amino acids as possible by a single scheme and from a single raw material. Such investigations are being conducted in the Institute of Heteroorganic Compounds of the AS USSR.

A. N. Nagayazov and B. Yu. Feryadlin have proposed using the reaction of telomerization from readily available ethylene and carbon tetrachloride to obtain amino acids



* where 1 - phenylalanine 2 - glutamic acid 3 - ornithine 4 - proline

A general method of synthesis of amino acids from nitroacetic ether has been discovered by V. N. Belikov and N. K. Vinogradov and developed jointly with the Department of Chemistry of the Leningrad Pedagogical Institute Imeni A. I. Gertsen (V. V. Perokhina). The key substance in all these syntheses is the available raw material nitromethane CH_3NO_2 , which can be readily transformed into nitroacetic ether $\text{O}_2\text{NCH}_2\text{COOR}$. The basis of the method is the exceptional reactivity of the

1/2 018 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--KINETICS AND MECHANISM OF MANNICH BASE DISSOCIATION IN AQUEOUS
BUFFERS -U-
AUTHOR-(04)-BELIKOV, V.M., BELOKON, YU.N., DOLGAYA, M.M., MARTINKOVA, N.S.
COUNTRY OF INFO--USSR
SOURCE--TETRAHEDRON 1970, 26(5), 1199-216
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL REACTION KINETICS, CHEMICAL REACTION MECHANISM,
CHEMICAL DECOMPOSITION, AMINE, ORGANIC NITRO COMPOUND, PROPANE, BUTANE
CENTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FAME--2000/1631 STEP NO--UK/0000/70/026/005/1199/1216
CIRC ACCESSION NO--AP0125253

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125253

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RATES OF DECOMP. IN WATER OF
1, (METHYLAMINO), 2, METHYL, 2, NITROPROPANE,
1, (DIMETHYLAMINO), 2, METHYL, 2, NITROPROPANE,
1, (DIETHYLAMINO), 2, METHYL, 2, NITROPROPANE,
1, (DIPROPYLAMINO), 2, METHYL, 2, NITROPROPANE,
1, (DIISOPROPYLAMINO), 2, METHYL, 2, NITROPROPANE,
1, (DIETHYLAMINO), 2, 2, DINITROPROPANE,
1, (DIMETHYLAMINO), 2, ETHYL, 2, NITROBUTANE,
1, (DIETHYLAMINO), 2, ETHYL, 2, NITROBUTANE,
PIPERIDINO, 2, METHYL, 2, NITROPROPANE AT DIFFERENT PH AND TEMPS. THE
PROPOSED REACTION MECHANISM INVOLVES UNIMOL. DISSOCN. OF AN UNPROTONATED
BASE AS THE RATE DETG. STEP WITH FORMATION OF IMMONIUM IONS AND
CARBANIONS. THE DISSOCN. RATES ARE GREATLY INFLUENCED BY THE SIZE BOTH
OF THE ALKYL SUBSTITUENTS AT THE AMINE N AND OF THE LEAVING GROUP. AN
EXCELLENT CORRELATION IS OBSERVED BETWEEN THESE RATES AND THE HYDROLYSIS
RATES OF 3,3, SUBSTITUTED MONO, P, BROMOPHENYL GLUTARATE ESTERS. THIS
FACT INDICATES THAT ALKYL GROUPS EXERT A PREDOMINANTLY STERIC EFFECT ON
THE REACTION VELOCITY. POSSIBLE MECHANISMS ARE DISCUSSED.
FACILITY: INST. ORG. ELEM. COMPD., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 548.736.4

BELOKONEVA, Ye. L., IVANOV, Yu. A., SIMONOV, M. A., BELOV, N. V., Moscow State University imeni M. V. Lomonosov

"Crystal Structure of Cadmium Orthogermanate $Cd_2[GeO_4]$ "

Moscow, Kristallografiya, Vol 17, No 1, Jan/Feb 72, pp 217-219

Abstract: The authors determine the crystal structure of synthetic germanate of cadmium. From the lattice parameters and interplane distances, it is established that the compound is an analog of γ - Ca_2SiO_4 . The assumed formula of Cd_2GeO_4 was later confirmed by chemical analysis. The interatomic distances for cadmium orthogermanate are calculated and the coordinates of the basis atoms are compared for calcium orthosilicate and cadmium orthogermanate. The results are tabulated. It is found that an olivine-like band is repeated in the cadmium orthogermanate crystal structure. Each oxygen atom is simultaneously the vertex of 3 Cd-octahedra and one Ge-tetrahedron, and 3 of the 6 edges of the tetrahedron are shared by Cd-octahedra. One figure, four tables, bibliography of two titles.

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USSR

UDC 621.382.2

BELOKOSYTOV, R.N.

"Noise Characteristics Of An Oscillator Using A P-N Type IMPATT Diode"

V sb. Poluprovodn. pribory i ikh primeneniye (Semiconductor Devices And Their Application--Collection Of Works), No 23, Moscow, "Sov.radio," 1970, pp 213-226 (From RZh--Elektronika i yeye primeneniye, No 11, November 1970, Abstract No 11B131)

Translation: The spectral and noise characteristics are analyzed of oscillators using IMPATT diodes with currents substantially smaller than a characteristic current and with not too large amplitudes. The expressions obtained in these operations are used, and after they are converted to a form convenient for engineering computations, the effect of the circuit system of oscillators using IMPATT diodes on its noise characteristics is investigated, as well as the spectral density distribution of the noise amplitude near the fundamental oscillation frequency. Formulas are given for computation of noise amplitude with the parameters of the circuit and noise taken into account, and computed curves are presented for the noise amplitude spectrum of oscillators using IMPATT diodes with various Q_0 and conductivities of the resonator. 3 ill. 10 ref. P.8.

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BELOKOPYTOV, V. S.

UDC 621.039.554:621.311.25:621.039

JPRS 55882
4 May 1972

STUDY OF THE BUILDUP OF PLUTONIUM ISOTOPES IN THE FUEL OF THE
VVER-1 REACTOR OF THE NOVO-VORONEZHSKIY ATOMIC POWER STATION

[Article by V. Ya. Gabeskiria, V. S. Belokopytov, G. A. Miller, G. A. Simakin, L. I. Burynikov, E. I. Pankov, N. A. Vladimirov, and I. V. Matyashchuk, Scientific Research Institute of Atomic Reactors, Helikess, Isdalevantskie inzheneriya izotopov plutoniya v toplive Reaktora VVER-1 Novo-Voronezhskoy AES, Russian, MIRA P-66, 1970, printing 220 copies, signed to press January 1970, 16 pp.]

Introduction

The isotopic composition of irradiated fuel in samples cut from fuel elements of the VVER-1 reactor of the Novo-Voronezhskiy Atomic Power Station was investigated in order to determine experimentally the isotopic composition of irradiated fuel in a reactor of the VVER type within the framework of contract no. 977/78 with the International Atomic Energy Agency. The tasks of this study were:

- (a) determining the uranium and plutonium isotopic composition after irradiation of the fuel;
- (b) determining the number of plutonium isotopes formed as a result of irradiation;
- (c) determining the isotopic composition of the fuel as a function of the degree of burn-up.

1. Preparation of Samples

The assembly from which the fuel element was taken was irradiated for 2.75 years and held for 1.5 years before the investigation.

Nuclear Science and Technology

USSR

UDC 669.296.5:621.039.5

ANDREYEVA, A. B., BELOKOPYTOV, V. S., VOTINOV, S. N., DEREBIZOV, M. D.,
PETIN, B. P., PAKHOMOV, Z. I.

"Study of Fuel Assemblies of the VK-50 Boiling Reactor"

Radiatsion. fiz. tverd. tela i reaktornoye materialoved. -- V sb. (Radiation
Solid State Physics and Reactor Material Science -- collection of works),
Moscow, Atomizdat Press, 1970, pp 208-212 (from RZh-Metallurgiya, No 4, Apr
71, Abstract No 4I842)

Translation: The results of studying the fuel assemblies of a boiling re-
actor after operation in the reactor core for 5,000 hours are described.
The fuel element cores are briquettes of sintered UO_2 with 2% enrichment.

The can material was Zr + 1% Nb alloy, and the jacket material was Zr + 2.5%
Nb alloy. A significant amount of the hydride phase was detected in the cans
of ruptured fuel elements in defective places. The article contains 1 illus-
tration and a 4-entry bibliography.

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1/2 032 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--ANTIBODIES AND TRACE ELEMENTS OF THE BLOOD AND IMMUNOGLOBULINS IN
CHRONIC DISEASES OF THE LIVER -U-
AUTHOR--(05)-BONDAR, Z.A., ZOLOTNITSKAYA, R.P., UZYANOVA, V.L.,
BELOKRITSKIY, D.B., KIRILCHENKO, A.M. *M*
COUNTRY OF INFO--USSR *B*
SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 3, PP 18-23
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--INTERNAL ORGAN DISEASE, LIVER, BLOOD CHEMISTRY, TRACE ELEMENT,
ANTIBODY, GLOBULIN
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1986/0815 STEP NO--UR/0504/70/042/003/0018/0023
CIRC ACCESSION NO--AP0102777
UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0102777

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS CONDUCT IMMUNOLOGICAL INVESTIGATIONS IN 110 PATIENTS WITH VARIOUS CHRONIC DISEASES OF THE LIVER COMPARING THEM WITH CLINICAL AND HEMATOLOGICAL DATA. IT WAS FOUND THAT IN 47.2 PERCENT OF THE PATIENTS ANTIBODIES TO TRACE ELEMENTS WERE DETERMINED, MOSTLY ERYTHROCYTIC AND THROMBOCYTIC. THERE WAS FOUND A CERTAIN CORRELATION BETWEEN POSITIVE REACTIONS TO ANTIBODIES AND CYTOPENIA, DEGREE OF SPLENOMEGALY AND CHANGES IN THE AMOUNT OF IMMUNOGLOBULINS. THE GREATEST IMMUNOLOGICAL CHANGES WERE OBSERVED IN PATIENTS WITH CIRRHOSIS OF THE LIVER. THE SPLEEN PLAYED A GREAT ROLE IN THE IMMUNE CONFLICT. A SPECIAL IMPORTANCE SHOULD BE ATTACHED TO THE IMMUNE MECHANISM IN THE COMPLICATED GENESIS OF HYPERSPLENISM IN CHRONIC DISEASES OF THE LIVER, HOWEVER THE ASSESSMENT OF IMMUNOLOGICAL DATA SHOULD BE DONE WITH CAUTION IN VIEW OF NONSPECIFIC POSITIVE REACTIONS.

UNCLASSIFIED

USSR

UDC: 621.373:530.145.6

BELOKRINITSKIY, N. S., ZUBRILIN, N. G., SHPAK, M. T.

"Investigation of the Transfer of Excitation Energy Between Impurity Centers in Neodymium Under Forced Emission Conditions"

V sb. Peredacha energii v kondensirovan. sredakh (Energy Transmission in Condensed Media--collection of works), Yerevan, 1970, pp 73-82 (from RZh--Radiotekhnika, No 5, May 71, Abstract No 5D228)

Translation: The authors studied the spectral composition of forced emission of trivalent neodymium cation on the transition ${}^4F_{3/2} \rightarrow {}^4I_{11/2}$ in phosphate glasses and inorganic liquid $\text{POCl}_3\text{-SnCl}_4$ as a function of the shape of the curve for effective laser amplification for the case of dispersion cavities based on Fabry-Perot interferometers. When the cavity is tuned to a region close to the maximum of the luminescence band, a frequency shift was observed in the minimum of curves for the frequency dependence of threshold pumping energy, as well as a flattening of the peak in the vicinity of the minimum, leading to broad-band emission ($\sim 100 \text{ cm}^{-1}$ for triple the pumping energy above the threshold value). As the tuning frequency moves away from the luminescence maximum toward longer waves, two extrema may be produced. In the short-wave arm of the luminescence band, there is no retuning of the working frequency or broadening of the forced emission spectrum. The nature

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BELOKRINITSKIY, N. S., et al., Peredacha energii v kondensirovan. sredakh, Yerevan, 1970, pp 73-82

of broadening of the transition ${}^4F_{3/2} \rightarrow {}^4I_{11/2}$ and the way in which the spatial nonhomogeneity of the field of modes generated and the transfer of excitation energy affect the spectral composition of forced emission are analyzed. It is assumed that in the media under study, exchange of excitation energy between optical centers takes place over time intervals no shorter than the times which are typical for peak emission ($\sim 10^{-6}$ s). A. K.

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USSR

B UDC: 547.26'118

ORLOV, N. F., and BELOKRINI~~TSKIY~~TSKIY, M. A., All-Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev, Leningrad, State Committee for Chemistry USSR

"Triorganosilyl Derivatives of Phenylphosphonous Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, p 504

Abstract: Phenylphosphonous acid readily reacts with one or two moles of triorganosilane in the presence of catalytic quantities of colloidal nickel to give, respectively, triorganosilyl phenylphosphonite (I) and bis(triorganosilyl) phenylphosphonite (II). (I), in turn, reacts with triorganosilane to give (II). The interaction of (II) with sulfur takes place with self-heating and results in the formation of bis(triorganosilyl) phenylthiophosphonate.

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1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--TRIORGANOSILYL DERIVATIVES OF PHENYLPHOSPHONOUS ACID -U-
AUTHOR--(02)-ORLOV, N.F., BELOKRINITSKIY, M.A. **B**
COUNTRY OF INFO--USSR
SOURCE--OBSSHCH. KHIM. 1970, 40(2), 504
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CHEMICAL SYNTHESIS, METAL CATALYST, NICKEL, PHOSPHATE ESTER,
BENZENE DERIVATIVE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/1749 STEP NO--UR/0079/70/040/002/0504/0504
CIRC ACCESSION NO--AP0112735
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112735

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHPO SUB2 H SUB2 REACTS WITH R SUB3 SIH IN THE PRESENCE OF NI CATALYST TO FORM THE CORRESPONDING MONO AND DI SUBSTITUTED ESTERS. REACTION OF 6.9 G MEET SUB2 SIH WITH 9.6 G PHPO SUB2 H SUB2 AND COLLOIDAL NI FROM 0.3 G NICL SUB2 GAVE, IN 2 HR AT 90-120DEGREES, 76PERCENT H AND 73.4PERCENT PHP(O)(OSIMEET SUB2)H, B SUB3 133DEGREES, D PRIME20 1.0388, N PRIME20 SUBD 1.4962. SIMILARLY WAS PREPD. 64.2PERCENT ET SUB3 SI ANALG, B SUB4 154-6DEGREES, 1.0310, 1.4990; AND BU SUB3 SI ANALG, 57.3PERCENT, BI SUB1, 162-3DEGREES, 0.9516, 1.4838. WITH 2 MOLES R SUB3 SIH THE REACTION GAVE 91.6PERCENT PHP(OSIET SUB3) SUB2 (I) B SUB2 144-7DEGREES, 0.9628, 1.4889; BU SUB3 ANALG, 50.5PERCENT, B SUB2 190-1DEGREES, 0.9123, 1.4810. I HEATED WITH S IN HEPTANE 3 HR GAVE PHP(S)(OSIET SUB3) SUB2, B SUB2 169-72DEGREES, 1.0165, 1.5039. FACILITY: VSES. NAUCH.-ISSLED. INST. SIN. KAUCH. IM. LEBEDEVA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 535.44:621.378

BELOKRINITSKIY, N. S., GNATOVSKIY, A. V., DANILEYKO, N. V., ZAKHAROV, V. P.,
and SHPAK, M. T.

"Holographic Recording of Information on Amorphous Semiconductor Films"

Leningrad, Doklady Akademii Nauk SSSR, Vol 209, No 2, 1973, pp 330-332

Abstract: This paper is a report on the application of local variations in the structural and optical characteristics of InSb, InSe, InTe, GaTe, GeTe, and Te for holographic information recording. In an earlier paper (N. S. Belokrinitskiy, et al, Pis'ma v ZhETF, 15, No 4, 1972, p 198) it was found that in GeTe films under strong light pulses a growth of crystallites was observed, accompanied by changes in the physical and optical characteristics of the compound. Similar characteristics, including the transmission and absorption spectra, were explored in the present paper for the compounds listed above. The equipment used for the holographic recording is shown in schematic form. Records of objects measuring $2 \times 2 \text{ mm}^2$ to $15 \times 15 \text{ mm}^2$ were made by illuminating them directly with neodymium and ruby lasers. Samples of the images obtained are shown. The authors thank V. N. Pavlyuk for running the experiment.

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Lasers and Masers

USSR

BELOKRINITSKIY, N. S., GNATOVSKIY, A. V., DANILEYKO, M. V., ZAKHAROV, V. P.,
KOZLOV, A. V., and SHPAK, M. T., Physics Institute, Academy of Sciences
Ukrainian SSR

"Recording of Optical Information on Amorphous Films of Semiconducting Com-
pounds"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15,
No 4, 20 Feb 72, pp 198-200

Abstract: The article describes a new optical information method based on local variations in structural and optical characteristics of some semiconducting compounds under the action of laser radiation. This opens up the possibility of creating carriers with a high recording speed (10^{-4} - 10^{-5} sec) and high spatial resolution without the need for subsequent processing. Amorphous GeTe and InSb films, vacuum-evaporated on glass and NaCl substrates, were used by the authors as carriers for optical signal recording. Laser radiation by a semitransparent mirror was separated into two beams approximately equal in intensity and directed at the sample at a convergence angle of $\sim 55^\circ$ for GeTe

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USSR

BELOKRINITSKIY, N. S., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoj Fiziki, Vol 15, No 4, 20 Feb 72, pp 198-200

and $\sim 25^\circ$ for InSb. The interference hologram grating of the radiation field was recorded on the film. Samples were exposed to radiation pulses of a free-running ruby ($\lambda = 0.69$ micron) and neodymium ($\lambda = 1.06$ microns) laser. Given a sufficiently homogeneous laser field amplitude distribution, interference gratings with a spatial frequency of up to 1000 lines/mm were obtained, representing alternating segments with different spectral and structural properties. There was found to be a relation between the sample preparation conditions and the maximum attainable spatial frequency. There are optimal radiation energies for the pulse-mode recording of gratings (e.g., ~ 0.1 j/sq mm for recording on GeTe films with pulsed neodymium laser radiation ~ 500 microseconds in duration). The authors observed two forms of film structural changes accompanying the information recording, depending on the density of the recorded grating. In the recording of gratings with a spatial frequency of ~ 100 -200 lines/mm, the lines represent bands of polycrystalline material, films in an amorphous state divided in segments. In the recording of gratings with a spatial frequency of

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- 63 -

USSR

BELOKRINITSKIY, N. S., et al., Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 4, 20 Feb 72, pp 198-200

~1000 lines/mm, grain enlargement is observed over the entire area of the film segment being treated with luminous radiation, but the optical density of the interference grating lines differs, making it possible to obtain a grating with sufficient efficiency in this case as well.

Work is continuing on the further kinetic study of the amorphous state-polycrystal phase transition of the above-indicated materials and a number of others, as well as the study of their use as carriers for recording information in the visible and IR region of the spectrum.

The authors thank V. S. SAMOYLOV for useful discussions of the results.

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USSR

UDC 616.981.48+616.981.25]-097.3-02:616.441-099.87-092.9

BELOKRYLOV, G.A.A., Leningrad Pediatric Medical Institute

"Effect of Thyroidectomy on the Resistance of Adult Rats to E. coli Endotoxin and Staphylococcal Exotoxin"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 8, Aug 70,
pp 72-74

Abstract: Thyroidectomy produced a marked decrease in the resistance of rats to E. coli endotoxin and Staphylococcal exotoxin. As compared to intact animals, the LD₅₀ for thyroidectomized animals was lower by a factor of 4.5 for E. coli endotoxin and by a factor of 1.4 for Staphylococcal Exotoxin. In rats that received a sham operation, resistance to the toxins remained unaffected. The decreased resistance following thyroidectomy is assumed to have resulted from impairment of the close relationship which normally exists between the thyroid and adrenals in regulating carbohydrate metabolism.

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USSR UDC 616.981.48+616.981.25]-097.3-02:616.441-099.87-092.9

BELOKRYLOV, G. A., Leningrad Pediatric Medical Institute

"Effect of Thyroidectomy on the Resistance of Adult Rats to E. coli Endotoxin and Staphylococcal Exotoxin"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 8, Aug 70, pp 72-74

Abstract: Thyroidectomy produced a marked decrease in the resistance of rats to E. coli endotoxin and Staphylococcal exotoxin. As compared to intact animals, the LD₅₀ for thyroidectomized animals was lower by a factor of 4.5 for E. coli endotoxin and by a factor of 1.4 for Staphylococcal Exotoxin. In rats that received a sham operation, resistance to the toxins remained unaffected. The decreased resistance following thyroidectomy is assumed to have resulted from impairment of the close relationship which normally exists between the thyroid and adrenals in regulating carbohydrate metabolism.

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USSR

UDC 576.858.9

BELOKRYSENKO, S. S., Chair of Microbiology, Second Moscow Medical Institute
Imeni N. I. Pirogov

"Genetic Evidence for the Detachment of Lambda Prophage from the Chromosome of Lysogenic Donor Bacteria Strain Induced by Ultraviolet Irradiation"

Moscow, Genetika, Vol 7, No 5, 1971, pp 123-129

Abstract: Irradiation of Escherichia coli K1 (lambda) donor strains with ultraviolet light causing induction in 98-99% of cells reduces by a factor of three to four the transmission frequency of lambda prophage to recombinants receiving the first gal marker. When lysogenic recipients are crossed with UV-irradiated lysogenic donors, some offspring are nonlysogenic; if nonirradiated lysogenic donors are used, all recombinant colonies contain only lysogenic bacteria. The transmission frequency of the distal trp marker by irradiated lysogenic donors is considerably smaller than by irradiated nonlysogenic donors. After UV-induction, the recombinant population of Hfr lysogenic donor cells consists of three groups of cells differing in their behavior during mating: a) the original lysogenic donor cells; b) cells which have retained chromosome breaks after detachment of the lambda prophage; and c) cells which have restored chromosome continuity after detachment of the prophage. However, most of the Hfr lysogenic cells retain the chromosome break after detachment of the prophage. 1/1

USSR

UDC 551.508.7.08

ZORGENFREY, V. G., DAYKER, A. L., BELOKUR, N. A.

"Lithium Chloride Self-Heating Electric Hygrometer"

Sb. Nauch. tr. Chelyabinsk. Politekhn. In-ta [Collected Scientific Works of Chelyabinsk Polytechnical Institute], 1971, No 105, pp 206-208, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, 1972, No 5, Abstract No 5.32.1041, by V.S.K.).

Translation: A description is presented of a flow-through type absolute moisture content hygrometer developed by the Chelyabinsk Scientific Research Institute "Metallurg" in cooperation with "Teplopribor" plant for the measurement of the moisture content of non-corrosive gases and steam-air mixtures. A resistance thermometer is used to measure the equilibrium temperature. Any electronic automatic standard calibration 22 bridge can be used as the secondary instrument. The ranges of moisture content which can be measured are: dew point 0-40°C; 4.8-63.1 g/m (stp) dry; measurement error $\pm 1-4\%$; pressure of medium being measured 760 \pm 40 mm h.g. 4 Figures.

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USSR

UDC 616.981.551-612.014.464

BELOKUROV, Yu. N., VODOLAZOV, Yu. A., KAMENNY, A. N., POPOV, B. V., and KIRSANOV, B. N.

"Inhalation of Oxygen Under High Pressure for Tetanus"

Kazan', Kazanskiy Meditsinskiy Zhurnal, No 5, 1971, p 93

Abstract: A 46-year-old male received a prophylactic dose of tetanus anti-toxin as well as tetanus toxoid for gunshot wounds in the neck and back, but his condition began to deteriorate sharply seven days after the injury and convulsions occurred with increasing frequency. When repeated injections of tetanus antitoxin, oxygen, analgesics, antihistamine, and desensitizing agents were ineffectual and the convulsions intensified, it was decided to institute hyperbaric oxygen therapy (1-1/2 hour exposure with O₂ pressure about 3 atm. The symptoms began to subside within 24 hours and respiration became easier. However, convulsions were provoked by the slightest movement and another session was carried out 24 hours later. The patient's condition showed steady improvement and convulsions became less frequent and confined to increasingly smaller areas. By the 15th day from the time of admission to the hospital, the clinical symptoms of tetanus disappeared completely.

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Therapy

USSR

BELOKUROV, Yu. N., KAMENYY, A. N., MORMYTKO, A. S. and MIKHAYLOV, V. P.,
Faculty Surgical Clinic, Yaroslavl Medical Institute

"Treatment of Anaerobic Infection with Hyperbaric Oxygenation"

Leningrad, Vestnik Khirurgii, Vol 105, No 10, Oct 70, pp 137-138

Translation: We have successfully used the method of hyperbaric oxygenation for the treatment of three patients with anaerobic infection of the extremities, spreading over the trunk.

In all three patients, the diagnosis was confirmed bacteriologically, and X-ray pictures showed gas in soft tissues. The treatment was conducted in a chamber designed by Yu. N. Belokurov. During the treatment sessions, the electrocardiogram, respiratory frequency, rheovasogram, and blood pO_2 of the patient were recorded. Each oxybarotherapeutic session lasted 2-3 hours, and the oxygen partial pressure was raised to a maximum of 2.8 atm. Each patient underwent from four to six of these treatment sessions.

We observed no complications from this treatment method. Detoxification therapy was simultaneously applied and consisted of administering antigangrene serum (up to 300,000 units per day), protein and electrolyte solutions, and

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USSR

BELOKUROV, Yu. N., et al., Vestnik Khirurgii, Vol 105, No 10, Oct 70,
pp 137-138

antibiotics. Even after the second therapeutic session, a marked clinical effect was observed, with disappearance of signs of gas gangrene in two patients.

The method was successful even when radical surgery was impossible due to the spreading of the process over the trunk.

1. Patient Shch, 35 years old. Delivered to the hospital on 23 January 1968, 6 hours after trauma sustained at work. Diagnosis: Open fracture of the pelvis; rupture of the ampullar portion of the rectum and the urethra; tear wound on right buttock; and third-degree shock.

The patient was brought out of shock, a suprapubic fistula of the urinary bladder was made, and the wounds were treated surgically without sutures. Forty-four hours after the trauma, the patient's temperature was 40°C, a swelling of the right buttock developed with bronze-cyanotic discoloration of the skin, and the wounds discharged an exudate of dirt and blood. Palpation revealed crepitation in the area of the right buttock and the perineum. A diagnosis of gas and edematous form of anaerobic infection was made. Skin and fascia cuts were made in the buttock and perineum, and antigangrene serum up to 150,000 Au per day was administered. On 26 January, the edema and gas spread

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USSR

BELOKUROV, Yu. N., et al., Vestnik Khirurgii, Vol 105, No 10, Oct 70,
pp 137-138

over the trunk, the wounds were necrotic, and the protruding muscles acquired a gray color. The patient was passive; pulse rate was 120 beats per minute. Sixty-eight hours after the beginning of the disease, the patient was sent to our clinic for oxybarotherapy. The first treatment was given on 26 January; it lasted 2.5 hours, with oxygen pressure in the chamber up to 2 atm. On 27 January, the patient's temperature was subfebrile, he was conscious, the hip swelling had diminished 4 cm, and the tissue around the wounds acquired a viable color. On the same day, the second oxybarotherapeutic treatment was given for 3 hours, with a pressure of 2.8 atm. After that, the bronze-cyanotic discoloration of the skin disappeared, the wounds exuded a moderate amount of a serous fluid, and the muscles became pink and were no longer protruding. The size of the right hip rapidly diminished to that of the healthy hip, and crepitation disappeared. The temperature was subfebrile, and the signs of gas gangrene were gone.

2. Patient R., 22 years old. On 8 March 1969, the patient sustained fourth-degree electrical burns on both wrists and forearms from 10,000 volt alternating current. On 13 March, he was delivered in serious condition to the Vologotskaya Oblast Hospital, where the following diagnosis was made:
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electrotrauma complicated by anaerobic infection spreading over the ventral surface of the neck and chest.

On 14 March, the patient was sent to our clinic in very serious condition, with a gray-earthy face color, icteric scleras, pulse of 120, and a temperature of 39.2°C. There are necrosis of both wrists and forearms up to the middle third. On the left side, the swelling and hyperemia spread to the lateral surface of the neck and over the subclavicular area. There was distinct crepitation to palpation. X-ray pictures revealed gas. Bacteriological analysis of the wound exudate established the presence of *C. perfringens* and hemolytic *Staphylococcus aureus*.

The patient was placed in the barochamber for four hours at a pressure of 2.5 atm. Within 24 hours, the patient's condition improved considerably, his temperature fell to subfebrile, swelling of the limbs diminished, and crepitation disappeared. On the following days, two more oxybarotherapeutic treatments were given. On 17 March, necrectomy was performed in the middle third of the left arm and the upper third of the right forearm. After surgery, the patient was again placed in the barochamber. On the following days, the patient improved rapidly. His temperature was subfebrile, and

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the stumps were gradually cleared of necrotic areas and pus and became covered with granulations and epithelization from the edges. The patient recovered and, on 20 April, was transferred to the Vologotskaya Oblast Hospital for further treatment.

3. Patient D., 38 years old. On 15 April 1969, the patient had an automobile accident and sustained an open fracture in the middle third of the right thigh and a laceration of the wall of the femoral artery. He was delivered to the district hospital in a state of shock. After the shock was treated, an osteosynthesis was performed on his right thigh, and his femoral artery was sutured. On the fifth day, the edematous and gaseous form of anaerobic infection developed in the thigh. Longitudinal cuts were made in the thigh, and the patient was sent to our clinic.

At admission on 20 April, he was in serious condition; his skin and scleras were icteric, his pulse was 100 beats per minute, his right thigh was edematous and the swelling was spreading over the shank, and the skin on the thigh had a bronze hue extending over the inguinal fold. A serous pus was discharging from the wound, and the muscles had a "cooked" color. Gas was emitted upon palpation and application of pressure. Bacteriological analysis
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pp 137-138

of the wound content revealed the presence of *C. perfringens*.

On 20 and 21 April, two oxybarotherapeutic treatments were administered, each lasting 3 hours at a pressure of 2.8 atm. The patient's general condition improved, his temperature was subfebrile, and the clinical signs of gas gangrene disappeared. On 21 April there was a sudden massive hemorrhage from the wound. The patient's condition markedly deteriorated, and his pulse rose to 130 beats per minute. The hemorrhage was stopped by conventional methods. On 24 April, as a result of an ischemic gangrene of the extremity, the patient's leg was amputated at the level of the middle third of the thigh. After surgery the patient was given four more oxybarotherapeutic treatments which considerably improved his general condition. The patient recovered.

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© BIOLOGICAL ABSTRACTS
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UR0609

19773. BELOKUROV, Yu. N. (Dep. Fac. Surg., Yaroslavl Med. Inst., Yaroslavl, USSR.) Napryazhenie kisloroda v tkani mozga pri gemorragicheskom insul'te i ego izmenenie pri kislorodnoi terapii. [Oxygen tension in brain tissue following hemorrhagic stroke and changes in it after oxygen therapy.] VOP NEIKOKHIR 33(2):39-43, illus. 1969. [Engl. sum.]²-Polarography using an open platinum electrode was used to measure the O₂ tension (pO₂) in the brain tissue of 21 patients following excision of an intracerebral hematoma with subsequent O₂ therapy. No pO₂ rise within 17 postoperative days was observed in the region of hematoma and surgical wound of the brain. In lethal outcomes the reaction to O₂ inhalation was also absent in remote portions of the brain, while in other cases it rose on the average up to 178%. An electrode coated with epoxy resin measured pO₂ early after stroke in 8 patients, the brain O₂ tension in them having averaged 28.7 mm Hg. To compare the brain pO₂ in healthy persons and also to establish the relation between the decrease of brain pO₂ and the severity of a cerebral lesion, the O₂ tension in the spinal fluid was investigated in 36 persons with the aid of a screened Gleichman-Libbers type electrode. In grave brain injuries and hemorrhagic strokes O₂ therapy cannot be recognized as an effective means for elimination of brain tissue hypoxia.

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UDC 669.018.58:621.7.044

POVOLOTSKIY, Ye. G., VASIN, G. P., VLASKINA, K. I., and BELOLIPTSEVA, G. G.,
Saratov Polytechnic Institute

"Nature of Extremal Magnetic Property Change in Ticonal Alloys After Iso-
thermal Thermomagnetic Treatment"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, Jan 73,
pp 69-71

Abstract: The nature of the change in the magnetic properties of highly coercive alloys of the ticonal type -- residual induction B_r , coercive force H_c , and maximum magnetic energy BH_{max} -- was studied since for the extreme case these properties depend on the temperature of isothermal thermomagnetic treatment (ITMT). The average composition of five alloys studied was (in%): 38 Co, 13.0 Ni, 7.5 Al, 6.5 Ti, 3.0 Cu and 1.05 FeS. It was assumed that the nature of this phenomenon should be associated with the features of the kinetics and morphology occurring in these alloys for dispersion $\beta_2 \rightarrow \beta + \beta_2$ decomposition for different modes of ITMT. The kinetics of dispersion decomposition of ticonal alloys during isothermal treatment without a magnetic field or ITMT is characterized by C-shape diagrams with a very short incubation period (15-45 minutes). The extremal relationship of ticonal magnetic properties to temperature of isothermal

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POVOLOTSKIY, Ye. G., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, Jan 73, pp 69-71

treatment without a magnetic field or ITMT has been associated with the formation of an intermediate form close to the barform structure of decomposition. 3 figures, 2 tables, 3 bibliographic references.

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USSR

UDC 533.6.011

BELOLIPETSKIY, V. M., and DULOV, V. G., Institute of Theoretical and Applied Mechanics, Siberian Department, USSR Academy of Sciences, Novosibirsk

"A Thin Shock Layer in the Problem of Hypersonic Flow-Around"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Tekhnicheskikh Nauk, Issue 1, No 3, 1973, pp 40-44

Abstract: The flow of a hypersonic, nonviscous, non-heat-conducting gas around planar, thin, axisymmetric bodies is considered, with search for an approximate solution, on the assumption that the perturbed area is small.

Several variables (geometrical parameters based on body shape, curvature of line of flow, curvature of body surface, velocity vector, entropy, temperature, density, pressure, enthalpy, specific heat for constant pressure, etc.) are combined as the elements of approximation formulas.

Calculations based on these formulas, with comparison of results from other approximation methods and with numerical solutions, show that the position of the shock wave can be determined reasonably accurately with this method; the value of the coefficient of pressure, however, is rather too low.

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BELOLIPETSKIY, V. M., and DULOV, V. G., Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Tekhnicheskikh Nauk, Issue 1, No 3, 1973, pp 40-44

Two of the formulas derived are readily extendable to the three-dimensional case by translation to a semigeodetic coordinate system, and assumption of nearness of the lines of flow lines on the body to the geodetic value.

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USSR

UDC 629.7.018.1

BELOMESTNOV, P. I., Institute of Theoretical and Applied Mechanics, Siberian Department of the Academy of Sciences USSR

"Device for Mounting Model in Working Section of Wind Tunnel"

USSR Author's Certificate No 363008, Cl. G 01m 9/00, filed 22 Mar 71, published 20 Dec 72 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 3, 1973, p 82)

Abstract: The device contains an arched holder with sting fastened to it, which is inserted in the working section through a wall window and kinematically coupled to the drive for movement along the incidence and slip angles. The unique feature of the device is that, to expand the slip angle range of the model and reduce flow disturbance, the wall window of the tunnel is made round and there are three disks varying in diameter built into it flush with the wall, eccentric to one another according to the degree of diameter reduction, with each capable of turning around its axis. The smallest of the disks is coupled to the drive for moving the model along the slip angles and has a slot for moving the holder along the incidence angles.

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USSR

UDC: 621.165.62-57

KUDRYAVTSEV, P. I., Candidate of Technical Sciences, BELOLIPETSKIY, Yu. P.,
Candidate of Technical Sciences, Central Scientific Research Institute of
Machine Technology

"Effect of Turbine Starts and Stops on the Fatigue Strength Characteristics
of Blade Materials"

Moscow, Teploenergetika, No 5, May 73, pp 59-61

Abstract: An investigation is made of the influence which the centrifugal
tensile force loading accompanying starting and stopping of turbines has
on the fatigue properties of materials for blading. It is found that the
sensitivity of VTZ-1 alloy to starting and stopping conditions is essen-
tially the same as that of the widely used 15Kh11MF blading steel. The
fatigue strength of this alloy under conditions typical for operation of
turbine blades does not fall below 11 kg/mm^2 (as determined on high-quality
bar stock loaded to the maximum number of turbine starts and stops -- 1000
cycles). Cyclic testing of VTZ-1 alloy specimens on a 1000-cycle base in-
creased their fatigue strength by approximately 10%. The same type of
loading on notched specimens reduced fatigue strength by 22%. This result

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KUDRYAVTSEV, P. I., BELOLIPETSKIY, Yu. P., Teploenergetika, No 5, May 73, pp 59-61

shows that low-frequency cyclic loading toughens the material while simultaneously increasing its sensitivity to stress concentration. Analogous stress concentration tests on 15Kh11MF steel caused a reduction in fatigue strength of 20%. Cyclic loading for 500 cycles caused no appreciable change in fatigue limit. These results should be considered when determining the strength properties of forgings for turbine blades.

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UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--MECHANISM OF CARBON DIOXIDE FORMATION IN THE OXIDATIVE
DEHYDROGENATION OF ETHYLBENZENE TO STYRENE -U-

AUTHOR--(04)-ISAGULYANTS, G.V., BOGDANOVA, O.K., BELOMESTNYKH, I.P.,
ROZHDESTVENSKAYA, N.N.

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B

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CIRC ACCESSION NO--AP0134677
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE MECHANISM WAS STUDIED BY
THE KINETIC ISOTOPE METHOD, USING STYRENE (I), PRIME14 C. I WAS THE
ONLY PRECURSOR OF CO SUB2. THE CATALYST MGO, (NH SUB4) SUB2, MOO SUB4 HAD
HIGH SELECTIVITY FOR THYOXIDATIVE DEHYDROGENATION OF ETPH TO I.
FACILITY: INST. ORG. KHIM. IM. ZELINSKOGO, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 681.142.621

ALEKSEYEV, V. A., BELOMESTIYKH, V. A., V'YUKHIN, V. N., KASPEROVICH, A. N.,
POPOV, Yu. A., SOLOMENKO, V. I., Novosibirsk

"A Multipoint High-Speed Digital System for Data Collection and Storage"

Novosibirsk, Avtometriya, No 4, Jul/Aug 71, pp 40-50

Abstract: The article describes a multipoint high-speed digital system for data collection and storage developed at the Atomic Energy Institute of the Siberian Department of the Academy of Sciences of the USSR for converting a large volume of analog information to digital form prior to computer input. The system contains a level-fixing module, a commutator with its own control unit, a data-stacking unit, a core store, a system control unit, and a CRT display. Block and circuit diagrams are presented, and the purpose and operation of each element of the system is described. Initial tests of the pilot model of the system have shown that it satisfies the design requirements. Printed-circuit construction is used, and the system is accommodated in two equipment bays -- one for the system proper, and the other for the core store. Seven figures, two tables, bibliography of two titles.

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Acc. Nr. AP0034096 Abstracting Service:
CHEMICAL ABST. 4-70

Ref. Code
UR 0078

B

74174t Uranyl hydroxooxalate compounds of the dioxalate series. Shchelokov, R. N.; Belomestnykh, V. I. (Inst. Obshch. Neorg. Khim. im. Kurnakova, Moscow, USSR). *Zh. Neorg. Khim.* 1970, 15(1), 139-46 (Russ). $M_n[UO_2(C_2O_4)_2(OH)] \cdot nH_2O$ (where M and n are: Na 1; K 2; CN_2H_6 2; $(C_2H_5)_2NH_2$ 1; $1/2C_2H_5(NH_2)_2$ 2; and Cs 2) were prepd. and their ns, temps. of dehydration, temps. of oxalate decompn., and $\nu(UO_2^{2+})$ were detd. $[UO_2(C_2O_4)_2(OH)]^{2-}$ can form not only by deprotonation of the aquo group in $[UO_2(C_2O_4)_2(OH_2)]^{2-}$ but also by a displacement of the bridging oxalate group in $[(UO_2)_2(C_2O_4)_3]^{4-}$, or by the interaction of $2[UO_2(OH)_2(OH_2)]$ groups with $[(UO_2)_2(C_2O_4)_3]^{4-}$ and $3C_2O_4^{2-}$. Mechanism of formation of these comps. is discussed. HMJR -

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Acc. Nr. AP0034217

Abstracting Service:
CHEMICAL ABST. #70

Ref. Code
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B

74244r Compounds of the hydroxotetraoxalatodiuuranilate ion.
Shehelokov, R. N.; Belomesnykh, V. I. (Inst. Obshch. Neorg.
Khim. im. Kurnakova, Moscow, USSR). *Zh. Neorg. Khim.*
1970, 15(1), 147-51 (Russ). Cryst. $M_n[(UO_2)_2(C_2O_4)_4(OH)] \cdot$
 nH_2O (where M and n are: Na 4; K, 5; Rb, 2; Cs, 2; CN_2H_6 ,
3) were prepd. and their refractive indices, temp. of dehydration,
temp. of $C_2O_4^{2-}$ decompn., and $\nu(UO_2^{2+})$ are tabulated. It is
assumed that $[(UO_2)_2(C_2O_4)_4(OH)]^{5-}$ has an OH bridge.

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UDC 669.28.172

BULGAK, L. V., SAVITSKIY, Ye. M., BELOMYTTSEV, Yu. S., SARATOVSKIY, L. N.,
PAVLOVICH, T. M., and MIKHAYLOV, S. M.

"Study of Structure and Properties of Molybdenum Single Crystals Produced
Under Oilless Vacuum Conditions"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory
and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 67-70

Translation: Data are presented on the mechanical properties and structure
of monocrystalline molybdenum, produced under oilless vacuum conditions by
cathode ray zone refining. 1 Table; 4 Figures; 2 Bibliographic References.

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