

USSR

UDC 669.111

GOREV, K. V., SHEVCHUK, L. A., DUDETSKAYA, L. R., GURINOVICH, V. I.

"Study of the Structure and Graphitizing Annealing of High-Purity Fe-C and Fe-C-Si Alloys"

Izv. ~~AN~~ AN BSSR, Ser. Fiz-tekhn. Nauk, No 2, Minsk, 1971, pp 49-54.

Abstract: This work presents a study of the structure and graphitization process of high-purity Fe-C and Fe-C-Si alloys. The carbon concentration in the binary alloys studied was 1.5, 2.7, and about 4.2%. In the two groups of ternary alloys studied with carbon contents of about 1.5 and 2.7%, the silicon concentration was varied from 0.1 to 1%. Annealing of pure binary specimens with 2.7 and 4.2% C result in the formation of a few very large segregations of graphite, primarily located along grain boundaries. The addition of silicon facilitated seeding and growth of graphite inclusions not only in microscopic cavities and along grain boundaries, but within the grains as well. The addition of 0.3-0.4% Si greatly facilitates graphitization.

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USSR

UDC 669.111

GOREV, K. V., SHEVCHUK, L. A., BURETSNAYA, L. R., GURINOVICH, V. I., Physico-technical Institute of the Academy of Sciences BSSR

"Investigation of the Structure and Graphitizing Annealing of Fe-C and Fe-C-Si Alloys of High Purity"

Minsk, Izvestiya Akademii nauk BSSR, Seriya fiziko-tekhnicheskikh nauk, No. 2, 1971, pp 49-54

Abstract: The structure and graphitization process of Fe-C and Fe-C-Si high purity alloys was studied. The carbon concentration in the binary alloys was 1.5, 2.7 and about 4.0% and in two groups of ternary alloys with a carbon content of about 1.5 and 2.7% the silicon content varied from 0.1 to 1%. The graphitization of samples with a carbon concentration of about 1.5% was investigated in cast samples and in samples subjected to homogenization at 850°C for 50 hours in an atmosphere of pure helium. The initial structure of these alloys in the cast state contained pearlite with separation of secondary cementite along the boundaries of the former grains of austenite and inside grains in the form of needles. In the silicon alloys, the structure was relatively finer. The homogenizing annealing of the steel in aiding the growth of austenite grains and avoiding heterogeneities in its composition cause the formation of large iccicles of

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GOREV, K. V., et al, Izvestiya Akademii nauk BSSR, Seriya fiziko-tekhnicheskikh nauk, No. 2, 1971, pp 49-54

secondary cementite in both the siliconless alloy and in alloys with silicon. The microstructure of alloys with a carbon content of 2.7% in the cast state contained converted primary austenite and ledeburite. The amount of the latter increased somewhat as the silicon concentration in the alloy increased. The binary alloy with a carbon content of 4.2% in the cast state had a ledeburite structure; in some alloys there was also observed a small amount of primary cementite in the form of needles. The study of the graphitization process of pure iron-carbon alloys obtained by the carbonization of carbonyl iron by reactor graphite in a vacuum showed that graphitization of these alloys has certain special characteristics as compared with ordinary iron alloys with carbon. Graphitization occurs in places where defects in the crystalline structure are present due to difficulty of nucleation of graphite in pure alloys. The separation of graphite in siliconless and low silicon alloys has a strongly branched form. The number of the separations is not great and they are nonuniformly distributed over a cross section of the casting. All treatments of the alloys that aid in nucleation of graphitization centers lead to a shortening of the duration of graphitization. Silicon especially helps the graphitization of alloys, especially at concentrations of more than 0.4-0.5%. The mechanism for the effect of silicon on the formation and growth of graphite inclusions in Fe-C-Si alloys is still not understood to a sufficient degree. It is only hypothesized that in the presence of silicon carbon atoms are distributed nonuniformly. Silicon apparently forms complexes with iron which drive back the carbon. Conditions are then made easier for the formation of atomic fluctuations necessary for the nucleation of graphite.

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1/2 017 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--MECHANISMS OF THE SCATTERING OF CURRENT CARRIERS IN LEAD  
CHALCOGENIDES -U-  
AUTHOR--(05)-RAVICH, YU.I., GURIYEVA, YE.A., DUBROVSKAYA, I.N., YEFIMOVA,  
B.A., PROKOFYEVA, L.V.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. TVERD. TELA 1970, 12(4) 917-19  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--LEAD SULFIDE, TELLURIUM COMPOUND, ELECTROMOTIVE FORCE, LOW  
TEMPERATURE EFFECT, HALL CONSTANT, MAGNETIC FIELD EFFECT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1988/0582 STEP NO--UR/0181/70/012/003/0917/0919  
CIRC ACCESSION NO--AP0105565  
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105565

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ANAL. WAS CARRIED OUT OF THE EXPTL. DATA ON MOBILITY AT 2-600DEGREES K AND THE LORENZ NO. AT SMALLER THAN OR EQUAL TO 77DEGREES K IN N AND P TYPE PBTE, PBSE, AND PBS WITH CARRIER CONCNS. OF APPROX.  $10^{18}$  PRIME<sup>20</sup>-CM PRIME<sup>3</sup>. CONSIDERATION OF POLAR SCATTERING ALLOWS ONE TO EXPLAIN ALSO THE RESULTS OF MEASUREMENTS OF MAGNETORESISTANCE. CALCNS. WERE MADE OF THERMAL EMF. AND THE LORENZ NO. IN PBTE AND PBSE OF N TYPE IN A BROAD INTERVAL OF CONCNS. AT GREATER THAN OR EQUAL TO 300DEGREES K; THE TEMP. DEPENDENCE OF THE HALL COEFF. FROM VERY LOW TEMPS. TO THE BEGINNING OF INTRINSIC COND.; THE NERNST ETTINGSHAUSEN COEFF. AT 300DEGREES K AS A FUNCTION OF CONCNS. ALSO AT 77DEGREES K, WHERE SCATTERING IS INELASTIC; AND FINALLY THE VARIATION OF THERMAL EMF. IN A STRONG MAGNETIC FIELD AT 77DEGREES K. IN ALL CASES, GOOD AGREEMENT WAS OBSD. BETWEEN THEORY AND EXPT. AT HIGH CONCNS. (OF THE ORDER OF  $10^{18}$  PRIME<sup>20</sup>-CM PRIME<sup>3</sup>), SCATTERING ON LONG WAVELENGTH ACOUSTICAL PHONONS PREVAILS. BECAUSE OF NONPARABOLICITY, THE MATRIX ELEMENT OF THE ACOUSTICAL SCATTERING DEPENDS ON THE ENERGY. AT CONCNS. OF SMALLER THAN OR EQUAL TO  $10^{18}$  PRIME<sup>18</sup> MINUS  $10^{19}$ -CM PRIME<sup>3</sup>, IN ADDN. TO ACOUSTICAL SCATTERING, AN ESSENTIAL ROLE IS PLAYED BY POLAR SCATTERING; AT RELATIVELY LOW TEMPS. (20-200DEGREES K), THERMOELEC. AND THERMOMAGNETIC EFFECTS ARE INFLUENCED BY THE COLLISIONS BETWEEN CARRIERS. AT EXTREMELY LOW TEMPS. (SMALLER THAN OR EQUAL TO 100DEGREESK), SCATTERING IS CONSIDERABLE IN THE CENTRAL PART OF THE IMPURITY POTENTIAL.

UNCLASSIFIED

USSR

UDC 621.314.61

DAVYDOV, V.S., GURKALOV, K.I.

"Concerning Use Of The Duality Principle For A Circuit With Rectifiers"

V sb. Vopr. elektrosvyazi (Problems Of Electrical Communications--Collection Of Works), Kiev, "Tekhnika," 1970, pp 15-20 (from RZh--Elektronika i yeye primeneniye, No 12, December 1970, Abstract No 12B501)

Translation: A method is presented of computation of a 2-phase bridge rectifier operating with a load of inductive character and using the principle of duality of the electrical circuits. Formulas are derived for determining the transformation ratio of the resistances from the a-c circuit and the d-c circuit. 4 ill. 4 ref. Summary.

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USSR

UDC 621.27/.39(038)

GURKIN, V. A.

Radiotekhnika i televideniye. Izd. 3-e, pererab. i dop. (Radio Engineering and Television. Third Edition, Reworked and Supplemented), Rostov-na-donu, Rostov University, 1970, 390 pp, ill., 1 r. 45 k (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4A24K)

Translation: This book contains two parts in which the elements of radio engineering and television are investigated. The six chapters of the first part contain materials on linear and nonlinear elements and circuits and the individual assemblies of radio systems. One chapter is devoted to semiconductor devices and systems based on them. The eight chapters of the second part include information about individual units, assemblies and circuits of television receivers. Basic attention is given to the physical essence of the studied phenomena. The book is designed for engineers, technicians, teachers, students and postgraduates dealing with the problems of radio physics.

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USSR

UDC 591.1.15

PIKULEV, A. T., ~~GURKO, A. V.~~, ZHIGALKOVICH, N. V., KHRIPCHENKO, I. P.,  
and CHERNOGUZOV, V. M.

"On the Mechanism of the Action of Ionizing Radiation on the Activity of  
Aminotransferase in the Brain of White Rats"

Nauch. dokl. vyssh. shkoly. Biol. n. (Scientific Papers of the University.  
Biological Sciences), 1971, No 9, pp 43-48 (from RZh-Biologicheskaya  
Khimiya, No 2, 25 Jan 72, Abstract No 2F272)

Translation: The rate of transamination processes catalyzed by the alanine-  
and aspartate-aminotransferase enzyme system is disrupted in rat brain under  
the effect of X-radiation in a dose of 700 roentgens. This is due to a change  
in the activity of the given enzymes in individual subcellular fractions of  
the brain, and also to discoordination in the transamination system which is  
especially pronounced on the first and seventh days after exposure to radia-  
tion. Résumé.

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USSR

UDC: 577.4

GURKO, V. F.

"Troubleshooting Logic Circuits Realized in a Computer Medium"

V sb. Vychisl. sistemy (Computer Systems--collection of works),  
vyp. 47, Novosibirsk, 1971, pp 45-55 (from RZh-Kibernetika, No  
8, Aug 72, Abstract No 8V435)

Translation: The paper deals with problems of diagnosis of  
circuits realized in a computer medium, each element of which  
performs a complete connective and functional basis. [From  
the introduction].

1/1

GURLEV, D.S.

Electronics/Tubes

TECHNICAL TRANSLATION

PSTC-HT-23-322-73

①

Car

ENGLISH TITLE: Handbook on Gas-Filled Tubes

FOREIGN TITLE: Spravochnik po lampam priboim

AUTHOR: D. S. Gurlev *Electronics/Tubes*

SOURCE: "Tekhnika" Publishing House, Kiev, 1970

Translated for FSIC by Leo Kanner Associates, Redwood City, CA.  
(BRUN)

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USSR

UDC 576.851.45.095

GURLEVA, G. G., DOMARADSKIY, I. V., KHALYAPINA, Ye. Ye., ALUTIN, I. M.,  
TARANOVA, V. N., PUSHNITSA, N. P., KOL'TSOVA, Ye. G., MARCHENKOV, V. I.,  
SHCHEGLAKOVA, N. M., and GRIGOR'YAN, E. G., Rostov-on-Don Scientific Research  
Antiplague Institute

"Biological Properties of Pasteurellae Isolated From Various Species of  
Animals"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 11, 1971,  
pp 54-58

Abstract: A comparative study was performed on *P. avicida*, *P. cuniculicida*,  
*B. avisepticus*, *B. suisepiticus*, *B. bovisepiticus*, and *B. ovisepiticus* (a total  
of 27 strains) isolated from chickens, pigs, suckling pigs, calves, steers,  
sheep, house mice, and rabbits in various geographic areas in 1936-1967. The  
tinctorial, cultural, morphological, and biochemical properties of these  
strains as well as their sensitivity to antibiotics, nucleotide DNA compo-  
sition, and virulence to albino mice, albino rats, and pigeons revealed that  
they constitute a homogeneous group and belong to a single species -- *P.*  
*multocida*. Significantly, all the strains investigated are sensitive to  
colicines E+J, F, G, J+G, and S<sub>5</sub>. If the findings are confirmed by supple-  
mentary investigations, the colicin test may well be used for a differential  
diagnosis of *P. multocida*.

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USSR

UDC 531.55:521.1

GURMAN, V. I., SALMIN, V. V., POPOV, YU. B., and NIKULIN, A. M.

"Control of Low-Thrust Space Vehicles With Account Taken of Their Motion About the Center of Mass"

Moscow, Tr. Pyatykh Chteniy, Posvyasch. Razrabotke Nauch. Naslediya i Razvitiyu Idey K. E. Tsiolkovskogo. Sekts. "Mekh. Kosmich. Poleta" (Works of the Fifth Lecture Series Devoted to Development of the Scientific Heritage and Development of the Ideas of K. E. Tsiolkovskiy. Series "Mechanics of Space Flight"), 1971, pp 59-67 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2A73 by G. S. Suvorov)

Translation: An investigation is made of the possibility of realizing some programs of control for the problem of the departure of a space craft with low thrust from the gravitational field of the Earth. The vehicle is assumed to be a solid body of variable mass. Control of movement of the center of mass and of rotation around it is effected by means of two electric-rocket cruise propulsion units. The vehicle is acted upon by the gravitational moment  $M_{gr}$  and by the controlling moment  $M_{contr}$  of the engine thrust. The acceleration vector lies in the orbital plane, and the motion is regarded only with respect to the pitch theta. Two systems of a space craft with an electric-rocket

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USSR

UDC 546.171.1

AYVAZOV, M. L., SARKISYAN, A. G., DOMASHNEV, I. A., GUROV, S. V., Institute of  
New Chemical Problems, Academy of Sciences USSR

"Synthesis and Study of Alloys in the TiO-MnO Cross Section"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, No 7, 1972,  
pp 1218-1220

Abstract: In certain ternary phases, a deviation is observed from the ordinary  $A_2B$  formula. The deviation from stoichiometry is most significant when component B is chrome or manganese. In this case, the stoichiometric composition shifts from  $A_2$  to B to AB. The literature contains no data on the nature of formation of phases in the cross section TiO-MnO. Study of this section is of both theoretical and practical interest, since as the 3d shell is filled, the electro-physical properties of monoxides shift from metal-like to dielectric. TiO-MnO specimens were prepared each 10 wt. % throughout the entire concentration interval and studied. MnO dissolves in TiO up to 15 wt. %, TiO in MnO--up to 40 wt. %. The alloys have an NaCl-like structure. The single-phase area in the TiO-MnO cross section can be considered a solid solution of substitution.

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Converters

USSR

UDC 621.374.5(088.8)

GUROVITS, L. S., KHAYUTIN, S. G., SHPICHINETSKIY, YE. S.

"Procedure for Combining a Piezoconverter with the Acoustic Line of an Ultra-sonic Delay Line"

USSR Author's Certificate No 278746, Filed 29 Jul 68, Published 16 Nov 70 (from RZh-Radiotekhnika, No 4, Apr 71, Abstract No 4G269P)

Translation: A procedure is proposed for connecting a piezoconverter to the acoustic line of a delay line by a matching layer of indium alloys under pressure and thermal conditions. In order to increase the pass band of the delay line, the piezoconverter and the acoustic line are connected by a layer of indium-thalium-silver alloy containing 0.3-5.0 percent thalium, 0.3-2.5 percent silver and under a pressure of 25-30 kg/mm<sup>2</sup> at 130-135° C, and they are held under the indicated conditions for 3-6 hours. In order to increase the sound propagation rate in the matching layer, the latter is cut in the form of a plate of alloy rolled into foil at an angle of 40-45° to the rolling direction.

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MEDICINE  
Aerospace Medicine

USSR

GUROVSKIY, N., Doctor of Medical Sciences

"Overcoming Weightlessness"

Moscow, Izvestiya, 19 Oct 71, p 4

Translation: The courageous cosmonauts G. T. Dobrovolskiy, V. N. Volkov, and V. I. Patsayev worked onboard the manned Salyut space station for 23 days. Their feat was an important contribution to the development of manned orbital flights and brought important scientific results. Izvestiya is publishing an article by Doctor of Medical Sciences N. Gurovskiy, who comments on the results of the cosmonauts' flight onboard the Salyut station.

During analysis of the data obtained as a result of man's flights on the Vostok, Voskhod, Mercury, and Gemini spacecraft one of the main problems of physiology remained unsolved: Is the reaction of the human organism to space-flight conditions due only to the effect of weightlessness, or is it a matter of the combined effect of weightlessness and other factors, specifically, restricted mobility. The question of the possible flight duration was the second important problem in the plan for the development of orbital stations.  
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USSR

GUROVSKIY, N., Izvestiya, 19 Oct 71, p 4

The flights on the Soyuz spacecraft and especially on the Salyut orbital station made an important contribution to the solution of these problems. In particular, the flights on the Soyuz spacecraft showed that the basic shifts in the physiological functions of the cosmonauts' organisms were observed during the first week of the flight. This is the period during which the organism adapts itself to weightlessness. Some physiological shifts were also noted, i.e., loss of body weight, change in the water balance, reduction of the mineral content of the bone, decrease in the muscle tone, etc.

The flight of the Soyuz-9 spacecraft with cosmonauts A. Nikolayev and V. Sevast'yanov onboard, which lasted almost 18 days, was especially informative for physicians. It revealed the great importance of the problems of the organism's readaptation to the effect of the earth's gravitation after the return from spaceflight. It became quite obvious that the cosmonaut's organism must be prepared during the flight for the return to earth. It also became clear that it was necessary to develop preventive measures against the effect of weightlessness during the flight and to search for methods and means for the most rapid restoration of the organism's function after the cosmonaut's return to earth.

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GUROVSKIY, N., Izvestiya, 19 Oct 71, p 4

These problems, as well as the problems of the effect of prolonged weightlessness on the organism, had to be studied as a result of the flight of the manned Salyut orbital station. The size of this station enabled the cosmonauts to perform a large number of various movements and to move freely in a large cabin. The station was filled with a large amount of scientific apparatus essential for observing the cosmonauts. The life-support systems maintained stable atmospheric conditions in the cabin throughout the flight. A whole set of training equipment was used onboard the station to prevent unfavorable phenomena in the astronauts in connection with the duration of the spaceflight.

We shall mention some results of the observations made during the flight of the station. According to biotelemetry data, reports of the cosmonauts television observations of their behavior, and the flight documentation, the condition of G. T. Dobrovolskiy, V. N. Volkov, and V. I. Patsayev was fully satisfactory during the entire flight, including the last 3 days.

An analysis of the fulfillment of the flight program, including the fairly complex dynamic operations and experiments, the record in the flight log, and the data obtained during radio conversations and telemetry reports,  
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GUROVSKIY, N., Izvestiya, 19 Oct 71, p 4

showed that the crew members retained their fitness for work right up to the separation of the descent capsule from the orbital compartment. During the entire flight the cosmonauts retained their interest in work and in news from earth and had good appetites.

The basic indexes of activity of the cosmonauts' cardiovascular systems were stabilized by the 9th day of the flight and remained at a level close to the preflight norm. Apparently, this was the result of sufficient physical training during the flight, of the use of other preventive measures, and of the possibility of free movement on the spacecraft.

The complex of medical investigations conducted on the Salyut orbital station greatly expanded our concept of the effect of weightlessness on the human organism and confirmed the correctness of the chosen preventive measures against its unfavorable effect.

A reliable proof of the possibility of man's prolonged (up to a month) stay under spaceflight conditions, and also of his many-sided activity, is the

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GUROVSKIY, N., Izvestiya, 19 Oct 71, p 4

main result of the manned flights on the Soyuz ships and especially on the Salyut station (from a medical point of view). Thus outer space may realistically be considered an environment where man can live and work while onboard a spaceship for a long time.

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UNCLASSIFIED

PROCESSING DATE--13NOV70

172 018

TITLE--ASTRONAUTS FACING THE MEDICAL COMMISSION -U-

AUTHOR--GUROVSKIY, N. N. G.

COUNTRY OF INFO--USSR

SOURCE--PRAVDA, JUNE 22, 1970, P 2, COLS 4-8

DATE PUBLISHED--22JUN70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--COSMONAUT TRAINING, COSMONAUT SELECTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1989/0983

STEP NO--UR/9012/70/000/000/0002/0002

CIPC ACCESSION NO--AN0107504

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AN0107504

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE GIVES SOME IDEA AS TO THE PROCEDURE USED IN THE SOVIET UNION TO SELECT CADRE FOR THE ASTRONAUT TRAINING.

UNCLASSIFIED

1/2 G24 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--INCIDENCE, PECULIARITIES OF THE CLINICAL PICTURE AND COURSE OF  
VARIOUS FORMS OF ANTRACOSIS -U-  
AUTHOR-(C4)-LYUBCHENKOV, V.YE., KIRYUKHINA, N.V., SIROTA, G.M.,  
GURKOVSAYA, S.M.  
COUNTRY OF INFO--USSR  
SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 6, PP 71-74  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BONE DISEASE, RADIOGRAPHY, DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3002/1911

STEP NO--UR/0504/70/042/006/0071/0074

CIRC ACCESSION NO--AP0120260

2/2 024

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0129269

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. A COMPARATIVE STUDY WAS MADE OF PECULIARITIES OF DEVELOPMENT, INCIDENCE, CLINICAL PICTURE AND COURSE OF NODULAR AND DIFFUSE SCLEROTIC FORM OF ANTRACOSIS. IT WAS ESTABLISHED THAT DIFFUSE SCLEROTIC FORM RAN A MORE SEVERE COURSE THAN NODULAR ONE, PROGRESSED MORE RAPIDLY ACCORDING TO THE DATA OF CLINICAL AND ROENTGENOLOGICAL STUDY. RECOMMENDATIONS ARE GIVEN CONCERNING THERAPY, EVALUATION OF CAPACITY FOR WORK AND PLACEMENT OF PATIENTS.  
FACILITY: KAFEDRA POCHEPATOLOGII DNETSKOGO MEDITSINSKOGO INSTITUTA I OBLASTNAYA KLINICHESKAYA BOL'NITSA PROFESSIONAL'NYKH ZABOLEVANIY, DONETSK.

UNCLASSIFIED

Vacuum Tubes

USSR

UDC 621.357

GURLEV, D.S.

"Handbook On Ion Devices"

Spravochnik po ionnym priboram (cf. English above), Kiev, "Tekhnika," 1970, 178 pp, ill., 68 k. (from RCh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4A186K)

[No abstract]

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Acc. Nr.

AP0045164

Abstracting Service:  
CHEMICAL ABST.

5-7d

Ref. Code  
UR0191

91223a Adhesion of some polymers to metal substrates.  
 Cherkasskaya, P. M.; Bilik, Sh. M.; Gurman, I. M.; Slyudikova,  
 N. N. (USSR). *Plast. Massy* 1970, (1), 62-4 (Russ). Polymeric  
 adhesives, e.g., epoxy resin ED-5 [cured with polyethylene  
 polyamine (I)], epoxy compd. K-139 (cured with I), epoxy compd.  
 K-153, epoxy compd. K-156, and a polyurethane varnish UR-19,  
 were used for bonding bronze and steel plates and polymer films.  
 Bronze and steel plates were sandblasted and defatted prior to  
 bonding. Expts. were conducted with reinforced polymer PLD  
 and PLT films [PLD is a polyamide (II) plasticized with rubber  
 (III), and PLT a II-III-poly(vinyl chloride) copolymer], polypy-  
 romellitimide (IV), 1,2-C<sub>6</sub>H<sub>4</sub>(NH<sub>2</sub>)<sub>2</sub>-1,3-C<sub>6</sub>H<sub>4</sub>(CO<sub>2</sub>H)<sub>2</sub> (V) copoly-  
 mer, 3,3'-diaminodiphenyl sulfone (VI)-V copolymer, and  
 2-MeC<sub>6</sub>H<sub>4</sub>NH<sub>2</sub>-V copolymer. The V-VI copolymer had the high-  
 est adhesion to bronze. Bronze and steel plates were best bonded  
 by K-139, and PLD, PLT, and IV films were bonded to bronze  
 and steel plates by K-139 and K-156. CKJR

LD

1/1

REEL/FRAME

7

19780064

1/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--ULTRAVIOLET ABSORPTION SPECTRUM OF A GLASSY 17.5M SOLUTION OF  
HYDROGEN PEROXIDE IN WATER AT 77DEGREESK -U-  
AUTHOR-(02)-GURMAN, V.S., SERGEYEV, G.B.

COUNTRY OF INFO--USSR

6

SOURCE--ZH. FIZ. KHIM. 1970, 44(3), 803-4

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--UV SPECTRUM, HYDROGEN PEROXIDE, LOW TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/1700

STEP NO--UR/0076/70/044/003/0803/0804

CIRC ACCESSION NO--AP0125321

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 023

CIRC ACCESSION NO--AP0125321

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE UV SPECTRA OF FROZEN SOLN. OF H SUB2 O SUB2 IN WATER WERE OBTAINED AS THE DIFFERENCE BETWEEN THE SPECTRUM OF THIS SOLN. AND THAT OF WATER, BOTH FROZEN WITH LIP. N. IN THIS WAY THE SPECTRUM WAS MEASURED OF 17.5M SOLN. OF H SUB2 O SUB2 IN WATER AT 265-320 NM. THE SPECTRA OF LIQ. AND SOLID SOLN. OF 17.5M H SUB2 O SUB2 IN WATER ARE IDENTICAL IN THIS REGION. FACILITY: MOSK. GOS. UNIV. IM. LOMENOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

GURMUZOVA, E. A.

"Kinetic Theory of Nonspherical Molecules With Oscillatory Degrees of Freedom and Effect of Molecule Nonsphericity on Speed of Oscillatory Relaxation"

Leningrad, Aerodinamika Razrezhennykh Gasov, 1970, pp 57-72

Abstract: Experimental data and approximate calculation indicate that the rotation of molecules has a large effect on the oscillatory relaxation process.

This article establishes the expressions for the oscillatory relaxation and basic kinetic coefficients taking into account the molecule nonsphericity. These expressions can be used for the sufficiently rigorous calculation of real gases with small perturbations in the oscillatory degrees of freedom.

The first two approximations of the distribution function given in this article make it possible to solve the oscillatory relaxation of the

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USSR

GURMUZOVA, E. A., Aerodinamika Razrezhennykh Gasov, 1970, pp 57-72

mixture of viscous heat-conducting gases with nonspherical molecules for the case of finite perturbations in the oscillatory degrees of freedom. This makes it possible to analyze the experimental data of the molecule excitation in the translation, rotation and oscillatory degrees of freedom.

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1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--REACTION OF RARE EARTH CHLORIDES WITH 1,3,5, TRINITROBENZENE AND  
CHLORANIL -U-  
AUTHOR--(02)-TRONOV, B.V., GURNITSKAYA, T.S. 6  
COUNTRY OF INFO--USSR  
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(4), 838-42  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--RARE EARTH COMPOUND, NITROBENZENE, COMPLEX COMPOUND, CHLORIDE,  
ELECTRON SPECTRUM  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3008/1326 STEP NO--UR/0019/10/040/004/0838/0842  
CIRC ACCESSION NO--AP013336  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0138336

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM SPECTROSCOPIC DATA THE FOLLOWING VALUES OF COMPLEXFORMATION CONSTS. WERE CALCD. FOR 1,3,5,C SUB6 H SUB3 (NO SUB2) SUB3 AND INDICATED CHLORIDES IN MEQH: PRCL SUB3 0.45 L.-MOLE; SMCL SUB3 0.52; TBCL SUB3 0.81; DYCL SUB3 0.88; HOCL SUB3 0.84; ERCL SUB3 0.77. THE CORRESPONDING VALUES FOR SYSTEMS WITH CHLORANIL WERE: PRCL SUB3 1.4; SMCL SUB3 2.04; TBCL SUB3 1.56; DYCL SUB3 0.85; HOCL SUB3 0.90; ERCL SUB3 0.97. IN THE ELECTONIC SPECTRA OF THE COMPLEXES THER IS ENHANCED ABSORBANCE IN THE 290-350 NM REGION.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70  
 TITLE--INFLUENCE OF A DEVIATION FROM NEUTRALITY ON THE ELECTROLUMINESCENCE  
 OF ZINC SULFIDE SINGLE CRYSTALS -U-  
 AUTHOR--(04)-GCKHFELD, YU.I., GURD, G.M., DAKHNOVETS, V.T., KOVTONYUK, N.F.  
 CCOUNTRY CF INFC--USSR  
 SOURCE--FIZ. TEKH. PCLUPROV. 1970, 4(4), 772-4  
 DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, CHEMISTRY  
 TOPIC TAGS--SINGLE CRYSTAL, ZINC SULFIDE, COPPER, ELECTROLUMINESCENCE,  
 DIELECTRIC CONSTANT

CCNTRCL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
 PROXY REEL/FRAME--3001/0485

STEP NO--UR/0449/70/004/004/0772/0774

CIRC ACCESSION NO--AP0126237

UNCLASSIFIED



2/2 025

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126237

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE DEPENDENCE OF THE RADIATION ENERGY ON THE POTENTIAL PULSE AMPLITUDE WAS INVESTIGATED FOR INSULATED AND SEMI INSULATED ZNS-CU CRYSTALS BY A PREVIOUSLY DESCRIBED METHOD (1969). FOR INSULATED CRYSTALS, THE DEPENDENCE IS QUADRATIC AND INDEPENDENT OF THE POLARITY OF THE APPLIED POTENTIAL. FOR SEMI INSULATED CRYSTALS, A NO. OF OBSD. PECULIARITIES ARE DISCUSSED. TO OBTAIN HIGH RADIATION ENERGIES, IT IS ESSENTIAL TO INCREASE THE DIELEC. CONSTS. OF THE DIELECS. FACILITY: FIZ. INST. IM. LEBEDEV, MOSCOW, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--FIELD EFFECT AT A SEMICONDUCTOR C DOMAIN FERROELECTRIC CONTACT -U-

AUTHOR--(03)-VUL, B.M., GURO, G.M., IVANCHIK, I.I.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(1), 162-6

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--FIELD EFFECT, FERROELECTRIC MATERIAL, FORBIDDEN ZONE WIDTH,  
SEMICONDUCTOR PROPERTY, FREE ELECTRON, ELECTROMAGNETIC INDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1987/1991

STEP NO--UR/0449/70/004/001/0162/0166

CIRC ACCESSION NO--AP0105065

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--A0105065

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONTACT BETWEEN A SEMICONDUCTOR AND A C DOMAIN FERROELEC. WAS EXAMD. THEORETICALLY. IF THE FORBIDDEN BAND WIDTH OF THE SEMICONDUCTOR IS SMALLER THAN THE CORRESPONDING VALUE OF THE FERROELEC., A LAYER OF FREE CARRIERS IS BUILT UP IN THE ADJACENT REGION OF THE SEMICONDUCTOR, REFLECTING THE FIELD OF SPONTANEOUS INDUCTION (D SUB0) OF THE FERROELEC. SOME FERROELECS. (E.G. BATIO SUB3 AND PBTIO SUB3 WITH D SUB0 IS SIMILAR OR EQUAL TO 10 PRIME8 V-CM) SHOW A CONC. OF FREE CARRIERS IN THIS LAYER OF APPROX. 10 PRIME21-CM PRIME3; THE FREE CARRIER GAS EXHIBITS A DISTORTION OF 1-2 EV. IF THE FORBIDDEN BAND THE FERROELEC., THE SEMICONDUCTOR REMAINING UNDISTURBED. FACILITY: FIZ. INST. IM. LEBEDEVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr

AP 0048826

Abstracting Service  
CHEMICAL ABST.

5-7c

Ref. Code

UR0459

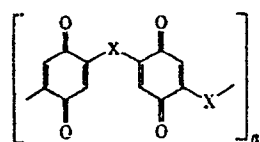
90938a Electrical conductivity of polyquinones and its dependence on the chemical structure of the polymer molecules. Dulov, A. A.; Gurov, A. A.; Liogon'kii, B. I.; Berlin, A. A. (Inst. Khim. Fiz., Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 74-80 (Russ). The elec. cond. of poly(quinone oxide) (I), poly(quinonedioxin) (II), poly(quinonethioxin) (III), poly(quinoneamine) (IV), poly(quinonethiazine) (V), poly(quinonequinoxalinediimine) (VI), poly(quinonenaphthoquinone - 1,4-diimine) (VII), and poly(quinonephenodithiazine) (VIII) was measured at 20-200°/10<sup>-8</sup> mm. Introduction of O bridges (and to a lesser extent NH groups) led to a marked decline in elec. cond. A transition to ladderlike polymers was accompanied by an increase in elec. cond.; the increase was most significant in VI vs. VIII. The activation energy increased and the sp. elec. cond. decreased on transition from the oxidized to the hydroquinone form. Ladderlike polymers contained a higher concn. of unpaired spins, suggesting that introduction of O bridges hindered the formation of paramagnetic centers considerably stronger than either -S- or NH-. CKJR

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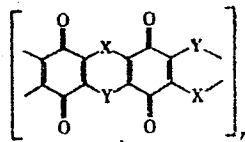
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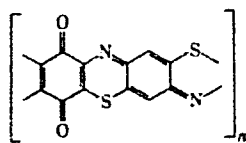
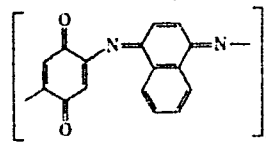
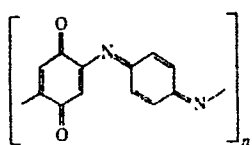


(IV, X=NH)



(III, X=O, Y=S)

(V, X=NH, Y=S)



(VIII)

LD

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ENGINEERING  
Aeronautical and Space

USSR

B O O K

UDC 629.78.036.7(075.2)

GUROV, A.F., SEVRIH, D.D., SPYNOV, D. N.

~~ROBUSTNOST' I RASCHET NA PROCHINOSU' KOSMICHESKIM ELEKTRODVAIGATEL'NIM DVIIGATEL'NIM~~  
(Design and Calculation of Strength Of Electric Propulsion Systems for Space),  
Moscow ("Mashinostroyeniye") 1970, 491 pp, illus, biblio, 2,500 copies printed

Authorized by the Ministry of Higher and Intermediate Special Education USSR as a textbook for the aviation VUZ. Gives general information, drawings, formulas, graphs, tables on design of electrical propulsion systems for space and calculation of their strength and vibrations, and an estimate of their reliability. Designs of nuclear reactors, isotope sources, solar concentrators and chemical fuel elements are discussed, as are various types of converters. Methods are discussed for computing the strength and vibrations of turbine buckets and wheels, the bearing capacities of hydrostatic bearings and the critical speeds of turbo-generators mounted on liquid metal bearings. The method of computing the anode block of a thermo-emission type converter is also discussed. Temperature stresses in various parts of the systems are emphasized.

The book is intended for use as a text and for reference by engineers and designers working in space engineering. Ye. A. Yakovlev is the editor.

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USSR  
GUROV, A.F., SEN'KH, D.D., SUDNOV, D. N., IZMERSHITSIYA I RASCHET NA PROGNOST'  
KOEFITSIENIY ELEKTRODINAMICHESKIY DVIKATELY, M. 1970, 451 IF

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USSR

BOLOTNIKOVA, T. N., GUROV, F. I., NERSESOVA, G. N.

"Distribution of Molecules According to Radiative Centers in Frozen n-Parafin Solutions"

Leningrad, Optika i Spektroskopiya, Mar 72, pp 531-534

ABSTRACT: The concentration of a solution prepared at room temperature determines the total number of molecules in a frozen polycrystalline medium which is distributed according to the different types of radiative centers. In this work an attempt is made to evaluate the concentration of molecules showing thin-line spectra according to the measurement of the quasi-line intensity ( $I_q$ ) in the luminescence spectra of anthracene in n-heptane over a wide range of concentrations. The experimental results obtained show that under conditions of an increased rate of crystallization of the solution the number of molecules corresponding to quasi-bright-line spectra increases and the region of linear dependence of  $I_q$  on the concentration increases. As the rate of crystallization (for example, the freezing of a large volume of the solution) decreases, the method suggested makes it possible to evaluate also the number of molecules which are not isolated by the matrix.

The article includes three figures. There are 6 bibliographic references.

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Acc. Nr. **AP0049969** - Abstracting Service  
CHEMICAL ABST. 5110

Ref. Code:  
**UR0051**

94912k Concentration dependence of the spectra of frozen n-paraffin solutions. Bolotnikova, T. N.; Gurov, E. I. (USSR). *Opt. Spektrosk.* 1970, 28(1), 182-3 (Russ). The dissoln. of aromatic compds. in n-paraffin solns. was carried out at 20°, 0°, -20° and -80°. The satn. of the anthracene soln. in n-heptane or n-hexane at -80° was 10<sup>-4</sup> or 5 × 10<sup>-5</sup>M, resp. The concns. were in accordance with those, at which the diffusion max. in the spectra appeared. The amt. of the analyzed compd. which was in excess in the satd. soln. at a given temp. caused the formation of the aggregates which were responsible for the absorption and emission diffusion spectra. This assumption was proven with the help of fluorescence spectra of frozen n-heptane soln. of anthracene (5 × 10<sup>-5</sup>M) at 77°K. The formation of the spectrum of the aggregate was connected with the formation of the primary solid phase of the growing crystals of the admixt. in the conditions of deep cooling. The possibility of the creation of the different forms of the spectrum (quasi-line or cryst.) from the different parts of the soln. proved the areal difference of the centers responsible for these spectra.

J. Vachek J

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BUROV K.P.

*Selected Materials  
Materials 5/15/50  
30 March 1975*

ON THE THEORY OF SUPERPLASTICITY

UDC 519.514

K. P. Gurev, M. Kh. Shorshorov, A. S. Tikhonov, and N. I. Nadiashkin  
Institute of Metallurgy Imeni A. A. Baikov of the USSR Academy of Sciences, submitted to press 5 January 1977 Paper 138-1142

A theoretical model is proposed in which the optimum conditions of superplasticity are connected with the maximum developed interphase surface of the fluctuation nuclei of the new phase. An estimate of the distribution of these nuclei according to dimensions, as a function of temperature, is performed from the standpoint of the theory of pre-transformation phenomena of Ya. L. Frenkel'. A comparison of the calculation data with the experimental results for a number of systems demonstrated the validity of such a model.

At the present time we may consider the concept that in the phenomenon of superplasticity of metallic materials the surface effects play the determining role (the effects at the inter-phase and inter-grain boundaries) may be considered as generally accepted. In connection with this, the use of the idea of Ya. L. Frenkel' [1] for estimation of the optimum conditions of superplasticity appears feasible.

The fact that the temperature corresponding to the optimum conditions of superplasticity lies close (but is not equal) to the temperature of the phase transition (the polymorphic transformation or melting) calls attention to itself. According to the considerations of Ya. L. Frenkel', the given temperature region should be considered as a "pre-transition" state of a system having its own specific features, caused by the presence of fluctuation nuclei of the new phase in the aggregate at the temperatures indicated. These nuclei appear all the time and disappear, or change their dimensions, but there is a dynamic equilibrium between them; that is, in the given case, we may speak of an entirely stable distribution of the nuclei according to

dimensions (at a constant temperature). According to Frenkel's, this distribution is characterized by the ratio

$$n_i = N \exp \left( - \frac{U_i}{kT} \right) \quad (11)$$

Here  $n_i$  is the number of nuclei containing  $i$  atoms;  $N$  is a standardizing multiplier;  $k$  is the Boltzmann constant;  $\Delta F_i$  is the variation of the thermodynamic potential of the system in the formation of a nucleus of the new phase, etc. We may assume that  $\Delta F_i$  consists of two items, considering the volumetric thermal effect of the transition and appearance of surface tension in the nuclei of the new phase. Generally speaking, there is still a third item, connected with the appearance of the microstresses because of local deformation (strain) in the vicinity of the nucleus. However, we ignore this effect; we will speak further of the permeability of ignoring the effect at the end of the article.

According to Frenkel's, for an estimate of  $\Delta F_i$  we may use the formula

$$\Delta F_i = Q \left( \frac{4}{3} \pi r^3 \rho \right) + 4 \pi r^2 \sigma \quad (12)$$

where  $Q$  is the latent heat of the transition (referred to one atom) at the true temperature  $T_0$  of the phase transition ( $Q < 0$  at  $T < T_0$ ), and  $\rho$  is the variation of  $\Delta F_i$  because of the appearance of surface tension ( $\rho < 0$ ).

Thus, according to this model, in the region of a pre-transition state at the approximation of the temperature to the true temperature of transition, both the number of nuclei and their distribution with respect to dimensions varies, and, consequently, the total area of the inter-phase boundaries varies. In this case, far from the temperature  $T_0$  the number of nuclei and the total area of their surfaces are negligible, but as  $T$  approaches  $T_0$  the total area increases. At  $T = T_0$  all the nuclei join into one common phase and the area of the internal inter-phase surfaces tend toward zero. Therefore, the total area of the surfaces of the nuclei as a function of the temperature must pass through an extreme (a maximum).

We assume that between the temperature corresponding to such an extreme and the optimum temperature of superplasticity there must be a definite correlation. In this work an attempt is made to establish such a correlation by means of approximate estimation of the temperature corresponding to the maximum total area of the surfaces of the nuclei. We must emphasize that if we succeed in confirming the presence of such a

USSR

UDC 546.763'171.1:538.22

AYVAZOV, M. I., DOMASHNEV, I. A., GUROV, S. V., and REZCHIKOVA, T. V.,  
Institute of New Chemical Problems, Academy of Sciences USSR

"Electrophysical and Magnetic Properties of Chromium Nitride"

Moscow, Neorganicheskiye Materialy, Vol 9, No 4, Apr 73, pp 600-603

Abstract: The electric conductivity, thermal emf, Hall effect, magnetic resistance, and magnetic susceptibility of CrN over a wide temperature interval were investigated. It was found that CrN is a more ionic compound than nitrides of titanium and vanadium. Amplification of the ionicity percentage in M-X interactions leads to realization of the system of spin-polarization electron states. A phase transition was observed at 290°K to CrN<sub>0.98</sub> which was associated with the trigonal distortion of the crystal lattice. 3 figures, 10 bibliographic references.

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USSR

UDC 546.822'712-31.538.214

AYVAZOV, M. I., GUROY, S. V., and SARKISYAN, A. G.

"Magnetic Properties of Materials Based on TiO-MnO"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 8,  
No 5, 1972, pp 853-857

Abstract: The magnetic susceptibility of alloys in the TiO-MnO cross section is studied in the 100-1000° K temperature interval. In alloys on the MnO side, as the content of TiO is increased, the degree of antiferromagnetic interaction decreases and super exchange interaction of ferromagnetic type appears. In alloys on the TiO side, the introduction of MnO results in the appearance of antiferromagnetic pairing of electrons and a decrease in the contribution of the spin paramagnetism of quasicoupled electrons.

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USSR

UDC 621.428.001.5

KOPELEV, S. Z., Engineer, ~~GUROV, S. V.~~, Engineer, and  
AVILOVA-SHUL'GINA, E. V., Engineer

"Increasing the Cooling Effectiveness of the Inlet Edge of  
Turbine Blades"

Moscow, Teploenergetika, No 12, 1971, pp 38 -41

Abstract : The cooling effectiveness of turbine blades with air passages in the inlet edge was experimentally investigated on blades of two types: thin-walled blades with inserted deflector and transversely arranged cooling air passages and blades with a cast loop-like deflector in the hollow. The investigation results are discussed by reference to diagrams showing the input-output characteristics and the cooling intensities of the inlet edge and of all blade parts ( inlet-, outlet-, and back edges ) of both blade types. Possibilities to increase the cooling intensity of the inlet edge of blades by air by-pass from the edge inner hollow into the flow part of the turbine are analyzed. It is demonstrated that in cases where the available pres-

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USSR

KOPELEV, S. Z., et al, Teploenergetika, No 12, 1971, pp 38-41

sure differential in the cooling system permits a reliable air flow from the inlet edge hollow into the flow part of the turbine, the by-pass of air represents an effective means of increasing the cooling intensity. Four illustr., three biblio. refs.

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USSR

UDC 546'821'27'17:538.214

AYVAZOV, M. I., ~~GUROY, S. V.~~, DOMASHEV, I. A., and  
KIREYEVA, I. M., Institute of New Chemical Problems of the  
Academy of Sciences USSR

"Investigation of Magnetic Properties of Variable Composition  
Phases of Titanium Nitride, Titanium Diboride, and Alloys in  
the Ti - B - N System"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materi-  
aly, Vol 7, No 7, Jul 71, pp 1176-1179

Abstract : The magnetic susceptibility of alloys in the system  
Ti - B - N and of the variable composition phase  $TiB_{2+x}$  were in-  
vestigated in the temperature interval of 100-1300 °K. Demon-  
strated investigation results of the temperature dependence of  
the magnetic susceptibility show that the latter is characteri-  
zed by temperature-independent high values of the susceptibility  
in the region of low temperatures. The susceptibility of two com-  
positions  $TiN_{1-x}$  probably can be expressed by  $\chi = \chi_d + \chi_c + \chi_e$ ,  
where  $\chi_d$ =diamagnetism of the ionic hull,  $\chi_c$ = Curie susceptibili-

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USSR

AYVAZOV, M. I., et al., Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 7, No 7, Jul 71, pp 1176-1179

ty, and  $\chi_e$ =electron paramagnetism. The initial concentration of charge carriers ( p-type ) is on all  $TiB_2$ -compositions of the order  $10^{21} \text{ cm}^{-3}$ . The magnetic susceptibilities of TiN and T - B - N compositions show a notable effect of the crystalline lattice on the formation of "quasi-localized" electron conditions. The presence of a partially filled up 2p-zone effects an increased Pauli paramagnetism on  $TiB_2$ -compositions at low temperatures and the appearance of two kinds of carriers at high temperatures. Four illustr., one table, eight biblio. refs.

2/2

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USSR

UDC: 536.244

KOPELEV, S. Z., GUROV, S. V., AVILOVA-SHUL'GINA, M. V.

"Heat Exchange in the Cooled Flow Part of the Turbine"

Moscow, Izvestiya Akademii Nauk SSSR--Energetika i Transport,  
No. 4, 1971, pp 105-111

Abstract: The heat exchange at the outer and inner surfaces of the vanes of a turbine takes place in a field of centrifugal forces. The purpose of this article is to settle the question of the competence of extending the data acquired under static conditions to the conditions of vane operation in turbines, as well as the question of the criteria characterizing the effect of the field of centrifugal forces on the heat exchange. Results of theoretical and experimental work relating to these questions are given in this article. The theoretical part of the work begins with the equation of motion, taken from the system of equations describing the heat exchange process in a continuous, non-

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USSR

KOPELEV, S. Z., et al., Izvestiya Akademii Nauk SSSR - Energetika i Transport  
No 4, 1971, pp 105-111

isothermic flow of an incompressible gas around the vane profile, in terms of the centrifugal forces. The assumption is made that the radial cooling channel in the vane is a tube of constant cross section. The experimental work involved research into vanes with transverse cooling channels; a table of the basic geometrical characteristics for the vane lattice is given.

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USSR

UDC: 621.438-253.5-71

KOPELEV, S. Z., GUROV, S. V., AVILOVA-ZHUL'GINA, M. V.

"Investigation of Heat-Exchange Processes in Cooled Gas Turbine Blades"

Teplofiz. i teplotekhnika. Resp. mezhved. sb. (Thermal Physics and Heat Engineering. Republic Interdepartmental Collection), 1970, vyp. 17, pp 97-104 (from RZh-Turbostroyeniye, No 8, Aug 70, Abstract No 8.49.106)

Translation: Data are given from an investigation of processes of heat exchange at the output edges of air-cooled gas turbine blades over a broad range of variations in Reynolds numbers on the air and gas side, and also in the temperatures of gas, air and turbine walls. It is shown that with a reduction in the Reynolds number calculated from the parameters of the gas in a narrow cross section of interblade channels (taking the chord of the blade as the characteristic linear dimension) of less than  $0.5 \cdot 10^6$ , the extent of the region of the laminar boundary layer on the profile of the cooled blade increases appreciably both on the convex and concave sides, and in the case of nondetached flow may extend right up to the outlet edge. Dimensionless heat-exchange relationships are given for the air and gas which can be used to determine the temperature of the outlet edge with precision satisfactory for practical purposes. Bibliography of nine titles.  
1/1

Exobiology

USSR

GUROV, V. , engineer

"Dolphin Receives the Signal"

Moscow, Sel'skaya Zhizn', 14 Apr 73, p 6

Translation: The problems of communicating with extraterrestrial civilizations (VTs) are ceasing to be a field of interest for science fiction writers alone. An international symposium that was held in Byurokan and at which prominent scientists from various sectors of science met at sessions, for instance, bears witness to the real formulation of the problems of communicating with VTs.

At the present time electromagnetic signals are considered the main method of transmitting into space and receiving information. The effective range of radio waves sent in a goal-directed manner from earth will in the near future reach a distance whose traversal will take a beam of light something of the order of 30,000 years to accomplish at a speed of about 30,000 kilometers per second. For the sake of comparison we need only remind you that the artificial radiation from the earth that is connected with the operation of all radio and television stations is effectively dead at a distance of 10-20 light-years. An earth-type star heated to 100 million degrees could radiate such energy.

The main task in the fully possible reception of an "intelligent" signal from a VTs is considered the decoding. It is difficult, very difficult

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USSR

GUROV, V., Sel'skaya Zhizn', 14 Apr 73, p 6

to predict in what "code" the radio operators of the universe will work. Even after detecting a signal of artificial origin it will hardly be possible to understand its meaning immediately: there is no appropriate experience in "conversation" with a civilization different from terrestrial civilization. Here dolphins will unexpectedly come to our aid. The highly developed masters of our seas number about 400 million, according to very rough estimates. They constitute an entire "maritime civilization" of which a characteristic feature is a form of communication with the external world and among themselves that is entirely different from man's traditional concepts.

Comparatively recently, as a result of systematic scientific research, it was established that hearing is the main channel for the reception of information in dolphins. Dolphins perceive and distinguish infrasonic, sonic and ultrasonic vibrations in a range of frequencies from several to 170,000 hertz. A dolphin understands astonishingly well the "multivoiced speech" of the sea. In the anarchy of audio vibrations it sensitively distinguishes the voices of not only its cohorts. It is known that dolphins move out to sea before an advancing storm that might cast them ashore. In the process they discern scarcely noticeable changes in the rhythms and sounds that race out from the shoreline. Issuing clicking ultrasonic impulses with the aid of a quite advanced hydrolocator, dolphins unfailingly discern their echos among the host

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USSR

GUROV, V., Sel'skaya Zhizn', 14 Apr 73, p 6

of marine sounds, and with respect both to the time of return and the nature of the echo they receive information on the object and the distance to it.

From sounding signals dolphins can determine not only distance and depth, but also the nature of the soil and the size and material of submerged objects. Soviet hydroacoustician N. A. Dubrovskiy has established that a "blinded" (with special blinkers) dolphin unfailingly distinguishes a lead ball 5 cm in diameter from a steel ball of the same size at a distance of 11 m, and a steel ball from a duralumin ball at a distance of 8 m. The highly developed brain of the dolphin, which is close to the human brain in size, form, and the number of convolutions, bears witness to the capability to make fine analysis of incoming information.

The dolphin can be considered (this possibility was mentioned at the symposium in connection with extraterrestrial civilizations) as a terrestrial model that is very convenient for the study of a well-developed form for transmitting and receiving information with the aid of acoustic signals. From acoustic signals to electromagnetic signals, from the learning of the dolphins' "language" to the decoding of possible signals from extraterrestrial civilizations. Thus we may represent the path to the fulfillment of the main task in the reception of an artificial signal from space. The dolphins' "language" is 3/4

USSR

GUROV, V., Sel'skaya Zhizn', 14 Apr 73, p 6

a good terrestrial model for the accumulation of necessary experience in "conversation" with intelligent radio operators of the universe. A scientific inquiry is already being conducted in this direction.

4/4

-- 21 --



Pulse Technique

USSR

UDC: 621.375:530.145.6

GUROV, V. A.

"On the Problem of Amplification of Nanosecond Video Pulses by Narrow-Band Systems"

V sb. Tonkiye magnitn. plenki, vychisl. tekhn. i radiotekhn. T. 1 (Thin Magnetic Films, Computer Technology and Radio Engineering. Vol. 1--collection of works), Krasnoyarsk, 1970, pp 64-67 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1D459)

[No abstract]

1/1

USSR

UDC: 621.317.736.045.12(088.8)

GUROV, V. M., BOBRYSEV, V. V.

"A Method of Detecting Short-Circuited Turns in a Coil With Magnetic Circuit"

USSR Author's Certificate No 280648, filed 25 Jun 68, published 4 Dec 70  
(from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6V317 P)

Translation: A method is proposed for detecting short-circuited turns in a coil with magnetic circuit by feeding a high-voltage high-frequency pulse to the coil. To improve inspection accuracy, the current taken by the coil from the line for 0.05 sec after initial actuation is compared with the steady-state current for 1-5 sec from the same time, utilizing the effect of the reduction in flux due to the short-circuited turn as it is heated by the short-circuit current flowing through it. The difference in these currents is used to determine whether there are short-circuited turns.

1/1

USSR

UDC 669.35'296

KOROL'KOV, A. M. and GUROVA, L. M. (Moscow)

"The Influence of Rare Earth Metals on the Structure and Heat Resistance of Copper and Copper-Zirconium Alloys"

Moscow, Izvestiya AN SSSR, Metally, No 3, May-Jun 70, pp 165-170

Abstract: The influence of certain rare earth metals (La, Ce, Pr, Nd and Y), for which the structural diagrams with copper are available, on the heat resistance of copper and copper-zirconium alloys is studied. The preparation of binary copper rare earth metal alloys is described. The heat resistance of binary alloys at 400°C was determined by the method of continuous hardness and plotted in the form of a "composition-continuous hardness" diagram. The increased heat resistance in copper with the addition of rare earth metals is produced both by the formation of the solid solution and by the presence of metal compounds of the Cu<sub>2</sub>Me type, which are more heat-resistant than copper. An analysis of the results shows: 1) the influence of yttrium, cerium, and praseodymium on copper at 400° is more important than that of lanthanum and neodymium; 2) at 400°C the Cu-Zr alloys with 2.5-3% Zr are the most heat resistant; 3) the Cu-Zr-Ce and Cu-Zr-Y alloys at high electric conductivity (80-85% of copper electric conductivity) have the same heat resistance at 400°C (12-13 kg/mm<sup>2</sup>) and 4) the Cu-08-1.2%-Zr-07-0.85% Ce alloy, which can be easily processed by pressure, may be recommended as a conducting heat resistant alloy.

1/1

- 43 -

Acc. Nr: **AP0048918** - Abstracting Service:  
CHEMICAL ABST. 5-70

Ref. Code:  
**4R 0035**

**C**

104571q Solubility products of 8-mercaptoquinolines of certain metals. Kharkover, M. Z.; Barkovskii, V. E.; Vdovina, V. M.; Gurova, L. P. (Ural State Univ., Sverdlovsk, USSR). Zh. Anal. Khim. ~~1970~~, 25(1), 30-3 (Russ). Soly. products of Co, Pb, Zn, V, Bi, and Mn 8-mercaptoquinolines were detd. by an extra-photometric method. Their neg. logs are 29.60, 26.02, 29.44, 25.10, 46.81, and 15.94, resp. Soly. products of Fe, Mn, Ni, and Bi thiooxinates in CHCl<sub>3</sub> were detd. The following soly. scale was composed: Mn > V > Pb > Ni ~ Fe > Co ~ Zn > Bi. Conditions for sepg. those elements with thiooxime were calcd. Chaim Weiner .

1/4

REEL/FRAME  
**19800690**

7<sup>nt</sup>

USSR

UDC 532.517.3.001.24

SBITNEVA, M. M., GUROVICH, B. M.

"Boundary Layer Stability"

[Nauchn. tr.] Tashkent. politekhn. in-t ([Scientific Works of] Tashkent Polytechnical Institute), 1970, No 65, pp 109-114 (from RZh-Teploenergetika, No 12, Dec 70, Abstract No 12G44)

Translation: Boundary layer stability under the joint action of free and induced longitudinal flow at a cold horizontal surface turned downward is considered. The relationship between the critical Reynolds and the Richardson number  $\theta = g/\sigma \partial p/\partial y / (dU/dy)_w^2$  (the  $y$  coordinate is measured from the horizontal surface,  $\rho$  is density,  $(dU/dy)_w$  is the velocity gradient at the wall) is taken to be the same as on a hot surface turned downward (G. Shlikhting, Teoriya pogranichnogo sloya (Boundary Layer Theory), Moscow, "Nauka" Publishing House, 1969); however, the regions of stable and unstable longitudinal motion vary in places.

1/2

USSR

1970, No 65, pp 109-114

For  $Re < Re_{cr}$ , the longitudinal motion is unstable.  $Re_{cr}$  is defined for non-viscous instability without considering forces of friction. The boundary of the instability is determined by the condition  $Gr/Re_{cr}^{2.5} = 2.2$ . For  $Re > Re_{cr}$  the heat transfer of the surface is determined by formulas for free motion. 1 ill., 4 ref. G. A. Dreytser.

2/2

USSR

GUROVICH, E. L., Giprogas, Kiev

"Accelerated Method of Packing Settling Soils in the Installation of a Gas Converter Plant"

Moscow, Stroitel'stvo Truboprovodov, No 11, Nov 71, pp 23-25

Abstract: The area being readied for units of the Groznensk Gas Converter Plant was complicated by a thick layer of silt-formed sandy loam and loam 14 meters thick. Although there are several methods of packing soil and eliminating settling properties, the most economical has been found to be pile-driving packing of the soil into which water has been previously pumped by explosive energy. The cost per cubic meter of silt is considerably lower than other methods and the time required is reduced to 1.-1.5 months. This method was developed by NIISK (Scientific Research Institute of Building Construction) under Gosstroy USSR. In a 144 square meter area a cluster of nine integrated (drainage-explosive) holes were drilled with a diameter of 500 mm to a depth of 8 meters. Four 150-mm diameter explosion wells were also drilled. Into the holes, pipe 152-168 mm in diameter was placed and filled with rubble. Pipe 98-103 mm in diameter was additionally inserted into the four explosive holes. Water was pumped into the integrated holes (900 m<sup>3</sup> in

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USSR

GUROVICH, E. L., Stroitel'stvo Truboprovodov, No 11, Nov 71, pp 23-25

3 days). Ammonite charges were placed in the holes, covered with sand and detonated. After nine detonations the surface area settled 90-125 cm and after the remaining four holes were detonated total settling amounted to 125-175 cm. 5 figures.

2/2

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1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--TRANSIENT EXACERBATIONS, OCCURRING IN THE PROCESS OF NEUROLEPTICAL  
THERAPY -U-  
AUTHOR--GUPOVICH, I.YA.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL NEVROPATOLOGIII I PSIKHIATRII INENI S. S. KERSAKOVA, 1970,  
VGL 70, NR 6, PP 919-925.  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NERVOUS SYSTEM DRUGS, SCHIZOPHRENIA, PSYCHOSIS, DIAGNOSTIC  
MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/1170

STEP NO--UR/0246770/070/006/0919/0925

CIRC ACCESSION NO--AP0126772

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0126772

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR OF 88 CASES AMONG 566 (I.E. IN 15.5PERCENT) SCHIZOPHRENIC PATIENTS WHO WERE TREATED WITH NEUROLEPTICAL DRUGS (TRIPHTAZINE, LYDGEN, METHERAZINE, MAJEPTIL, NAVAN, NAVAN, TRIPERIDOL) IN USUAL DOSES, WHERE IN THE PROCESS OF THERAPY THERE WERE TRANSIENT EXACERBATIONS OF THE PSYCHOSIS. THESE EXACERBATIONS WERE RELATED TO THE APPEARANCE OF EXTRAPYRAMIDAL DISTURBANCES AND DISAPPEARED WITH THE PRESCRIPTION OF ANTIPARKINSONIC DRUGS. THE AUTHOR DESCRIBES 2 GROUPS OF EXACERBATIONS: 1) CRISIS OF PSYCHOMOTOR EXCITATION WITH A SHARP OUTBREAK OF THE PSYCHOTIC SYMPTOMATOLOGY. THESE PHENOMENA ARE RELATED TO THE APPEARANCE OF EXTRAPYRAMIDAL DYSKINESIA; 2) A MORE DURATIVE EXACERBATION OF THE AFFECTIVE PARANOID OR CATATONIC SYMPTOMS, CONNECTED WITH AN ACUTELY DEVELOPING PARKINSONISM IN COMBINATION WITH AKATIZIA. FACTORS, PRECIPITATING THE APPEARANCE OF EXTRAPYRAMIDAL PSYCHOTIC STATES IN THE PROCESS OF THERAPY ARE: EXPRESSED NEURODISLEPTICAL PROPERTIES OF THE DRUG, THE EXISTENCE IN PATIENTS OF CEREBRO ORGANIC INSUFFICIENCY, REPEATED PAROXYSMAL AND ACUTE EXTRAPYRAMIDAL DISORDERS SEEN DURING TREATMENT. FACILITY: MOSKOVSKOGO NAUCHNO-ISSLED. INSTITUTA PSIKHIATRII, MZ RSFSR.

UNCLASSIFIED

1/2 007 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--CATALYTIC PURIFICATION OF PHENOL -U-

AUTHOR--(05)-MENYAYLO, A.T., POKROVSKAYA, I.YE., AEROV, M.E., GURQVICH,  
R.E., VOLKOYA, T.S.  
COUNTRY OF INFO--USSR

SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(2), 92-4

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHENOL, CHEMICAL PURIFICATION, ION EXCHANGE RESIN/(U)KUZ ION  
EXCHANGE RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1997/0737

STEP NO--UR/0064/70/046/002/0092/0094

CIRC ACCESSION NO--AP0119644

UNCLASSIFIED

2/2 007

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119644

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHENOL (AFTER DISTN. AND DRYING) WAS PURIFIED BY CONTACT WITH THE KU 2 RESIN (ACTIVATED BY CONTACT WITH 10PERCENT HCL, AND DRIED), AT 75-100DEGREES AND FLOW RATE 1 VOL.-HR TO QUANT. REMOVE MESITYL OXIDE, ALPHA METHYLSTYRENE, AND ME SUB2 PHCOH (INITIAL CONCNS. WERE 0.083, 0.0045, AND 0.063 WT. PERCENT, RESP.), WHILE THE CONCNS. OF BZME REMAINED CONST. (0.9 WT. PERCENT). PURIFICATION BY CONTACT WITH AN ALUMINDSILICATE CATALYST WAS LESS EFFECTIVE.

UNCLASSIFIED



2/2 008

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136998

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHENOL PURIFICATION IS CARRIED OUT  
OVER ION EXCHANGE RESIN KU2, AT 90-100DEGREES, PH 6-7, AND VOL. RATE  
1.5-2.5 HR PRIME NEGATIVE1.

UNCLASSIFIED

USSR

UDC: 539.166.074

BRATANOVSKIY, V. V., GENERALOVA, V. V., GURSKIY, M. N., and TYLTAYEV, A. V.

"Metrologic Verification of the State of Measuring Gamma-Radiation Doses in the  $1 \cdot 10^3$ - $10 \cdot 10^8$  Rad Interval With Liquid Chemical Detectors"

V sb. Dozimetriya i radiats. protsessy v dozimetr. sistemakh (Dosimetry and Radiation Processes in Dosimetric Systems -- collection of works), Tashkent, "Fan", 1972, pp 100-103 (from RZh-32. Metrologiya i Izmeritel'naya Tekhnika, No 5, 1973, Abstract No 5.32.1321)

Translation: The metrologic verification of the state of measuring gamma-radiation doses in the  $1 \cdot 10^3$ - $10 \cdot 10^8$  rad interval with liquid chemical detectors showed that nearly one fourth of the digital values of an exposure dose diverge with the assigned value to magnitudes which exceed the measurement error. The number of overestimated results is nearly twice that of the underestimated. This attests to the presence of systematic error. Ways of improving the state of measuring gamma-radiation doses are indicated. Original article: one illustration and one table.

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28 February 1971

FOURTH ALL-UNION CONFERENCE ON SPACE BIOLOGY AND MEDICINE

(Article by N. G. Gerasimov, Director of medical sciences and M. S. Gerasimov, Director of medical research, Medical Research Institute, Moscow, 29 January 1971, p. 31)

The Fourth All-Union Conference on Space Biology and Medicine was held at Kaluga in accordance with a resolution of the directorate, Ministry Division, USSR Academy of Sciences. The conference was opened by O. Gerasimov, Corresponding Member USSR Academy of Sciences. In his report he summarized the principal results of the experiments in space biology and aerospace medicine during the three years which have elapsed since the Taird All-Union Conference. He noted that specialists are solving complex problems in space transport and the medical support of space flights. A total of 251 reports were presented at three plenary and 26 section meetings.

An analysis of the materials reveals an increase in the relative participation of investigators in the field of aerospace medicine directed to solution of problems in the formation of an atmosphere aboard flight vehicles. The practical importance of this problem is combined with its great theoretical and scientific importance. The extensive experimental data presented at the conference enriched our ideas concerning the physiology of respiration and blood circulation, on the toxic effect of oxygen, the mutagenic effect of inert gases, etc.

Dr Gerasimov presented a report regarding a special review of the physiological basis for forming a rational atmosphere in the space of man-made objects. He noted that the principal problems involving maintenance of a high level of performance by cosmonauts during a prolonged spaceflight and an increase in its stability under extreme conditions during emergency



studies have shown, it is very important to have a  
decision developed at times when conditions are  
favorable to the cause.

In addition, it is important to have a  
strategy in that regard that has only slight  
substantiality in its body flexibility and  
mobility.

At the conference great attention was given to  
problems involved in the development of  
specialized units. The center of attention is  
in the field of medical support. It is  
of importance, as the selected unit  
of the special section meeting was held in  
London.

An outlined strategy was given by a  
representative of the Institute of  
Health in London in connection with  
these problems. The strategy was  
of clinical specialties and physicians.

A report by W. Belitsky on the  
basis on the studies of the  
development of the program of  
health care in the USSR. The  
report dealt with the  
development of the program of  
health care in the USSR. The  
report dealt with the  
development of the program of  
health care in the USSR.

The system for medical support of  
units with the character of  
prior to the 1940s and during  
the war in the USSR. The  
system was developed at the  
conference.

USSR

WEINSTEIN, B. K.; GURSKAYA, G. V.; LOBANOVA, G. M. (Institute of Crystallography, USSR Academy of Sciences)

"X-Ray Diffraction and Electron Microscope Study of Hexagonal Crystals of Catalase. II. X-Ray Study"

Moscow, Kristallografiya; July-August, 1971; pp 764-73

ABSTRACT: The authors present a method of the joint use of X-ray and electron microscope data for the study of the structures of crystalline proteins with large molecular weights. Based on this method, a Fourier synthesis with a resolution of 30 Å was obtained for hexagonal crystals of catalase without the use of isomorphous derivatives. The quaternary structure of the molecules and their position in an elementary cell were established from the synthesis.

The article includes 10 figures and one table. There are 14 references.

1/1

Acc. Nr: AP0052085

6

Ref. Code: D/3441

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikhatrii imeni  
S. S. Korsakova, 1970, Vol 70, Nr 3,  
pp 370-374

CHANGES OF BRAIN ELECTRIC ACTIVITY IN FRIEDREICH'S DISEASE

L. G. Makarov, N. Z. Gurshava

The paper concerns a study of brain electric activity in 34 patients with Friedreich's disease (18 familial and 16 sporadic cases). «Spontaneous» EEG and bioelectrical brain reactions to a trigger photo stimulation were registered. In all cases there were changes in the development of electric process. They were expressed in different degrees of changes: activity, in a weakening of  $\beta$ -activity, in unregular sharp waves and groups of slow waves of the  $\theta$ -rhythm, or their paroxysmal discharges. The trigger photo stimulation stressed the changes displayed in a «spontaneous» EEG. The character of EEG disorders and the topographical distribution of pathological forms of activity permits to assume the involvement into the pathological process in cases of Friedreich's ataxia, the stem-cerebellar structures in the light of contemporary concepts of the cerebellar-cortical subcortical correlations.

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REF/FRANC  
19820822

Materials

USSR

UDC 666.293.52

VYKHOVANETS, A. F., SAZONETS, W. V., NIKITENKO, L. N. GURSKIY, B. A., KOCHUYEV, YE. S., and GLADUSH, V. M.

"An Enamel for Steel"

USSR Author's Certificate No 366160, Filed 27 Oct 70, Published 16 Jan 73 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar(a) 73 Claim No 1433623/29-33)

Translation: An enamel for steel, including  $\text{SiO}_2$ ,  $\text{B}_2\text{O}_3$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{TiO}_2$ ,  $\text{CaO}$ , and  $\text{Na}_2\text{O}$ , distinguished by the fact that in order to increase its acid resistance and heat resistance it additionally contains  $\text{SrO}$ ,  $\text{Li}_2\text{O}$ ,  $\text{Na}_2\text{SiF}_6$ ,  $\text{K}_2\text{O}$ ,  $\text{CaF}_2$ ,  $\text{Co}_2\text{O}_3$ ,  $\text{Ni}_2\text{O}_3$  and  $\text{Cr}_2\text{O}_3$  in the following ratio of components, weight %:  $\text{SiO}_2$  64-67,  $\text{B}_2\text{O}_3$  1.8-2.7,  $\text{Al}_2\text{O}_3$  1.0-1.6,  $\text{TiO}_2$  3.1-3.6,  $\text{CaO}$  3.2-3.7,  $\text{SrO}$  0.6-0.9,  $\text{Na}_2\text{O}$  9.4-10.7,  $\text{K}_2\text{O}$  3.9-4.5,  $\text{Li}_2\text{O}$  4.3-4.5,  $\text{Na}_2\text{SiF}_6$  1.3-2.0,  $\text{CaF}_2$  1.7-2.5,  $\text{Co}_2\text{O}_3$  0.5-0.56,  $\text{Ni}_2\text{O}_3$  0.4-0.53,  $\text{Cr}_2\text{O}_3$  0.16-0.25.

1/1

Materials

USSR

UDC 666.293.52

VYKHOVANETS, A. F., SAZONETS, N. V., NIKITENKO, L. N. GURSKIY, B. A., KOCHUYEV, YE. S., and GLADUSH, V. M.

"An Enamel for Steel"

USSR Author's Certificate No 366160, Filed 27 Oct 70, Published 16 Jan 73 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, Mar(a) 73 Claim No 1488623/29-33)

Translation: An enamel for steel, including  $\text{SiO}_2$ ,  $\text{B}_2\text{O}_3$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{TiO}_2$ ,  $\text{CaO}$ , and  $\text{Na}_2\text{O}$ , distinguished by the fact that in order to increase its acid resistance and heat resistance it additionally contains  $\text{SrO}$ ,  $\text{Li}_2\text{O}$ ,  $\text{Na}_2\text{SiF}_6$ ,  $\text{K}_2\text{O}$ ,  $\text{CaF}_2$ ,

$\text{Co}_2\text{O}_3$ ,  $\text{Ni}_2\text{O}_3$  and  $\text{Cr}_2\text{O}_3$  in the following ratio of components, weight %:  $\text{SiO}_2$  64-67,  $\text{B}_2\text{O}_3$  1.8-2.7,  $\text{Al}_2\text{O}_3$  1.0-1.6,  $\text{TiO}_2$  3.1-3.6,  $\text{CaO}$  3.2-3.7,  $\text{SrO}$  0.6-0.9,  $\text{Na}_2\text{O}$  9.4-10.7,  $\text{K}_2\text{O}$  3.9-4.5,  $\text{Li}_2\text{O}$  4.3-4.5,  $\text{Na}_2\text{SiF}_6$  1.3-2.0,  $\text{CaF}_2$  1.7-2.5,  $\text{Co}_2\text{O}_3$  0.5-0.56,  $\text{Ni}_2\text{O}_3$  0.4-0.53,  $\text{Cr}_2\text{O}_3$  0.16-0.25.

1/1

1/3 '014

UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--PHASE COMPOSITION OF MAGNESITE CHROMITE REFRACTORIES WITH GUNITE COATINGS AFTER SERVICE IN THE ROOF OF AN OPEN HEARTH FURNACE -U-

AUTHOR--(05)-PYATIKOP, P.D., PIROGOV, YU.A., BOLTYANSKIY, A.V., GURSKIY, G.L., KOBYLKO, V.S.

COUNTRY OF INFO--USSR

SOURCE--OGNEUPORY 1970, 35(3), 37-40

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--OPEN HEARTH FURNACE, SPINEL, OXIDE REFRACTORY, PHASE COMPOSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1996/0875

STEP NO--UR/0131/70/035/003/0037/0040

CIRC ACCESSION NO--AP0118046

UNCLASSIFIED

3/3 014

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118046

ABSTRACT/EXTRACT--THE CR SPINEL AND SECONDARY SPINEL GRAINS ARE IN CLOSE CONTACT. THE PERICLASE IN THE FORM OF CORRODED GRAINS IS CLOSELY PERMEATED WITH THE SECONDARY SPINEL INCLUSIONS. SILICATES ARE PRESENT AS MONTICELLITE AND MERWINITE. ZONE (4) CONSISTS OF SECONDARY SPINEL (85-8), CR SPINEL (SIMILAR TO 6), AND SILICATES (6-15PERCENT).  
FACILITY: UKR. NAUCH.--ISSLED. INST. OGNEUPOR., KHARKOV, USSR.

UNCLASSIFIED

2/3 014

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118046

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FOR THE COATING OF REFRACTORIES GUNITE POWDER OF COMPN. CR SUB2 O SUB3 31.5-7.7, MGO 33.8-42.8, CAO 0.54-1.6, AL SUB2 O SUB3 4.7-6.5, SIO SUB2 4.2-5.5, AND FE SUB2 O SUB3 8.5-10.5PERCENT WAS USED. ON THE BRICKS WITH GUNITE COATINGS AFTER SERVICE IN THE ROOF OF AN OPEN HEARTH FURNACE 4 STRUCTURAL ZONES WERE FOUND: (1) SLIGHTLY CHANGED ZONE, 100-50 MM THICK, (2) THE TRANSITION ZONE, 30-60 MM, (3) WORKING ZONE, 15-25 MM, AND (4) GUNITE COATING ZONE, 20-5 MM. IN THE DIRECTION FROM (1) TO (4) THE CONTENT OF CAO, FEO, FE SUB2 O SUB3 INCREASES WHILE THAT OF MGO AND CR SUB2 O SUB3 DECREASES. THE MAX. SIO SUB2 CONTENT IS FOUND IN (2). (1) SHOWS THE NONUNIFORM GRANULAR STRUCTURE; IT CONSISTS OF PERICLASE (60-70), CR SPINEL (25-30), AND SILICATES (10-12PERCENT). THE PERICLASE (0.2-2.5) AND CR SPINEL (0.5-3.0 MM) GRAINS ARE CEMENTED WITH A FINE GRANULAR MASS. THE SILICATES ARE REPRESENTED BY MONTICELLITE AND RARELY BY FORSTERITE. THE HOMOGENEOUS DISTRIBUTION OF PORES OF THE CRACK FORMS IS OBSERVABLE. (2) IS ANALOGOUS TO (1) ACCORDING TO THE MINERALOGICAL COMPN. BUT IT DIFFERS FROM (1) IN THE FOLLOWING ASPECTS: (1) IT HAS A MORE UNIFORMLY DISTRIBUTED PERICLASE GRAINS, (B) THE PERICLASE GRAINS ARE LARGER, (C) A CONSIDERABLE HIGHER CONTENT (18PERCENT) OF SILICATES IN WHICH MONTICELLITE PREVALIS, (D) THE PRACTICAL ABSENCE OF FINE CRACKS AND ON THE OTHER HAND THE PRESENCE OF LARGE AMT. OF PORES OF SIZES 0.03-1 MM. (3) IS COMPOSED OF SECONDARY SPINEL, CR SPINEL PERICLASE, AND SILICATES. THE SECONDARY SPINELS FORM THE MAIN COMPONENT (63-70PERCENT) WITH BLACK GRAINS 0.05-0.3 MM.

UNCLASSIFIED



AA0040727 GURSKIY G.L. UR 0482

1-20

Soviet Inventions Illustrated, Section I Chemical, Derwent,

242338 HEAT-INSULATION of the top part of a steel ingot is provided by a rapidly hardening composition which is poured between the casting mould and a model. In an example, the composition consists of 95-96% of quartz sand and 4-5% of ferrochrome slag, with addition of 7-10% of a binder comprising water glass and a foaming agent). The insulation does not require any additional drying; it is porous and permeable to gases. This method is simpler and more rapid than the conventional methods.

12.5.68 as 1239974/22-2. V.G. DODOKA et alia.  
"ZAPOROZHSTAL" WORKS. (2.9.69) Bul 15/25.4.69.  
Class 31b. Int.Cl.B 22d.

1/2

10 18

19750379

AA0040727

AUTHORS: Dodoka, V. G.; Zhil'ko, M. M.; Podgorodetskiy, A. A.;  
Gurskiy, G. L.; Tkachenko, A. S.; Shchastnyy, P. M.;  
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Zavod "Zaporozhstal'"

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PYATIKOP, P. D., PIROGOV, YU. A., BOLTYANSKIY, A. V., GURSKIY, G. L., KOBYLKO, V. S.

"Phase Composition of Magnesite-Chromite Refractories With Guniting Coatings After Service in the Crown of an Open-Hearth Furnace"

Moscow, Ogneupory, No 3, Mar 70, pp 37-40

Abstract: Guniting the rear walls of open-hearth furnaces at "Zaporozhstal'" plant has increased their life from 180-200 to 500 and more cycles. The rear wall is gunited with a secondary powder mixture at least once per day. The composition of the powder is: 31.5-37.7% Cr<sub>2</sub>O<sub>3</sub>, 33.8-42.8% MgO, 0.5-1.6% CaO, 4.7-6.5% Al<sub>2</sub>O<sub>3</sub>, 4.2-5.5% SiO<sub>2</sub>, 8.5-10.5% Fe<sub>2</sub>O<sub>3</sub>, weight loss 1.7-3.0%. The powder contains not over 7% particles over 1 mm, 20-25% particles less than 0.071 mm. The binder and moistener used is an aqueous solution of liquid glass with a density of 1.17-1.20 g/cm<sup>3</sup>. The authors studied the chemical and phase compositions of the magnesite-chromite refractories which had 1/2

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PYATIKOP, P. D., et al., Ogneupory, No 3, Mar 70, pp 37-40

been used in the rear line of the crown of an open-hearth furnace operating with oxygen injection. Photographs showing the general appearance and microstructure of the refractories are presented, as well as a graph of the oxide content of the refractories after usage. The guniting of the working surface of the refractories forms a layer of highly refractory materials, protecting the brick from the effects of dust, preventing deep penetration of silicate melts into the cold zones of the brick, and consequently decreasing the rate of conversion of the brick and the intensity of brick wear during service.

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USSR

UDC 621.77.01

SEVERDENKO, V. P., GURSKIY, L. I.

"Structure in Volume and on Surface of Rolled Materials"

Struktura v Ob'eme i na Poverkhnosti Prokatannykh Materialov [English Version Above], Minsk, Nauka i Tekhnika Press, 1972, 308 pages.

Translation of Annotation: This monograph studies the flow of a metal at the deformation center in various rolling and plastic deformation modes with ultrasound. It is demonstrated that the structure and properties result not only from the degree of deformation, but also significantly from the modes of deformation and conditions at the contact surface. The texture, dislocation structure, microdistortions of the lattice, blocks of the mosaic, residual stresses of first and second kind during deformation and annealing in the volume and on the surface of compact and powdered materials are studied.

The stress and strain state during rolling of three-layer packets is analyzed. The peculiarities of the interaction of dislocations with the free surface and boundaries in the metal are studied. Methods are suggested for calculation of lattice defects. Particular attention is given to investigation of the structure of the surface layers of plastically deformed materials and the structures of powder materials.

11 Tables; 167 Figures; 443 Biblio. Refs.

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UDC 621.77.01

SEVERDENKO, V. P., GURSKIY, L. I., *Struktura v Ob'eme i na Poverkhnosti Prokatannykh Materialov*, Minsk, Nauka i Tekhnika Press, 1972, 308 pages.

Intended for metallurgical engineers and mechanical engineers working in the area of strength and ductility of metals.

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SEVERDENKO, V. P., CURSKIY, L. I., *Struktura v Ob'eme i na Poverkhnosti*  
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UDC 548.4

SEVERDENKO, V. P., Academician, Academy of Sciences BSSR, GURSKIY, L. I.,  
and PETRENKO, S. I.

"Change in the Dislocation Structure of a Metal Acted on by Ultrasound"

Minsk, Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1082-1085

Abstract: Although there are numerous papers concerned with the influence of ultrasound on the physico-mechanical properties of metals and alloys, there are very few concerned with the effect of ultrasound from the kilohertz frequency range on the dislocation structure of metals. Available data are mainly concerned with studying changes in the dislocation structure of metals.

This article seeks to correct this by looking at the influence of intense ultrasound on the dislocation structure and shift in grain boundaries in samples of polycrystalline aluminum.

Two figures are given for visual presentation.

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SEVERDENKO, V. P., et al., Doklady Akademii Nauk BSSR, Vol 14, No 12, 1970, pp 1082-1085

It is found that certain changes in the dislocation structure of Al indicate that the ultrasonic energy is absorbed on the crystal lattice defects, outwardly manifested by heating of the sample.

The studies here also show that as a result of absorption of ultrasonic energy, the dislocation structure undergoes substantial restructuring, leading to a decrease in the free energy of the system; and the process of self-diffusion is accelerated and accompanied by disappearance or shift in the grain boundaries.

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UDC 548.4

SEVERENKO, V. P., GURSKIY, L. I., and PETRENKO, S. I.

"examination of a Polycrystal Aluminum Surface Deformed by Ultrasound"

Minsk, Doklady Akademii Nauk BSSR, Vol 15, No 4, 1971, pp 312-315

Abstract: This article is a study of the deformation of the surface of samples of polycrystal aluminum in the region of maximum cyclic stress following exposure to ultrasound. The samples were subjected to repeated cycles of 60 seconds of exposure to ultrasound oscillations plus 120 seconds of rest until they broke (approximately  $2.2 \times 10^7$  cycles). After observing the development of slip bands with the aid of an optical microscope, the authors conjecture that the formation and expansion of the bands results from repeated cross slipping of screw dislocations. Subsequent examination of the samples with an electron microscope revealed the step-by-step nature of the distribution of dislocations, which confirms the conjecture. The authors conclude that exposure to individual microvolumes of polycrystal aluminum to cyclic stress from ultrasound frequencies causes plastic deformation of the aluminum.

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UDC 539.219.1:678.067

GURSKIY, N. G., Kiev, Institute of Mechanics of the Academy of Sciences UkrSSR

"Macroheterogeneity of Thermoelastic and Strength Characteristics of the Material in Glass-Textolite Compressor Blades Originating in the Production Process"

Kiev, Problemy Prochnosti, No 9, Sep 73, pp 69-71

Abstract: Models of compressor blades produced under industrial conditions from VPS-3 and EF-32-301 Glass-Textolite according to the technology for natural products were investigated for the heterogeneity of reduced thermoelastic characteristics of Glass-Textolite by volume of the blade fin. It was found that the heterogeneity is of layer character, determined by nonuniformity of the density in the layer packing, of the content of the binder, and of its polymerization degree. Blades manufactured with observance of the worked out requirements did not warp. The dispersion of ultimate strength values on these blades, manufactured from VPS-3 and EF-32-301 Glass-Textolite, and also the ultimate strength of blades from EF-32-301 are of the same order as on blades from aluminum alloys. Three figures, six bibliographic references.

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1/2 056 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--VISCOELASTIC PROPERTIES OF A POLYMER BINDER -U-  
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRESS DEFORMATION CHARACTERISTICS WERE DETD. OF EPOXY RESIN ED-6 UNDER THE DYNAMIC AND QUASI STATISTICAL TESTING CONDITIONS. THE PARAMETERS OF THE EQUATIONS  $\Omega = A \tau^B$ ;  $\tau = A' \tau'^B$  (J. D. FERRY, 1963) WERE DETD. FROM THESE DATA THE TEMP. DISTRIBUTION IN ED-6 RESINS (USED AS BINDERS FOR GLASS CLOTH LAMINATES) SUBJECTED TO VIBRATIONS, SUCH AS OCCUR IN ROCKET ENGINES, CAN BE PREDICTED. FACILITY: INST. MEKH., KIEV, USSR.

UNCLASSIFIED



USSR

GOLOVACHEV, V. and GUROVSKIY, N. N., Doctor of Medical Sciences

"The Riddles of Weightlessness"

Moscow, Trud, 15 Jun 70, p 3

Abstract: Some interesting aspects of spaceflight are discussed. The human body's adaptation to weightlessness is described; the adaptive changes resulting in loss of water and calcium, and the weakening of some reflexes are discussed. No permanent harmful effects are expected from spaceflights, even long ones. Astronauts are given silver in their drinking water to eliminate undesirable microbes. Dehydrated food is very useful on prolonged spaceflights. The radiation to which the Soyuz-9 astronauts were subjected was a harmless amount; if solar flares were to increase it, special medication is available. Health and physical fitness requirements for spaceflight crews still remain strict, but they are relaxed and adapted to individual needs in the case of scientists and observers.

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USSR

UDC 621.791.008.1

GURSKIY, P. I.

"Conference on Cold Pressure Welding of Metals"

Kiev, Avtomaticheskaya Svarka, No 3, Mar 71, pp 76-77

Abstract: This article contains a list of 35 reports heard at the Second All-Union Conference on Cold Pressure Welding held in Kiev on 1-3 December 1970, at the Institute of Electric Welding imeni Ye. O. Paton. The reports characterize the state of the art in cold welding and its introduction in production, theoretical and technological problems, and problems of design and manufacture of equipment. Special notice is given to reports by a group of scientists from the Physics Institute of Academy of Sciences, Latvian SSR, who discussed original theoretical work on obtaining and studying adherence of juvenile surfaces. The group demonstrated that in the space created by a burst the vacuum is no worse than  $5 \cdot 10^{-14}$  torr. The study of adhesion of juvenile surfaces of lead, tin, and cadmium demonstrated that on indentation of punches by 1.5-3% a joint equal in strength to the base metal was formed. The adhesion of lead, zinc, and cadmium was

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GURSKIY, P. I., *Avtomaticheskaya Svarka*, No 3, Mar 71, pp 76-77

studied at different temperatures and for a different number of repeated contact cycles. Adhesion of solid states was studied as a function of their mutual solubility, and the effects of limiting solubility of the alloying element in the base material (aluminum, copper, and so on) on seizing strains were established.

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UDC: 621.791.1:669.4

KHRENOV, K.K., GURSKY, P.I., and DUBOLAZOV, V.A., Institute of Electric Welding  
imeni Ye. O. Paton, Academy of Sciences Ukrainian SSR

"Cold Welding of Copper With Kovar in the Hermetic Sealing of Semiconductor Devices"

Kiev, Avtomaticheskaya Svarka, No 5, May 70, pp 51-53

Abstract: Investigations were conducted of the cold welding of copper with Kovar (54 Fe, 28 Ni, 18 Co) for the hermetic sealing of semiconductor devices. Semiconductor devices are hermetically sealed by cold lap welding with the circular joint of the hollow parts. In vibration and impact strength tests of semiconductor instruments, there were no cases of breakdown in welds performed by cold welding. In conformance with technological requirements, copper and Kovar parts are prepared for cold welding by nickel plating. Analysis of microsections of the joint showed that the coating plays a decisive role from the point of view of the container and the optimum is a ratio of coating to base metal thickness of 0.01:0.03. The coating on Kovar is subjected to etching, washing, and drying, which have no effect on cold welding quality, although coating thickness decreased sharply. Regardless of this, the nickel film preserves its stabilizing influence. In attempts to dispense with nickel plating, airtightness stability of the instruments dropped sharply. The hermetic sealing of semiconductor instruments, two deformation schemes are used: bilateral and unilateral. Bilateral deformation ensures

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