

Steels

USSR

UDC 669.15'24'26-194

KACHALKIN, G. S., NEDOSUGOV, Yu. D., and KACHALKIN, V. G., Gor'kiy Automobile Plant; Gor'kiy Polytechnic Institute

"Cast High Temperature Steels With Reduced Nickel Contents"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 6, 1972, pp 57-58

Abstract: The objective of this study was Kh24N12SL low-nickel steel as a replacement for Kh18N25S2 and Kh18N16 steels in accessories and reinforcements for heat treating furnaces. The requirements on the new metal included scale, acid, wear, and high temperature resistance under thermal cycles of 20-1000°C. The mechanical properties of the test specimens of the new steel were found to be similar to those of the other steels. Microstructural examinations of the steel after repeated anneals for 5000 hr showed structural changes similar to those in the other steels. The overall test results of Kh24N12SL steel over the entire set of properties showed little or no differences from those of the other steels in current use. The present output of castings from the new steel amounts to no less than 80% of the total output of high temperature castings. The replacement of

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KACHALKIN, G. S., et al, Metallovedeniye i termicheskaya obrabotka metallov,
No 6, 1972, pp 57-58

Kh18N25C2 and Kh18N16, the high-nickel steels, with Kh24N123L steel saves
about 12,500 kg nickel per year, resulting in 31,625 rubles of yearly
savings. (1 table)

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1/2 021 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--REFRACTORY TOOL STEEL -U-

AUTHOR--(02)-KACHALKIN, G.S., KHLDPUSHIN, YU.A.

COUNTRY OF INFO--USSR

SOURCE--LITEINGE PROIZVOD. 1970, 2, 40

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--TOOL STEEL, ALLOY DESIGNATION, CHROMIUM NICKEL STEEL, METAL
CASTING, CAST STEEL, ALLOY COMPOSITION, REFRACTORY METAL/(U)KH18N24SZL
TOOL STEEL, (U)KH18N35 TOOL STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1372

STEP NO--UR/0128/70/002/009/0040/0040

CIA accession no--AP0116821

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0116321

ABSTRACT/EXTRACT--(U) GP-G- ABSTRACT. A NEW TYPE OF STEEL KH18N35 WAS DEVELOPED CONTG.: C 0.25-0.4, SI 2-3, MN 0.3-0.8, CR 16-20, NI 33-37, P 0.03, S 0.05PERCENT, CHARACTERIZED BY GOOD REFRACTORY PROPERTIES. DESPITE ITS HIGH PRICE COMPARED TO KH18N24S2L STEEL, IT CAN BE USED SATISFACTORILY IN THE PRODUCTION OF HARDENED STEELS.

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Steels

USSR

UDC 669.15'24'26-194

KACHALKIN, G. S., NEDOSUGOV, Yu. D., and KACHALKIN, V. G., Gor'kiy Automobile Plant; Gor'kiy Polytechnic Institute

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1/2 027 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--HOLOGRAPHIC IDENTIFICATION OF SIMILAR IMAGES -U-
AUTHOR--(02)-KOSOUROV, G.I., KACHALOV, G.V. *K*
COUNTRY OF INFO--USSR
SOURCE--PRIBORY I TEKHNIKA EKSPERIMENTA, JAN.-FEB. 1970, P. 197-199
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS
TOPIC TAGS--HOLOGRAM, FORM RECOGNITION, OPTIC IMAGE, LIGHT SOURCE, OPTIC
FILTER

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1549 SER NO--UR/01707/797/007/007/017/01799
CIA ACCESSION NO--A00101295
UNCLASSIFIED

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UNCLASSIFIED

PROCESSED DATE--0-0000

CINC ACCESSION NO--AP010625

ABSTRACT/EXTRACT--(U) GP-04 ABSTRACT. DESCRIPTION OF A METHOD FOR HOLOGRAPHIC IDENTIFICATION OF SIMILAR TWO-DIMENSIONAL OBJECTS BY A LINEAR TRANSFORMATION OF THE SPACE BY MEANS OF A SPHERICAL LENS. IT IS SHOWN THAT THE OPTICAL CORRELATOR METHOD CAN BE GENERALIZED TO THE CASE WHERE THE DISPOSITIVE IS ILLUMINATED BY A POINT SOURCE OF LIGHT LOCATED AT A FINITE DISTANCE FROM IT, WHILE THE HOLOGRAPHIC FILTER IS LOCATED IN THE PLANE CONJUGATE TO THE PLANE OF THE SOURCE. IN THIS CASE THE SCALE OF THE FOURIER IMAGE OF THE OBJECT IN THE PLANE OF THE FILTER DEPENDS ON THE DISTANCE FROM THE OBJECT TO THE LIGHT SOURCE, THUS PROVIDING A WAY OF IDENTIFYING SIMILAR IMAGES. THE OPERATION OF A CORRELATOR USING WHITE LIGHT IS DESCRIBED. FACILITY: AKADEMIIA NAUK SSSR, INSTITUT KRISTALLOGRAFI, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 8.74

BUZUNOV, Yu. A., VAVILOV, Ye. N., Kachalov, P. T.

"Tabular Method of Construction of Distribution of Control Signals in Micro-programmed Automaton"

Kibern. Tekhn. [Cybernetic Equipment--Collection of Works], Kiev, 1971, pp 181-197, (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V506, by V. Mikheyev)

Translation: The following problem is studied. Given is a set of operations O_1, O_2, \dots, O_n , performed by a digital operating automaton. Each operation O_i corresponds to microprogram Π_i , composed of a fixed set of microoperations

$A_1, A_2, \dots, A_j, \dots, A_r$, where r is the number different microoperation in the set. The problem is to construct a microprogrammed controlling automaton (MPCA) with the minimum output control signal distributor, corresponding to the fixed set of microoperation. The MPCS is constructed in the form of r units: the control signal former (CSF) including, in addition to memory, logic circuits realizing the excitation functions; the control signal distributor (CSD), realizing the output functions corresponding to the output control.

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Buzumov, Yu. A., Vavilov, Ye. N., Kachalov, P. T., Kibern. Tekhn., Kiev, 1971, pp 184-197

signals u_j . The CSF develops a sequence of pulses $q_1, q_2, \dots, q_n, \dots, q_s$, forming the operating cycle of the MPCA. The operating cycle refers to the time interval, during which the automaton develops the necessary sequence of microoperations allowing performance of the microprogram corresponding to operation Q_1 .

The operating cycle is divided into microcycles, during each of which one of the signals q_n appears at the input of the CSD. The outputs of the MPCA then carry a sequence of control signals u_j , distributed in time and space. Illustrative examples are presented.

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USSR

UDC 632.4:585.13:633.11

KACHALOVA, Z. P. and KUZ'MICHEV, A. A., Timiryazev Agricultural Academy, Moscow

"Incidence of Cover Smut of Wheat and Distribution of Affected Ovaries in the Ear"

Leningrad, Mikologiya i Fitopatologiya, No 4, 1972, pp 347-353

Abstract: Study of several spring (Lyutestsens 62, Krasnozernaya) and winter (PPG-186, Mironovskaya 808) wheat varieties infected with covered smut showed that the pathogen *Tilletia caries* spreads diffusely through the plant but does not penetrate all the ovaries of the forming spike, thereby determining the extent of infection of the spike. Early planting of spring wheat increases both the number of infected spikes and the extent of infection. Spikes on lateral shoots of 2-, 3-, and multistem plants are generally the most affected. Within a spike, the center is most affected; within a spikelet, the third and fourth ovaries. The presence of partly affected spikes, spikelets, and grains is related to the physiological and biochemical state of the plants, which is dependent, in turn, on the varietal characteristics and conditions under which the ovaries are formed.

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UNCLASSIFIED

PROCESSING DATE--20NOV70

1/2 020

TITLE--MECHANISM OF THE SIMULTANEOUS REACTION OF BUTYL ISOCYANATE AND
METHANOL WITH AERCSIL -U-

AUTHOR--(05)--KULIK, N.V., NEGIYEVICH, L.A., KURGAN, N.P., BELTSKAYA, G.F.,

KACHAN, A.A.

COUNTRY OF INFO--USSR

SOURCE--TEOR. EKSP. KHIM. 1970, 6(1), 55-60

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ORGANIC ISOCYANATE, METHANOL, CHEMICAL REACTION RATE,
ADSORPTION, SILICA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAHE--3002/1171

STEP NO--UR/0379/70/006/001/0055/0060

CIRC ACCESSION NO--AP0128593

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0128593

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTION RATES WERE MEASURED OF URETHANE (I) FORMATION FROM BUNCO (II) AND MEOH IN THE GAS PHASE ON AERCSIL. THE HIGHEST RATE WAS ACHIEVED BY INTRODUCING A MIXT. OF MEOH AND II ONTO THE CATALYST, DUE TO COMPLEX FORMATION. A LOWER RATE WAS OBTAINED ON INTRODUCING II FIRST. INTRODUCTION OF MEOH FIRST LED TO THE LOWEST RATE DUE TO BLOCKING OF SILANGL GROUPS OF THE CATALYST BY MEOH ADSORPTION. FACILITY: INST. KHIM. VYSOKOMOL. SOEDIN., KIEV, USSR.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--MODIFICATION OF POLYETHYLENE FILMS BY PHOTOCHEMICAL GRAFT
POLYMERIZATION -U-
AUTHOR-(03)-KOSTYLEVA, Z.A., SHRUBOVICH, V.A., KACHAN, A.A.
COUNTRY OF INFO--USSR
SOURCE--PLAST. MASSY 1970, 2, 14-15
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--GRAFT POLYMERIZATION, ACTIVATION ENERGY, THERMAL STABILITY,
COPOLYMER, PLASTIC FILM, CHEMICAL REACTION, ACRYLIC ACID, POLYETHYLENE,
PHOTO SENSITIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/1689 STEP NO--UR/0191/70/000/002/0014/0015
CIRC ACCESSION NO--AP0112683
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112683

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PHOTSENSITIZED (WITH PH SUB2 CO) GAS PHASE GRAFT COPOLYMN. OF ACRYLIC ACID (I) ON POLYETHYLENE (II) FILMS WAS STUDIED. THE COPOLYMN. WAS A 1ST ORDER REACTION WITH RESPECT TO LIGHT INTENSITY (I) WHENEVER I IS SMALLER THAN 10 NEGATIVE PRIME8 EINSTEIN,CM PRIME2,SEC, WHEREAS AT HIGHER I THE ORDER WAS INDEPENDENT OF I. THE ACTIVATION ENERGY (DETD. AT 30-50DEGREES) WAS 4.6 KCAL,MOLE. THE ADVANTAGES OF THE PHOTSENSITIZED GRAFT COPOLYMN. OF I ON II FILMS WERE POINTED OUT. THE MODIFIED II FILMS EXHIBITED HIGHER THERMAL STABILITY AND IMPROVED PHYSICOMECH. PROPERTIES.

UNCLASSIFIED

1/2 036 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--TWO QUANTUM BENZOYL CHLORIDE PHOTSENSITIZED CROSSLINKING OF
POLYETHYLENE -U-
AUTHOR-(04)-ANDRUSHCHENKO, D.A., KACHAN, A.A., CHERNYAVSKIY, G.V.,
SHRUBOVICH, V.A.
CCUNTRY OF INFO--USSR
SOURCE--KHIM. VVS. ENERG. 1970, 4(2), 169-70
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--POLYMER CROSS LINKING, POLYETHYLENE, CHLORINATED ORGANIC
COMPOUND, BENZENE DERIVATIVE, RADIATION EFFECT, CHEMICAL REACTION
MECHANISM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1992/1622 STEP NO--UR/0456/70/004/002/0169/0170
CIRC ACCESSION NO--AP0112616
UNCLASSIFIED

2/2 036 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0112616
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT 22DEGREES AND 3 MM PARTIAL BZCL
PRESSURE POLYETHYLENE (I) FILM ABSORBS SIMILAR TO 0.2PERCENT BZCL IN 2-3
MIN. IRRADN. OF THIS FILM FOR 20 MIN GAVE SIMILAR TO 60PERCENT
CROSSLINKING. THIS REACTION IS 1.87 ORDER, WHICH INDICATES THAT 2 LIGHT
QUANTA PARTICIPATE. THE REACTION INVOLVES THE FORMATION OF PH AND CLCO
RADICALS WHICH ADD TO 1, CROSSLINKING IT. FACILITY: INST. KHIM.
VYSOKOMGL. SOEDIN., KIEV, USSR.

UNCLASSIFIED

USSR

UDC: 539.37⁴

VAKULENKO, A. A., KACHANOV, M. L.

"Microstresses in the Theory of Plasticity"

V sb. Probl. mekhan. tverd. deformir. tela (Problems in the Mechanics of a Deformable Solid--collection of works), Leningrad, "Sudostroyeniye", 1970, pp 99-103 (from RZh-Mekhanika, No 9, Sep 70, Abstract No 9V326)

Translation: It is known that in many instances a continuous elastic body with "slits" (singularities of the displacement field) of the appropriate kind may act as a model for a crystal whose lattice contains dislocations. In this paper, such a model is considered as a "standard" -- a body whose averaged properties should play the part of the localized properties of the medium in the macroscopic theory of plasticity. It is shown that in the case of a sufficiently well substantiated algorithm for such averaging, tensors which characterize "inherent" stresses due to dislocations should show up in the macroscopic theory together with the tensor for dislocation density. Macroscopic strengthening is directly associated with the change in tensors, which are determined in turn by the dislocation density distribution. Authors' abstract.
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USSR

UDC: 6.74

BUEUNOV, Yu. A., KACHANOV, P. T.

"One Method of Construction of Microprogrammed Automaton Control Pulse Formers"

Kibern. Tekhn. [Cybernetic Equipment--Collection of Works], Kiev, 1971, pp 212-222 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V507, by V. Mikheyev)

Translation: A method is described for solving the following problem of synthesis of control signal formers (CSF). A set of microprograms is fixed, corresponding to the selected algorithms for performance of operations in an operational automaton (OA). It is required to construct a circuit for formation of control signals according to the fixed set of microprograms. The number of signals must be equal to the number of microinstructions required to run any microprogram from the fixed set. A microinstruction refers to a set of microoperations performed simultaneously. Two cases are studied: a number of microinstructions in a microprogram is constant, or variable. An illustrative example is presented.

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A.A. KACHAN

UNCLASSIFIED

PROCESSING DATE--03JUL70

TITLE--PHOTOSENSITIZED VAPOR PHASE GRAFT COPOLYMERIZATION OF VINYL ISOCYANATE ON POLYETHYLENE FILMS -U-

AUTHOR--KACHAN, A.A., LEBC, YU.G., SHRLEOVICH, V.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970, 12(1), 214-19

DATE PUBLISHED-----70

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34

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--PHOTOSENSITIVITY, COPOLYMERIZATION, ORGANIC ISOCYANATE, POLYETHYLENE, MOLECULAR WEIGHT, PLASTIC FILM, LIGHT ABSORPTION, PHOTOCHEMISTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/0604

STEP NO--08/C459/70/D12/C01/C214/C219

CIRC ACCESSION NO--APCC48837

UNCLASSIFIED

Acc. Nr.

AP0048837

Abstracting Service:
CHEMICAL ABST.

5-70

Ref. Code
21R0459

91096m Photosensitized vapor-phase graft copolymerization of vinyl isocyanate on polyethylene films. Kachan, A. A.; Lebo, Yu. G.; Shrubovich, V. A. (*Inst. Khim. Vysokomol. Soedin., Kiev, USSR*). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 214-19 (Russ). The photosensitized graft copolymn. of vinyl isocyanate (I) on polyethylene (II) films in the presence of benzophenone (III) was investigated. Light of wavelength 350 m μ , corresponding to the $n-\pi^*$ transition of III, increased the mol. wt. of the films compared with the mol. wt. obtained with $\lambda = 253.7$ m μ ($\pi-\pi^*$ transition of III). Switching off the light source stopped the increase in mol. wt. Neither evacuation of the system, nor use of solvents decreased the mol. wt. Prior irradiation of films containing III in the absence of I at 1×10^{-7} einstein/cm²-sec did not affect the graft copolymn. Absorption of light by III apparently gave macroradicals in II which initiated I grafting. Macroradical formation was also confirmed by H evolution during irradiation of II films containing III at $\lambda \geq 320$ m μ . The equilibrium grafting rate (w) with II films of thickness 70 and 200 m μ was proportional to the area of the films and not to their thickness, indicating that the process was localized in the surface layer. Since w was proportional to the square of the light intensity, 2 quanta of light participated in effecting the primary photochemical reaction.

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UDC 669.71.472

KACHANOVSKAYA, I. S.

"Construction of Cryolite-Alumina Melts"

Tr. Vses. n.-i. i provektn. in-ta alvumin., magn. i elektrodn. prom-sti
(Works of the All-Union Scientific Research and Planning and Design Institute
of Aluminum, Magnesium and Electrode Industry), 1970, No 71, pp 69-74 (from
RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G166)

Translation: Cryolite-alumina melts are investigated as ion liquids whose complex and elementary ions are bound by dynamic equilibrium. From the results of measuring the effective transport numbers in melts of the LiF-NaF-KF-AlF_3 and LiCl-NaCl-KCl systems, differences in their structure are demonstrated. Variation of the cryolite-alumina melt composition displaces the complex ion \rightleftharpoons elementary ion equilibrium by varying the degree of dissociation of the complex ions and the proportion of the participation of cations of different types in the current transfer. The cation conductivity characteristic of cryolite-alumina melts is explained by the deficiency of elementary anions (F^-) bound into complex ions of alkali metals and aluminum. The Al^{3+} ion in cryolite-alumina melts is in the form of complex ions, and it does not participate in the current transfer. There are 3 illustrations and a 13-entry bibliography.

USSR

UDC 669.71.053.4

KACHANOVSKAYA, I. S., SIRAYEV, N. S., OSOVIK, V. I.

"Developments of Requirements for Phase and Granulometric Composition of Alumina for Electrolysis of Aluminum"

Tr. Vses. N-i. i Proyechn. In-ta. Alyumin., Magn. i Elektrodn. Prom-sti [Works of All-Union Scientific Research and Planning Institute of the Aluminum, Magnesium and Electrode Industry], 1970, No. 71, pp. 37-44. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G144 by the authors).

Translation: Requirements are formulated for Al_2O_3 for electrolysis of Al. Although inferior to domestic grades of Al_2O_3 in its aeration properties, the Al_2O_3 of the recommended composition does not powder, pours well, is more easily washed to remove Na_2O , and causes no difficulties upon dissolution in the cryolite. Its application in electrolysis allows the consumption of F salts and Al_2O_3 to be reduced and improve the conditions of labor in electrolysis buildings. 2 figs; 1 table.

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USSR

UDC Δ 539.1.073/074

KARZHAVIN, Yu. A., MATYUSHIN, A. T., MATYUSHIN, and KACHATURYAN, M. N., Joint Institute of Nuclear Research, Dubna

"A New Method for Sampling Data from a Spark Chamber"

Moscow, Pribory i Tekhnika Eksperimenta (Instruments and Experimental Technology), No. 5, Sept-Oct 1970, p 60-63

Abstract: Experiments were conducted to find a new method of sampling data from a spark chamber with solid electrodes. A piezoelement was used as a passive detector of ultrasound generated in the electrode by the spark. The detector was attached directly to the electrode or to a sound conductor attached to the electrode. An emitter-follower was used to transmit the detected signal into an acoustic channel. The amplitude of the signal depends on the material of the electrode, its thickness, the distance between the detector and spark, the spark energy, the length of the spark gap, and the acoustic matching of the piezo-element and the sound conductor or electrode. The best common material is duraluminum, and especially dural foil, which gives an amplitude of one order higher than does a plate. The spark chamber was used to record particle track signals. Curves of the detector signal amplitude for thyatron generator voltages of 20

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KARZHAVIN, Yu. A., et al, Pribory i Tekhnika Eksperimenta, No 5, Sept-Oct 1970, p 60-63

and 25 kv are plotted. Two vibration frequencies of the plate were selected as optimum for measurement. Interesting effects were found when a high voltage pulse was transmitted to the plate through a needle point pressed directly on the plate or on a mylar film placed on the plate. The method yields data from the ends of the sparks in the gap. The signal propagation rate is constant, and both X and Y coordinates can be picked off from the same electrode. The method can be used with various chamber configurations, large and small gaps, and magnetic fields, as well as with photographic recording of results. A spherical chamber is suggested with a target at the center. Such a chamber can accommodate many spark gaps and 20 to 30 detectors or more. A block diagram is shown of a detector hookup to a computer for storing data during the time a beam is striking the target and partially processing the data during the pauses. Approximately 10 to 20 words of 11 to 12 bits can be passed during the dead time of the beam to a computer that can accept a number in less than 250 microsec. The BESM-4, M220, Dnepr-I, Dnepr-II, Minsk, and other computers are recommended. Counting circuits, consisting of an amplifier, shaper, and trigger, are used to register and store the data. The operation of the computer linking circuits is described. Orig. art. has 5 figs. and 4 refs.

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USSR

UDC 627.81.034(47+57)

PECHERKIN, I. A., KARZENKOV, G. I., KACHENOV, V. I.

"Revision of the Banks of Votkinsk Reservoir (1967)"

Izuch. i ispol'z. vodn. resursov SSSR. 1966-1967 -- V sb (Study and Use of USSR Water Resources. 1966-1967 -- Collection of Works), Moscow, Nauka Press, 1970, p 135 (from RZh-Elektrotehnika i Energetika, No 2, Feb 71, Abstract No 2 D46)

Translation: The results of routine observations of the bank formation process at Votkinsk Reservoir during its existence are presented. It is noted that the process is made up of abrasion, transport and accumulation of the transported sediment. The bank deterioration characteristic is investigated for specific genetic types of banks. The cyclicity of the process is emphasized. The close relation of bank erosion is observed only on slide and avalanche banks composed of loose deposits. On creeping banks and banks made up of Permian reds, the process proceeds more complexly and is not subordinate to known calculation formulas. When forecasting the bank deterioration here, it is necessary to consider the set of geodynamic processes developing in the bank. The basic ones of them are the following: wind erosion, creep and gully erosion. Significant attention has been given to the transport and accumulation of alluvium, the formation of underwater forms of relief and the shore area of the reservoir. The relations of these processes to the genetic type of bank is indicated. Some recommendations are made with respect to the problem of forecasting bank revisions.

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USSR

UDC 535.376:666.265

GAVRILENKO, T. B., KARAPETYAN, G. O., ~~KACHIBAYA, V. N.~~

"Cathodoluminescence of Terbium-Activated Glasses" :

Minsk, Zhurnal Prikladnoy Spektroskopii (Journal of Applied Spectroscopy), Vol 15, No 4, Oct 71, pp 663-666

Abstract: Terbium-activated, multicomponent silicate and borate glasses are studied to compare their cathodoluminescence and photoluminescence spectra. Measurement of the temperature dependence of the emission line at 432 nm makes it possible to determine the temperature of the sample during excitation of cathodoluminescence.

Cathodoluminescence, light emission, photoluminescence, extinction times, and the temperature dependence of the spectra were measured. For high terbium concentrations intense lines appear at 542 and 549 nm; for low concentrations prominent lines are seen at 400 to 500 nm and 520 to 620 nm. The short wavelength group is brighter in photoluminescence than in cathodoluminescence, probably due to temperature quenching.

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USSR

GAVRILENKO, T. B. et al, Zhurnal Prikladnoy Spektroskopii, Vol 15, No 4, Oct 71, pp 663-666

Measurement of temperature dependence of photoluminescence in low concentration samples shows that the most intense short wavelength group is quenched almost completely at $\sim 110^{\circ}\text{C}$. This permits indirect determination of sample temperature from the weakening of cathodoluminescence.

In both cathodo- and photoluminescence spectra the intensity of the short wavelength group decreases with increase in terbium concentration. Peak light emission is obtained with glass consisting of $20\text{Li}_2\text{O}\cdot 10\text{Al}_2\text{O}_3\cdot 50\text{SiO}_2\cdot 20\text{BaO}$ (mol%) and 10% by weight of Tb_2O_3 . Higher concentrations of Tb_2O_3 decrease light output because of concentration extinction.

The authors thank V. V. Kuprevich for valuable discussions. Orig. art has 3 figs., 1 table, and 4 refs.

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USSR

UDC 661.55

ARBUZOV, M. P., KHAYENKO, B. V., and KACHKOVSKAYA, E. T., Institute of the Problems of Material Science, Academy of Sciences UkrSSR

"Investigation of the Real Structure of Titanium Mononitride in the Region of Its Homogeneity"

Kiev, Poroshkovaya Metallurgiya, No 6(126), Jun 73, pp 69-74

Abstract: The boundaries of the homogeneity region of titanium mononitride, the concentration dependence of its lattice periods, and its density in the annealed and tempered (from 1400°C) states are specified for equilibrium samples. After annealing and tempering, titanium mononitride possesses throughout the whole homogeneity region a NaCl-type structure with statistical disposition of titanium atoms in the metallic sublattice and of nitrogen atoms in the metalloid sublattice. The actual disposition of the atoms in sublattices is explained by a comparison of values of reflection factors and theoretically calculated values. The degree of filling each of the sublattices with titanium and nitrogen atoms, depending on the nitrogen content of titanium mononitride, is determined. Two figures, two tables, six formulas, twelve bibliographic references.

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1/2 018 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--MODEL SOUND WAVES IN A WEDGE WITH THE AID OF MOIRE PATTERNS -U-
AUTHOR--(03)-BARKHATOV, A.N., GORSKAYA, N.V., KACHKHOYEVA, N.A.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, AKUSTICHESKIY ZHURNAL, VOL 16, NO 1, 1970, PP 10-14
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--GRAPHIC TECHNIQUE, ACOUSTIC FIELD, ACOUSTIC REFLECTION, BOTTOM
LOSS, MATHEMATIC MODEL, MATRIX FUNCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/1878

STEP NO--UR/0046/70/016/001/0010/0014

CIRC ACCESSION NO--AP0106544

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0106544

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALOGY MODELING OF THE SOUND FIELD IN A WEDGE IS EXAMINED WITH THE AID OF MOIRE PATTERNS FORMED BY SUPERIMPOSING MOIRE GRATINGS. IT IS SHOWN THAT MOIRE PATTERNS MAKE IT POSSIBLE TO GRAPHICALLY REPRESENT THE VERTICAL DISTRIBUTION OF THE FIELD AT DIFFERENT DISTANCES FROM THE RIB OF THE WEDGE. THE QUESTION OF THE NUMBER OF NORMAL WAVES IN THE PLANE PARALLEL LAYER AND THE WEDGE WHICH MUST BE MODELING IN ESTIMATING LOSSES ACCOMPANYING THE REFLECTION OF SOUND FROM THE ABSORBING BOTTOM WAS INVESTIGATED. THE ANGLE BETWEEN THE NORMAL TO THE FRONTS OF EACH OF THESE WAVES AND THE BOUNDARY OF THE FLAT LAYER FOR THE CASE OF IDENTICAL (SOFT OR HARD) ABSOLUTELY REFLECTING BOUNDARIES IS AN EQUALS ARCH SIN (N LAMBDA OVER 2H) (1) WHERE N EQUALS NUMBER OF NORMAL WAVE, LAMBDA EQUALS LENGTH OF SOUND WAVE, AND H EQUALS THICKNESS OF LAYER. ON THE OTHER HAND, THE PERIOD OF THE MOIRE PATTERN H SUBM FORMED BY SUPERIMPOSING TWO HATCHED GRATINGS WITH THE SAME PERIOD LAMBDA SUBM IS DETERMINED BY THE FORMULA: H SUBM EQUALS LAMBDA M OVER S SIN A SUBM (2) HWERE S PRIMEA SUBM EQUALS ANGLE OF INTERSECTION OF GRATING HATCHINGS. FACILITY: GOR'KIY STATE UNIVERSITY.

UNCLASSIFIED

K

UDC 534.221

USSR

BARKHATOV, A. N., GORSKAYA, N. V., and KACHKHOYEVA, N. A., Gor'kiy State University

"Model Sound Waves in a Wedge with the Aid of Moire Patterns"

Moscow, Akusticheskiy Zhurnal, Vol 16, No 1, 1970, pp 10-14

Abstract: Analogy modeling of the sound field in a wedge is examined with the aid of moire patterns formed by superimposing moire gratings. It is shown that moire patterns make it possible to graphically represent the vertical distribution of the field at different distances from the rib of the wedge. The question of the number of normal waves in the plane-parallel layer and the wedge which must be modeling in estimating losses accompanying the reflection of sound from the absorbing bottom was investigated.

The angle between the normal to the fronts of each of these waves and the boundary of the flat layer for the case of identical (soft or hard) absolutely reflecting boundaries is

$$\alpha_n = \text{arch sin } \left(\frac{n\lambda}{2H} \right) \quad (1)$$

USSR

BARKHATOV, A. N., et al., Akusticheskiy Zhurnal, Vol 16, No 1, 1970, pp 10-14

where n = number of normal wave, λ = length of sound wave, and H = thickness of layer.

On the other hand, the period of the moire pattern H_M formed by superimposing two hatched gratings with the same period λ_M is determined by the formula:

$$H_M = \frac{\lambda_M}{2 \sin \alpha'_M} \quad (2)$$

where α'_M = angle of intersection of grating hatchings.

USSR

UDC: 8.74

SHABANOV-KUSHNARENKO, Yu. P., YERYOMIN, G. S., KACHEKO, Ye. G., MARCHENKO,
Yu. S., PCHELINOV, V. P., TISECHENKO, V. V.

"On the Problem of Axiomatic Construction of Mathematical Models"

Probl. bioniki. Resp. mekhn. temat. nauch.-tekhn. sb. (Problems of
Bionics. Republic Interdepartmental Thematic Scientific and Technical
Collection), 1971, vyp. 6, pp 70-74 (from RZh-Kibernetika, No 1, Jan 72,
Abstract No 1V1074)

Translation: Mathematical methods are proposed for describing objects
which have known input and output signals. Authors' abstract.

1/1

- 58 -

USSR

UDC 51:155.001.57:612.82

SHABANOV-KUSHNARENKO, Yu. P., KACHKO, Ye. G.

"Algorithm Upon Which Inertia and Irradiation of Human Vision are Based"

Kibernet. i Vychisl. Tekhn. Resp. Mezhd. Sb. [Cybernetics and Computer Engineering, Republic Interdepartmental Collection], No 4, 1970, pp 195-201, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V676 by the authors).

Translation: A psychophysical model of human vision is studied, having properties corresponding to inertia and irradiation.

1/1

- 77 -

USSR

UDC 51:155.01.57:612.82

SHABANOV-KUSHNARENKO, Yu. P., KACHKO, Ye. G.

"Study of the Reactions of an Allard-Luisoff Model of Inertia to Periodic, Bright Flashes"

Probl. Bioniki. Resp. Mezhved. Nauchno-tekhn. Sb. [Problems of Bionics, Republic Interdepartmental Scientific and Technical Collection], No 4, 1970, pp 103-114, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V674 by the authors).

Translation: Problems of possible application of the mathematical model of Allard and Luisoff for description of the perception of periodic bright flashes are studied.

1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--THE IMPORTANCE OF BOULEN'S DROP IN THE DIAGNOSIS OF LUNG CANCER -U-
AUTHOR--(03)--SERGEL, O.S., ADAMYAN, A.A., KACHKOV, A.P.
COUNTRY OF INFO--USSR
SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA, 1970, NR 3, PP
12-15
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--LUNG, CANCER, DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3001/0912 STEP NO--UR/0481/70/000/003/0012/0015
CIRC ACCESSION NO--AP0126571
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0126571

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BOULEN'S TEST IN 120 PERSONS WAS INVESTIGATED. THE LARGE COINCIDENCE OF THE RESULTS IN PATIENTS WITH CANCER AND HEALTHY PERSONS IN CONJUNCTION WITH THE TECHNICAL SIMPLICITY GIVES GROUNDS TO RECOMMEND BOULEN'S TEST AS AN ADDITIONAL ONE IN OBSCURE PERIPHERAL FORMATIONS IN THE LUNG, AS WELL AS IN DISPENSARY EXAMINATION FOR THE PURPOSE OF DETECTING ASYMPTOMATIC PERIPHERAL CANCER OF THE LUNG.

FACILITY: KLINIKO-DIAGNOSTICHESKAYA LABORATORIYA.

FACILITY: II KHIRURGICHESKOYE OTDELENIYE. FACILITY: INSTITUTA KHIRURGII IM. A. V. VISHNEVSKOGO, AMN SSSR, MOSKVA.

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0127722

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE THERMAL DECOMPOSITION IN THE AIR OF TITANIUM NITRIDES WITH ULTIMATE COMPOSITION AND IN THE HOMOGENEITY REGION AND NITRIDES OF ZIRCONIUM, HAFNIUM, VANADIUM, AND CHROMIUM WAS INVESTIGATED BY THERMOGRAPHIC, CHEMICAL, AND X RAY METHODS. THE DECOMPOSITION OF TITANIUM NITRIDE STARTED AT 600DEGREESC. THE DECOMPOSITION OF TITANIUM, ZIRCONIUM, HAFNIUM, VANADIUM, AND CHROMIUM NITRIDES AT CORRESPONDING TEMPERATURES UP TO THE HIGHEST OXIDES OCCURRED THROUGH THE FORMATION OF INTERMEDIATE COMPOUNDS OF VARIABLE COMPOSITION. (AUTH). FACILITY: INST. OF PROBLEMS IN MATERIAL STUDIES, KIEV.

UNCLASSIFIED

PHYSICS

Crystals & Semiconductors

USSR

UDC: None

KACHLISHVILI, E. S.

"Faraday Effect in Semiconductors in a Strong Electric Field"

Leningrad, Fizika Tverdogo Tela, vol 14, No 5, 1972, pp 1527-1528

Abstract: As earlier researchers have found, heating the electronic gas in semiconductors markedly affects the Faraday rotation of the polarization plane of an electromagnetic wave passing through the semiconductor. The author of the present paper points out, however, that his predecessors assumed the total concentration of the free carriers to be balanced and that in the presence of recombination effects and impurity breakdown the current carrier concentration as a function of the field must be considered. With this latter consideration taken into account, the angle of Faraday rotation is found to increase or decrease, depending on the method of capture of the carriers. Each of these two possible cases is considered. The formulas obtained in this communication are important when the relaxation time exceeds the period of the incident wave.

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USSR

UDC 612.815:577.3

GER, B. A., DYN'KIN, Ye, M., and KACHMAN, A. N., Institute of Evolutionary Physiology and Chemistry imeni I. M. Sechenov, Academy of Sciences USSR, Leningrad, and All-Union Scientific Research Institute of Synthetic Rubber imeni S. V. Lebedev, Leningrad

"A Two-Chamber Diffusion Model of a Synapse"

Moscow, Doklady Akademii Nauk SSSR, Vol 209, No 2, 1973, pp 508-511

Abstract: Considering the rapidity with which fast mammalian skeletal muscles can contract and relax, the following assumptions and approximations are made with regard to the neuromuscular synapse: 1) acetylcholine conc. (C_1) in the synaptic cleft (V_1) is reduced through a) enzymatic hydrolysis, b) diffusion outside the synapse; and c) diffusion into the postsynaptic structure (V_2); 2) V_2 is much larger than V_1 ; 3) V_1 is connected with V_2 by means of pores located on the postsynaptic membrane and occupying 10-20% of its area; 4) the area of contact between V_1 and the extrasynaptic space is so small that diffusion of the mediator outside the synapse can be disregarded; 5) ACh molecules can freely diffuse throughout the synapse; and 6) the total area of the postsynaptic membrane on which enzymatic hydrolysis of the mediator takes place is about 0.05% of the total area through which diffusion into V_2 takes place.

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USSR

GER, B. A., et al., Doklady Akademii Nauk SSSR, Vol 209, No 2, 1973, pp 508-511

On the basis of these assumptions and known facts, a mathematical model is developed which indicates that after each secretory discharge of ACh, there is an immediate abrupt fall of C_1 to C_2 due to diffusion into V_2 , which is followed by a gradual reduction in C_2 due to enzymatic hydrolysis. ACh conc. in V_2 is always below a certain critical level, that is, the synapse is never overfilled. Thus, when $V_1/V_2 = 1/20$, the two-chamber system with diffusion pores can transmit impulses of a frequency 10 times as high as what can be handled by a one-chamber system with simple absorption.

2/2

Hematology

USSR

UDC 615.471:616.155.11/.12-073.171

KACHMARCHIK, E. V. and KALIKOV, V. N., Komi Pedagogical Institute, Syktyvkar

"Measuring the Diameters of Erythrocytes With a Laser Beam"

Moscow, Laboratornoye Delo, No 3, 1973, pp 138-139

Abstract: The suggested laser technique is based on the phenomenon of diffraction of light as it passes through a thin blood smear that serves as an optical grating. The diameter of the diffraction rings is inversely proportional to the diameter of the erythrocytes. The narrow (1 mm^2) monochromatic, spatially coherent light rays of a gas laser (LDI-67) produces distinct diffraction rings. The laser beam is maximally diaphragmed and a slide with a blood smear is inserted into the holder. When the screen is drawn back, the diffraction rings appear on it. The radius of the erythrocytes is computed from the formula

$$r = \frac{0.44 \lambda \cdot 2L}{D}$$
, where r is the radius, D is the diameter of the ring on the screen, and L is the distance from the blood smear to the screen.

1/1

USSR

UDC 519.21

KACHNOVA, A. I.

"The Convergence of the Expansion of a Gaussian Process with Green Function Covariation"

Uch. Zap. Kazan. Un-t. [Scientific Writings of Kazan' University], Vol 130, No 3, 1970, pp 69-74 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V78 by Yu. Davydov).

Translation: Almost universal even convergence is demonstrated for a Shauder-base expansion for Gaussian Processes with covariations which are Green functions of a certain differential equation.

1/1

Acc. Nr: AP0052302

Ref. Code: VR0238

PRIMARY SOURCE: *K* Fiziologicheskii Zhurnal, 1970, Vol 16, Nr 2, pp 265-273

PHYSIOLOGICAL PROBLEMS OF PARENTERAL NUTRITION
BY FAT EMULSIONS

Ya. P. Sklyarov, B. V. Kachorovskiy

Department of Normal Physiology, Medical Institute, Lvov,
Institute of Hematology and Blood Transfusion, Lvov

Summary

Proceeding from the modern data on the nutrient value of fats, a theoretical substantiation is presented of the expediency of fat application for parenteral nutrition. The composition of commercial preparations of fat microemulsions for intravenous parenteral nutrition, produced in different countries is given.

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REEL/FRAME
19820868

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The mechanisms of evacuation of parenterally administrated fat from the blood bed are described and the proofs of its complete and comparatively quick assimilation are given. Numerous literary data are summed up on the effect of parenteral hyperlipemia on the state and function of different organs and physiological systems of an organism.

An original preparation of high-dispersed fat emulsion for parenteral nutrition (lipoparenteral) is developed and studied by the authors in a physiological experiment. The obtained results prospect for application of this preparation for clinical purposes.

2/2

4th

19820869

USSR

UDC 669.184.266:14.018.2

KACHUR, B.K., KUKURUZNYAK, I.S., NIKIFOROV, B.V., TARAPUROV, N.P., UMIYOV, V.D.
POGORELYY, V.P., GALATON, YE.G., KHARCHENKO, B.V., and PLOKHIKH, V.A.
(Ukrainian Scientific Research Institute of Metals, Krivoy Rog Metallurgical
Plant)

"Smelting of Low-Alloy Steel in a 130-ton Converter"

Moscow, Metallurg, No 9, Sep 71, pp 14-16

Abstract: A description is given of the technology of smelting low-alloy steels (OST-1, OST-2, 25G2C, and 35GC) in 130-ton oxygen converters at the Krivoy Rog Metallurgical Plant. Pig iron (881 kg per ton of steel) containing 0.6-0.9% Mn, 0.4-0.8% Si, not more than 0.06% S, and not more than 0.1% P, is poured into the converter at 1250-1350°C. Fresh burnt lime (65 kg), limestone (15-20 kg), and fluorspar (2-5 kg) per ton of steel were used as slag forming materials. The use of liquid alloying elements (75% FeMn, 65% FeSi and SiMn) in the ladle makes it possible to reduce the expenditure of ferroalloys, to improve the macro- and microstructure of the metal, and to minimize the content of nonmetallic inclusions. The steel obtained satisfies the requirements of GOST 5058-65.

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- 50 -

USSR

UDC 616.127-005.8-039:616.9-022,38-
039:616.3-008.17-07-039.11

GAL'PERIN, E. A.; KACHUR, M. B.; Moscow Hospital imeni S. P.
Botkin

"Diagnosis of Myocardial Infarct That Simulates Food Poisoning"

Moscow, Sovetskaya Meditsina, No 4, 1971, pp 99-104

Abstract: A study of the literature and 31 case histories of patients with myocardial infarct hospitalized for food poisoning showed that gastrointestinal disturbances occur fairly frequently during the first few hours after an attack and especially 3 to 4 days later. The diagnosis of such cases is difficult because pain in the epigastrium is often combined with elevated temperature, nausea, vomiting, liquid stools, and so forth, although less intense than in food poisoning. Early differential diagnosis between the two diseases can be made by: (a) careful study of the anamnesis to determine whether the patient has had other diseases (e.g., of the cardiovascular system) and epidemiological inquiry regarding the possibility that other persons may have eaten the same foods that the patient did prior to the

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USSR

GAL'PERIN, E. A., et al, Sovetskaya Meditsina, No 4, 1971, pp
99-104

attack, (b) nature and sequence of symptoms, and (c) EKG examination and analysis of WBC, transferases, and ESR. Food poisoning may provoke myocardial infarction in persons suffering from chronic coronary insufficiency.

2/2

- 35 -

USSR

UDC: 681.92.94

GERSHBERG, I. M., KACHUR, M. M., LOZOVSKIY, A. M., Odessa Special Design Office of Polygraphic Machine Building

"An Installation for Applying a Photosensitive Layer to Form Plates"

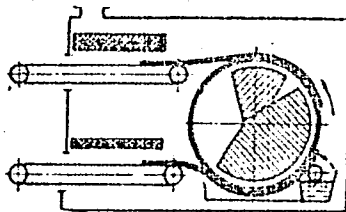
Moscow, Otkrytiya, Izobreneniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, Feb 72, Author's Certificate No 328415, Division G, B, filed 5 Sep 68, published 2 Feb 72, p 144

Translation: This Author's Certificate introduces an installation for applying a photosensitive layer to printing plates. The unit contains a predrying chamber for the plates, a means of rotating the plates, a tank with the photosensitive solution and a plate-drying chamber. As a distinguishing feature of the patent, the unit is designed for continuous application of the photosensitive layer. The means for rotating the plates is made in the form of an electromagnetic cylinder with magnetizing and demagnetizing sectors.

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USSR

GERSHBERG, I. M. et al., USSR Author's Certificate No 328415



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Acc. Nr:

AP0046686

Abstracting Service: 5/70
INTERNAT. AEROSPACE ABST.

Ref. Code:
UR 0185

A70-23194 Some properties of ordered phases based of the metallides TiNi and TiCo and interactions between them (Deiaki vlastivosti vporiadkovanikh faz na osnovi metalidiv TiNi i TiCo i vzaemodiiia mizh nimi). I. I. Kornilov, O. K. Belousov, and E. V. Kachur (Akademiiia Nauk SSSR, Institut Metallurgii, Moscow, USSR). *Ukrains'kii Fizichnii Zhurnal*, vol. 15, Jan. 1970, p. 110-112. 10 refs. In Ukrainian.

Investigation of changes in electrical resistivity of the compounds TiNi and TiCo and of alloys with deviation from stoichiometry to 3 at.% Ni and Co, respectively. The measurements were made at room temperature and at -196 C after quenching from 900 C or long-term annealing. Over the section TiNi-TiCo at intervals of 10 mol.% the electrical resistivity of TiCo was measured during continuous heating from 20 to 1000 C. It is established that for TiCo the minimum density at 20 C corresponds to 50 at.% Co for annealed and quenched samples, while at -196 C for the Ti-Co the minimum is observed with 51% Co. For the system Ti-Ni the minimum density corresponds to an Ni concentration equal to 49.5% for quenched samples. For annealed samples the minimum is observed with 51% Ni and is also present at -196 C with somewhat greater concentrations.

(Author)

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REEL/FRAME

19782002

18

USSR

UDC: 8.74

1

BADENKO, L. A., IVANOVA, L. V., KALININ, O. M., KACHURIN, A. L., KOLO-
DYAZHNYI, S. F.

"Analysis of the Motion of Aggregates of Cells in a Fresh-Water Sponge"

V sb. Probl. kibernetiki (Problems of Cybernetics--collection of works),
vyp. 25, Moscow, "Nauka", 1972, pp 119-127 (from RZh-Kibernetika, No 6, Jun
72, Abstract No 6V599)

Translation: An attempt is made to find estimates of the principal param-
eters of cell motions on the basis of mathematical processing of individual
trajectories of finite aggregates in a fresh-water sponge. Authors' ab-
stract.

1/1

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USSR

NIKITIN, V. N., LIFVITSKIY, D. A., STEFSENKO, E. A., GIMSHENIN, I. I.,
KACHURIN, D. E., and VORONISHCHEV, V. I., Central Scientific Institute of
Ferrous Metallurgy, Kuznetsk Metallurgical Combine

"Increasing the Ductility and Impact Strength of Carbon Steel"

Moscow, Metallurg, No 8, Aug 71, pp 17-19

Abstract: A basic structural steel for different structures and machines is steel St. 3sp 3YuA, according to GOST 380-60 has an impact strength of 3 kg-m/cm² at -20°C. Aluminum in the amount of 0.1-0.3% improves its impact strength and increasing its content to 0.35% does not improve strength properties but leads to an increase in ductility of hot-rolled steel St. 3sp 3YuA at 0.001% Al. In studies of steels St. 3 sp and St. 3Yu in a cold state it was found that aluminum improves their impact strength at -20°C, however the thicker the sheet the greater the tendency to cold brittleness. Steel St. 3Yu has a greater impact strength than St. 3sp due to smaller inclusions of sulfur. In all instances (for steel St. 3sp) strength properties were better for the normalized state than for the hot-rolled state.

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USSR

UDC: 621.315.592

ZELEVINSKAYA, V. M., KACHURIN, G. A., and SMIRNOV, L. S., Institute of Semiconductor Physics, Novosibirsk

"Interaction of Impurities and Defects in GaAs Doped with Tellurium Ions"

Leningrad, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1385-1387

Abstract: This brief communication is the follow-up to an earlier paper (V. M. Zelevinskaya, et al, FTP, 5, 1971, p 1969) in which it was found that the behavior of impurities of atoms in the VI group used for doping GaAs is radically different from the behavior of doping atoms of the II and IV group. In that earlier paper, it was assumed that heavy selenium and tellurium ions amorphize the doped layer and that sulphur ions could not be used for doping. The purpose of the present paper is to check the validity of this assumption with an experiment involving the irradiation of the GaAs by Te ions with an energy of 40 kev and a dose of $10^{15}/\text{cm}^2$ at various target temperatures. The method of irradiation as well as of the annealing and measurement procedures that followed it is given in another earlier article in the same journal (V. M. 1/2

USSR

ZELEVINSKAYA, V. M., et al, Fizika i tekhnika poluprovodnikov, No 7, 1972, pp 1385-1387

Zelevinskaya, et al, FTP, 4, 1970, p 1784). Curves are plotted for the layer concentration and mobility of electrons as functions of the irradiation temperature, and for the change in layer resistance after irradiation as a function of isochronous annealing temperatures. It is concluded that the assumption noted above is correct. The authors express their gratitude to S. I. Romanov for the electronographic work.

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USSR

UDC: 621.315.592

GERASIMENKO, N. N., DVURECHENSKIY, A. V., KACHURIN, G. A., PRIDACHIN, N. B., SMIRNOV, L. S., Institute of Physics of Semiconductors, Siberian Department of the Academy of Sciences, Novosibirsk

"Radiation Annealing of Defects Formed During Ion Bombardment of Crystals"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 9, Sep 72, pp 1834-1835

Abstract: The authors investigate the recovery of gallium arsenide and silicon structures amorphized by bombardment with 40 keV argon ions. The annealing was accompanied by irradiation with 3.5 MeV electrons or 10 keV protons. The three procedures used for checking structural transformations are described. It was found that defects induced by argon ion bombardment were not removed by heating at 200-250°C without proton irradiation. A temperature of 500°C is required without the proton treatment. When proton bombardment is used, the lower temperature is sufficient for recovery of the nondefective structure. The authors thank S. I. Romanov for taking the electron-diffraction patterns of the surface of the specimens, and B. I. Vikhrev for measuring the electron paramagnetic resonance.

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USSR

UDC 621.3.032.269.1

KACHURIN, G.A.

"Ion Doping Unit"

Moscow, Pribery i Tekhnika Eksperimenta, No 5, Sept-Oct 1971, pp 222-223

Abstract: The paper describes a simple ion gun without a mass-separator which can be mounted on any device for vacuum deposition. The gun is designed for creation of heavily-doped regions in thin (< 1 micron) semiconductors. With high levels of doping there is no necessity for cleaning of the ion beam by the magnetic mass-separation method. Elimination of a mass-separator substantially simplifies the unit and decreases its weight and cost. The dimensions of the unit are $1400 \times 700 \times 700$ mm³. During the course of several years the gun has been used for doping A_2B_6 and A_3B_5 compounds with ions of almost all the basic elements. Received by editors 9 Mar 71. 5 ref. 1 fig. [Institute Of The Physics Of Semiconductors, Siberian Department Of The Academy Of Sciences, Novosibirsk]

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1/2 042 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--LOW RESISTIVITY FILMS OBTAINED BY ION BOMBARDMENT ON SEMIINSULATING
GALLIUM ARSENIDE -U-
AUTHOR--ZELEVINSKAYA, V.M., KACHURIN, G.A., PRIDACHIN, N.B., SMIRNOV, L.S.
COUNTRY OF INFO--USSR
SOURCE--FIZIKA I TEKHNIKA POLUPROVODNIKOV, VOL. 4, FEB. 1970, P. 317-320
DATE PUBLISHED----FEB 70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--POLYCRYSTALLINE FILM, ION BOMBARDMENT, GALLIUM ARSENIDE,
CARRIER DENSITY, ELECTRIC CONDUCTIVITY, NEUTRON IRRADIATION, ELECTRON
BOMBARDMENT, XENON, SELENIUM, KRYPTON, ZINC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1346

STEP NO--UR/0449/70/004/000/0317/0220

CIRC ACCESSION NO--AP0107819
7777777777

UNCLASSIFIED

2/2 042

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0107819

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL STUDY IN WHICH CONDUCTING FILMS WERE SYNTHESIZED ON SEMIINSULATING GALLIUM ARSENIDE BY BOMBARDMENT WITH XENON, KRYPTON, SELENIUM, AND ZINC IONS. THE CARRIER CONCENTRATION IN THE FILM IS 5 TIMES 10 TO THE 16TH PER CU CM, THE MOBILITY IS 10 SQ CM-V SEC, AND THE THERMAL ACTIVATION ENERGY IS 0.07 EV. THE EFFECT OF THE DOSE RATE, THE ION ENERGY, AND THE SUBSTRATE TEMPERATURE ON THE FORMATION OF THE CONDUCTING FILM IS INVESTIGATED. WITH THE AID OF AN ETCHANT ACTING AT A RATE OF 5 TO 8 A-SEC, THE DISTRIBUTION OF THE FILM CONDUCTIVITY WITH DEPTH IS RECORDED. ON THE BASIS OF EXPERIMENTS ON ION BOMBARDMENT AND IRRADIATION OF SEMIINSULATING GAAS WITH REACTOR NEUTRONS AND ELECTRONS WITH AN ENERGY OF 3.5 MEV, IT IS CONCLUDED THAT AN INCREASE IN CONDUCTIVITY IS ATTRIBUTABLE MAINLY TO A MERGING OF THE BIAS PEAKS INTO A SINGLE FILM WHERE THE COMPENSATION CONDITIONS ARE NOT FULFILLED.

UNCLASSIFIED

USSR

KACHURIN, V. N.

"Synthesis of Optimal Control Algorithms for Discrete Systems Based on Standard Pulse Characteristics"

Vychisl. Tekhnika [Computer Technology -- Collection of Works], No 2, Leningrad, Energiya Press, 1972, pp 24-28 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V732, by the author).

Translation: Results are presented from studies related to the synthesis of standard discrete systems which are initial systems for determination of optimal algorithms for numerical control based on standard pulse transient characteristics of the system.

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KACHURINA, O. K.

COMPUTERS

СОВЕТСКИЕ ПРИБОРЫ
31 АВО 71

71. USSR

UDC 692.513.5:681.3

BALAPANOV, Ye., KACHURINA, O. K., KIRDYASIKIN, A. P., KULEKOV, B., LYAN, E. N.,
USTINOV, V. A., TASHIBAYEV, B. B., TRET'YAKOV, V. V., and ELBEROV, V. V.

"The MS-1 Information Retrieval System"

Tr. In-ta Mat. i Mekh. AN KazSSR (Works of the Institute of Mathematics and
Mechanics of the Academy of Sciences, Kazakh SSR), No 1, 1970, pp 293-302 (from
R-Zh -- Informatika, No 4, Apr 71, Abstract No 71.4.169 (71R-12501))

Translation: An approach to the creation of a system for collection, storage, and
processing of technological information from a controlled process is described. One
variant of an information retrieval system is presented. It includes technical
resources, the organization of information arrays in computer storage, and a complex
of programs for processing information.

1/2 028 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--PRIMARY CORTICAL RESPONSES AS FUNCTIONAL CHARACTERISTICS OF
ASCENDING SYSTEMS OF INTERNAL AND EXTERNAL ANALYSERS -U-
AUTHOR--BULYGIN, I.A., KACHURO, I.I.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL VYSSHEY NERVNOY DEYATEL'NOST 1970, VOL 20 NR 1, PP 115-122

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CAT, ANESTHESIA, SENSORY PHYSIOLOGY, NERVOUS SYSTEM, GLUCOSE,
SODIUM CHLORIDE, DIGESTIVE SYSTEM, SMALL INTESTINE, ELECTROPHYSIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1982/0835

STEP NO--UR/0247/70/020/001/0115/0122

CIRC ACCESSION NO--AP0052270

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0052270

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IN ACUTE EXPERIMENTS ON CATS UNDER CHLORALOSE, PRIMARY RESPONSES (PR) WERE RECORDED TO DIFFERENT INTEROCEPTIVE AND EXTEROCEPTIVE AGENTS. PR TO ACOUSTIC, ELECTRO CUTANEOUS AND TACTILE STIMULI WERE RECORDED PRACTICALLY IN ALL THE EXPERIMENTS, AND TO ELECTRICAL STIMULATION OF THE CENTRAL PARTS OF THE SPLANCHNIC AND PELVIC NERVES IN 70PERCENT OF CASES. INTEROCEPTIVE ACTION OF A 60PERCENT GLUCOSE SOLUTION AND OF 20PERCENT SODIUM CHLORIDE SOLUTION ON THE STOMACH MUCOSA, AS WELL AS STRETCHING OF THE HOLLOW INTERNAL ORGANS WITH A RUBBER BULB, LED TO RARE RESPONSES OF THE PR TYPE (IN 10 TO 26PERCENT OF CASES) OF A LONG LATENCY, FROM 40 MSEC, TO 3.5-5.5 SEC., WHICH POINTS TO A CHAIN REACTION. PR WERE NOT RECORDED IN RESPONSE TO AN ADEQUATE STIMULATION OF THE MUCOSA OF THE STOMACH AND THE SMALL INTESTINE BY A 20PERCENT GLUCOSE SOLUTION, AND TO A TACTILE AND ELECTRICAL (1 TO 15 UPSILON) STIMULATION OF THE SEROSA OF THE ORGANS. THE CHARACTERISTICS OF THE RECORDED PR ARE DUE TO THE PECULIARITIES (PREVIOUSLY ESTABLISHED BY THE AUTHORS) OF AFFERENT INNERVATION OF EXTERO AND INTEROCEPTIVE ZONES, A DIFFERENT RELATIVE NUMBER OF ENDINGS OF SOMATIC (GROUP A) AND SYMPATHETIC AFFERENTS WHICH THEY RECEIVE.

UNCLASSIFIED

Organ and Tissue Transplantation

USSR

UDC 612.6.054.017.4

3

K
SVET-MOLDAVSKIY, G. Ya., SHAGIYAN, G. Sh., MKHEIDZE, D. M., LITOVCHENKO, T. A.,
OZERETSKOVSKAYA, N. N., KADAGIDZE, Z. G., and CHERNYAKHOVSKAYA, I. Yu., Institute
of Experimental and Clinical Oncology, Academy of Medical Sciences USSR, Moscow
(Presented by Academician V. V. Parin)

"Inhibition of Transplantation Immunity in Mice Infected With *Trichinella spiralis*"

Moscow, Doklady Akademii Nauk SSSR, Vol 190, No 4, Feb 70, pp 999-1000

Abstract: In this study the authors attempted to get experimental support for the theory proposed by Svet-Moldavskiy that helminths produce substances which drastically inhibit the immunity of the host. Experiments were based on skin transplants. It was determined that in mice infected with *Trichinella spiralis*, the allogenic skin transplant survived much longer, and the detachment of necrotic sections occurred much later than in controls.

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USSR

UDC 669.71:669-416:539.4:539.52

DRITS, M. YE., KADANER, E. S., TOROPOVA, L. S., KOP'YEV, I. M.

"Variation of the Strength and Plastic Properties of Aluminum Foil and Sheet Aluminum as a Function of Composition"

V sb. Struktura i svoystva legk. splavov (Structure and Properties of Light Alloys -- collection of works), Moscow, Nauka Press, 1971, pp 28-32 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I625)

Translation: A study was made of the dependence of the mechanical properties of Al rolled material A99 2-0.02 mm thick. It was established that the specific properties of the foil (a sharp drop in plasticity and an increase in strength) begin to appear with a thickness of the rolled material of 0.1 mm. A study was made of the dependence of the mechanical properties of the 2 mm sheet and 0.02 mm foil on composition for binary alloys of the Al-Cu, Al-Zn, Al-Mg, Al-Mn, and Al-Ti systems. The properties were determined both in the peened and annealed states. The nature of the dependence of the mechanical properties on the composition is analogous for foil and sheet, but the alloying effect is exhibited appreciably more strongly in the foil. The observed deviations from this relation are connected with the harmful effect of oxidation of the interfaces (internal and external) and the presence of microdefects caused by inclusions of solid and brittle phases. Stress relief of the foil has a cross section. 3 illustrations and a 6-entry bibliography.

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- 2 -

Mechanical Properties

USSR

UDC 669.715'74'884:539.43

KADANER, E. S., TURKINA, N. I.

"Mechanical Properties and High-Temperature Strength of Individual Phases of Alloys of the Al-Mn-Li System"

V sb. Struktura i svoystva legk. splavov (Structure and Properties of Light Alloys -- collection of works), Moscow, Nauka Press, 1971, pp 95-101 (from RZh-Metallurgiya, No 4, Apr 72, Abstract No 4I636)

Translation: A study was made of the mechanical properties of alloys of various phases of the domains of the Al-Mn-Li system and also the high-temperature strength of individual phases present in these alloys. The mechanical properties were determined in pressed alloys worked with respect to the optimal heat treatment conditions, the methods of short-term stretching at room and increased temperatures, and also stress-rupture strength (lasting 100 hours). It was established that the best properties are observed for Al alloy with 1.5% Mn and 2.8-3.8% Li at a quenching temperature of 590° in the two-phase domain of $\alpha + \text{MnAl}_6$. The indicated alloys have low strength properties at room temperature and are characterized by relatively high stability of the properties on heating to 200° with prolonged holding. The high-temperature strength of the phases was studied by the method of short-term and prolonged (one-hour) microhardness in the 20-300° range. The MnAl_6 phases and the solid solution of Li based on this

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USSR

KADANER, E. S., et al., Struktura i svoystva legk. splavov, Moscow, Nauka Press, 1971, pp 95-101

compound can be classified as heat-resistant phases with respect to absolute values of the microhardness and nature of the temperature dependence. The role of the alloying elements in work hardening and stress-relief of the Al-Mn-Li alloys has been discovered. Five illustrations, 1 table, and a 14-entry bibliography.

2/2

- 25 -

USSR

KADANER, E. S., TURKINA, N. I.

"Mechanical Properties and Heat Resistance of Individual Phases of Alloys in the System Al-Mn-Li"

Struktura i Svoystva Legk. Splavov [Structure and Properties of Light Alloys -- Collection of Works], Moscow, Nauka Press, 1971, pp 95-101, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V1341 by the author's).

Translation: The mechanical properties of alloys of various phase areas in the system Al-Mn-Li are studied, as well as the heat resistance of the individual phases present in these alloys. The mechanical properties were determined on pressed alloys treated according to the optimal mode of heat treatment by methods of short term extension at room and elevated temperatures, as well as long term (100 hour) strength. It was found that the best properties are produced in alloys of aluminum with 1.5% manganese and 2.8-3.8% lithium. These alloys have low strength properties at room temperature and high stability of properties when heated to 200° upon long holding. The heat resistance of the phases was studied by brief and extended (1 hour) microhardness testing in the 20-300° temperature interval. The phases $MnAl_6$ and the solid solution of lithium based on this compound are

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USSR

KADANER, E. S., TURKINA, N. I., *Struktura i Svoystva Legk. Splavov*, Moscow, Nauka Press, 1971, pp 95-101.

heat-resistant phases, on the bases of absolute values of microhardness and its temperature dependence. 14 Biblio. Refs.

2/2

- 2 -

USSR

UDC: 539.385

DRITS, M. YE., KADANER, E. S., KOP'YEV, I. M., TOROPOVA, L. S.
and DEMIDOV, YU. S., Institute of Metallurgy imeni A. A. Baykov,
Academy of Sciences USSR

"Factors Affecting the Fatigue Characteristics of Aluminum
Foil of Various Compositions"

Moscow, Sb. "Ustalost' metallov i splavov". "Nauka" Press,
1971, pp 112-116

Translation: Aluminum foil finds applications in the production
of miniature computer membranes operated under cyclic loading
conditions. There are almost no data in reference sources on
the fatigue strengths of aluminum foil. This study deals with
the effect of alloying components on the limited service life of
aluminum foil. Ordinary fatigue curves have been plotted for
pure A99 aluminum and Al alloy with 4% Zn. The effect of the
foil's microgeometry on fatigue properties was studied on
foil from Al alloy with 4% Zn. It is shown that the fatigue
strength of foil from aluminum alloys depends on: 1) foil
composition, governing the presence or absence of internal
defects; 2) alloy strength, and 3) the state of internal and
external interfaces. (3 illustrations, 4 biblio. ref.; summary)

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USSR

UDC 669.715.3.85.86.018.29(088.8)

DRITS, M. Ye., KADANER, E. S., TOROPOVA, L. S., KOP'YEV, I. M., DEMIDOV, Yu. S.,
LEYKIN, A. I., YEGOROV, N. I. [Institute of Metallurgy imeni A. A. Baykov]

"Aluminum-Based Alloy for Foil"

USSR Author's Certificate No. 276419, Filed 13/11/68, Published 16/10/70.
(Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5, I748P).

Translation: The alloy has the following composition (%): Cu 0.5-2.0, at least one of the REM 0.1-0.5 and Zr 0.05-0.15, impurities < 0.01 , remainder Al. The introduction of Cu and the rare and refractory metals increases its physical and mechanical properties. The alloy shows σ_b 30 kg/mm², withstands $30 \cdot 10^6$ cycles without rupture, and can be rolled into a foil 10-20 μ thick.

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UDC 669.715.22.85.86.296.018.2(088.8)

USSR

DRITS, M.Ye., KADANER, E. S., TOROPOVA, L. S., KOP'YEV, I.M., DEMIDOV, Yu.S.,
LEYKIN, A. I., YEGOROV, N. I.

"Aluminum-Based Alloy for Foil"

USSR Author's Certificate No. 276420, Filed 13/11/68, Published 16/10/70.
(Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5,
750P).

Translation: This alloy has the following composition (%): Ag 0.75-2, REM 0.1-0.5, Zr 0.05-0.15, impurities \leq 0.01, Al remainder, has high σ_b (26 kg/mm²) and high durability and stability of properties with cyclical loading, has good technological properties for rolling to a thickness of 10-20 μ ; the foil has good surface qualities.

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1/2 G24 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ELECTROCHEMICAL DEPOSITION OF A RUTHENIUM ALLOY -U-

AUTHOR--(02)-KADANER, L.I., AUAKYAN, R.B.

COUNTRY OF INFO--USSR

SCURCE--U.S.S.R. 264,050
REFERENCE--*K* LTRBYTIYA, IZVEST., PROM. GBRAZTSY, TOVARNYE ZHAKI 1970,
DATE PUBLISHED--10FEB70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CHEMICAL PATENT, ELECTROCHEMICAL EFFECT, METAL DEPOSITION,
RUTHENIUM ALLOY, ELECTROLYTE, ELECTRODEPOSITION

CENTRAL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3004/1825

STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AAC132090
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0132090

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. AN RU ALLOY IS ELECTROCHEM. DEPOSITED AT 15-40DEGREES AND CATHODE C.D. 3-9 A-DM PRIME2 FROM AN ELECTROLYTE CONTG. RU 0.1-8, NICKL SUB2 1-80, NH SUB4 CH 30-100, KCL 3.5-3.8, H SUB2 O SUB2 1-1.1 G-L., AND HCL TO PH 1.0-1.8. FACILITY: KHARKOVSKIY GOSUDARSTVENNY PEDAGOGICHESKIY INSTITUT IM. G. S. SKOVRODY.

UNCLASSIFIED

KADANTSEVA M.I.

Acc. Nr:

AP0041516

Abstracting Service:

CHEMICAL ABST.

Ref. Code:

4-96 **UR 0075**

83463p Cerium(III) chloride-hexamethylenediamine dihydrochloride-water system. Kadantseva, M. I.; Zhuravlev, E. F. (Voronezh. Politekh. Inst., Voronezh, USSR). *Zh. Neorg. Khim.* 1970, 15(1), 211-14 (Russ.). Soly. diagrams (25 and 50° isotherms) are constructed for $CeCl_3 \cdot H_2N(CH_2)_6NH_2 \cdot 2HCl$ (I)- H_2O system. At 25° the system has only 2 soly. isotherms of $CeCl_3 \cdot 7H_2O$ and I. A compd., $[H_2N(CH_2)_6NH_2][CeCl_3]$, sep. at 50° in addn. to the above mentioned solids. HMJR

REEL/FRAME
19751384

1/2 031 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--RADIATION CATALYTIC ACTIVITY OF DIAMOND AND GRAPHITE -U-

AUTHOR--(05)-VLADIMIROVA, V.I., ZHABROVA, G.M., KADENATSI, B.M.,
KRIVENKOVA, P.G., BUTUZOV, V.P.

COUNTRY OF INFO--USSR

SOURCE--KHIM. VYS. ENERG. 1970, 4(2), 182-3

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, NUCLEAR SCIENCE AND TECHNOLOGY, EARTH SCIENCES
AND OCEANOGRAPHY

TOPIC TAGS--CATALYST ACTIVITY, DIAMOND, GRAPHITE, METHANOL, GAMMA
RADIATION, FORMALDEHYDE, ETHYLENE GLYCOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0748

STEP NO--UR/0456/70/004/002/0182/0183

CIRC ACCESSION NO--AP0119655

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0119655

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIAMOND AND GRAPHITE WERE STUDIED TO DET. THEIR ACTIVITY IN DIFFERENT ELECTRONIC CONFIGURATIONS. SYNTHETIC AND NATURAL DIAMONDS WERE USED. THE SURFACE OF ALL SAMPLES WAS INCREASED BY VIBRATION GRINDING. THE SAMPLES WERE PURIFIED WITH HCL AND DRIED AT 120DEGREES. THE RADIATION CATALYTIC ACTIVITY WAS DETD. BASED ON THE TRANSFORMATION OF MEOH TAKING PLACE IN AN ABSORBED LAYER AT ROOM TEMP. THE SAMPLES WERE DEGASSED AT 400DEGREES AND MEOH VAPORS WERE ADSORBED ON THEM BY COOLING THEM TO ROOM TEMP. THEN THE SAMPLES WERE IRRADIATED WITH PRIME60 CO GAMMA RAYS, AND THE PRINCIPAL PRODUCTS FORMED WERE CH SUB2 O AND ETHYLENE GLYCOL. THE TOTAL PRODUCTS FORMED EXCEEDED BY A FACTOR OF 100 THE TOTAL OBTAINED BY THE HOMOGENEOUS RADIOLYSIS OF MEOH. THUS DIAMONDS WITH A WIDTH OF THE FORBIDDEN BAND OF 7 EV TRANSFER ENERGY WELL. NO DIFFERENCE IN ACTIVITY WAS FOUND BETWEEN SYNTHETIC AND NATURAL DIAMONDS. GRAPHITE DID NOT TRANSFER THE ABSORBED ENERGY. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 620.186.5:669.71

DRITS, M. Ye., KADENER, E. S., and TOROPOVA, L. S., Institute of Metallurgy
imeni A. A. Baykov

"Recrystallization of a Foil of Aluminum and Its Alloys"

Moscow, Metallovedeniye, No 5, 1971, pp 49-51

Abstract: A study was made of the effect of Cu, Zn, Ag, Mg, Ce, Nd, mixed metal, Mn, Cr, Ti, and Zr on the recrystallization temperature of a 20- μ -thick aluminum foil, and, for purposes of comparison, of the recrystallization of binary aluminum alloys on 2-mm-thick sheets. Results show the effect of alloying elements on recrystallization temperatures at the beginning and end of the recrystallization. Additions of Zr, Mn, Ti, and Cr most effectively impede the development of recrystallization processes in the foil. Recrystallization processes proceed in the foil much more intensively than in the material of the same composition but of massive cross-section. Two figures, one table, nineteen bibliographic references.

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Acc. Nr:

AT0045129

Abstracting Service: 5/70
INTERNAT. AEROSPACE ABST.

Ref. Code:

UROC20

KADER B.A.

A70-23169 - A universal law of turbulent heat and mass transfer from the wall at large Reynolds and Peclet numbers (Universal'nyi zakon turbulentnogo teplo- i massoperenosa ot stenki pri bol'shikh chislakh Reinal'dsa i Pekle). B. A. Kader and A. M. Iantom (Akademiya Nauk SSSR, Institut Fiziki Atmosfery, Moscow, USSR). *Akademiya Nauk SSSR, Doklady*, vol. 190, Jan. 1, 1970, p. 65-68. 17 refs. In Russian.

Development of a universal law characterizing turbulent heat and mass transfer from a flat wall to a plane-parallel fluid flow at large Reynolds and Peclet numbers. A comparison is made between empirical data concerning heat and mass transfer at various Reynolds and Prandtl numbers and the results of calculations according to a formula giving the Nusselt number in terms of the Reynolds and Prandtl numbers.

A.B.K.

A-5

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REEL/FRA
19780029

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USSR

SOKOLOV, V. I., ZHESTEREV, V. I., Candidate of Biological Sciences, SERGEYEV, V. A., Doctor of Biological Sciences, TETERINA, A. V., Candidate of Biological Sciences, and ~~KADETOV, V. N.~~, All Union Scientific Research Institute of Veterinary Virology and Microbiology

"Automated Apparatus for Laboratory Cultivation of Animal Cells in Suspension"

Moscow, Doklady Vsesoyuznoy Ordena Lenina Akademii Sel'skokhozyaystvennykh Nauk imeni V. I. Lenina, No 8, 1971, pp 40-42

Abstract: An automatically monitored apparatus in which suspensions of animal cells can be cultivated according to all known techniques was designed and built. The apparatus consists of four units: a cultivation block, a gas supply system, a cooling chamber, and a control and recording panel. The cultivation block is a thermostatically controlled water container in which flasks of various sizes and shapes are immersed half-way. Rods, tubes, and needles installed in air-tight stoppers facilitate addition and withdrawal of cells and reagents as well as recording of various parameters. Cells are introduced by means of compressed air and sampled using a vacuum. In the gas supply system, tanks with various gases are attached to a control panel which selects the appropriate gas and controls its flow between 2
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SOKOLOV, V. I., et al., Doklady Vsesoyuznoy Ordana Lenina Akademii Sel'skokh-
ozyaystvennykh Nauk imeni V. I. Lenina, No 8, 1971, pp 40-42

and 60 liters per hour. Temperature, pH, and other parameters are automati-
cally adjusted and recorded. Optical density of the cell suspension is also
recorded. Prior to each experiment, the apparatus must be thoroughly washed,
sterilized, assembled, and calibrated. This takes 2.5-3 hours, which are
subsequently more than regained through the automatic control. In test runs,
cell growth was better than in the older semi- and nonautomated apparatuses.

2/2

- 15 -

1/2 009 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--A COMPARISON OF NETWORKS OF A THREE PHASE ASYNCHRONOUS MOTOR WITH
RECTIFIERS IN THE STATOR CIRCUIT TO ACHIEVE REDUCED SPEEDS -U-
AUTHOR-(02)-PARAIL, V.A., KADEYEV, G.D.
COUNTRY OF INFO--USSR
SOURCE--NOVOCHERKASSK, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY,
ELEKTROMEKHANIKA, NO 3, 1970, PP 285-289
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--ELECTRIC NETWORK, ELECTRIC MOTOR, ELECTRONIC RECTIFIER
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1999/1685 STEP NO--UR/0144/70/000/003/0285/0289
CIRC ACCESSION NO--AT0123509
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0123509

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE NETWORKS OF THIS TYPE ARE WIDELY USED IN ELECTRIC DRIVES. IN THE PUBLISHED WORKS ARE FOUND ABOUT 30 SPECIFIC DIAGRAMMATICAL SOLUTIONS BUT THERE ARE NO CCMPARATIVE ANALYSES OF ADVANTAGES AND DISADVANTAGES OF NETWORKS. THE ARTICLE CONTAINS SUCH AN ANALYSIS ALONG WITH CONCLUSIONS.

UNCLASSIFIED

USSR

UDC 612.822.3

RAYEVA, S. N., and KADIN, A. L., Department of Memory Problems, Institute of Biophysics, Academy of Sciences USSR, Pushchinona-Oke, and Institute of Neurosurgery, Academy of Medical Sciences USSR, Moscow

"Spontaneous and Evoked Activity of Neurons in Deep Structures of the Human Brain During Voluntary Movements"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 2, 1973, pp 198-205

Abstract: Spontaneous and evoked activity of 365 neurons in the ventrolateral thalamic nucleus, globus pallidus, putamen, and n. caudatus were studied in parkinsonian patients during stereotaxic surgery performed under local anesthesia. The records show that each structure has its own characteristic pattern of spontaneous activity, by which it can be differentiated from neighboring structures. During voluntary contraction of skeletal muscles (bending and stretching the fingers, moving the hand, and lifting the arm) on the ipsi- and contralateral side, the ventrolateral thalamus responds with tonic evoked activity (in 90% of the cases) of the excitatory, inhibitory, or intermediate type, which lasts almost throughout the motor activity. The evoked activity in the extrapyramidal system, especially in the globus pallidus and putamen, is phasic, that is, the 1/2

USSR

RAYEVA, S. N. and KADIN, A. L., Fiziologicheskiy Zhurnal SSK imeni I. M. Sechenov, Vol 59, No 2, 1973, pp 198-205

neurons fire a brief valley of impulses at the beginning and upon termination of the voluntary movement. It is believed that these functional differences may serve as an additional diagnostic tool in brain surgery.

2/2

- 31 -

Corrosion

USSR

UDC 669.018.6:620.194.2

KADIROV, T., and PROSHITSKIY, B. Ye.

"Corrosion Resistance of VAD 23 Alloy Sheet"

[Tr.] Tashkent. politekhn. in-ta ([Works] of Tashkent Polytechnic Institute), 1970, vyp. 77, pp 90-92 (from RZh-Metallurgiya, No 1, Jan 72, Abstract No II766 by I. Nabatova)

Translation of Abstract: The authors investigated the resistance of VAD23 alloy to general corrosion (GC) and stress corrosion (SC). Specimens of 2-mm-thick clad sheet, prehardened in various agents (water at 20 and 96°, oil at 20°, and liquid nitrogen at -196°) and aged under the following procedures: 140°, 18 hours; 160°, 10 hours; and 200°, 10 hours, underwent GC testing. Losses of mechanical properties were determined after specimens had been held in a NaCl solution for 150 days. SC susceptibility was determined by the "arc" method, with specimens periodically submerged in a 3% NaCl solution. Changing the hardening agents had practically no effect on the loss of mechanical properties. Specimens aged under the procedure of 140° for 18 hours proved least resistant to GC (loss of σ_b was 4-4.9%, and of δ 31-38.5). In the case of specimens aged at 160° for 10 hours, GC resistance was satisfactory, while the mechanical properties of those

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USSR

KADIROV, T., and PROSHITSKIY, B. Ye., [Tr.] Tashkent. politekhn. in-ta
([Works] of Tashkent Polytechnic Institute), 1970, vyp. 77, pp 90-92
(from RZh-Metallurgiya, No 1, Jan 72, Abstract No II766 by I. Nabatova)

aged at 200° for 18 hours were practically unchanged. The SC resistance
of sheets after two-stage aging was satisfactory. Two tables.

2/2

USSR

UDC 541.183

DUBININ, M. M., BAKAYEV, V. A., and KADLETS, O., Institute of Physical Chemistry, Academy of Sciences USSR, Moscow and Institute of Physical Chemistry, Academy of Sciences, Czechoslovakia, Prague

"Behavior of the Adsorption Equation in the Theory of Micropore Filling"

Moscow, Doklady Akademii Nauk SSSR, Vol 205, No 3, 1972, pp 628-631

Abstract: Several investigators have observed experimentally that the adsorption by micropores, plotted as a function of the equilibrium pressure, has an inflection point. The second differential of the general equation, after appropriate substitutions, is set equal to zero and has the form $(nRT/E^n)A_0^n -$

$A_0 - RT(n - 1) = 0$, where A_0 is the differential molar heat of adsorption at a particular partial pressure p ; E is the characteristic energy of adsorption; R is the gas constant; T is the temperature; and n is the porosity constant. As can be derived from the equation, the inflection point occurs for n greater than 1 and disappears for n equal to 1. A table of data is given for the adsorption of neopentane, benzene, n -hexane and methane on various zeolites. At relatively high temperatures the isotherms become approximately linear.

1/1

USSR

KADMENSKIY, S. G., KALECHITS, V. YE., and KHLEBOSTROYEV, V. G., Voronezh State University

"Stripping Reactions With Transfer of Two Nucleons and the Polarizability of t , He^3 "

Moscow, Yadernaya Fizika, Vol. 12, No. 2, Aug 70, pp 302-307

Abstract: The possibility of explaining anomalies in reactions of the type (t, p) , (He^3, n) by the polarizability of triton or He^3 in the field of the target nucleus is examined. These reactions occur in several nuclei in the lp -shift when an anomalous peak is observed at zero angle in the angular distribution for the case of momentum transfer $L = 2$. Computer calculations were made to explain anomalous reactions with the aid of the polarizability of tritons for reactions $B^{10}(t, p)B^{12}$ in which the anomaly appears most strongly in the cross section. Calculations show that the relationship between the calculated amplitudes of the reaction were little affected by variation in the width of the potential hole. A graph of the amplitude of the reaction as a function of the

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USSR

KADMENSKIY, S. G., et al, Yadernaya fizika, Vol. 12, No. 2, Aug 70, pp 302-307

scattering angle shows that the maximum amplitude as calculated by the plane wave approximation is greater than the maximum amplitude as calculated considering the polarizability of tritons by a factor of 250. It is concluded that none of the mechanisms presently known can explain the anomalous features of the cross section of the stripping reaction with transfer of two nucleons. It is hypothesized that these characteristics can be explained only by subsequent consideration of wave distortion, including distortion of wave functions of the center of gravity of triton and the wave function of the proton.

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USSR

UDC: 619.612.128

BURGANOV, R. K., KADOCHNIKOV, A. P.

"A Method of Determining the Activity of Cholinesterase"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrazttsy, Tovarnyye Znaki, No 13, May 72, Author's Certificate No 335253, Division C, filed 17 Nov 70, published 11 Apr 72, p 89

Translation: This Author's Certificate introduces a method of determining the activity of cholinesterase by using substrates to determine the increase in luminescence intensity. As a distinguishing feature of the patent, sensitivity. As a distinguishing feature of the patent, sensitivity and accuracy are improved and the determination time is reduced by using a luminescent substrate of β -methyl umbelliferone acetate in a concentration of $3.6 \cdot 10^{-7}$ g/ml in a phosphate buffer with a pH of 7.8-8.

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UDC 533.952

IGITKHANOV, YU. L. (Corresponding Member of the Academy of Sciences USSR), KADOMTSEV, B. B.

"Pinch-Effect Instability in Low-Density Plasma"

Moscow, Doklady Akademii Nauk SSSR (Proceedings of the Academy of Sciences USSR), Vol 191, No 5, 1970, pp 1013-1021

Abstract: In a low-density plasma, the directional velocity of the electrons approaches the speed of sound. If the linear proton number (for a hydrogen discharge) becomes less than unity (i.e., the number of particles per linear cm $< 10^{16}$), electron velocity exceeds the speed of sound. Under these conditions the normal hydrodynamic approximations fail: the entire physics of instability changes.

The case is studied theoretically in which the proton number is much less than unity (i.e., the electron velocity is much greater than the speed of sound). The ions are not magnetized, and their Larmor radii are greater than the radius of the plasma column. There is an azimuthal magnetic field, but no longitudinal field.

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IGIENKOV, YU. L., et al, Doklady Akademii Nauk SSSR, Vol 191, No 5, 1970, pp 1018-1021

The dynamics of the plasma are described by equations of ideal two-fluid magnetohydrodynamics. Small and shortwave oscillations of the column are studied. It is found that stability requires a sharp drop in density at the periphery of the column. Relatively strong instability can arise in low-density pinches from the resonance between helicons and Alfvén waves. As in the case of ordinary diffusion pinch, kinks develop in the internal region and constrictions on the periphery.

The results can be extended qualitatively to cases of longitudinal magnetic fields. Low-density pinch instability can be demonstrated experimentally on an ordinary plasma column without a longitudinal field. As shown by experiments on the Zeta machine, the competing process of electron escape excites oscillations and interrupts the current. Orig. art. has 5 refs.

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1/2 039 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--ON DIFFUSION OF A PLASMA IN TOROIDAL SYSTEMS -U-
AUTHOR--(02)-KADOMTSEV, B.B., POGUTSE, O.P. *K*
COUNTRY OF INFO--USSR
SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 5, PP 1675-1682
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS
TOPIC TAGS--PLASMA DIFFUSION, DIFFUSION COEFFICIENT, HEAT TRANSFER
COEFFICIENT, ELECTRON COLLISION, MAGNETIC FIELD

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/0129 STEP NO--UR/0056/70/058/005/1675/1682
CIRC ACCESSION NO--AP0127755
UNCLASSIFIED

2/2 039

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0127755

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TURBULENT DIFFUSION OF A PLASMA DEVELOPING AS A RESULT OF GRAVITATIONAL DISSIPATIVE INSTABILITY IN TOROIDAL SYSTEMS IS CONSIDERED. EXPRESSIONS FOR THE DIFFUSION AND THERMAL CONDUCTIVITY COEFFICIENTS ARE OBTAINED IN THE CASE OF SMALL AND LARGE VALUES OF THE ELECTRON COLLISION FREQUENCIES. THE DIFFUSION AND THERMAL CONDUCTIVITY COEFFICIENTS ARE FOUND TO BE APPRECIABLY HIGHER THAN THE CLASSICAL VALUES. DIFFUSION OF A PLASMA IN THE CASE OF WEAK DESTRUCTION OF MAGNETIC SURFACES IS ALSO CONSIDERED.

UNCLASSIFIED

UDC: 533.95

USSR

KADOMTSEV, B. B., Academician, and PETVIASHVILI, V. I.

"Sonic Turbulence"

Moscow, Doklady Akademii Nauk SSSR, 1 February 1973, pp 794-796

Abstract: Sonic turbulence is here defined as the totality of sound waves of finite amplitude in a compressible gas or plasma. The authors show that the relevant equations in ordinary space, as opposed to wave-number space, lead to a conclusion of sound wave amplitude reversal in sonic turbulence and the formation of shock waves. As a result, they find it necessary to modify the Kolmogorov-Obukhov concept of energy transmission over the spectrum in the case of formation of discontinuities -- shock waves, for example. In their analysis, the authors assume that the sound is isothermal -- that the heat conductivity is very high -- and that the gas conducting the sound has low and vanishing viscosity; the analysis begins with the Euler equation and the equation of continuity reflecting that assumption. It is also assumed that the motion of the gas, described by these two equations, is potential; i.e., that $\vec{g} = -\nabla\psi$, where \vec{g} is the acceleration and ψ a potential.

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KADOMTSEV, B. B., et al, Doklady Akademii Nauk SSSR, No 4, 1973,
pp 794-796

UDC: 533.95

The authors thank Academician R. Z. Sagdeyev for his comments on
the work.

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UDC 533.9

IOFFE, M. S., KADOMTSEV, B. B.

"Confining a Plasma in Adiabatic Traps"

Moscow, Uspekhi Fizicheskikh Nauk, Vol 100, No 4, April 1970, pp 601-640

Abstract: This article is a survey of theoretical and experimental papers on the stability and confinement of a plasma in adiabatic traps with magnetic mirrors. The basic problems connected with this area of plasma research are discussed: confinement of single charged particles -- maintaining the adiabatic invariant, pair interactions -- Coulomb distance to the "forbidden cone," collective interactions -- magnetohydrodynamic flute instability and methods of stabilizing it, various forms of kinetic instabilities connected with nonequilibrium of the particle distribution function with respect to velocities and inhomogeneity of the magnetic field. A large part of the material comes from the results of numerous research projects on the problem of controlled thermonuclear fusion. The survey also covers papers on electron-cyclotron masers and the van Allen radiation belts of the Earth which are discussed briefly in the last two

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