USSR

UDC 621.382.2

GEL'MONT, B. L., SHUR, M. S., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences of the USSR, Leningrad

"Current Stringing in Heavily Doped Gunn Diodes"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 9, Sep 70, pp 1650-1655

Abstract: The authors give the following explanation for the mechanism of current stringing in heavily doped Gunn diodes in which zone-zone breakdown takes place. A specimen is assumed to be in the mode of direct current corresponding to a segment with negative differential conductivity. It is further assumed that the concentration of nonequilibrium carriers has increased in some region as a result of fluctuation. The rate of electron-hole pair generation will increase exponentially in this region. In the segment with negative differential conductivity, this increase will exceed the corresponding increase in recombination. Fluctuation will begin to be intensified, but at high concentrations the increase in fluctuation will be limited by diffusion, resulting in the development of a stationary string (layer) of strong current, i.e., a string (layer) with a high concentration of carriers. The string will be flat in the case of a specimen in the form of a thin plate. Equations are derived for determining the conditions of

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USSR

GEL'MONT, B. L., et al., Fizika i Tekhnika Poluprovodnikov, Vol 4, No 9, Sep 70, pp 1650-1655

development of instabilities leading to current stringing. It is shown that an S-shaped voltage-current characteristic leads to current stringing, and equations are given for determining the dimensions of the current string of a Gunn diode with such a characteristic. It is found that the size of the string is determined by the "recombination" length and the applied field (as the field is increased, the string broadens and its amplitude decreases). Stringing disappears when the recombination length is comparable with the dimensions of the specimen. It is shown that hysteresis exists between the threshold currents for generation and quenching of current strings. Experimental data are given on current stringing in GaAs, CdTe and InP Gun diodes. It is concluded that current stringing is explained by the relationship between domain amplitude and concentration.

2/2

USSR

UDC 621.382.2

KASTAL'SKIY, A. A., LEONOV, YE. I., SHUR, M. S., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences of the USSR, Leningrad

"Gunn Effect Devices with a Variable Energy Gap"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 4, No 8, Aug 70, pp 1609-1611

Abstract: The authors discuss the possibility of developing devices based on the Gunn effect with an energy gap which varies lengthwise of the specimen. Such devices would be more suitable and convenient for use in integrated circuits than would analogous devices which utilize a variable cross sectional area or variable gradient of equilibrium carrier concentration. The energy gap can be varied either by changing the chemical composition lengthwise from the cathode to the anode according to a predetermined law, or by creating variable pressure along the specimen by gluing it to a substrate with a greater coefficient of thermal expansion while heat is applied and then cooling the assembly. The use of Gunn effect devices with variable energy gap would enable a considerable increase in the efficiency of Gunn generators. In the flip-flop mode, Gunn effect diodes with a variable energy gap could be used to produce pulses whose duration is determined by the bias voltage, and such devices could also be used to measure the duration of input pulses.
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1/2 038 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--THE VIBRATIONAL SPECTRUM, THE OPTICAL CONSTANTS, AND THE IONICITY OF THE BOND OF CDGEAS SUB2 IN CRYSTAL AND AMORPHOUS PHASES BY IR

AUTHOR-(04)-ZLATKIN, L.B., MARKOV, YU.F., STEKHANOV, A.I., SHUR, M.S.

COUNTRY OF INFO--USSR

SOURCE--I. PHYS. CHEM. SOLIDS 1970, 31(3), 567-71

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--VIBRATION SPECTRUM, OPTIC PROPERTY, IR SPECTRUM, CHEMICAL BONDING, CRYSTAL STRUCTURE, CADMIUM COMPOUND, GERMANIUM COMPOUND, ARSENIC COMPOUND, CRYSTAL LATTICE STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/1396 STEP NO--US/0000/70/031/003/0567/0571

CIRC ACCESSION NO--AP0107869

UNCLASSIFIED

2/2 038 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0107869

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IR REFLECTIVITY IS INVESTIGATED IN THE FREQUENCY REGION FROM 2 TO 75 MU FOR T EQUALS 295DEGREESK. CHANGES OF THE VIBRATIONAL SPECTRUM TAKE PLACE IN THE REGION OF THE LATTICE REFLECTION WHILE CLEAR CORRELATION EXISTS IN THE REGIONS OF SMALL (SMALLER THAN 25 MU) AND LARGE (GREATER THAN 60 MU) WAVELENGTHS BETWEEN THE OPTICAL CONSTS. OF CDGEAS SUB2 IN THE CRYSTAL AND AMORPHOUS PHASES. THE DISPERSION OF N AND THE DIELEC. CONST. WERE CALCD. BY KRAMERS KRONIG AND DISPERSION ANAL. AND THE VIBRATIONAL FREQUENCIES DETD. THE QUAL. AND QUANT. PARAMETERS OF THE IONICITY OF THE BOND HAVE BEEN ESTD. THE CHEM. BOND IN CDGEAS SUB2 IS IONIC COVALENT WITH LARGER DEGREE OF COVALENT PART. FACILITY: A. F. IOFFE PHYS. TECH. INST., LENINGRAD, USSR.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--11SEP70

1/2 021

TITLE--ANOMALY OF THE ELECTRICAL CONDUCTIVITY OF FERROELECTRIC SEMICONDUCTORS NEAR THE CURIE POINT -U-

AUTHOR--GUBANOV, A.I., SHUR, M.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(2), 664-6

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SEMICONDUCTOR CONDUCTIVITY, FERROELECTRIC MATERIAL, ELECTRIC CONDUCTIVITY, CURIE POINT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/0259 STEP NO--UR/0181/70/012/002/0664/0666

CIRC ACCESSION NO--AP0105333

UNCLASSIFIED

2/2 021 UNCLASSIFIED

CIRC ACCESSION NO--AP0105333 PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. UNDER CERTAIN CONDITIONS IN FERROELEC. SEMICONDUCTORS, THE ELEC. COND. CAN INCREASE SHARPLY IN THE REGION OF VALIDITY OF THE CURIE WEISS LAW. VARIATION OF ELEC. COND. IS DUE TO VARIATION IN THE CONCN. OF POLARONS IN THE COND. BAND AND VARIATION OF MOBILITY AND THE BOHR RADIUS OF POLARONS IN THE REGION OF THE CURIE POINT. NUMERICAL EXAMPLES ARE GIVEN.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--CATALYTIC FIXATION OF NITROGEN -U-

AUTHOR-(03)-VOLPIN, M.YE., ILATOVSKAYA, M.A., SHUR, V.B.

COUNTRY OF INFO--USSR

SOURCE--KINET. KATAL. 1970, 11(2), 333-41

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITROGEN, AMMONIA, TITANIUM CHLORIDE, ALUMINUM BROMIDE, CHEMICAL SYNTHESIS, CHEMICAL REACTION MECHANISM, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0091 STEP NO--UR/0195/70/011/002/0333/0341

CIRC ACCESSION NO--AP0132384

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132384

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. N IS CATALYTICALLY REDUCED TO NH SUB3 IN THE PRESENCE OF TICL SUB4, AL, AND ALBR SUB3. BEST YIELD (10.7 MOLE NH SUB3 -L MOLE TICL SUB4) WAS OBTAINED AT 1:12:33 MOLE RATIO OF CATALYST MIXT. C SUB6 H SUB6 IS THE BEST SOLVENT FOR THIS REACTION BUT THE REACTION CAN TAKE PLACE WITH COMPARATIVELY SIMILAR YIELD OF NH SUB3 IN THE ABSENCE OF A SOLVENT, IN FUSED ALBR SUB3. AT 130DEGREES AND 100 ATM. N, 125 MOLES NH SUB3 WERE OBTAINED WITHIN 14-18 HR AT 1:300:1500 MOLE RATIO OF TICL SUB4 -LIALH SUB4 -ALBR SUB3. FOR CATALYTIC FIXATION OF N, ALBR SUB3 WHICH PARTICIPATES IN THE BREAKING OF TI-N BOND IS AS INDISPENSABLE AS TLCL SUB4 AND A REDUCING AGENT.

FACILITY: INST. ELEMENTOORG. SOEDIN., MOSCOW, USSR.

UNCLASSIFIED

Reaction Kinetics

USSR

UDC: 541.124-128

VOL'PIN, M.YE., ILATOVSKAYA, M.A., and SHUR, V.B., Institute of Organo Elemental Compounds, Moscow, Academy of Sciences USSR

"Catalytic Fixation of Nitrogen"

Moscow, Kinetika i Kataliz, Vol 11, No 2, Mar-Apr 70, pp 333-341

Abstract: Compounds of transitional metals react with N_2, forming compounds of the nitride type that yield NH_3 on hydrolysis. While the transitional metal compounds are effective in activating N_2, fixation of N_2 by them is not a catalytic process, because regeneration of the compound bringing about the fixation of N_2 does not take place by reason of the strong bond formed between N and the metal. Regeneration does take place when a reducing agent and an aprotonic acid are present. Thus, catalytic fixation of N_2 could be carried out by employing the system $TiCl_4$ + Al + $AlBr_3$ in the presence of benzene; by using this mixture, the yield of NH_3 could be increased to 200-300 moles per mole $TiCl_4$ upon increasing continuously the content of $AlBr_3$ in the mixture at a constant amount of $TiCl_4$ and Al. The reaction could also be carried out in the absence of benzene in molten $AlBr_3$. Chlorides of transitional metals other than Ti ($ZrCl_4$, $CrCl_3$, $MoCl_5$, WCl_3, $FeCl_3$, etc) were ineffective as catalysts of N_2 fixation in a reaction of this type. Other systems that brought about catalytic fixation of N_2 were Al:$AlBr_3$: C_6H_6.$TiCl_2$.2$AlCl_3$, $TiCl_4$:$LiAlH_4$:$AlBr_3$, and $Ti(OBu)_4$ + iso-Bu_3Al + $AlBr_3$ in the presence of H_2/

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USSR

UDC 531.768.089.62

KRASHENINNIKOVA, T. P., SHKALIKOV, V. S., and SHUR, V. L.

"Subsonic Vibration Installation With Magnetic Suspension of the Movable System"

Tr. Metrol. In-tov SSSR [Works of Metrological Institutes USSR], 1972, No 139 (199), pp 77-80 (from Referativnyy Zhurnal, No 10, Oct 72. 32. Metrologiya i Izmeritel'naya Tekhnika. Single Issue. Abstract No 10.32.524)

Translation: A brief description is given of the type OIVU-2 vibration installation which makes it possible to decrease the lower limit of the frequency range to 0.01 Hz, to broaden the range of reproducible acceleration from 10^{-7} to 200 ms^{-2}, and to increase by one order of magnitude the amplitude of dislocation. Two illustr., two biblio. refs.

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Acc. Nr. AP0051159 Abstracting Service: CHEMICAL ABST. 5-70 Ref. Code: UR0239

98924p Excitation of sympathetic postganglionic fibers by potassium chloride and acetylcholine action on the epicardium. Khayutin, V. M.; Shur, V. L.; Malyarenko, Yu. E. (Lab. Biophys. Cardiovasc. System, Inst. Norm. Pathol. Physiol., Moscow, USSR). *Fiziol. Zh. SSSR im. I. M. Sechenova* 1970, 56(1), 84–94 (Russ). Expts. on anesthetized cats showed elec. activity developing in the lower cardiac nerve during irrigation of the pericardium and epicardium with solns. of KCl and acetylcholine chloride. KCl 31.2–500 m*M* and acetylcholine solns. at 1–1000 μg/ml acting on the cardiac membrane induced centripetal impulses, esp. the slow type, in the peripheral sections of the lower cardiac nerve. This impulsation was formed by antidromic discharges of the sympathetic postganglilnic C fibers, with a rate of conduction of 0.75 m/sec. These dishcarges seemed to result directly from K^+ and acetylcholine excitation of nonmyelinated fibers.

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REEL/FRAME
19811206

USSR

UDC 621.382:535.376

MIN'KOV, G.M., SHUR, V.YA.

"Redistribution Along P-N Junction Of The Radiation Of Injected Light Sources Of Gallium Arsenide In A Magnetic Field"

Uch.zap.Ural'sk.un-ta (Scientific Notes, Ural University), 1971, No 118, pp 45-51 (from RZh--Elektronika i yeye primeneniye, No 3, March 1972, Abstract No 3B291)

Translation: The paper reports on a study of the change of intensity of spontaneous radiation along a p-n junction in a transverse magnetic field as a function of the geometry of the diode, the intensity of the magnetic field, and the current across the specimen. The resolution amounted to 3-5 micrometer. In the magnetic field pronounced redistribution was observed of the radiation at the edges of the specimen, the relative magnitude of which practically did not depend on the width of the diode. 4 fig. 8 ref. Yu.M.

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USSR

UDC 621.375.82

(3)

GLAZER, A. A., NIKITINA, T. F., PANTELEYEV, V. I., PLOTNIKOV, A. F., POPOV, YU. M., POTAPOV, A. P., SELEZNEV, V. N., TAGIROV, R. I., and SHUR, YA. S.

"Using GaAs and Nd Lasers for Optical Writing on MnBi Film"

Kratkiye Soobshch. po fiz. (Brief Communications on Physics) No 12, 1972, pp 9-12 (from RZh-Fizika, No 7, 1973, Abstract No 7D1088)

Translation: The possibility of using a GaAs semiconductor laser for recording information on a ferromagnetic film of MnBi is experimentally investigated. MnBi film 700 Å thick, which has undergone condensation in a vacuum on glass substrates of 0.1-0.2 mm in thickness, is used. For recording information, a GaAs laser with a threshold current of 2 amp at 77° K and a p-n junction width of 400 μ is used. It is shown that the laser's minimum pumping current at which recording is possible is 60 amp, whereas the radiation power is 20 w. The energy density of the radiation on the film is then $6 \cdot 10^{-9}$ j/μ². With a monopulse neodymium laser, an evaluation of an information recording density equal to 2500 lines/cm is made. It is noted that the use of a semiconductor laser with a junction width not exceeding 20 μ permits reducing the power to a fraction of a watt. Bibliography of four.

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SHUR, YA. S.

IC 11

JPRS 60499

9 November 1973

PRODUCTION OF HIGHLY TEXTURIZED PERMANENT MAGNETS FROM MAGNETICALLY ANISOTROPIC POWDERS

(Article by Ya. S. Shur, L. M. Magat, A. S. Yermolenko, N. A. Reshetnikov, V. S. Averkiyev, A. V. Petrygin, V. S. Boyarenko and Ye. V. Shchepetilova, Institute of Metal Physics, Urals Scientific Center, Academy of Sciences USSR, Sverdlovsk, Fizika Metallov i Metallovedeniye, Russian, Vol 35, No 2, 1973, submitted 13 December 1971, pp 422-424)

In recent years considerable success have been achieved in the field of developing materials for permanent magnets using the rare-earth elements--yttrium or thorium); which possess extremely high values of the constant of uniaxial anisotropy (on the order of 10^7-10^8 erg/cm^3--see, for example, /1/). The process of manufacturing permanent magnets from such materials is reduced to grinding an alloy and compacting the resultant powder. Here, since due to the high value of anisotropy energy, the role of the magnetostatic interaction turns out to be insignificant and the powder can be compacted without substantial lowering of the coercive force, to a density close to the solid material. All the particles must be oriented prior to compaction to accomplish the maximum possible values of remanence energy (it is suggested that each particle is a single crystal and, consequently, magnetically uniaxial) and the compaction to be done in the axis of easy magnetization along one direction so as to create the magnetic structure. This can usually be achieved by means of placing the powder in a magnetic field. The main difficulty is in preserving the magnetic texture during the subsequent compaction of the powder /2/.

Methods of pressing in metallic dies ordinarily used leads to a significant lowering of the powder magnetic texture. This was caused by deformation of the material in one direction (in

USSR

UDC: 669.24:538.248

YERMAKOV, A. Ye., IVANOV, O. A., SHUR, Ya. S., GRECHISHKIN, R. M., IVANOVA, G. V., Institute of Physics of Metals, UNTs, Academy of Sciences of the USSR, Ural State University imeni V. I. Lenin

"Magnetic Properties of Single-Crystal Nickel Powders"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 3, Mar 72, pp 558-563

Abstract: The authors investigate the magnetic properties of nickel single crystal spherical particles as a function of diameter from 22 to 320 nm. It is shown that as particle size increases, the coercive force and residual induction first increase, then decrease after reaching a maximum. The magnetic structure goes through three stages with an increase in particle size from 22 to 320 nm: superparamagnetic, monodomain and polydomain. The authors thank M. Ya. GEN for procedural guidance in making the particles.

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USSR

UDC 669.24:538.221

IVANOV, O. A., YERMAKOV, A. YE., and SHUR, YA. S., Institute of Metal Physics, Ural National Center of the Academy of Sciences USSR, and Ural State University imeni A. M. Gor'kiy

"Temperature Dependence of Magnetic Properties of Fine Singlecrystal Nickel Powders"

Sverdlovsk, Fizika Metallov i Metallovedeniya, Vol 33, No 4, Apr 72, pp 752-757

Abstract: The effect of magnetostatic interaction on magnetic properties has been evaluated on the basis of a study of the temperature dependence of magnetic properties of fine nickel powders. The investigation included magnetic structures from superparamagnetic to nearly multidomain structures in the 220 to 3200 Å interval. It was found that for the over 300°K temperature range the magnetic properties of powders are basically determined by the chain-like alignment of particles which results in an anisotropy of the demagnetizing field. At temperatures below 300°K, in addition to the indicated anisotropy, the magnetic properties are essentially affected by the magnetocrystalline anisotropy. A possible mechanism of the remagnetization of such chain-like structures is discussed. A drop of the residual

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USSR

IVANOV, O. A., et al., Fizika Metallov i Metallovedeniya, Vol 33, No 4, Apr 72, pp 752-757

magnetization with the temperature is observed for pseudosuperparamagnetic particles and particles with maximum coercivity at $T \gtrsim 300^{\circ}K$, this drop being effected by the appearance of the superparamagnetic phase. Apparently, the same sources cause the anomalous shape of the temperature curve of coercivity with the decreasing size of particles. Six illustrations, four formulas, twelve bibliographic references.

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AP0023552 METALS ABST. 3/70 UR0185

33 0193 Ordering Processes and Coercive Force in Powdered Iron—30-50 At.% Palladium Alloys. Ya. S. Shur, V. S. Boldenko, L. M. Magat, G. S. Kandaurova, [illegible] V. Ivanova, Ukrain. Fiz. Zhur., Oct. 1969, 14, (10), 1664-1667 [in Russian].

The relation between the coercive force of Fe—30-50 at.% Pd alloy powders with a particle size of 10 μm and the method of preparing the samples (e.g., by the mechanical crushing of large crystals or by chemical deposition of the powder) was studied and interpreted in terms of the ordering phenomena characterizing each type of material. The samples prepared by mechanical crushing had the greater coercive force (20 kOe); the difference was attributed to differences in the crystal structures of the ordered phase.—G. A.

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Thin Films

USSR UDC 669.25:539.216.2:538.24

GLAZER, A. A., SERIKOV, V. V., and SHUR, YA. S., Institute of Physics of Metals, Academy of Sciences USSR

"Study of the Process of Remagnetization of 'Supercritical' Cobalt Films by Nuclear Magnetic Resonance"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 3, Mar 71, pp 529-537

Abstract: Hysteresis loops of cobalt films 1400 and 9000 A thick in the "supercritical" state are compared with the dependence of spin echo amplitude from the field. The gain factors, relative numbers of nuclei participating in the resonance, and NMR spectra are determined in the initial state, following annealing at 470° and after separation of the film from the substrate. It is established that during switching of these films, processes of rotation of magnetization are significant. The type of domain structure in films of various thicknesses was determined on the basis of the behavior of the NMR spectra after removal of film from substrate.

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Thin Films

USSR UDC 669.25:539.216.2:538.24

GLAZER, A. A., SERIKOV, V. V., and SHUR, YA. S., Institute of Physics of Metals, Academy of Sciences USSR

"Study of the Process of Remagnetization of 'Supercritical' Cobalt Films by Nuclear Magnetic Resonance"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 3, Mar 71, pp 529-537

Abstract: Hysteresis loops of cobalt films 1400 and 9000 A thick in the "supercritical" state are compared with the dependence of spin echo amplitude from the field. The gain factors, relative numbers of nuclei participating in the resonance, and NMR spectra are determined in the initial state, following annealing at 470° and after separation of the film from the substrate. It is established that during switching of these films, processes of rotation of magnetization are significant. The type of domain structure in films of various thicknesses was determined on the basis of the behavior of the NMR spectra after removal of film from substrate.

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1/2 033 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--COERCIVE FORCE AND STRUCTURE OF AN IRON PLATINUM ALLOY -U-

AUTHOR-(05)-MAGAT, L.M., IVANOVA, G.V., SOLINA, L.V., SHCHEGOLEVA, N.N., SHUR, YA.S.

COUNTRY OF INFO--USSR

SOURCE--FIZ. METAL METALLOVED. 1970, 29(2), 400-3

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--IRON ALLOY, PLATINUM CONTAINING ALLOY, METAL MICROSTRUCTURE, MAGNETIC COERCIVE FORCE, MAGNETIC ANISOTROPY, CRYSTALLOGRAPHY, PLASTIC DEFORMATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/0337 STEP NO--UR/0126/70/029/002/0400/0403

CIRC ACCESSION NO--AP0126093
UNCLASSIFIED

2/2 033 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126093

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE STRUCTURE WAS STUDIED FOR FE,PT ALLOYS WITH A HIGH COERCIVE FORCE. THE EFFECT WAS STUDIED OF PLASTIC DEFORMATION AND TEMPERING ON THE COERCIVE FORCE. IN A 1:1 ALLOY, THE MAX. COERCIVE FORCE OCCURRED IN THE SINGLE PHASE ORDERED STATE. THE SIZE OF THE TETRAGONAL PHASE CRYSTALLITES (FOR A MAGNETIC, CRYSTALLOGRAPHIC, ANISOTROPY CONST. OF THE ORDER OF 10 PRIME7 ERGS-CM PRIME3) IS THE MAIN FACTOR DETG. THE VALUE OF THE COERCIVE FORCE.

FACILITY: INST. FIZ. METAL., SVERDLOVSK, USSR.

UNCLASSIFIED

UDC 669.1:548.0:538

USSR

SHUR, YA. S., ZAYKOVA, V. A. and KHAN, YE. B., Institute of Metal Physics, Academy of Sciences USSR

"Domain Structure in Single Crystals of Silicon Iron in a Variable Magnetic Field"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70, pp 770-776

Abstract: A study was made to investigate the behavior of the domain structure in a variable magnetic field in relation to the induction amplitude. Samples were strips of silicon iron (3%,Si) measuring 50 x 5 x 0.3 mm whose surfaces were close to the (011) crystal plane. Silicon iron was used because there is a more complete change in the domain structure in quasistatic fields, which significantly simplified the study. The surfaces of the samples were mechanically polished and vacuum annealed at 1100°C for two hours.

Observations of the single crystals showed that domain structure behavior in variable fields depends on the magnitude of magnetic induction (B_{max}). At B_{max} = 50 Hz, six domains were observed. The width of the domains remained fairly constant until a B_{max} of 11,500 Hz was induced. At B_{max} = 12,300 Hz the number of domains increased to eight, and at 15,000 there were nine domains. The new domains formed along the edge of the surfaces, parallel to the [100] axis. Upon approaching the saturation point the domain structure again changed, so that at B_{max} =

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USSR

SHUR, YA. S., et al., Fizika Metallov i Metallovedeniye, Vol 29, No 4, Apr 70, pp 770-776

17,000 Hz only three domains were noted.

According to the authors, magnetic (polarity) reversal in a dynamic mode differs substantially from magnetic reversal in the quasi-static mode and, in relation to the magnitude of B_{max}, can proceed by three methods. At small values of B_{max}, one observes a fluctuation of 180° domain boundaries near their equilibrium position (Method I). At higher values of B_{max}, along with the boundary fluctuations, the number of domains increases (Method II). At the saturation point there is a shifting of domain boundaries from the side surfaces to the center (Method III).

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ferromagnets. Sharf, Ya. S.; Kandaurova, G. S. (Ural. Gos. Univ. im. Col'kogo, Sverdlovsk, USSR). *Fiz. Metal. Tela* 1969, 11(3), 797-9 (Russ). Study was made of the dependence of hysteresis of the domain structure on the specimen dimension in single-crystal $PbO.6Fe_2O_3$ and the alloy MnAlGe. Both of these ferromagnets have high consts. of uniaxial anisotropy ($K \approx 10^7$ ergs/cc.). The specimen thickness was 1000-15 μ. With decreasing thickness of the crystal, the character of the appearance of the domain structure changes. For thick specimens, the powder figures were round spots, while for thin specimens they were broad beat bands, and in very thin specimens lines of the powder ppt. protrude from some centers. When the domain structure disappears in the field, the powder figures are round spots independent of the specimen thickness. The magnitude of hysteresis in the appearance of the main domain is dependent on the crystal thickness. In massive crystals, the magnitude of hysteresis is independent of the magnetizing field. A. Popchyj

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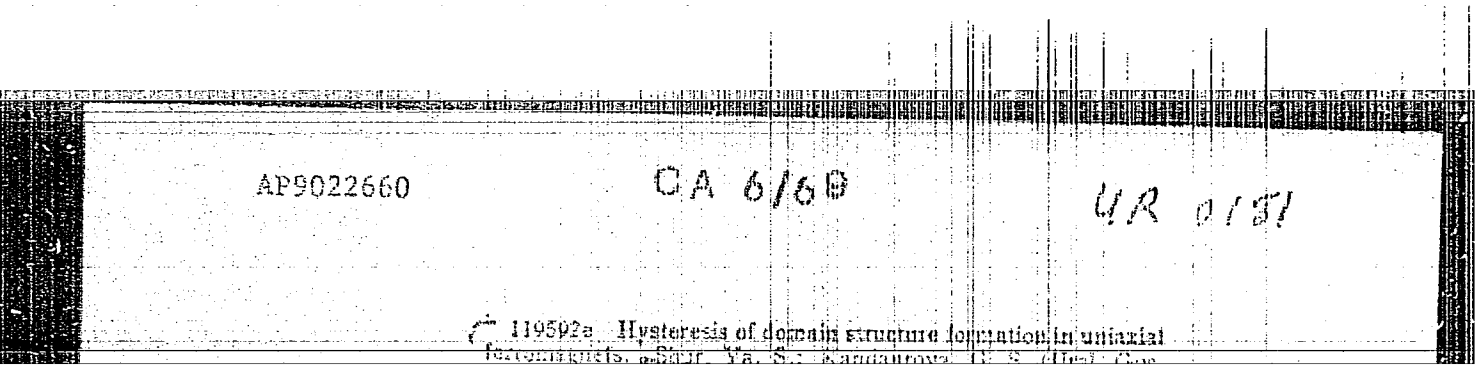

119592e Hysteresis of domain structure formation in uniaxial ferromagnets. Shur, Ya. S.; Kandaurova, G. S. Ural. Gos.

USSR

UDC 669.76:538.221

YERMAKOV, A. Ye., IVANOV, O. A., and SHUR, Ya. S., Institute of Physics of Metals, Ural National Center of the Academy of Sciences USSR, and Ural State University imeni A. M. Gor'kiy

"Rotational Hysteresis in Single Crystal Nickel Powders"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 6, Jun 72, pp 1182-1187

Abstract: A study was made of the temperature dependence of rotational hysteresis in single-crystal nickel powders with 220-3200Å particle diameters. The magnetic properties of nickel powders were found to be related to the effective constant of magnetic anisotropy produced by magnetic interaction of particles. The remagnetization mechanism of nickel powders for 300 and 450 °K remains constant, but the magnetic anisotropy constant for these temperatures takes values of $5 \cdot 10^4$ erg/cm^3 and zero, respectively. The type of remagnetization in nickel powders with particle sizes of $d \leq 1100$ Å can be qualitatively explained by approximation of the "twisting" and the chain models of spheres. In powders with $d > 1100$ Å particle sizes, the character of remagnetization is more complex. The exchange anisotropy, dependent on the presence of NiO, was found to have no effect on magnetic properties. Five figures, fourteen bibliographic references.
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AA0043313 S

UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent, 2/70

243054 TRANSFORMER SUBSTATION limits artificial short circuit currents. In a simplified scheme no circuit breaker is employed on the high voltage side and protection in case of transformer damage is achieved by a shorting switch the operation of which causes the feeding substation to switch off. The magnitude of short circuit current is limited by using a reactor in the circuit of the shorting switch. It is shown that one such arrangement is sufficient for a substation irrespective of the number of transformers.

20.6.67 as 1167076/24-7. YU.B.SHUR. (25.9.69.) Bul 16/ 5.5.69. Class 21d^2. Int.Cl. H 02j.

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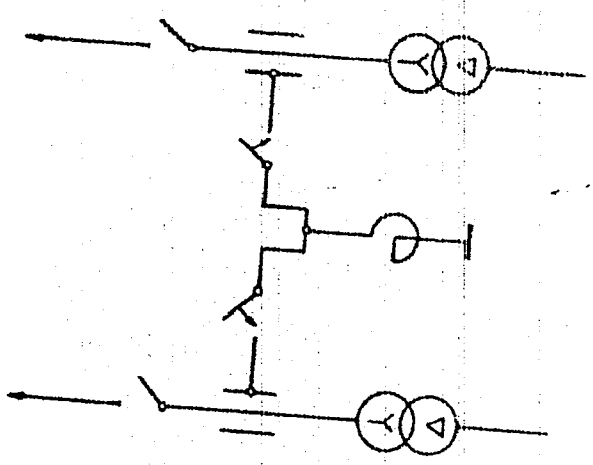

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USSR

SHURA-BURA, M. R.

"Materials of the International Discussion on "Programming in the 1970's"

VKP-2. Tr. 2-y Vses. Konf. po Programmir., 1970, Dokl. in. Uchastnikov [VKP-2 Works of Second All-Union Conference on Programming, 1970, Reports of Foreign Participants -- Collection of Norks], Novosibirsk, 1971, pp 78-127, (Translated from Referativnyy Zhurnal, Kibernetika, No 2, 1972, Abstract No 2 V659 by V. Mikheyev).

Translation: The materials contain the following articles: M. R. Shura-Bura (USSR), Prospects for Utilization of Machine-Oriented Algorithmic Language for Utilization of Many Problem-Oriented Algorithmic Languages in Programming; A. P. Yershov (USSR), The Compatability of Software; F. L. Bauer, Programming in the 1970's; S. S. Lavrov, Universal Expandable Language as a Bases for Creation of Specialized Programming Systems; L. Bolier, (France), Teaching of Programming in Secondary Schools; J. Koch (USA), Possible Influence of Progress in Machine Technology on Programming; John MacCarthy (USA), Advertising the Mathematical Theory of Computation; H. Tithiel (GDR), The Use of Methods of Mathematical Logic in Programming; L. Nolan (France), Is Programming a Science. Comments on the presentations and answers to questions are also included.

1/1

UDC 621.791.856.3:620.193.41

YURCHENKO, YU. F., SOKHICHENKO, A. L., AZAPOV, G. I., KOMISSAROV, V. G., and SHURAKOV, S. A.

"Effect of Heat Treatment on the Structure and Corrosion Resistance of the Metal In the Heat-Affected Zone of Joints of Kh18N10T Steel"

Kiev, Avtomaticheskaya Svarka, No 6, Jun 71, pp 8-11

Abstract: Studies were made on joints of 1Kh18N10T pipe 57 mm in diameter with a wall thickness of 3 mm produced by argon-arc welding. After welding, a portion of the joints were tempered at 700°C for 2,10, 100, and 1000 hours: the other portion was quenched in water after heating for different times at 1000-1250°C. Heat treatment of 1Kh18N10T weld joints increases the rate of knife corrosion and expands the front of its development. This was caused by precipitation, at this temperature, of chromium carbides of the type $Me_{23}C_6$ along the grain boundaries of the heat-affected zone. Holding at 700°C for 10-100 hours leads to coalescence and dissolution of these carbides and to the appearance of the sigma-phase at the grain boundaries. In this case the carbon, being freed in the dissolution of metastable chromium carbides, is bonded in carbides of titanium which are basically distributed in the body of austenite grains. However this process diminishes the rate of knife corrosion. Quenching joints from 1000-1150°C lowers (by 1.5-5 times) the rate of knife

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YURCHENKO, YU. F., etal, Kiev, Avtomaticheskaya Svarka, No 6, Jun 71, pp 8-11

corrosion. This has been associated with a change in the type of carbides of titanium in the heat-affected zone, by redistribution and removal of internal stresses, as well as with the elimination of concentration heterogeneity of austenite in grain bodies and in their boundaries. Increasing quenching temperature (1150-1250°C) leads to homogenization of all zones of the weld joint and prevents knife corrosion; Reheating joints for quenching above 1250°C increases the rate of knife corrosion. 7 figures, 2 bibliographical references.

2/2

USSR

ZEMLYANSKIY, A., SHURAKOV, V.

"Automatic Distribution of Memory in Data Processing Systems"

Elektronno-Vychisl. Tekhn. i Programmir. [Electronic Computer Equipment and Programming -- Collection of Works], No 5, Moscow, Statistika Press, 1972, pp 36-42 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V643, by the authors).

Translation: The version of automatic distribution of memory suggested is recommended for information processing systems using the Minsk-23 computer.

UDC:681.3.06:51

USSR

SHURAKOV, V. V.

"Software for the Modern Computer"

Tr. Mosk. ekon. stat. in-ta (Transactions of the Moscow Economics Statistics Institute) Part 1, 1973, pp 3-21 (from RZh--Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 12, 1973, Abstract No 12B135)

Translation: Given is a classification of the forms of software for the electronic computer. The characteristic for the three fundamental groups of software elements -- tested programs, programming systems and data preparation, and the operational system -- is shown. The peculiarities of machine, procedural, problem, and auxiliary systems of programming are considered, and a classification is made of the operational system (by the method of using the computer, the group of languages, and the presence and possibilities of broadening a single internal language).

Functions of individual components of the operational system are presented. A classification and a brief description of special software(packets for broadening the possibilities of the operational system and packets of applied programs) are presented. Four illustrations, bibliography of three.

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USSR

UDC 612.014.424:591.18+591.881

SHURANOVA, Zh. P., BURMISTROV, Yu. M., GVOZDIKOVA, Z. M., EL'KINA, G. A., Institute of Higher Nervous Activity and Neurophysiology of the USSR Academy of Sciences, Moscow

"Circulation of Nerve Impulses in the Cerebral Cortex"

Moscow, Uspekhi Fiziologicheskikh Nauk, Vol 4, No 2, 1973, pp 42-54

Abstract: The basic laws characteristic of multiple pulse discharges arising as a result of the circulation of excitation in the system of so-called lateral giant axons of the river crayfish which is a closed chain of a limited number (4-12) of neurons. In the effort to extend these laws to the neuron activity of the brain of a rabbit it turned out that 1) there are still no reliable data either for or against the proposition of the participation of reverberation processes in the genesis of the background activity of the cortical neurons; 2) the contribution of these processes to the organization of the neuron response to direct electrical stimulation under the conditions of the intact cortex has very low probability; 3) on the contrary, the proposition is made of the presence of the excitation circulation processes in the organization of the reaction to an analogous stimulation in a neuronally isolated strip of the cortex. The conclusion with respect to the possibility of circulation of an excitation in an isolated strip is based entirely on recording the

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SHURANOVA, Zh. P., et al., Uspekhi Fiziologicheskikh Nauk, Vol 4, No 2, 1973, pp 42-54

activity of individual neurons. It was shown that this mechanism probably begins during the recovery period after the inhibition interval. There is no absolute proof that the post-inhibition activation in the strip takes place by the reverberation mechanism, but the similarity of the group discharges of the neurons of the strip to the well investigated activity of the reverberation nature makes the proposition probable. An additional stimulation administered against the background of trace discharge of a neuron immediately stopped the pulsation. Three possible interpretations of this fact are presented.

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USSR

UDC 621.376.234

AKIMOV, YU. K., ANDERT, K., KALININ, A. I., CHURIN, I. N., SHURAVIN, V. N.

"Time Measurements with a Germanium Detector"

Moscow, Pribory i Tekhnika Eksperimenta, No 6, 1971, pp 51-54

Abstract: The basic factors determining the time resolution of semiconductor detectors are 1) the occurrence of time fluctuations as a result of superposition of signals on noise from the detector and amplifier; 2) shifting of the circuit response time on variation of the signal amplitude and 3) dependence of the response time on variations of the collection of free charge carriers in the detector with time. These factors were considered when developing the described low-noise preamplifier with a buildup time of 5 nanoseconds and a high-speed shaper with compensation of the dependence of the time resolution on the amplitude dispersion and variations in the pulse front for time measurements with a germanium detector. When recording γ-quanta from ^{60}Co by a germanium detector with a volume of 3 cm^3 included for coincidence with a scintillation counter, a time resolution of 2.2 nanoseconds was obtained in the energy range of 0.07-1.33 megaelectron volts. The width of the coincidence curve on the 0.1 level of its height was 12.5 nanoseconds. A time resolution of 0.9 nanoseconds was obtained in a narrow energy range.

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1/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--REACTION OF SODIUM AND POTASSIUM NITRITES, NITRATES MOLYBDATES, AND TUNGSTATES IN MELTS AND IN THE SOLID STATE -U-

AUTHOR-(02)-SHUROUMOV, G.K., KHOKONOVA, T.N.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 843-5

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--EUTECTIC, CHEMICAL REACTION, SODIUM COMPOUND, NITRATE, TUNGSTATE, MOLYBDATE, FUSED SALT, POTASSIUM COMPOUND, NITRITE, PHASE DIAGRAM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0078/70/015/003/0843/0845

PROXY REEL/FRAME--3001/0368

CIRC ACCESSION NO--AP0126123

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0126123

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHASE DIAGRAMS OF BINARY SYSTEMS MNO SUB3 M SUB2 MOO SUB4 (M EQUALS NA, K), MNO SUB2 M SUB2 WO SUB4, MNO SUB3 M SUB2 MOO SUB4, AND MNO SUB3 M SUB2 WO SUB4 ARE PRESENTED. AT 15-25 MOLE PERCENT MOLYBDATE (OR TUNGSTATE) AND 600-650 DEGREES, SIGNIFICANT DECOMPN. AND VOLATILITY OF THE LOW MELTING COMPONENTS OF THE SYSTEM ARE OBSD. ALL OF THE SYSTEMS FORM EUTECTICS AT LOW (SMALLER THAN 10 MOLE PERCENT) CONCNS. OF MNO SUB2 OR MNO SUB3. FACILITY: KABARDINO-BALKAR. GOS. UNIV., NALCHIK, USSR.

UNCLASSIFIED

USSR

UDC 519.217

SHURENKOV, V. M.

"Representation of Arbitrary Random Sequence By Markov Chain"

Teoriya Veroyatnostey i Mat. Statist. Mezhved. Nauch. Sb., [Theory of Probabilities and Mathematical Statistics. Indepartmental Scientific Collection], 1970, No 3, pp 232-239, (Translated from Referativnyy Zhurnal Kibernetika, No. 5, 1971, Abstract No. 5V53 by the author).

Translation: Proof is presented for a theorem of the possibility of construction for in a sequence of random quantities $(\xi_n, n \geq 1)$ a sequence of random quantities $(\eta_n, n \geq 1)$, forming a Markov chain, such that random quantity η_n is measurable relative to the σ algebra generated by random quantities $\xi_1, \xi_2, \ldots, \xi_n$.

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USSR

UDC 621.039.524.034.3:621.039.526

KRASIN, A. K., NESTERENKO, V. B., KOLYKHAN, L. I., BUBNOV, V. P., IL'IN, A. YA., SLIZOV, V. P., SHURFROV, YU. V.

"Experimental Power Plant with a Gas Cooled Fast-Neutron Reactor and a Dissociating Heat Transfer Agent (BRG-20)"

Dissotsiiruyushch. gazy kak teplonositelii rab. tela energ. ustanovok -- V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 42-47 (from RZh-Elektrotekhnika i Energetika, No 5, May 1971, Abstract No 5U107)

Translation: The possibility of creating an experimental industrial atomic power plant with a gas-cooled fast neutron reactor and a dissociating heat exchange agent is investigated. The parameters of the device and the required volume of experimental research are discussed. There are two illustrations and a four-entry bibliography.

1/1

1/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--PHASE DIAGRAMS OF LITHIUM ,SODIUM, POTASSIUM, RUBIDIUM, CESIUM, BROMIDE TIN,II,BROMIDE SYSTEMS -U-

AUTHOR-(02)-BELYEYEV, I.N., SHURGINOV, YE.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 883-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHASE DIAGRAM, LITHIUM COMPOUND, RUBIDIUM COMPOUND, CESIUM COMPOUND, SODIUM COMPOUND, POTASSIUM COMPOUND, TIN COMPOUND, BROMIDE, THERMOGRAPHIC ANALYSIS, EUTECTIC

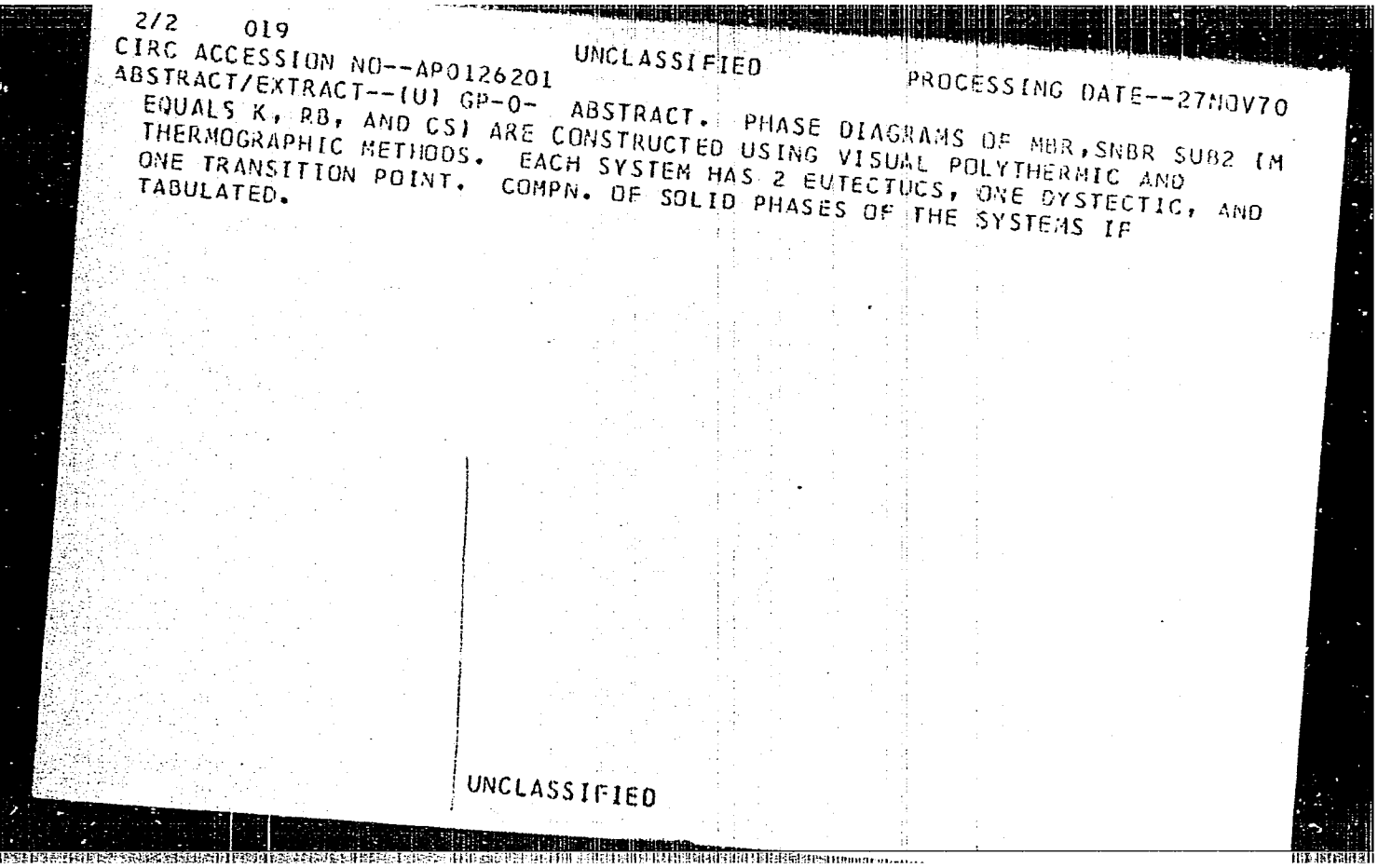
CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0449 STEP NO--UR/0078/70/015/003/0883/0885

CIRC ACCESSION NO--AP0126201

UNCLASSIFIED



2/2 019 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0126201
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHASE DIAGRAMS OF MBR,SNBR SUB2 (M EQUALS K, RB, AND CS) ARE CONSTRUCTED USING VISUAL POLYTHERMIC AND THERMOGRAPHIC METHODS. EACH SYSTEM HAS 2 EUTECTICS, ONE DYSTECTIC, AND ONE TRANSITION POINT. COMPN. OF SOLID PHASES OF THE SYSTEMS IF TABULATED.

UNCLASSIFIED

USSR

SHURIN, A. K., Poroshkovaya Metallurgiya, No 1, Jan 73, pp 50-53

stable equilibrium between metal A and phase B_mC. Group IV was characterized by limited mutual solibility of the components and phases of the system and by the formation of ternary compounds in most cases and, mainly, by the absence of equilibrium between metal A and any of the phases in the B-C system.

The conditions for choosing ternary compounds were determined for the case where the chemical interaction between the base metal and interstitial phase is minimum for the solid state at high temperatures. 2 figures.

2/2

Composite Materials

UDC 669.017.3

USSR

SHURIN, A. K., Institute of Metal Physics, Academy of Sciences UkrSSR

"Phase Equilibria in Ternary Allows Containing an Interstitial Element and the Stability of Composite Materials"

Kiev, Poroshkovaya Metallurgiya, No 1, Jan 73, pp 50-53

Abstract: Analysis was made of 200 ternary phase diagrams in which metal A, positioned at the left angle, was more electronegative than metal C, located at the right angle, while interstitial element B was positioned at the top angle. Only those phase diagrams were examined in which components A and C were transition metals. From this analysis, the specific principles of phase diagram structure were determined and the diagrams were separated into four basic groups. Group I diagrams were characterized by an unlimited solubility both between metals A and C and between the more noble metal with compounds AB_m and B_mC. An equilibrium exists between the phase of the A-C solid solution and the phase on the basis of the noble metal. Group II consists of those ternary compounds which also have unlimited solubility between metals A and C but differ from Group I by the formation of still another compound--A_nB. Group III diagrams were characterized by limited mutual solubility of the components and phases of the system and also by a

USSR UDC 669.28.293.297.017.13

SVECHNIKOV, V. N., SHURIN, A. K., and ALFINTSEVA, R. A., Institute of Metal Physcis, Academy of Sciences Ukr SSR

"Investigation of Phase Equilibria in Alloys of the Molybdenum-Niobium-Hafnium System"

Kiev, Metallofizika, No 32, 1970, pp 25-27

Translation: The phase composition of molybdenum-niobium-hafnium alloys was studied by methods of metallographic, x-ray structural, and durometric analysis. Isothermal sections of a triple phase diagram at temperatures of 1800° and 1500° C were constructed. The composition's effect on the hardness and parameter of the crystal lattice of a solid solution with a body-centered cubic lattice was determined.

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1/2 028 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--SOLUBILITY OF OXYGEN IN NIOBIUM AND ZIRCONIUM ALLOYS -U-

AUTHOR-(02)-SHURIN, A.K., LOKTIONOV, V.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (1), 231-3

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--SOLUBILITY, OXYGEN, NIOBIUM ALLOY, ZIRCONIUM ALLOY, HARDNESS, CRYSTAL STRUCTURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1980/1276 STEP NO--UR/0370/70/000/001/0231/0233

CIRC ACCESSION NO--AP0049438

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--18SEP70

2/2 028

CIRC ACCESSION NO--AP0049438

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ALLOYS WERE ANNEALED IN NB CONTAINERS IN A VACUUM FURNACE AT 1600DEGREES FOR 100 HR AND THEN AT 1000DEGREES FOR 100 HR. THE O CONTENT IN THE SAMPLES VARIED FROM 0.025 TO 20 ATOM PERCENT. THE N CONTENT WAS LESS THAN 0.003 WT. PERCENT, THE H CONTENT WAS 10-15CM PRIME3-100 G, AND THE ZR CONTENT VARIED FROM 0.4 TO 33 ATOM PERCENT. THE SOLY. OF O IN PURE NB ATTAINS 5 ATOM PERCENT AT 1000DEGREES. AFTER SMALL ZR ADDNS. THE SOLY. DROPS SHARPLY. WITH 0.4 ATOM PERCENT ZR, THE O SOLY. IS LESS THAN 0.025 ATOM PERCENT AND THIS VALUE DOES NOT CHANGE WITH INCREASE IN ZR CONTENT TO 5.7 ATOM PERCENT. AT 1600DEGREES, THE SOLY. OF O IN NB IS SOMEWHAT HIGHER BUT THE EFFECT OF THE ZR ADDN. IS THE SAME. THE ZRO SUB2 CRYSTALS ARE GRAY BLUE AND ARE FOUND WITHIN THE GRAINS AND AT THE GRAIN BOUNDARIES. IN ALLOYS WITH A COMPN. IN THE 2 PHASE REGION IN THE NB RICH PORTION OF THE NB ZRO SUB2 SYSTEM, A EUTECTIC STRUCTURE IS OBSD. THE CHANGE IN THE SOLY. OF O IN THE ALLOYS STUDIED MAKES IT POSSIBLE TO EXPLAIN THE CHANGE IN HARDNESS OF NB WHEN IT IS DEOXIDIZED WITH ZR.

UNCLASSIFIED

UDC: 62-546.8

USSR

MIRINSKIY, D. S., SHURIN, Ya. I., Institute of Inorganic Chemistry, Siberian Department of the Academy of Sciences of the USSR

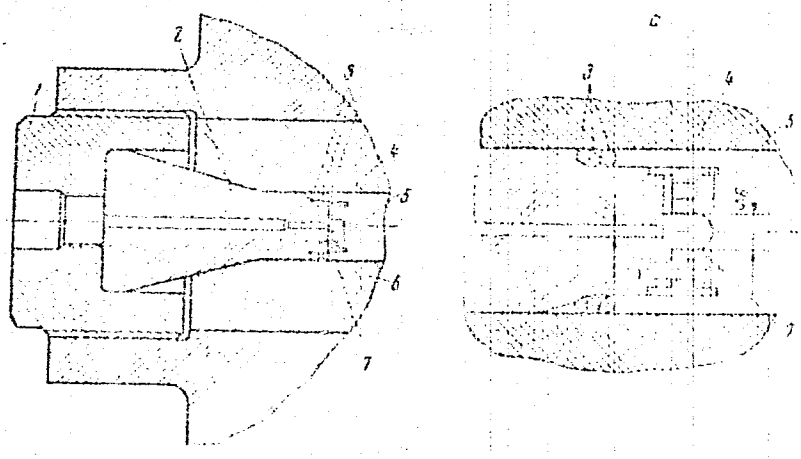
"A Check Valve for up to 20 kbar"

Moscow, Pribory i Tekhnika Eksperimenta, No 2, Mar/Apr 72, pp 193-194

Abstract: The article describes a check valve for up to 20 kbar with flat contact surfaces. The valve is diagrammed in the figure. The valve body 2 is made of hardened KhVG steel and has a shut-off orifice of 1.5 mm. The orifice is closed by cap 7 prestressed with low force by plate spring 5 and centered in sleeve 4 which is held in the valve body by screws. The valve body is held in the high-pressure channel by nut 1 and sealed by beryllium bronze and teflon rings 3. Dents and scratches on the working surface of the valve cap can be worked out with lapping compound. Tests with glycerin and PMS-5 liquid showed reliable operation over long periods. One figure, bibliography of two titles.

USSR

MIRINSKIY, D. S., SHURIN, Ya. I., Pribory i Tekhnika Eksperimenta, No 2, Mar/Apr 72, pp 193-194



2/2

1/2 027 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--EFFECT OF RHEOPOLYGLUCIN ON METABOLIC PROCESSES IN THE ORGANISM -U-

AUTHOR-(05)-STEPANYAN, YE.P., POSPELOVA, YE.P., YARLYKOVA, YE.I., SHURKALINA, T.KH., KYUMINA, YE.N.

COUNTRY OF INFO--USSR

SOURCE--EKSP. KHIR. ANESTEZIOL. 1970, 15(1), 40-4

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DEXTRAN, MOLECULAR WEIGHT, BLOOD PLASMA, BLOOD CHEMISTRY, PROTEIN, FIBRINOGEN, CALCIUM COMPOUND, BLOOD VOLUME, MYOCARDIUM, ENZYME ACTIVITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0474 STEP NO--UR/0481/70/015/001/0040/0044

CIRC ACCESSION NO--AP0131111

UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--20NOV7C

CIRC ACCESSION NO--AP0131111

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. RHEOPOLYGLUCIN (A PHARMACEUTICAL PREPN. OF DEXTRAN, WITH MOL. WT. 35,000-40,000), INFUSED IN DOGS AT 10, AND 30 MG-KG PRODUCED SLIGHT, AND AT 50 MG-KG PRONOUNCED, DECREASES IN THE CONCN. OF TOTAL PROTEINS, FIBRINOGEN, AND CA PRIME2 POSITIVE IN PLASMA; A TRANSIENT 50PERCENT INCREASE IN THE VOL. OF CIRCULATING BLOOD WAS ALSO OBSD. AT 50 MG-KG, A 50PERCENT DECREASE IN THE OXIDATIVE PHOSPHORYLATION OF MYOCARDIAL TISSUE AND DISTURBANCES OF THE ELECTROLYTE BALANCE WERE EVIDENT. FACILITY: INST. SERDECHNO-SOSUDISTOI KHIR. IM. BAKULEVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--INFRARED SPECTROSCOPIC STUDY OF NITRATES OF SOME METALS IN ACETONE WATER SOLUTIONS -U-

AUTHOR-(02)-SHEVCHENKO, L.L., SHURKHAL, T.M.

COUNTRY OF INFO--USSR

SOURCE--UKR. KHIM. ZH. 1970, 36(2), 199-203

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IR SPECTROSCOPY, NITRATE, ACETONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1921 STEP NO--UR/0073/70/036/002/0199/0203

CIRC ACCESSION NO--AP0118883

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118883

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE N1 SUB3 ABSORPTION AT 1390 CM PRIME NEGATIVE 1 IS ATTRIBUTED TO THE SUBGAMMA3 (EPRIME) VIBRATION OF THE D SUB3H SYSTEM. THIS IS CHARACTERISTIC OF A FREE STANDING NO SUB3 PRIME NEGATIVE ION AND DECREASES IN INTENSITY AS THE NO SUB3 PRIME NEGATIVE IS MORE FIRMLY COORDINATED TO A CATION INTO A SYSTEM OF C SUB2V SYMMETRY. ALTHOUGH ANHYD. CO (NO SUB3) SUB2 AND CO(NO SUB3) SUB2 SEEM TO POSSESS NO SUB3 PRIME NEGATIVE OF D SUB3H SYMMETRY, THEIR AQ. SOLNS. SHOW PROGRESSIVE SHIFTS TOWARD C SUB2V SYMMETRY AS ME SUB2 CO IS ADDED. TH(NO SUB3) SUB4.4H SUB2 O AS A SOLID HAS NO SUB3 PRIME NEGATIVE IONS OF C SUB2V SYMMETRY, BUT IN SOLN. SOME OF THE D SUB2H TYPE ARE PRESENT. THESE DECREASE IN NO. AS ME SUB2CO IS ADDED. AT THE SAME ME SUB2CO CONCN. THE ORDER OF DECREASING C SUB2V SYMMETRY IS TH, GD, CO. IN ME SUB2CO SOLNS. CONTG. CO(NO SUB3) SUB2 AND CO(NO SUB3) SUB2 THE CARBONYL STRETCH OF ME SUB2 CO IS DISPLACED FROM 1709 TO 1670-1 CM PRIME NEGATIVE1. FACILITY: KIEV. GOS. UNIV. IM. SHEVCHENKO, KIEV, USSR

UNCLASSIFIED

SHURLYGIN, V.

P

PSYCHO-PHYSIOLOGICAL TESTING AND TRAINING OF PILOTS

[Article by V. Shurlygin, "The Seventh Checkout: An Experiment on the Ground and in the Air", Tekhnika Molodezhi, Moscow, 17 December 1972, p 41]

"After twenty seconds an electric shock will hit you... the searchlight is blinding..."

"Lamps of different colors will light up on the display and you must react to each of them..."

"In the middle of the passage the light leader is switched on..."

"The experimenter will observe your mimicking and coordination of motion. The instruments will fix the rapidity of reaction and the quantity of errors. We must know about all this in order to prevent any unexpected events..."

I sit down comfortably in a chair, fasten on my left arm a bracelet with electrodes, switch on the motor and watch to see what happens. The trainer resembles the cabin of a combat aircraft, from which only the instrument panels have been removed. A large white board is clearly visible ahead, through the cross-wires of the electronic sights. A complex contour line with acute and blunt angles is inscribed on it, like a black ribbon. By changing the position of the training device in space by means of pedals and control levers, it is necessary to repeat accurately all the bends of this far curve and, when reaching the last point, retain sight over it. Only 58 seconds are assigned for the performance. For a while you rise and descend, turning the training device to the right or left, simultaneously switching off suddenly flashing lamps, discharging gas or command, as the experimenters investigate your coordination, precision, emotional stability, the flexibility of your nervous system, rapidity of your reactions, and the productivity of your mental activity.

"Get ready, we have begun!"

I pull the control lever smoothly toward myself and lightly press the right pedal, keeping a curve that is moving steeply upward in the cross-wires of the sight. Work has begun, and the stop-watch is counting the first seconds of the experiment. How many of these seconds lie ahead? Hundreds or thousands? From the training device I move to an apparatus for determining the higher nervous activity and then becoming fatigued from the monotony of it, will try to write with the greatest speed in a certain time one and the same letters "o" and "x," "k" and "a"... In a limited time I tried to determine whither the arrows of 50 compasses are directed... I remember dozens of figures which unexpectedly appeared on the display... And all this, aside from numerous medical examinations, tests in a pressure chamber, on a rotating stool, and on Kaliev swings...

Stop. Perhaps enough has been listed. When I left Leningrad, [illegible] Dzhamgarov, doctor of psychological sciences, the head of the Scientific Research Laboratory of the Institute imeni P.F. Lesgaft, warned me: it will be serious. But now everyone dreaming to become a flier or a cosmonaut mandatorily passes through a psychological selection. And this, alas, is not the fashion, but a severe time requirement. Let us consider [illegible]. Although the psychological features of a person are extraordinarily plastic and he can adapt to the overwhelming majority of professions, not everyone can control a supersonic machine. It is precisely therefore that the problem of the ascertainment of the precise criteria according to which an estimate of the personality and its psychological features may be accomplished that is becoming especially acute.

But in what, especially, lies the urgency of this problem? I sat with Dzhamgarov and we did some calculations. During World War II the Americans, using special tests to determine the capabilities and inclinations of a person, saved 4 billion dollars in the training of pilots for the VVS (Air Force) alone. They saved this sum because out of hundreds of candidates they selected the dozens of the most capable. However, at the end of the 1950's, when jet aircraft displaced prop-driven aircraft, western researchers noted with surprise that in spite of thorough selection the probability of prediction of success sharply decreased. The methodology that had been developed had become obsolete at some time. Excessive dependence on the tests led to a unique scientific crisis, which led to dozens of accidents and catastrophes. And sometimes the pilots suffered a disaster not because they could not prevent it, but because they did not succeed in doing so. Their qualities, as evaluated according to the old methodology, did not correspond to the requirements which the jet aircraft imposed upon man.

And here we have arrived at the most important and interesting thing. It turns out that flight safety and the psychological features of the personality are closely connected. Dzhamgarov learned this long ago. But he also understood that the most important problem of the state in professional selection by means of tests alone cannot be solved. Several years passed

1/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--APPLICATION OF THE X RAY SMALL ANGLE SCATTERING METHOD TO THE STRUCTURE STUDY OF MONOMINERAL BINDING MATERIALS -U-

AUTHOR-(03)-SHUROV, A.F., SOROCHKIN, M.A., PLAVNIK, G.M.

COUNTRY OF INFO--USSR

SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 3, PP 454-457

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--X RAY STUDY, GYPSUM, PARTICLE SIZE, BONDING MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2140 STEP NO--UR/0069/70/032/003/0454/0457

CIRC ACCESSION NO--AP0125723

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0125723

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE X RAY SMALL ANGLE SCATTERING (SAS) ON THE WATER-GYPSUM RATIO IN HARDENED GYPSUM HAS BEEN STUDIED AS WELL AS THE CHANGE OF SAS DURING HARDENING. THE OBSERVED SAS PATTERNS ARE DETERMINED BY THE TRUE SHALL ANGLE SCATTERING, RATHER THAN BY DIFFRACTION REFLECTION. THE VARIATION OF SAS INTENSITY DURING HARDENING IS ASSOCIATED WITH THE CHANGED PARTICLE SIZE IN THE HARDENING PASTE. FACILITY: INZHENERNO-STROITEL'NYY INSTITUT, GRO'KIY. FACILITY: INSTITUT FIZICHESKOY KHIMII AN SSSR, MOSCOW.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002203010016-6"

USSR

UDC 539.3

SHUROV, A. M.

"Graphical Method for Calculating Radial Displacements of Cylindrical Surfaces Loaded By a Variable Pressure Along the Length"

Sb. nauch. tr. Kiyev. in-t inzh. grazhd. aviatsii (Collection of Scientific Works. Kiev Institute of Civil Aviation Engineers), 1971, No. 3, pp 38-42 (from RZh-Mekhanika, No 8, Aug 72, Abstract No 8V14)

Translation: A graphical method is proposed for calculating radial displacements of cylindrical surfaces loaded with a variable pressure along the length. The graphical method is based on the Lame equation for displacements and previous results from which it follows that: (1) the effect of a discontinuity in the pressure curve extends identical distances in both directions; (2) the radial displacement at the point of the discontinuity in the pressure curve is 50% of the displacements as calculated by the Lame equation. Three types of pressure changes are discussed: following a straight-line law and following convex and concave curves. A solution is given for the inner and outer surfaces of the cylinder.
I. M. Rabkina.

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USSR UDC: 621.396.6:621.318

MASLOV, Yu. N., SHUROV, M. I.

"On Calculating a Nonhomogeneous Section of a Magnetic Circuit"

Sb. nauchn. tr. Vladimir politekhn. in-t (Collected Scientific Works of Vladimir Polytechnical Institute), 1970, vyp. 10, pp 57-59 (from RZh--Radiotekhnika, No 1, Jan 71, Abstract No 1V369)

Translation: The authors consider a section of magnetic circuit which contains a gap in the form of a hole made for a pin. It is shown that such nonhomogeneities lead to errors in calculation, and a refined formula is given for the reluctance in the case of cubic approximation of the magnetization characteristic. One illustration, bibliography of seven titles. Resumé.

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USSR UDC: 621.372.413

BULAYEV, V. P., SHUROVA, I. G., PANKOV, L. N.

"On the Problem of Reducing Emission Losses From Circular Openings in Coaxial Resonators"

Sb. Nauchn. tr. Vladimir. politekhn. in-t (Collected Scientific Works of Vladimir Polytechnical Institute), 1970, vyp. 9, pp 74-77 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6B162)

Translation: A solution is found for the problem of minimizing the level of emission losses from circular openings in coaxial resonators. Three tables, bibliography of three titles. Resumé.

1/1

Plant Pathology

USSR UDC 04.001.35

SHUROVENKOV, B., Docent, Kursk Agricultural Institute

"Dangerous Pest of Hard Wheat"

Moscow, Zemledeliye, No 12, 1971, p 75

Abstract: A brief summary is given of a brochure published by the Chelyabinsk agricultural test station entitled: "Wheat blossom mite - a dangerous pest of hard wheat" by A. Badulin. The wheat blossom mite appears to be a pest predominantly of hard wheat and the main area of its activity is the semi-arid and arid steppes overgrown with couch-grass. It is also present in temperate zones, where its frequency varies depending on the amount of precipitation. The mite causes partial or complete sterility of the blossoms, resulting in the appearance of empty ears. Infestation differs from other wheat ear diseases because their natural color is preserved. Results of the investigations suggest that hard wheat should be limited to the geographical areas not affected by the pest, and that more research is needed in order to develop strains with better immunity to the blossom mite.

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USSR

UDC 652.75

SHUROVENKOV, Yu. B., Scientific Agricultural Research Institute of the Northern Trans-Ural Region

"Effectiveness of Insecticides in the Control of Wheat Thrips in the Trans-Ural Region"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 7, 1971, pp 44-45

Abstract: Studies conducted in 1962-67 at the Kurgansk Agricultural Experiment Station showed that treatment of wheat fields in the trans-Ural Region with an aerosol of technical hexachlorocyclohexane, 3.5-4.5% concentration in diesel fuel, was the most effective method for the control of the wheat thrips (Haplothrips tritici Kurd.) that damage the wheat crop there; it resulted in the extermination of 95.4% of the insects in the imago stage. However, treatment of wheat by this method on a large scale is undesirable. Small-drop spraying with 20 l/ha of 65% chlorophos (1.5-2.0 kg/ha) + an amine salt of 2,4-D (1.8 kg/ha) was also very effective, resulting in extermination of 94.7% of the thrips imago. Furthermore, 75-80% of the weeds were killed with the use of this mixture. The degree of extermination of thrips imago on application of 65% chlorophos alone (1.5-2.0 kg/ha) without the 2,4-D salt was 91.5%. In

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USSR

SHUROVENKOV, Yu. B., Khimiya v Sel'skom Khozyaystve, Vol 9, No 7, 1971, pp 44-45

addition, 85-90% of the imago and larvae of the aster-leafhopped (Cicadula sexnotota) perished under the action of the insecticides. The optimum time for treating spring wheat in the Trans-Ural Region in order to control thrips is in the stage of formation of plant "tubes", which coincides with the mass flight of the insects. The thrips can also be effectively controlled in the larva stage by applying DDT, thiophos, or chlorophos, but the equipment used for spraying the insecticides crushes the crop at the time in question, while spraying from aircraft cannot be carried out because of the wooded areas surrounding the fields.

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USSR

SHURPACH, L. S., Candidate of Medical Sciences, and SALIMOVA, V. M., Uzbek Scientific Research Institute of Sanitation, Hygiene, and Occupational Diseases

"The Functional State of the Cardiovascular and Respiratory Systems in Acute and Chronic Poisoning With Organophosphorus and Organochlorine Pesticides"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, July 1973, pp 54-56

Abstract: In 1968-1970, clinical and physiological tests were performed on 172 agricultural employees treated for acute and chronic poisoning with organophosphorus and organochlorine pesticides. EKG changes were observed in all patients: sinus bradychardia and arrhythmia, prolonged Q-T interval, and modified T wave. In chronic patients, the T wave was either markedly lowered or totally flattened. Adrenaline and histamine skin tests revealed functional predominance of the parasympathetic system in 67 percent of the acute patients, suggesting that the disturbances in cardiac rhythm were due to the action of the pesticides on the autonomic nervous system and its mediators, while changes in the T wave, characteristic of dystophic myopathy, might be associated with disturbed myocardial metabolism similar to histoxic hypoxia. All acute and some chronic patients suffered capillary

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USSR

SHURPACH, L. S., Meditsinskiy Zhurnal Uzbekistana, July 1973, pp 54-56

and bronchial spasms, while some acute patients also had reduced blood flow velocity and blood oxygen saturation. In 15 patients, air flow velocity was reduced to less than 3 L/sec. Thus, disturbances in the cardiovascular and respiratory systems should be considered in the treatment of these poisonings.

2/2

USSR

Composite Materials

UDC 661.666.2.661:665

DERGUNOVA, V. S., SHURSHAKOV, A. N., POSOS'YEVA, G. D., LUTSENKO, L. N.

"Certain Strength Properties of Composite Graphite-Zirconium Carbide Materials"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug, 1972, pp 51-58.

Abstract: Results are presented from a study of the physical and mechanical properties of graphite-zirconium carbide and graphite-zirconium carbide-zirconium materials of various chemical compositions and structures. Strength properties were determined in the 20-2,500°C temperature interval using tensile-test specimens. Several factors influencing the strength of composite materials are studied. It is shown that the material with 75% graphite and 25% zirconium carbide has 30% higher tensile strength at 2,500°C than structural graphite type VPP. It is established that, by changing the degree of saturation of the zirconium phase of carbon, the physical and mechanical properties of the composition can be changed significantly. When there is residual zirconium present, in the 20-2,000°C temperature interval, the tensile and bending strengths are 1.5-3 times higher than when the carbide phase alone is present in the structure.

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USSR

UDC 621.3.035.2

YELYUTIN, V. P., KOSTIKOV, V. I., DERGUNOVA, V. S., SHURSHAKOV, A. N., POSOS'YEVA, G. D., LUTSENKO, L. N.

"Specifics of Saturation of Porous Graphite Bases with Melted Zirconium"

Tsvetnye Metally, No 1, 1971, pp 46-50.

Abstract: Certain regularities involved in the process of capillary saturation of various porous graphite materials with liquid zirconium are studied. An attempt is made to determine experimentally the apparent activation energy of the process and to determine the influence of individual factors on various stages of the process. The experiments were performed in a specially designed high-temperature installation under a vacuum of $2 \cdot 10^{-2}$ mm hg. The experiments showed that the melt flows energetically over the outer surface of specimens, thus producing elevated capillary rise values on specimens less than 60 mm in diameter due to additional penetration of the melt through side surface pores. Penetration of porous graphite materials with liquid zirconium occurs by flow of the zirconium along poor walls. The time dependence of movement of the saturation front under isothermal conditions forms a quadrativ parabola. The apparent activation of the process of saturation was calculated for type PROG-2400 and PG-50 graphites.

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USSR

SHURSHAKOV, A. N., DERGUNOVA, V. S., MEYERSON, G. A., SIZOV, B. A.

UDC 669.782.053.2

"Study of the Effect of Boron Additives on the Carburization of Silicon"

Tugoplavk. karbidy — V sb. (Refractory Carbides — collection of works), Kiev, Naukova Dumka Press, 1970, pp 77-82 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G219)

Translation: The effect of boron additives on the carburization rate of molten Si and the growth of the carbide layer formed at the graphite-melt interface is investigated. On introducing boron additives in the amount of 14%, the thickness of the carbide layer at the graphite-melt interface increases, and the C content in the melt increases simultaneously. There are 3 illustrations, 1 table, and a 9-entry bibliography.

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Graphite

USSR

UDC 669.3.035.2

YELYUTIN, V. P., KOSTIKOV, V. I., DERGUNOVA, V. S., SHURSHAKOV, A. N., POSOS'YEVA, G. D., and KHAKIMOVA, D. K.

"Effect of the Degree of Efficiency of a Graphite Grid on the Velocity of its Treatment with Liquid Zirconium"

Tsvetnye Metally, No 4, Apr 71, pp 51-52

Abstract: Studies were continued on the penetration of liquid metals, in this case, zirconium, into the pores of graphite. Previous work showed that the penetration of zirconium into the pores reached a maximum and that zirconium carbide was formed. In the present work, a study was made of the effect of the ideal structure of the porous graphite on the velocity of penetration by the liquid zirconium. Cylindrical samples of carbon 20 mm in diameter and 60 mm in length were prepared from PROG-2400 stock. The samples were fired in an annular kiln at 1250°C for 280 hours, placed in graphite crucibles, covered with coke, and graphitized in a vacuum of 5×20^{-2} mm at 2000, 2400, and 2800°C for one hour.

X-ray diffraction patterns were made to determine the degree of conversion and then the samples were saturated with liquid zirconium at 1800, 2100, and 2250°C. The contact time varied between 5 to 20 sec; the velocity

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USSR

YELYUTIN, V. P., et al., Tsvetnye Metally, No 4, Apr 71, pp 51-52

in the rise of the melt in the pores was determined. X-ray diffraction showed that the samples processed at 2000°C have a turbostratic carbon structure. Thermal processing at 2400 and 2800°C leads to the appearance and breakdown of a three-dimensional ordering. The method of Maur and Hering was used to determine the extent of graphitization. The increase in the height of the melt in the pore with time gives a parabolic curve.

The average velocity of penetration is decreased with an increase in the interplanar constant and is the largest at 2100°C. As the melt penetrates along the surface of the pore, a chemical reaction occurs at the liquid zirconium-graphite interface, forming zirconium decreases as a result of the precipitation of zirconium carbide and a diffusion of carbon across the carbide layer.

The viscosity of the liquid zirconium also increases due to the presence of zirconium carbide and this in turn slows the penetration. The extent of graphitization can change the velocity of the firing process even without temperature changes.

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USSR

UDC 532.593

SHURSHALOV, L. V., Moscow

"Calculation of Powerful Under Water Explosions"

Mekhanika Zhidkosti i Gaza, No 5, 1971, pp 36-40.

Abstract: Calculation is performed for powerful under water explosions using a finite difference method involving artificial viscosity. The properties of the water are described using an equation of state which is correct over a broad range of thermodynamic parameters. Relatively weak explosions, when the compressibility of the water can be ignored or considered in the acoustical approximation were studied in earlier works. The approach used in these works cannot be applied for powerful under water explosions, since a full thermodynamic description of the properties of water over a broad range of pressures, temperatures and densities is required. Several equations of state for water have been suggested which are correct over broad ranges of thermodynamic parameters, although no generally accepted equation of state for water has yet been produced. This work presents a numerical solution of the problem of an under water explosion using one of these equations of state. Calculations are performed by the finite difference method with the introduction of artificial viscosity to the equations.

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USSR

UDC 541.67 + 547.558.1

PEN'KOVSKIY, V. V., YEGOROV, YU P., ZIMUROVA, I. N., MARTYNYUK, A. P., and SHURUBURA, A. K., Institute of Organic Chemistry, Acad. Sc. UkrSSR, Kiyev

"Distribution of Electronic Density in Anion Radicals Containing Triarylphosphazo Groups"

Kiyev, Teoreticheskaya i Eksperimental'naya Khimiya, Vol 9, No 1, Jan-Feb '73, pp 112-116

Abstract: Eight anion radicals of the type $(p\text{-}RC_6H_4)_2(p\text{-}R'C_6H_4)P{:}N\text{-}C_6H_4NO_2\text{-}p$ generated by the electrochemical method in acetonitrile have been studied by means of EPR. In all cases a split was noted on the p^{31} nucleus indicating π-electronic interaction of the P:N group with p-nitrophenyl residue of the anion radical. This effect can be explained only on the basis of $d\pi\text{-}p\pi$ interaction. The effects of various electron donor and electron acceptor R and R' on the distribution of spin density has been compared. Qualitative explanation of this effect has been proposed based on the mobility of π-electrons of the imino nitrogen and a direct polar conjugation of the phosphazo group with the nitro group. The values of the splitting constants at the p^{31} nucleus are not correlated with the σ-constants of R and R'.

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USSR

SHURUBURA, V. P.

"The Debugging of Control Programs"

Vopr. Proyektir. Mat. Mashin i Ustroystv [Problems of Planning of Mathematical Machines and Devices -- Collection of Works], Kiev, 1972, pp 87-98 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V725).

Translation: The debugging of the software of systems operating in real time is studied. The debugging of programs for real time systems is divided into the following phases: 1. Automatic debugging of program modules in the monoprogramming mode with possible models of certain portions of the system hardware (or the control computer itself). 2. Debugging of operating programs in the monoprogramming mode on an actual computer with a supervisor but without a multiplexer. 3. Repetition of phase 2 with multiprogramming processing (complex statistical debugging). 4. Debugging with multiplexers, but with remote terminals not connected to the computer (complex dynamic debugging) with the external medium imitated. 5. Repetition of phase 4 in the dynamic mode with terminals connected (complex dynamic debugging in the actual medium). 6. Operation of the real time system with the addition of new functions or its modification during operation. A specific realization of the ideas of debugging of programs for real time system is described at the level of the input language in the dialog mode for the Dnepr-2 control computer. V. Mikheyev

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USSR

UDC: 681.3.06:51

SHURUBURA, V. P.

"Description of a Basis Modeling Language"

V sb. Mat. obespecheniye ETsVM. Vyp. 4 (Mathematical Provision of Digital Computers--collection of works, No 4), Kiev, 1970, pp 45-61 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V708)

Translation: The author describes a language for modeling systems of discrete events which is presented in general outlines in the paper (abstract 7V709). The language is designed for modeling systems in a conditional time scale and for operation in a real-time system. Extended ALGOL is selected as the general algorithmic basis of the language. The basic concepts of the language are object and class. The object is an independent program, the class introduces localized quantities of the object and an algorithm of actions. The classes permit an embedded block structure with localization of values in a subclass. Access from without to the variables of the class is through an external identifier which contains an indicator of the object and a variable in the object. A set

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SHURUBURA, V. P., Mat. obespecheniye ETsVM. Vyp. 4, Kiev, 1970, pp 45-61

of operators of synchronization and control describes times of transition of the object to active and passive states and takes care of synchronization of objects. The data used by the model are organized in the form of a file. Two classes incorporated in the standard LISP and SYSTEM set are presented. The first of these introduces facilities for processing ring lists, and the second gives special components for describing multi-panel computer systems. V. Tkach.

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USSR

UDC: 681.3.06:51

NIKITIN, A. I., SHURUBURA, V. P.

"On a Basis Language for Modeling of Systems"

V sb. Mat. obespecheniye ETsVM. Vyp. 4 (Mathematical Provision of Digital Computers--collection of works, No 4), Kiev, 1970, pp 21-44 (from RZh-Kibernetika, No 7, Jul 71, Abstract No 7V709)

Translation: The author analyzes and compares the expressive possibilities of languages for modeling systems of discrete events: GPSSIII, SIMSCRIPT, SOL, SIMULA, SIENG, SIMULA-67. Considering the problem of modeling the behavior of digital computer communications systems with user panels and external storage devices, the authors developed the modeling language presented in the previous article (abstract 7V708). The general requirements imposed on a language for modeling systems of discrete events are discussed, and an example is presented of description of the simplest model of a computer system which includes a user panel, central processor, operational memory and magnetic tapes in the language developed by the authors. V. Tkach.

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USSR

UDC 547.341

YEVTIKHOV, Zh. L., SHURUKHIN, B. B., RAZUMOVA, N. A., and PETROV, A. A.
Leningrad Technological Institute imeni Lensovet

"Reaction of Phenyl Ester of Ethyleneglycolphosphorous Acid With 1,3-Dienes"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 2, Feb 71, pp 480-481

Abstract: Investigation of the condensation of phenylethylene phosphite with 1,3-dienes showed that the reaction occurs without the elimination of the glycol radical and that it goes faster than an analogous reaction with alkyl esters. This indicates that beside the p_{π}-d_{π} interactions the p-π conjugation must also be important, so that the P-OPh bond is more labile than the P-OCH_3. Physical properties of two compounds are reported: 1-(2-phenoxyethoxy)-3-phospholine-1-oxide, m.p. 47-48°, b.p. 180°/1.0 mm, d_4^{20} 1.2201, n_D^{20} 1.5526; and 1-(2-phenoxyethoxy)-3-methyl-3-phospholine-1-oxide, m.p. 49-50°, b.p. 204°/1.0 mm, d_4^{20} 1.1902, n_D^{20} 1.5480.

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USSR

UDC 577.1:615.7/9

PINIGIN, M. A., MARKARYAN, A. S., SHURUPOVA, V. S.

"Adaptation to Different Types of Exposure to Chemical Substances (Constant, Intermittent)"

V sb. Farmakol. Khimoterapevt. Sredstva. Toksikol. Probl. toksikol. (Pharmacology. Chemotherapeutic Agents. Toxicology. Problems of Toxicology--Collection of Works), Vol 5 (Advances in Sciences and Technology. All-Union Institute of Scientific and Technical Information, USSR Academy of Sciences, Moscow, 1973, pp 120-128 (from RZh-Biologicheskaya Khimiya, No 17, Sep 73, Abstract No 17 F1898 by the author)

Translation: A graphic method is proposed for evaluating the process of adaptation to continuous and intermittent inhalation of aniline (Mt-Hb-forming substance).

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USSR

UDC 591.1.15

SHUR'YAN, I. M.

"Peroxidase Activity of the Blood and the Methemoglobin Content of X-Ray and Fast-Neutron Irradiated Rats"

V sb. Biofizika i radiobiol. (Biophysics and Radiobiology -- Collection of Works), Vyp. 3, Kiev, "Nauk. dumka," 1972, pp 26-32 (from RZh-Biologicheskaya Khimiya, No 10, 25 May 1972, Abstract No 10P1403 from summary)

Translation: A study was made of peroxidase activity and methemoglobin content of rat blood in the dynamics of radiation sickness induced by exposure to X-rays and fast neutrons. It was ascertained that the peroxidase activity of the blood of rats irradiated with X-rays and fast neutrons in LD_{100} and LD_{50} doses increases sharply, reaching maximum values on the 12th to 16th day after irradiation. A significant increase in the methemoglobin content of the blood of irradiated animals is directly related to peroxidase activity.

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USSR

UDC 591.1.15

SHUR'YAN, I. M., STARODUB, N. F., and REKUN, G. M.

"Peroxidase Activity of Hemoglobin and Individual Fractions Thereof During X-Ray and Fast-Neutron-Irradiation of Animals"

V sb. Biofizika i radiobiol. (Biophysics and Radiobiology -- Collection of Works), Vyp. 3, Kiev, "Nauk. dumka," 1972, pp 20-26 (from RZh-Biologicheskaya Khimiya, No 10, 25 May 1972, Abstract No 10F1407 from summary)

Translation: It was shown that during the acute period of radiation sickness (8th to 12th day) there is a reliable increase in the peroxidase activity of whole Hb. The change in enzyme properties for individual Hb fractions obtained by column chromatography on aluminum oxide is not uniform. The greatest increase in peroxidase activity is found in the third and fourth fractions. Methemoglobin exhibits catalytic activity as peroxidase to a significantly greater degree than oxy-, carboxy- and nitroxyhemoglobin.

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SHURYGIN, D. Ya.

MEDICINE

COLEEN

JPRS 53589
13 July 71

UDC 617-001.17-092.9-07:[616.831.41+616.432]-07

STATE OF HYPOTHALAMO-HYPOPHYSEAL SYSTEM IN EXPERIMENTAL BURN

600440

[Article by Ye. A. Moiseyev, D. Ya. Shurygin, and V. Ye. Belyayev; "The State of the Hypothalamo-Hypophyseal System in Experimental Burn"; Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Russian, No 5, 1971, pp 113-115]

Twenty-one to thirty-eight percent of the skin surface of rabbits was burned. Two days after the burn there was an activation of neurosecretory processes in supraoptic and paraventricular nuclei of the hypothalamus coupled with a significant admission of the neurosecreta into the main posterior region of the neurohypophysis. At later periods, in some cases, there occurs a gradual restoration of the neurosecretory cells or degenerative changes of neurosecretory cells develops. (Byull. Eksper. Biol. (Bulletin of Experimental Biology), No 5, 1971, page 117).

At the present time the attention of numerous researchers is attracted to hypothalamic neurosecretion. Morphological and histochemical changes in the hypothalamohypophyseal system after burns have been studied to an insufficient degree [1,2,3,4,5]. The cited authors, basing themselves on experimental and clinical materials, studied changes in the hypothalamo-hypophysel system mainly during the first few hours following infliction of severe burn injuries.

The purpose of our work was to study the dynamic state of the hypothalamo-hypophyseal system following a standard experimental burn.

1/2 035 UNCLASSIFIED

TITLE--CARBOHYDRATE METABOLISM IN BURNS -U-

PROCESSING DATE--11SEP70

AUTHOR--SHURYGIN, D.YA., MOISEYEV, YE.A., KONSTANTINOVA, M., BELYAYEV, V.YE., ANTONOV, V.B.

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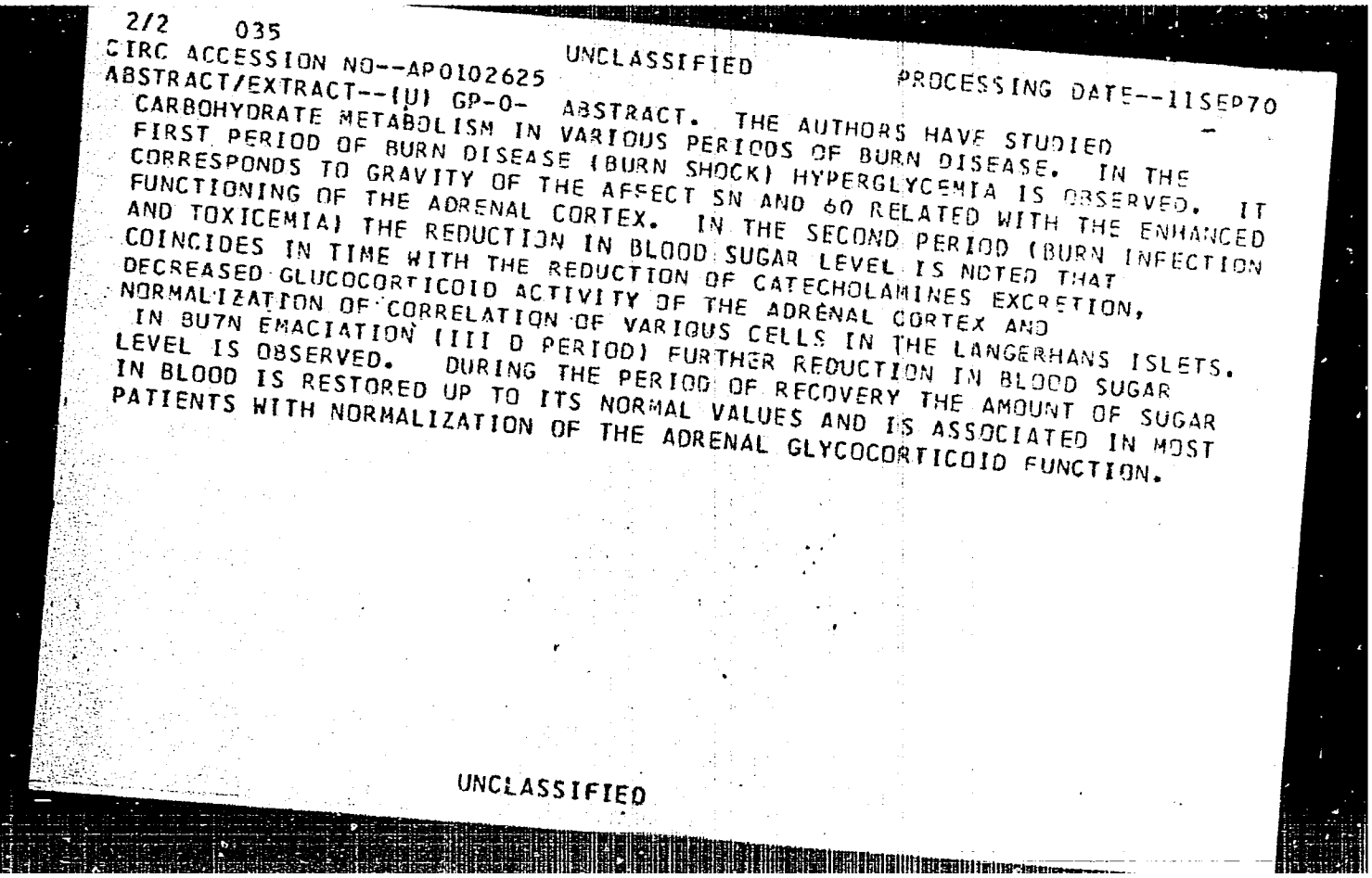

2/2 035 UNCLASSIFIED
CIRC ACCESSION NO--AP0102625 PROCESSING DATE--11SEP70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHORS HAVE STUDIED CARBOHYDRATE METABOLISM IN VARIOUS PERIODS OF BURN DISEASE. IN THE FIRST PERIOD OF BURN DISEASE (BURN SHOCK) HYPERGLYCEMIA IS OBSERVED. IT CORRESPONDS TO GRAVITY OF THE AFFECT SN AND 60 RELATED WITH THE ENHANCED FUNCTIONING OF THE ADRENAL CORTEX. IN THE SECOND PERIOD (BURN INFECTION AND TOXICEMIA) THE REDUCTION IN BLOOD SUGAR LEVEL IS NOTED THAT COINCIDES IN TIME WITH THE REDUCTION OF CATECHOLAMINES EXCRETION, DECREASED GLUCOCORTICOID ACTIVITY OF THE ADRENAL CORTEX AND NORMALIZATION OF CORRELATION OF VARIOUS CELLS IN THE LANGERHANS ISLETS. IN 8U7N EMACIATION (III D PERIOD) FURTHER REDUCTION IN BLOOD SUGAR LEVEL IS OBSERVED. DURING THE PERIOD OF RECOVERY THE AMOUNT OF SUGAR IN BLOOD IS RESTORED UP TO ITS NORMAL VALUES AND IS ASSOCIATED IN MOST PATIENTS WITH NORMALIZATION OF THE ADRENAL GLYCOCORTICOID FUNCTION.

UNCLASSIFIED

USSR

UDC 612.017

SHURYGIN, D. Ya., Professor, Col Med Serv. NIKOLAYEVSKIY, V. V., Candidate of Medical Sciences, Lt Col Med Serv, DYGIN, V. P., Doctor of Medical Sciences, Lt Col Med Serv, and KALUZHENKO, R. K., Candidate of Medical Sciences, Lt Col Med Serv

"On the Immunological Reactivity of Military Servicemen"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 2, 1973, pp 61-65

Abstract: Military servicemen were subjected to immunological tests to determine effects of various aspects of service on immunological makeup. Environmental aspects were studied in the first stage: While servicemen in the south of Western Siberia were immunologically normal, those in the north manifested reduced immunological reactivity. Allergic reactions are pronounced in isolated collectives. Low lysozyme, complement, and reactivity were characteristic of individuals in their first 2 months of service. Lysozyme and antibody titers were lowest in April-May. The second stage involved types of combat activity, physical training, and vaccinations: While group antigen and lysozyme titers were higher in daytime than at night during routine duty, the pattern reversed itself during 24-hour duty. Lysozyme decreased and auto-antibodies appeared more frequently after combat exercises. Physical training increased reactivity.

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USSR

SHURYGIN, D. Ya., et al., Voyenno-Meditsinskiy Zhurnal, No 2, 1973, pp 61-65

Autosensitization arose in the 10th-45th days after preventive immunization. The third stage involved harmful environmental factors: While very long electromagnetic waves were not found to cause problems, ultrahigh-frequency fields caused some complement reduction and occasional appearance of antibodies, particularly after long exposure. Immunological reactions in the presence of internal brain injuries and burns were analyzed in the fourth stage: Acute brain injury caused quite pronounced spontaneous blast transformation of lymphocytes and made them cytopathic against homologous fibroblasts for months and years. The same problems arose with burns. Auto-allergic processes played a major role in burn cases. Disease-associated changes were studied in the final stage. Rheumatism caused formation of tissue auto-antibodies to degrees depending on the disease form. Liver auto-antibodies were detected with Botkin's disease in quantities directly correlated with phase and severity of illness. They also appeared with chronic hepatitis and cirrhosis of the liver. Acute and chronic diffuse glomerulonephritis caused production of kidney auto-antibodies. Acute and chronic pneumonia caused pronounced auto-allergies with production of various auto-antibodies, and general reduction of immunological reactivity. Dermatosis disrupted lymphocyte and neutrophil function, as did chronic tonsilitis. Among these diseases, changes in reactivity are probably

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USSR

SHURYGIN, D. Ya., et al., Voyenno-Meditsinskiy Zhurnal, No 2, 1973, pp 61-65

pathogenic only with rheumatism, nephritis, and hepatitis. This information would be helpful in the diagnosis, prevention, and treatment of immunopathy involved with military service.

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USSR

UDC 669.71.053.4(088.8)

BATYUK, Yu. N., SHURYGIN, G. V., and SLOBIN, P. I.

"Device for Filtrate Sampling From Pipe-Line"

USSR Authors' Certificate No 298856, Cl. G 01 n 1/10, filed 7 Apr 69, published 18 May 71 (from RZh-Metallurgiya, No 1, Jan 72, Abstract No 1G119P by G. Svodtseva)

Translation of Abstract: A device for filtrate sampling from a pipe-line can be used in the production of Al_2O_3 and includes a cylindrical frame with flanges and a connecting piece with open pores. In order to increase operating efficiency the connecting piece is installed concentrically inside the frame and supplied with a conical tip.

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USSR

UDC: 621.374.32

INOZEMTSEV, B. I., MAL'SKIY, V. A., NOVIKOV, L. G., and SHURYGIN, I. T.

"Computer Device Using Integrated Circuits"

Moscow, V sb. Svoystva materialov pri povysh. temperature i apparatura dlya ikh ispytaniya (Characteristics of Materials at High Temperatures and the Equipment for Testing Them--Collection of Works), 1972, pp 82-88 (from RZh--Avtomatika, telemekhanika i vychislitel'naya tekhnika, No 2, 1973, Abstract No 2A496)

Translation: The construction and operation principles of a binary-digital computer in a code with a redundancy of 3 are described. The logic circuits of hybrid integrated elements of two types, used in the construction of the computer, and the schematic of the digital readout in lights of the IN-1 type are given. Six illustrations. Bibliography of three. N. S.

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USSR

KADYROV, M., SHUSHBAYEV, S.

"One Algorithm for Reduction of Positive Quadratic Forms"

Vopr. Vychisl. i Prikl. Mat. [Problems of Computational and Applied Mathematics -- Collection of Works], No 14, Tashkent, 1972, pp 148-157 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V678, by the authors).

Translation: A standard program is written in ALGOL for reduction of positive quadratic forms of n variables ($n \leq 6$), and the area of Hermith-Minkovskiy reduction M^*_n is calculated.

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USSR

UDC 616.981.51.576.8.097.29

SHUSHAYEV, B. Kh. All-Union Scientific Research Institute of Veterinary Sanitation

"The Study of the Possibility of Spread of Labeled Anthrax Bacteria in Soil"

Moscow, Doklady Vsesoyuznoy Ordena Lenina Akademii Sel'skokhozyaystvennykh Nauk imeni V. I. Lenina No 5, 1970, pp 38-39

Abstract: Bacillus anthracis was studied by labeling with P^{32} in Siberian soil. With a single watering of the soil, bacteria penetrated to a depth of 7 centimeters in three days. The second watering caused a penetration to ten centimeters after another three days. Subsequent watering caused no further penetration. The period of penetration was pronounced during the first five days; after that no further penetration was observed. Control groups showed no kind of penetration into the soil. It was concluded that spores of Bacillus anthracis may penetrate into the soil and not be visible on the surface.

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1/2 024 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--PROBLEMS OF BIOCHEMISTRY OF SURPLUS SYNTHESIS OF PYRIDINE ADENINE DINUCLEOTIDES -U-

AUTHOR-(03)-CHAGOVETS, R.V., KHALMURADOV, A.G., SHUSHEVICH, S.I.

COUNTRY OF INFO--USSR

SOURCE--UKRAYNS'KIY BIOKIMICHNIY ZHURNAL, 1970, VOL 42, NR 2, PP 191-200

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NUCLEOTIDE, LIVER, PYRIDINE, DEHYDROGENASE, ENZYME ACTIVITY, PHOSPHORUS, METABOLISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/1678 STEP NO--UR/0300/70/042/002/0191/0200

CIRC ACCESSION NO--AP0106424

UNCLASSIFIED

2/2 024 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0106424

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DYNAMICS OF MULTIPLY RISE OF CONTENT IN LIVER TISSUE OF PYRIDINE ADENINE DINUCLEOTIDES (PAD) AFTER ADMINISTRATION OF NICOTINIC ACID (NA), NICOTINAMIDE (NAM) AND 3 METHYLPYRIDINE,BETA,PICOLINE (3 MP) INTO THE DIFFERENT ANIMALS DEPENDS ON THE NATURE OF INTRODUCED PYRIDINE DERIVATIVES AND THEIR DOSE, IS CHARACTERIZED BY DEFINIT SPECIFIC PECULIARITIES AND OCCURS WITHOUT THE CHANGE IN THE ACTIVITY OF DEHYDROGENASES DEMANDING THE PYRIDINE CONTAINING COENZYMES. WITH THE SURPLUS SYNTHESIS OF PAD THE ADENILIC MOIETY OF ATP IS USED AS A STRUCTURAL MATERIAL IN AMOUNTS EXCEEDING ITS CONTENT IN LIVER TISSUE. NEW FORMATION OF PAD DEMANDS THE ADDITIVE AMOUNTS OF PHOSPHORIBOSYLPYROPHOSPHATE AS WELL AS GLUTAMINE FOR NA AMIDATION. ALL THESE PROCESSES CONDITION THE EXHAUSTING INTENSIFICATION OF THE ENERGETIC METABOLISM, THE INCREASE OF THE CONTENT OF THE LABILE PHOSPHORUS IN TISSUE TESTIFIES TO THIS FACT.

UNCLASSIFIED

USSR

UDC: 669.017.11.295.292

SHUSHKANOV, V. M., MOROZ, L. S., OBUKHOVSKIY, V. V., KAPITONOVA, N. P., IVANOVA, N. V., Leningrad

"Solubility of Vanadium in α Titanium"

Izvestiya Akademii Nauk SSSR, No 4, Jul-Aug 73, pp 221-224.

Abstract: Considering that vanadium is one of the most important alloying elements used in the production of titanium alloys, this work attempts to establish the true limit of solubility of vanadium in α titanium. The paramagnetic susceptibility and modulus of elasticity of four alloys in the Ti-V system containing 0.50, 0.92, 1.40 and 2.30 wt. % vanadium were studied in various initial states. Methods were selected for high sensitivity to changes in electron structure of the alloys studied and interatomic bonding forces, hoping to record the initial stage of the formation of a second phase. The studies showed characteristic breaks on composition versus property curves of the alloys at 0.92 wt. % V, indicating changes in the interatomic bond energies and electron structure at this point. X-ray structural analysis showed that the breaks on the composition versus property curves correspond to appearance of the β phase. Thus, the equillibrium limit of

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USSR

Shushkanov, V. M., Moroz, L. S., Obukhovskiy, V. V., Kapitonova, N. P., Ivanova, N. V., Izvestiya Akademii Nauk SSSR, No 4, Jul-Aug 73, pp 221-224.

solubility of vanadium in α titanium is not over 0.9 wt. % at 650-700° C.

USSR

ZHMUKKIN, Yu. A., and SHUSHKANOV, V. M.

UDC 543.42.08

"Small-Scale Source of Direct-Current Arc for Spectral Analysis"

V Sb. "VII Ural'sk. Konf. po Spektroskopii, 1971. Vyp. 1" [In the Collection "Seventh Ural Conference on Spectroscopy, 1971. No 1"] Sverdlovsk, 1971, pp 41-42 (from Referativnyy Zhurnal, No 10, Oct 72. 32. Metrologiya i Izmeritel'naya Tekhnika. Single Issue. Abstract No 10.32.992 by V. S. K.)

Translation: A new developed schema of a thyrite d-c arc source (AS) used for spectral determination of the oxygen content in metal by the Fassel method is discussed. The AS consists of the power block control block, timer, safety device, and a sparking block for arc ignition. The arc current is controlled in the 5-50 amp range, the power used by the control block is one watt. The unit is naturally colled by air. The dimensions of the AS are 500x500x400 mm. A two year service experience of the AS has demonstrated its high degree of reliability and stability in operation. One illustration, two bibliographical references.

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1/2 028 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EFFECT OF A STATIC DOMAIN ON CURRENT VOLTAGE CHARACTERISTICS -U-

AUTHOR-(02)-SHUSHKEVICH, V.L., LYUZE, L.L.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(2), 650-2

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--VOLT AMPERE CHARACTERISTIC, GERMANIUM SEMICONDUCTOR, ELECTRIC FIELD, ELECTROSTATIC FIELD, PERIODIC PULSE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1987/1974 STEP NO--UR/0181/70/012/002/0650/0652

CIRC ACCESSION NO--AP0105048

UNCLASSIFIED

2/2 028 UNCLASSIFIED

CIRC ACCESSION NO--AP0105048 PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EZPTL. RESULTS ARE GIVEN ON SOME PROPERTIES OF THE STATIC DOMAINS. N-GE SPECIMENS WERE USED WITH THE CONCN. OF BASIC CARRIERS AT 290DEGREESK OF 2 TIMES 10 PRIME14 CM PRIME NEGATIVE3. MEASUREMENTS WERE CARRIED OUT UNDER PULSED CONDITIONS (1-50 MSEC. 50 HZ). MEASUREMENTS OF THE DISTRIBUTION OF THE FIELD ALONG THE SPECIMEN SHOW THAT THE DOMAIN IS ALWAYS FORMED AT THE CATHODE. THE FIELD IN THIS REGION CAN EXCEED THE FIELD ELSEWHERE IN THE SPECIMEN BY 2 ORDERS OF MAGNITUDE AND REACH A VALUE OF 10 PRIME4 V-CM FOR AN AV. APPLIED FIELD OF 1000 V-CM. THIS PHENOMENON IS NOT OF THE CONTACT TYPE, HOWEVER, AND THE REGION OF FORMATION OF THE DOMAIN CAN BE ADJUSTED BY THE GEOMETRY OF THE SPECIMEN. DIMENSIONS OF THE DOMAIN AND MAGNITUDE OF THE FIELD DEPEND ON THE AV. VALUE OF THE FIELD ON THE SPECIMEN. WITH INCREASING FIELD, THE FIELD IN THE DOMAIN INCREASES AS WELL AS ITS DIMENSIONS AND IT IS HSIFTED TOWARD THE ANODE. THE PRESENCE OF THE DOMAIN CHANGES THE CURRENT VOLTAGE CHARACTERISTICS OF THE SPECIMEN.

UNCLASSIFIED

USSR

UDC 576.858.25.083.35.086.3

GUSHCHIN, B. V., TSILINSKIY, Ya. Ya., SHUSHKOV, L. S., L'VOV, D. K., and KLIMENKO, S. M., Institute of Virology imeni D. I. Ivanovskiy, Academy of Medical Sciences USSR, Moscow

"Electron Microscopic Investigations of Vero Cells Infected With Genetically Homogenous and Heterogenous Venezuelan Equine Encephalitis Virus (VEE)"

Moscow, Voprosy Virusologii, No 4, 1973, pp 436-438

Abstract: Vero cells grown in medium 199 with 10% normal bovine serum were infected with clones 6 and 8 of VEE either separately, or with both clones at the same time. Electron microscopy of thin sections showed that 17 and 23 h after infection either with clone 6 or 8 alone mononucleoid virions were formed, whereas infection with both clones simultaneously yielded mononucleoid virions as well as giant virions containing several nucleoids (polynucleid virions). After 29 and 41 h an additional type of giant viral particle was formed which contained material equal in density to that of the nucleoids (termed giant viral particles in distinction to polynucleoid virions) in cultures infected with both clones. Cells infected with only one type of VEE clone did not form giant viral particles. The data support the contention that formation of giant virions represents infection of the cells with genetically heterogenous VEE virus.

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USSR

UDC 621.374.32

SHUSHKOV, YE. I., GALUST'YAN, S.G., and TSODIKOV, M.B.

"Multichannel Pulse Counters"

Mnogokanal'nyye schetchiki impul'sov (cf. English above), Leningrad, "Energiya," 1971, 64 pp, ill., 25 k. (from RZh-Avtomatika, Telemeknanika i Vychislitel'naya Tekhnika, No 1, Jan 72, Abstract No 1A357K)

Translation: The book considers ways of pulse counting simultaneously over several channels by means of a single electronic counter using an internal storage. An analysis is given of the principal characteristics and parameters of the multichannel counter. Its application in various technical devices is considered; viz., multichannel frequency meters, time-interval indicators, statistical analyzers, monitoring and accounting devices. A description is given of the design and operation of various versions of multichannel counters, and schematic diagrams and calculations are given for the principal components.

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