

2/2 016

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120296

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. OF N WAS DETD. AS A FUNCTION OF TEMP. AND SI CONTENT IN THE ALLOYS. THE NITRIDING OF FE-SI ALLOYS, CONTG. 3.4, 4.3, 5.6, 6.0 AND 8.0 WT. PERCENT SI, WAS CARRIED OUT IN THE ATM. OF 150-410 TORR N. THE EQUILS. DURING THE ABSORPTION OF N BY THE SPECIMEN AND THE ELIMINATION OF N FROM THE SPECIMEN WERE OBTAINED BY THE TEMP. CHANGES AT CONST. PRESSURE. THE SOLY. OF N INCREASED WITH INCREASING TEMP. EQUATIONS FOR THE SOLY. OF N IN FE-SI ALLOYS WERE DERIVED. SI SUB3 N SUB4 FORMED DURING THE N ADSORPTION PROCESS AND ITS SOLY. WAS DETD. FACILITY: TSNICHM IM. BARDINA, MOSCOW, USSR.

USSR

UDC: 621.376:530.145.6

POKROVSKIY, Yu. A., BAKALOV, V. I., PARINSKIY, A. Ya., and
MILITEYEVA, G. V.

"Resonance Angular Devices in the Optical Range"

V sb. Vopr. radiotekhniki (Electronic Engineering Problems--
collection of works) Tula, Tula Polytechnical Institute, 1970,
pp 45-53 (from RZh-Radiotekhnika, No. 3, March 71, Abstract "o.
3D376)

Translation: This paper demonstrates the possibility of using
resonance angular devices as broad-band light modulators, trans-
verse oscillation selectors in open resonators, and Q modulators
for lasers. Their superiority over similar devices of the non-
resonance type is noted. Resume

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USSR

UDC:621.438.018-253.5:621.9.015

PANKOV, O.M., BOYKOV, O.I. and MILITONOV, G.V.

"Effect of Surface Finish and Tolerances of the Turbine Blade's Working Part on the Effectiveness of Gas Turbine Installation"

Moscow, Sb. Gasoturbin. i Kombinir. Ustanovki (Symposium on Gas Turbine and Combined Installations), 1971 (1972), pp 255-260 (from Referativnyy Zhurnal - Turbostroyeniye, 1973, Abstract No 3.49,157)

Translation: The present standards require the surface finish of the blades to be $\nabla 8 - \nabla 9$. It is pointed out that this requirement is unnecessarily strict and results in increased blade cost. Operating experience with gas turbine installations by foreign firms confirms the conclusion that blade surface finish over $\nabla 6$ is not required. It is pointed out that it is necessary to define clearly the section of the blade surface to which the standards apply. 2 illustrations. 9 tables. 2 references.

1/1

USSR

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UDC 681.325

KANTAROVSKIY, A. A., KARTAVYY, V. V., MILKIS, G. YA., Lugansk
Affiliate of the State Planning, Design, and Scientific Research
Institute "Giprougleavtomatizatsiya"

"A Converter Which Changes Digital Code to a Time Interval"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratztsy, Tovarnyye
Znaki, No 12, 1970, Author's Certificate No 267207, filed 18 Nov
68, p 124

Abstract: This Author's Certificate introduces a converter which
changes digital code to a time interval. The device contains a
decoder, two-cycle magnetic choke logic elements, and diodes. As
a distinguishing feature of the patent, the device is simplified
by interconnecting the decoder outputs through diodes and connect-
ing these same decoder outputs to the inputs of logic elements
which perform the operation of logical multiplication. The out-
puts of these logic elements are connected through diodes to the
input of a logic element which performs the operation of logical
negation.

1/1

USSR

UDC 541.14:661.882.2

IL'YENKO, V. S., UVAROV, A. V., and MIL'KO, V. I., All-Union Scientific Research and Design Institute of Titanium, Zaporozh'ye

"Determination of the Photochemical Activity of Pigmented Titanium Dioxide by the Method of Electron Paramagnetic Resonance"

Moscow, Zavodskaya Laboratoriya, Vol 39, No 9, 1973, pp 1089-1090

Abstract: In this article a method has been developed for the spectral analysis of pig iron on the amount of impurities-modifiers of Bi, Sb, Pb, Sn, Al, Ti, Zn, V, Ce, and Cu. The ranges of detection are from 0.001 to 1.0%.

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IL'YENKO, V. S., et al., Zavodskaya Laboratoriya, Vol 39, No 9, 1973,
pp 1089-1090

The table compiled by the authors gives a comparison of various samples as pertains to the results of determining the concentration of Ti^{3+} ions.

Since the sensitivity of electron paramagnetic resonance spectrometers is high it is possible to analyze samples of titanium dioxide with a low photochemical activity.

The article contains 1 table and 11 bibliographic references.

2/2

- 5 -

1/2 012 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--THE EFFECT OF MEDIUM COMPOSITION AND GROWTH CONDITIONS ON FLAVIN
SYNTHESIS BY MYCOBACTERIUM LACTICOLUM 104 -U-
AUTHOR-(02)-MILKO, YE.S., IVANOVA, N.P.

COUNTRY OF INFO--USSR

SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 71-76

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MYCOBACTERIUM, CULTURE MEDIUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1413

STEP NO--UR/0220/70/039/001/0071/0076

CIRC ACCESSION NO--AP0109475

UNCLASSIFIED

272 012

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0109475

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF CONCENTRATIONS OF CARBON, NITROGEN, PHOSPHORUS, IRON, POTASSIUM, MANGANESE, MAGNESIUM AND SURFACE ACTIVE SUBSTANCES AS WELL AS AERATION, TEMPERATURE AND PH OF THE MEDIUM WAS STUDIED ON THE YIELD AND TOTAL FLAVIN CONTENT DURING THE GROWTH OF MYCOBACTERIUM LACTICOLUM 104 IN THE MEDIUM WITH N-HEXADECANE. FLAVIN SYNTHESIS WAS ENHANCED WITHOUT ANY CONSIDERABLE CHANGES OF BIOMASS YIELD WHEN NITROGEN AND POTASSIUM CONTENT WAS INCREASED, THAT OF PHOSPHORUS, DECREASED AND THE INITIAL PH VALUE OF THE MEDIUM WAS SLOW. FLAVIN SYNTHESIS IN THIS MEDIUM RISED TWOFOLD.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--16OCT70
 TITLE--ON THE INITIAL FORMS OF CHRONIC CARBON DISULFIDE POISONING -U-
 AUTHOR--(051)-MILKOV, L.YE., MONAYENKOVA, A.M., BYALKO, N.K., GLOTOVA, K.V.,
 VERETINSKAYA, A.G.
 COUNTRY OF INFO--USSR
 SOURCE--GIGIYENA TRUDA I PROFESSIONAL'NYE ZABOLEVANIYA, 1970, NR 5, PP
 28-32
 DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
 TOPIC TAGS--POISON, CARBON DISULFIDE, INDUSTRIAL HYGIENE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1995/0450

STEP NO--UR/0391/70/000/005/0028/0032

CIRC ACCESSION NO--AP0116116
 UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116116

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

ABSTRACT. AN EXAMINATION OF WORKERS EXPOSED TO THE EFFECT OF CARBON DISULFIDE IN CONCENTRATIONS OF 30-60 MG-M PRIME3 DISCLOSED THE PRESENCE OF THE INITIAL FORMS OF CHRONIC CARBON DISULFIDE POISONING IN THE SHAPE OF VEGETATIVE VASCULAR DYSFUNCTION (NOT INFREQUENTLY WITH HYPERTENSIVE REACTIONS) AND OF THE ASTHENO VEGETATIVE SYNDROME, OFTEN APPEARING IN CONJUNCTION WITH SIGNS OF MILDLY PRONOUNCED VEGETATIVE SENSITIVE POLYNEURITIS, COMMONLY DEVELOPING IN PERSONS WITH LONG SERVICE RECORDS. IN THE INITIAL FORMS OF POISONING A NUMBER OF NONSPECIFIC CHANGES IN INDIVIDUAL BIOCHEMICAL BLOOD AND URINE INDEXES WERE ELICITED, WHEREBY IN CASES OF VEGETATIVE VASCULAR DYSFUNCTION OF A DECLINE OF THE PSEUDO CHOLINESTERASE ACTIVITY AND A FALL OF THE BLOOD CHLORIDE CONCENTRATION, ALONG WITH AN ELEVATED CATECHOLAMINES EXCRETION (WITH NORPINEPHRINE BEING COMMONLY RESPONSIBLE FOR IT) OCCURRED MUCH MORE OFTEN THAN IN THE ASTHENIC FORM OF POISONING. PERSONS EXPOSED TO CARBON DISULFIDE CONCENTRATION NOT SURPASSING THE MAXIMUM PERMISSIBLE LEVEL (10 MG-M PRIME3) ALSO DEMONSTRATE INITIAL FORMS OF CHRONIC CARBON DISULFIDE POISONING, ALTHOUGH IN FEWER CASES. THIS MAKES IT NECESSARY TO LOWER THE FIXED MAXIMUM PERMISSIBLE CONCENTRATION LEVEL OF CARBON DISULFIDE IN CONSIDERATION OF THE INHALATION AND CUTANEOUS ROUTS OF ITS INGRESS INTO THE ORGANISM.

FACILITY: INSTITUT GIGIYENY TRUDA I

PROFZABOLEVANIY AMN SSSR.

UNCLASSIFIED

acc. Nr.: **AP0029502**

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Ref. Code: UR 0391

PRIMARY SOURCE: Gigiyena Truda i Professional'nyye Zabolevaniya,
1970, Nr 1, pp 31-34

WORK CONDITIONS AND THE STATE OF HEALTH OF WORKERS ENGAGED
IN HOT VULCANIZATION OF FOOTWEAR RUBBER

Z. A. Volkova, L. Ye. Milkov, K. A. Lopukhova, L. M. Matyar, Yu. I. Makarenko,
T. K. Shakhova

Summary

Hot vulcanization (cure) of rubber with divinyl-styrene raw rubber serving as a base is attended by the formation of a complex steam and gas mixture. In this process permanent constituents are styrene fumes, whose content in the respiration zone comprises 2-40 mg/m³. Into the atmosphere there are also released divinyl, butyric acid, formaldehyde, acrolein, carbon monoxide, sulfur dioxide, ammonia, methyl alcohol, aromatic amines. Heat-producing microclimate is an adverse factor as well. The workers demonstrated functional shifts in the state of the nervous system, alterations in the upper respiratory tract, peripheral blood and teguments. Medico-prophylactic measures are proposed.

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REEL/FRAME

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19681103

USSR

UDC 520.17

AZARKEVICH, L. B., BLAYKHMEN, YE. M., MAKOVETSKIY, V. A., and MIL'KOV, V. G.

"A Rubber-Like Optically Sensitive Material on the Basis of Oligodiene Epoxy FDI-3A"

Tallin, VII Vses. Konf. po Plyarizatsi.-Optich. Metodu Issled. Napryazh., 1971
— Sbornik (Seventh All-Union Conference on the Polarization-Optical Method of Stress Research -- Collection of Works), Vol 2, 1971, pp 106-109 (from Referativnyy Zhurnal, Mekhanika, No 2, Feb 72, Abstract No 2W1656)

Translation: A report is given on the composition and optomechanical properties of optically sensitive materials made of the oligodiene epoxy FDI-3A in combination with epoxy resins. When applied as photoelastic coatings such materials make possible the measurement of plastic deformations from 2 to 30%. A calibration diagram is presented for one of the materials. Samples from the obtained materials were subjected to repeated loadings (stretching or pure fracture), and on the basis of 1.5 -- 2.0 thousand cycles the stability of the optomechanical properties of the photoelastic coating was shown. In addition, these materials possessed low optical sensitivity. The last two properties are particularly useful in the measurement of accumulated deformations during repeated loadings.

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172 012 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--HYPERFINE STRUCTURE AND NATURE OF EXCHANGE INTERACTIONS IN COPPER
CARBOXYLATE -U-
AUTHOR--(04)-YABLOKOV, YU.V., GAVRILOV, V.V., ABLOV, A.V., MILKOVA, L.N.

COUNTRY OF INFO--USSR

SOURCE--DOKL AKAD. NAUK SSSR 1970, 191(5), 1102-5

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HYPERFINE STRUCTURE, COPPER COMPOUND, COMPLEX COMPOUND, IONIC
BONDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3008/1260

STEP NO--UR/0020/70/191/005/1102/1105

CIRC ACCESSION NO--A10138271

UNCLASSIFIED

PROCESSING DATE--04DEC70

UNCLASSIFIED

2/2 012

CIRC ACCESSION NO--AT0138271

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

ABSTRACT. THE EPR HYPERFINE STRUCTURE OF CU SUB2 (O SUB2 CR) SUB4 .2L, WHERE R EQUALS ME, ET, PHCH SUB2, CLCH SUB2, CL SUB3 C, AND L EQUALS 2, CHLOROPYRIDINE, PH SUB3 P, UREA, QUINOLINE, BETA NAPHTHOQUINOLINE, ALPHA PICOLINE, WERE INVESTIGATED. WITH AN INCREASE OF THE ELECTRONEGATIVITY OF THE ACID GROUP THE CU-O SIGMA BOND BECOMES MORE IONIC. THE IONIC CHARACTER OF THE CU-O BOND ALSO INCREASES WITH INCREASE OF THE ELECTRON DONOR PROPERTIES OF THE AXIAL LIGANDS IN THE COMPLEX. WITH A CHANGE IN THE CHARACTER OF THE CU-O SIGMA BOND, THE CHARACTER OF THE PLANAR PI BOND CHANGES IN THE REVERSE DIRECTION. THESE RESULTS CAN BE USED TO ELUCIDATE THE MECHANISM OF THE EXCHANGE INTERACTION OF CU-CU AS HAVING INDIRECT CHARACTER, AND THE OBSD. SIGNIFICANT EXCHANGE INTEGRAL IS PROBABLY DUE TO JOINT MANIFESTATIONS OF INTERACTIONS THROUGH SIGMA AND PI BONDS OF CU-O AND O-C.

FACILITY: KAZAN. FIZ.-TEKH. INST., KAZAN, USSR.

UNCLASSIFIED

1/2 030

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--EVALUATING THE KINETICS OF VULCANIZING RUBBER MIXTURES ACCORDING TO
A DYNAMIC MODULUS UNDER VARIABLE TEMPERATURE CONDITIONS -U-

AUTHOR--(051)NECHIPORENKO, A.G., LUKOMSKAYA, A.I., MILKOVA, YE.M., PUKHOV,
A.P., SHMIGELSKIY, V.K.

COUNTRY OF INFO--USSR

SOURCE--KAUCH. REZINA 1970, 29(3), 17-19

DATE PUBLISHED-----TO

SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--SHEAR STRESS, VULCANIZATION, ELASTIC MODULUS, RUBBER WORKING
MACHINERY, AUTOMATIC CHEMICAL PROCESS CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1997/0529

STEP NO--UR/0138/70/029/003/0017/0019

CIRC ACCESSION NO--AP0119448

UNCLASSIFIED

2/2 030 UNCLASSIFIED PROCESSING DATE--30OCT70
CIRC ACCESSION NO--AP0119448
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN APP. WAS DESIGNED WHICH
AUTOMATICALLY RECORDS THE AMPLITUDE OF THE DYNAMIC SHEAR STRESS APPLIED
TO A RUBBER SAMPLE BEING VULCANIZED AT CONSTANTLY INCREASING
(PROGRAMMED) TEMP. THE READINGS ARE PROPORTIONAL TO THE CHANGING
DYNAMIC ELASTICITY MODULUS OF THE SAMPLE AND PERMIT DETN. OF THE OPTIMUM
VULCANIZATION TIME POSSIBLE IN A GIVEN TEMP. REGIME. FACILITY:
DNEPROPETROVSK. SHINNYI ZAVOD., DNEPROPETROVSK, USSR.

UNCLASSIFIED

Acc. Nr:
AP0050805

Abstracting Service:
CHEMICAL ABST. 1-7c

Ref. Code:
UR0339

ML

102066e Role of buffering in the decomposition of sucrose. Ivanov, S. Z.; Mil'kova, Z. A.; Sapronov, A. R. (Voronezh Tekhnol. Inst., Voronezh, USSR). *Sakh. Prom.* 1970, 44(1), 31-4 (Russ). Solns. 0.5M in sucrose and 0.17M in nonsugars, with original pH 7.5, were refluxed. The decompn. was followed by detn. of dry matter by refractometry, detn. of pH at 90° with a pH meter LPC-01 and detn. of sucrose by iodometry. The decompn. is characterized by S-curves which fit the equations for autocatalytic processes. The changes in pH follow the same pattern. Autohydrolysis is catalyzed by NaCl and glucose and inhibited by melanoids, the products of alk. decompn. of invert sugar and by glutamic acid. The effect of the nonsugar complex was examd. by heating a sugar soln. with added molasses at pH 7. Hydrolysis was inhibited with decreasing purity of the sugar. Olaf Thomsen

REEL/FRAME
19810807

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USSR

BELOV, K. P., ~~MILL, B. V.~~, SOKOLOV, V. I., and KHIYEN, T. D., Moscow State University imeni M. V. Lomonosov

"Magnetic Properties of Cobalt-Containing Ferrite-Garnets"

Leningrad, Fizika Tverdogo Tela, Vol 13, No 6, 1971, pp 1649-1653

Abstract: Measurements of the magnetic and magnetostriictive properties of polycrystalline substituted ferrite-garnets of the system $R_2Co_xFe_{5-2x}Ge_xO_{12}$ in which ions with $L \neq 0$ (L is inductance) can be present in each of the three magnetic sublattices of garnet are reported. The charge compositions in the garnet synthesis included Co_3O_4 , Fe_2O_3 , and GeO_2 , along with oxides of gadolinium, terbium, and dysprosium with purity not less than 99.99%. Excess GeO_2 (2-3%) was added to the charge to compensate for vaporization losses. In the temperature range 4.2 - 100°K and in magnetic fields up to 60 kilo-oersteds, data were obtained on the effect of the Co^{2+} concentration in rare-earth ferrite-garnets on the magnetic field intensity and the coercive force. It was shown that adding Co^{2+} to rare-earth ferrite-garnets leads to a sharp increase in the coercive force variant. An anomalous dependence of the magnetostriction of terbium ferrite-garnets on the field at high Co^{2+} concentrations was observed.

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1/2 012 UNCLASSIFIED PROCESSING DATE--20NOV70
 TITLE--CATIONIC DISTRIBUTION IN A SYSTEM OF CA SUB3 IN SUB2 SN SUBX
 NEGATIVE GE SUB3 NEGATIVE X D SUB12 GARNETS BASED (IN GAMMA RESONANCE
 AUTHOR--(03)--BELYAYEV, L.M., LYUBUTIN, I.S., MILL, B.V.

COUNTRY OF INFO--USSR

SOURCE--KRISTALLOGRAFIYA 1970, 15(1), 174-174

DATE PUBLISHED-----70

M

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--MOSSBAUER SPECTRUM, GARNET, GERMANIUM COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--1995/0906

STEP NO--UR/0070/70/015/001/0174/0175

CIRC ACCESSION NO--AP0116416

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

2/2 012

CIRC ACCESSION NO--AP0116416

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FORMATION OF GARNETS IN THE SYSTEMS CA SUB3 ZR SUB2 GE SUB1 NEGATIVE X SN SUB11 GA SUB2 O SUB12, X EQUALS 0.5, 1.0; SR SUB3 YB SUB2 GE SUB3 NEGATIVE X SN SUBX O SUB12, CA SUB3 YB SUB2 GE SUB3 NEGATIVE X SN SUBX O SUB12, SR SUB3 IN SUB2 GE SUB3 NEGATIVE XNEGATIVE SN SUBX O SUB12, X EQUALS 0.5; AND CA SUB3 IN SUB2 GE SUB3 NEGATIVE X SN SUBX O SUB12, X EQUALS 0.0, 0.25, 0.5, 0.75 WAS STUDIED IN ORDER TO OBTAIN GARNETS CONTG. SN PRIME4 POSITIVE IN D POSITIONS (TETRAHEDRAL) EXCLUSIVELY. SINGLE PHASE SAMPLES WERE OBSD. IN THE LAST CASE ONLY FOR X SUBMAX IS APPROXIMATELY EQUAL TO 0.6. THE IMPOSSIBILITY OF ONLY IN PRIME3 POSITIVE IONS OCCUPYING THE A POSITIONS (OCTAHEDRAL) WAS CONCLUDED FROM THE MOESSBAUER SPECTRA. THE RELATION OF SN PRIME4 POSITIVE (D)-SN PRIME4 POSITIVE (A) IS SIMILAR TO OF EQUAL TO 0.25 FOR X EQUALS 0.25, AND 0.42 FOR X EQUALS 0.5. IN PRIME3 POSITIVE IONS OCCUPY A MAX. OF 15 PERCENT OF THE D POSITIONS IN THE GARNET STRUCTURE AND THIS FACT ALSO DETS. X SUBMAX FOR THE SYSTEMS.

FACILITY: INST. KRISTALLOGR., MOSCOW, USSR.

UNCLASSIFIED

1/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--NEW SERIES OF TE PRIMEPOSITIVE6 CONTAINING GARNETS -U-
AUTHOR--MILL, B.V. *m*
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(1), 86-8
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, EARTH SCIENCES AND OCEANOGRAPHY
TOPIC TAGS--GARNET, TELLURIUM, RARE EARTH METAL, METAL OXIDE

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1130 STEP NO--UR/0020/70/191/001/0086/0038
CIRC ACCESSION NO--AT0116595
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0116595

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REPLACEMENT OF DIVALENT METALS IN TE GARNETS WITH MONO AND TRIVALENT METALS WAS STUDIED. THE FOLLOWING GARNETS WERE SYNTHESIZED BY HEATING COMPACTED MIXTS. OF THE CORRESPONDING METAL CARBONATES OR OXIDES: NA SUB3 TE SUB2 M SUB3 O SUB12 (M EQUALS FE, GA, AL), M SUB3 TE SUB2 LI SUB3 O SUB12 (M IS A RARE EARTH, Y, OR BI), CAGD SUB2 SB SUB2 ZN SUB3 O SUB12, CA SUB3 TE SUB2 ZN SUB3 O SUB12, NA SUB1 TIMES 5 GD SUB1 TIMES 5 TE SUB2 ZN SUB3 O SUB12, AND CA SUB3 TE SUB2 LI SUB1 TIMES 5 GA SUB1 TIMES 5 O SUB12. THE LATTICE CONST. A AND TEMP. OF FORMATION ARE GIVEN FOR ALL COMPOS. THE TE AND SB ATOMS OCCUPY THE 6 COORDINATE A POSITIONS IN THE LATTICE, THE RARE EARTHS, BI, NA, AND CA OCCUPY THE 8 COORDINATE C POSITIONS, AND THE FE, GA, AL, LI, AND ZN ATOMS OCCUPY THE 4 COORDINATE D POSITIONS. THE FORMATION OF THESE GARNETS AND THE FAILURE TO PREP. CERTAIN OTHER GARNETS CONTAINING DIVALENT METALS ARE EXPLAINED ON THE BASIS OF SIZE AND PREFERRED COORDINATION NO. OF THE METALS. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

UDC 678.652'41'21-9

USSR

SHARKOVSKIY, V. A., AKUTIN, M. S., KERBER, M. I., SHEGLOV, L. L.,
MATVELASHVILI, G. A., PUKHOVITSKAYA, A. N., ~~MIKHAILOV, I. I.~~, GREBENNIKOV,
A. V., OSTROVSKAYA, A. YE., and DYMARSKAYA, YE. L.

"New Types of Aminoplastics"

Moscow, Plasticheskiye Massy, No 12, Dec 70, pp 53-54

Abstract: The article describes synthesis of Fiberglass plastics based on carbamide binders. These binders include a carbamide oligomer modified by polyvinylacetate emulsion during synthesis, and urea-benzoguanamine-formaldehyde oligomer. Fiberglass textolites based on these oligomers and TS-8/3-250 glass treated with lubricant 752 are mechanically strong. In addition to its excellent strength properties, the plastic based on urea-benzoguanamine-formaldehyde oligomer is also water-resistant.

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UNCLASSIFIED

PROCESSING DATE--11NOV70

1/2 024

TITLE--MOSSBAUER EFFECT ON PRIME121 SB NUCLEI IN YTTRIUM IRON GARNET -U-

AUTHOR--(04)-GOLOVNIN, V.A., IRKAEV, S.M., KUZMIN, R.N., MILL, V.V.

COUNTRY OF INFO--USSR

SOURCE--JETP LETTERS (USA), VOL. 11, NO. 1, P. 35-7 (JAN. 1970)

DATE PUBLISHED----JAN70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--MAGNETIC FIELD, MOSSBAUER EFFECT, ANTIMONY ISOTOPE, ATOM, NUCLEUS, YTTRIUM, IRON, GARNET, DIAMAGNETISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY KEEL/FRAME--3005/1751

STEP NO--US/0000/70/0011/001/0035/0037

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 024

CIRC ACCESSION NO--AP0133656

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

ABSTRACT. THE INVESTIGATION REVEALED A

SUPEREXCHANGE INDUCTION OF MAGNETIC FIELDS ON THE DIAMAGNETIC SB ATOMS.

FACILITY: MOSCOW STATE UNIV. USSR.

USSR

UDC 550.42

BORISENKO, L. F., MILLER, A. D., and FISHER, E. I., Institute of Mineralogy, Geochemistry and Crystallochemistry of the Rare Elements, Moscow

"Abundance of Gold in Ultrabasites"

Moscow, Geokhimiya, Akad. Nauk SSSR, No 2, Feb 72, pp 188-195

Abstract: A relatively high gold content for various igneous rocks has been suggested during the past decade.

In the present study, 79 samples of ultrabasites, pyroxenites, hornblendes, peridotites, dunites, olivinities and serpentinites were taken in the Urals, and 7 similar samples in Armenia. These showed a gold content varying from 0.005 to 0.300 g/t. In general, the content was higher than normally expected for this class of minerals, especially in the case of many gabbro-pyroxenite-dunite, and hyperbasite, formations in certain districts of the Urals.

The gold was mainly in the form of small nuggets of native Au or electrum, reaching 1-2 mm in diameter; it exhibited siderophile and chalcophile properties, as well as higher content in sulfide-rich rocks. The gold was both primary in character and also secondary, as introduced during hydrothermal-metasomatic processes. The presence of sulfur was an important factor in the transport and local concentration of gold in most of the minerals studied.

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- 12 -

MILLER, A. T.

SO:JPRS 55100
4 FEB 72

UDC 581.13:577.15/.057:429.78.048
EFFECT OF FLIGHT FACTORS ON THE FORMATION OF ALDOLIS METABOLITE AND AC-
TIVITY OF ENZYMES IN PLANTS

Article by E. Shatavskiy, A. T. Miller *et al.*
Krasnoyarsk, Novosibirsk, Kuznetskaya ASSR, USSR
1971. Submitted for publication 25 June 1971, pp 36-38/
(Radiation Biology)

Oxidation processes play an important role in the development of pri-
mary radiation damage reactions. Peroxidase is among the typical oxidative
enzymes. The activity of these enzymes is a sensitive index of radiation in-
jury in plants (V. A. Kopylov and A. M. Kozlov, A. M. Kuzin, M. Kuzin,
Siberia and Milan). The activation of oxidative enzymatic systems (peroxi-
dase + polyphenol oxidase) in the tissues of irradiated plants leads to an
accumulation of primary radiolysis (A. M. Kuzin and N. P. Korolev). These
include substances of phenol nature of the orthoquinone type and the oxida-
tion products of unsaturated fatty acids intensifying the development of pri-
mary and initial radiation damage processes (A. M. Kuzin; Yu. B. Kudryashov;
F. A. Shatavskiy). Exposure to different factors (stress, washing, heat,
ins, hypoxia, mineral nutrition, growth retardants) can substantially
change the content of these substances in the tissues of irradiated animals and
plants, and thereby decrease the biological effect of irradiation (N. M.
Kuznetsov, et al., L. I. Beyrov, A. M. Kuzin, et al.).

Accordingly, as criteria of the biological effect of ionizing radi-
ation and ~~radiation factors~~ we used the content of anomalous metabolites
(radotoxins) and the activity of various enzymes in plant tissues.

Method

The experimental model and the method for cultivating the plants
grown from seeds exposed aboard an artificial earth satellite are described
in other articles in this number of the journal. The content of anomalous
metabolites was determined in plants 7, 10, 20 and 30 days in age. The ex-
tracts were extracted from the plant tissues over a period of 2 hours at
room temperature using a quinupic (by weight) quantity of sodium (purified
in Al(OH)₃) acidified to pH 3.3. The extract was filtered and the quantity

Radiation Biology

MILLER, A. T.

SO: JPRS 55100

4 FEB 72

UDC 629.78.048:162.998.4.057

CHANGE IN GROWTH PROCESSES IN IRRADIATED LETTUCE SEEDS

Article by Yu. I. Shaydakov, A. T. Miller, L. V. Alshina

Abstract: The effect of spaceflight factors on the biological effectiveness of X-rays was studied with respect to lettuce seeds. It was found that the light exerted no significant effect on the energy of seed germination. The length of the primary root in flight specimens irradiated before flight was similar to that in the ground controls. According to this test, flight factors increased the effectiveness of postflight irradiation insignificantly. The influence of a synchronous exposure inhibited the effect of all the doses tested during the flight. The seed exposure to radiation during the flight resulted in a slight decline of plant weight in comparison with the laboratory control.

We studied the influence of flight factors and ionizing radiation on initial growth processes (sprouting energy and percentage of seeds, growth of the primary root), and also on the appearance of aftereffects of the sterilization of the influence of flight factors on the appearance of a retrobiological effect (seed irradiation prior to flight) and the radiation effect on dry seeds begins to appear with the onset of their germination. At that time one observes both the realization of the damage and the oppositely directed processes associated with a normalization of plant growth mechanisms. During the initial growth period the damaging effect of radiation is most clearly manifested. With an increase in plant age recovery processes begin to predominate and in the case of small irradiation doses the radiation effect can be smoothed out.

Article by Yu. I. Shaydakov, A. T. Miller, L. V. Alshina, Kazakhskaya Biologiya, 1971, pp 21-24, submitted for publication 25 June

microbiology

USSR

UDC 576.858.6.083.35.07

(11)

ZHDANOV, V. M., BYKOVSKIY, A. F., AL'TSHTEYN, A. D., LOZINSKIY, T. P.,
URYVAYEV, L. V., VOLKOVA, M. L., YERSHOV, F. I., IL'IN, K. V., BENTEMIROV,
T. A., IRLIN, I. S., MILLER, G. G., ZAKHAROVA, L. G., PEREKREST, V. V.,
GERASINA, S. F., and SEVAST'YANOVA, M. V., Institute of Virology imeni
D. I. Ivanovskiy, Academy of Medical Sciences USSR, and the Institute of
Epidemiology and Microbiology imeni N. F. Gamaleya, Moscow

"Detection of Oncornaviruses in Continuous Tissue Cultures"

Moscow, Voprosy Virusologii, No 4, 1973, pp 411-414

Abstract: Studies were conducted on a number of human and animal continuous tissue cultures maintained in medium 199 containing 10% bovine serum to determine oncornaviruses. Formation of oncornaviruses in the tissue cultures were followed by the appearance of viral particles in the culture fluid labeled with H³-uridine, susceptibility of their synthesis to low actinomycin D concentrations, appearance of these particles following inhibition of nuclear material synthesis by bromodeoxyuridine or mitomycin, presence of reverse transcriptase in these particles, presence of 60-70 S RNA in these particles, and electron microscopy. Of the 26 human lines investigated 14 contained type B oncornavirus, and 4 lines type C virus. Eight of the

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USSR

(11)

ZHDANOV, V. M., et al.; Voprosy Virusologii, No 4, 1973, pp 411-414

14 animal lines studies also showed the presence of oncornaviruses. The source of these viruses in the human lines remains unclear, but the source may have been bovine serum or porcine trypsin used in the preparation of cell suspension. It is noteworthy that type B viruses were isolated in human cultures of epithelial origin, while type C viruses in human cultures of leukotic or sarcomatous origin.

2/2

- 25 -

1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--GERMANIUM TIN PLUS 2 WT. PERCENT ANTIMONY AND GERMANIUM, TIN PLUS
5.5 WT. PERCENT ANTIMONY -U-
AUTHOR--(02)-GUBENKO, A.YA., MILLER, M.B. M
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(13), 471-4
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--GERMANIUM ALLOY, TIN ALLOY, ANTIMONY ALLOY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0842 STEP NO--UR/0363/70/006/033/0471/0474
CIRC ACCESSION NO--AP0118018
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0118018

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE LIQUIDUS OF THESE WAS
CONSTRUCTED. THE SOLY. OF SB IN THE SOLID PHASES ON THESE SECTIONS WAS
DETD. THE DISTRIBUTION COEFF. K SUBSB IS STRONGLY DEPENDENT ON THE
RATE OF GROWTH. THE CONC. DEPENDENCE OF THE RESISTIVITY OF SN-AS
CONTACTS WAS INVESTIGATED. WITH INCREASING AS CONC. THE RESISTIVITY
DECREASES. THE RESISTIVITY OF CONTACTS BASED IN THE ALLOY SN PLUS 2 WT.
PERCENT AS IS LOWER AT ALL TEMPS. THAN FOR THE CASE OF THE SN PLUS 5.5
WT. PERCENT SB ALLOY.

UNCLASSIFIED

1/2 023 UNCLASSIFIED PROCESSING DATE--30OCT70
 TITLE--ELECTROCHEMICAL OXIDATION OF CARBON MONOXIDE IN AQUEOUS SOLUTION.
 II. OXIDATION OF CARBON MONOXIDE IN ACID SOLUTIONS ON A PLATINUM
 AUTHOR--(03)-MILLER, N.B.; TYURIKOVA, D.G.; VESELOVSKIY, V.I.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKIMIYA 1970, 6(4), 468-72

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AQUEOUS SOLUTION, CHEMICAL REACTION RATE, PLATINUM ELECTRODE,
 CARBON MONOXIDE, ELECTROCHEMISTRY, OXIDATION, CHEMICAL BONDING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--1998/1159

STEP NO--UR/0364/70/006/004/0463/0472

CIRC ACCESSION NO--AP0121718

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121718

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE OXIDN. OF CO ON A PT ELECTRODE WAS STUDIED BY ANODIC POLARIZATION IN 0.1 N H SUB2 SO SUB4 AT 25 DEGREES. AT AND AROUND THE EQUIL. POTENTIAL (0.05 V), THE CO OXIDN. IS SLOW AND PROCEEDS AT THE EXPENSE OF THE CATALYTIC CONVERSION OF WATER. THE ELECTROCHEM. OXIDN. PROPER BEGINS AT 0.85 V AND IS CONTINGENT UPON THE FORMATION OF O AND ITS ADSORPTION ON THE ELECTRODE SURFACE. IN THIS REGION THE REACTION RATE IS GOVERNED BY THE DIFFUSION OF CO. A FURTHER INCREASE IN THE POTENTIAL ABOVE 1.1 V LEADS TO A PRONOUNCED DECREASE IN THE REACTION RATE, DUE TO THE FORMATION OF AN OXIDE BOND BETWEEN THE O AND THE ELECTRODE SURFACE. FACILITY: NAUCH. ISSLED. FIZ. KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

MILLER, O. A.

JPRS 55882
4 May 1972

UDC 621.039.554:621.311.25:621.533

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

Articles by V. Ya. Gabesiriya, V. S. Baloboyrov, O. A. Miller, G. A. Simakin, L. I. Semyonov, Z. I. Kabanov, M. A. Vladimirov, M. I. V. Kalyabnikov, Scientific Research Institute of Atomic Reactors, Moscow, U.S.S.R.; Institutul National de Fizica Atomara, Bucuresti, Romania; and the International Atomic Energy Agency, Vienna, Austria, 1970. Printing 270 copies. Stated to press January 1970. 16 pp.

Introduction

The isotopic composition of irradiated fuel in samples cut from fuel elements of the VVER-1 reactor of the Novodvorskiy Atomic Power Station was investigated in order to determine experimentally the isotopic composition of irradiated fuel in a reactor of the VVER type within the framework of contract no. 577/58 with the International Atomic Energy Agency. The tasks of this study were:

- (a) determining the uranium and plutonium isotopic composition after irradiation of the fuel;
 - (b) determining the number of plutonium isotopes formed as a result of irradiation;
 - (c) determining the isotopic composition of the fuel as a function of the degree of burn-up.
1. Preparation of Samples
- The assembly from which the fuel element was taken was irradiated for 2.75 years and held for 1.5 years before the investigation.

172 020 UNCLASSIFIED PROCESSING DATE--20 NOV 79
TITLE--USE OF A GAMMA ACTIVATION METHOD FOR THE QUANTITATIVE DETERMINATION
OF NITROGEN AND PHOSPHORUS IN MODIFIED CELLULOSE PREPARATIONS -U-
AUTHOR--(05)-YUCASHEV, A.YU., MILLER, R.A., KHAKIMOV, M., MURATOVA, U.M.,
SADYKOV, H.M.
COUNTRY OF INFO--USSR
SOURCE--VYSOKEMOL. SOEDIN., SER. A 1970, 12(4), 957-9.
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, CHEMISTRY
TOPIC TAGS--QUANTITATIVE ANALYSIS, NITROGEN ISOTOPE, PHOSPHORUS ISOTOPE,
CELLULOSE, X RAY RADIATION, NEUTRON ACTIVATION ANALYSIS, GAMMA
RADIATION, RADIOACTIVE DECAY, PHOTONUCLEAR REACTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--390671300 STEP NO--0870459770/01270047075770759
CIRC ACCESSION NO--AP0135054

272 020

UNCLASSIFIED

PROCESSING DATE--20NOV76

CIRC ACCESSION NO--AP0139054

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. THE IRRADIATION OF MOISTENED CELLULOSE CONTG. P AND N WITH GAMMA RAYS OF 15,MEV ENERGY CAUSES THE FOLLOWING PHOTONUCLEAR PROCESSES: PRIME14 N PLUS GAMMA YIELDS PRIME13 N PLUS N (ABOVE 10.5 MEV THRESHOLD) AND PRIME31 P PLUS N (ABOVE 12.05, MEV THRESHOLD). PRIME12 C AND PRIME16 O REQUIRE ENERGIES GREATER THAN 15 MEV TO REACT. SINCE THE HALF LIVES OF PRIME13 N AND PRIME30 P ARE 10.03 AND 2.5 MIN, RESP., MEASUREMENT OF THE RADIOACTIVITY DECAY AFTER IRRADN. GIVES A MEANS FOR RAPID DETN. OF P AND N. FACILITY: TASHKENT. GGS. UNIV. IM. LENINA, TASHKENT, USSR.

272 031 UNCLASSIFIED PROCESSING DATE--10SEP70
TITLE--SILICATE LINED CAST IRON PIPES -U-

AUTHOR--(04)-CHERNYAVSKIY, I.YA., MILLER, S.N., KVARNBERG, A.F.,
DSHCHEPKOV, G.I.

COUNTRY OF INFO--USSR

M

SOURCE--GER. 1,558,346

DATE PUBLISHED--02JAN70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CAST IRON, SILICATE, SAND, DRE, SLAG, CONCRETE, PROTECTIVE
COATING, PIPE, CHEMICAL COMPOSITION, METAL COATING, PROTECTIVE COATING,
CHEMICAL PATENT, MATERIAL HANDLING EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAHE--1985/0928

STEP NO--6Y/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AA0101234

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AA0101234

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TUBES WHICH ARE USEFUL E.G. FOR THE TRANSPORT OF ABRADING MATERIAL (CONCRETE, SLAG, SAND, DRES) CONSISTS OF A CAST IRON SHEATHING AND AN INNER LINING OBTAINED BY APPLYING A SILICATE MELT CONTG. E.G. SIO SUB2 40-1, CAO 45-7, AL SUB2 0 SUB3 5-7, MGO 5-6, MNO 0.25, FEO 0.47, S 0.56PERCENT, THE SILICATE LINING EXTENDING OVER THE WHOLE LENGTH OF THE TUBE AND BEING TAPERED AT THE ENDS OF THE TUBE AT AN ANGLE OF 5-20DEGREES.

UNCLASSIFIED

WILLER, V. B.

JPRS 52887
15 (Apr 71)

PROBLEMS OF THE AGING AND STABILIZATION OF POLYMERS
(Symposium and Coordinating Conference in Moscow)

Academician V. N. Emanuel' and
Candidate of Chemical Sciences
V. B. Willer

[pp 107-110]

Synopsis on the problem of the aging and stabilization of polymers... The aging and stabilization of polymers has acquired a traditional character and demonstrate a considerable elevation with each year of the scientific level of investigations in this direction, an ever broader and more detailed knowledge of practical problems. It now is necessary to intensify study of the kinetics and mechanism of the aging of polymers, structural changes in polymers during their aging, and also properties of stabilizers of various types. Much attention must be given to the searching out of new paths of stabilization of the stabilization of the connection between the structure of the stabilizers and their effectiveness, and revelation of distinctive features in the effect of mixtures of stabilizers and on the mode of application. A broad circle of problems of basic and applied nature requires solving in the study of the aging and stabilization of polymers. Also of great importance is the study of the aging and stabilization of biological systems, including complex biological systems, and the study of the aging and stabilization of polymer materials. The work of which represents the main part of the present volume is the work of V. N. Emanuel' and V. B. Willer, who are working in this area.

The symposium was opened by N. K. Emanuel', who in his... presented working in this area.

1/2 030 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SOLUBILITY OF ANTIOXIDANTS IN CRYSTALLINE POLYETHYLENE --U-
AUTHOR--(04)--GROMOV, B.A., KORDUNER, N.YE., MILLER, V.B., SHLYAPNIKOV,
YU.A.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1381-2 (PHYS CHEM) M
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--SOLUBILITY, POLYETHYLENE, ANTIOXIDANT ADDITIVE, ANILINE,
AMINE, BENZENE DERIVATIVE, CRYSTAL, IR SPECTROSCOPY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/0710 STEP NO--UR/0020/70/190/006/1381/1382
CIRC ACCESSION NO--AT0124380
UNCLASSIFIED

2/2 030

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124380

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLY. OF PH SUB2 NH,
PHENYL,BETA, NAPHTYLAMINE, AND CYCLOHEXYLBENZENE (USED AS A MODEL
COMP.D.) IN POLYRYHYLENE (I) CONTG. VARIOUS AMTS. OF CRYST. PHASE (DETD.
BY IR SPECTROSCOPY) DOES NOT DEPEND ON ITS CRYSTALLINITY, EXCEPT THAT
WHEN THE CRYSTALLINITY APPROACHES 100PERCENT, THERE IS A LOWERING OF
SOLY. THE SOLY. OF ANTIOXIDANTS IN THE CRYST. PHASE IS PROBABLY DUE TO
MICROFISSURES. THERE IS A SOLY. INCREASE WITH I TEMP. IN THE
30-60DEGREES RANGE. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

(TS)

BALOSHIN, O. N., BLAGORODOV, A. M., BOLONKIN, B. V., VLADIMIREVSKIY, V. V.,
 GORIN, YU. P., GRIGOR'YEV, V. K., GRISHIN, A. P., YEROFEYEV, I. A., KORCL'KOV,
 I. YA., LUZIN, V. N., MILLER, V. V., NIKOLAYEVSKIY, YE. S., PETRUKHIN, V. N.,
 PLIGIN, YU. S., PONOMAREV, L. A., SIROTKIN, S. M., SOKOLOVSKIY, V. V., TARASOV,
 YE. K., TIKHOMIROV, G. D., TROSTINA, K. A., TURCHANOVICH, L. K., and SHKURENKO,
 YU. P., Institute of Theoretical and Experimental Physics GKI AE (State
 Committee for the Use of Atomic Energy)

"The $K^-p \rightarrow K^0n$ Charge Exchange Reaction at a Pulse of 39 Gev/sec"

Moscow, Yadernaya Fizika, Vol 18, No 3, Sep 73, pp 542-544

Abstract: The authors present the measurement results from studying the charge exchange reaction of K^- -mesons on protons ($K^-p \rightarrow K^0n$) at a pulse of 39 Gev/sec. The study was carried out using the ITEP 6-m magnetic track spectrometer. The working volume of the magnetic field of the spectrometer was $1.0 \times 1.5 \times 6$ m. Twelve optical spark chambers were located inside the magnet, with each chamber having eight spark gaps (10 mm each). The chamber electrodes consisted of two layers of aluminum foil 14 microns thick. The photographs were taken through a special slit in the magnet yoke. A mirror system made it possible to obtain three stereoprojections of all of the chambers

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BALOSHIN, O. N., et al., *Yadernaya Fizika*, Vol 18, No 3, Sep 73, pp 542-544 with one camera. The reaction was studied on the negative particle beam of the IFVE accelerator. The K^- -mesons were distinguished by a differential Cerenkov counter. The beam was focused on a liquid hydrogen target 40 cm long which was set approximately three meters from the first chamber of the spectrometer. Approximately $5 \cdot 10^7 K^-$ -mesons were passed through the equipment and 1020 photographs taken. Pairs of uniformly charged tracks were measured on the photographs. The measurement results were then processed on the Razdan-3 computer. Only 270 intersecting tracks were found. A graph is given for the differential cross section of the reaction. The results show that the cross section value of 7.4 ± 1.2 microbarns obtained by the authors in comparison to data obtained for lower energies elsewhere shows the logarithmic dependence of the charge exchange cross section on the pulse, equal to -1.58 ± 0.05 . The authors thank K. G. Borenskov, A. M. Lapidus, S. T. Sukhorudov, and K. A. Ter-Martirosyan for their presentation of the computational results as the dependence of the differential cross section on pulse transfer (do/dt). This dependence is compared with predictions of the Regge pole model.

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MILLER, V. V.

JPRS 55568
29 MAR 72

UDC: 550.84

NEUTRON PULSE METHODS IN GEOPHYSICS

[Article by candidates of Technical Sciences D. P. Besbelay and V. V. Miller and Doctor of Physical and Mathematical Sciences V. I. Shmeljevich; Moscow, Vestnik Akademii Nauk SSSR, Russian, Vol 42, No 1, January 1972, pp 39-43]

Study of the elementary composition and properties of rocks under the conditions in which they are situated naturally is an important stage in searches for and surveys of mineral deposits and also in control of their working. Among the geophysical methods used for that, a special place belongs to neutron methods. Neutron sounding gives multicoated information about the composition and properties of rocks. In addition, neutrons and the same-quanta caused by them have a relatively great penetrating capacity, thanks to which the investigation of matter is rather large and substantially exceeds the dimensions of a drillhole.

In various methods of investigating drillholes were born in 1949, when P. G. Tsvetkov proposed a neutronic method of determining the content of various strata containing hydrogen or oxygen. In parallel, work of Pacific Institute of Geophysics and Geodesy with a flux of fast neutrons, continuous in time, is being carried out. The neutronic method of the geophysical survey proposed in the publications of the Soviet geologists, which is based on the measurement of the detector reaction rate, makes it possible to obtain information about the distribution of the neutron flux in the strata of the earth's crust. It is also possible to determine the content of various strata containing hydrogen or oxygen. The neutronic method proposed in the publications of the Soviet geologists, which is based on the measurement of the detector reaction rate, makes it possible to obtain information about the distribution of the neutron flux in the strata of the earth's crust. It is also possible to determine the content of various strata containing hydrogen or oxygen.

5 (1972)

USSR

UDC 669.71.48

MILLER, V. YA., IVANOV, A. I., UTKOV, V. A.

"Agglomeration of Finely Dispersed Moist Clay Material"

Tr. In-ta metallurgii. Ural'sk. fil. AN SSR (Works of the Metallurgy Institute. Urals Branch of the USSR Academy of Sciences), 1970, vyp. 22, pp 92-95 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G194)

Translation: Agglomeration of red sludge is possible if its moisture content is less than 26%. Drying (to 14-17% moisture) can be realized by hot return. During agglomeration the red sludge is close to iron hydroxide ores (fine limonite, brown chromite, and ocherous ores). The agglomerates are distinguished by high reducibility, sufficient strength, and resistance to deterioration with a 35-40% content of return and 5-6% coke. There are 4 tables and an 8-entry bibliography.

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1/2 011

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--PHASE COMPOSITION AND STRENGTH OF HIGHLY BASIC MANGANESE SINTERS
-U-

AUTHOR--(03)--UTKOV, V.A., MOLEVA, N.G., MILLER, V.YA.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, METAL 1970, (11), 3-6

DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--SINTER, MANGANESE, IRON ORE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1984/0169

STEP NO--UR/0370/70/000/001/0003/0006

CIRC ACCESSION NO--AP0054965

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054965

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPN. OF MN CONC. AND ORE WAS
FE 2.4 AND 3.1, MN 26.7 AND 19.3, CAO 8.0 AND 8.4, SIO SUB2 15.8 AND
19.6, MGO 2.4 AND 2.2, AL SUB2 0 SUB3 2.0 AND 4.4PERCENT, RESP.
EIGHT, 10, KG SINTERS WERE PREPD. IN CRUCIBLES. HIGHLY BASIC SINTERS WITH
STRENGTH COMPARABLE TO THOSE FROM FE ORE WERE PREPD. BY THE ADDN. OF FE
ORE. THE BINDING PHASES IN THE HIGHLY BASIC LOW FE AND HIGH FE SINTERS
WERE HAUSMANNITE AND CA FERRITE, RESP.

UNCLASSIFIED

USSR

UDC: 8.74

MILLEROVA, M. G."On One Extension of the LSA Language"

V sb. Avtomaty i upr. setyami svyazi (Automata and Control of Communications Networks--collection of works), Moscow, "Nauka", 1971, pp 136-141 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V527)

Translation: When the LSA language is used for recording algorithms of functioning of finite automata, it becomes necessary to extend the language. An extended LSA-II language is considered in which, in addition to the conventional type of logic conditions (so-called instantaneous logic conditions) temporal and anticipatory logic conditions are introduced. In connection with the expanded concept of logic conditions, in addition to the conventional normal distribution of shifts, an obligatory distribution of shifts is also introduced which contains only those logic conditions always changed by a given operator. Author's abstract.

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1/2 024 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--PROTECTION OF CULTIVATED PLANTS FROM IONIZING RADIATION BY
FERTILIZING THEM WITH INORGANIC CATIONS -U-
AUTHOR--MILLERS, A.

COUNTRY OF INFO--USSR

SOURCE--LATV. PSR ZINAT. AKAD. VESTIS 1970, (3), 131-7

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--IONIZING RADIATION BIOLOGIC EFFECT, PLANT PHYSIOLOGY, CATION,
RADIOPROTECTIVE ACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3007/1988

STEP NO--UR/0897/70/000/003/0131/0137

CIRC ACCESSION NO--AP0137167

UNCLASSIFIED

2/2 024

CIRC ACCESSION NO--AP0137167

UNCLASSIFIED

PROCESSING DATE--27NOV70

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

ABSTRACT. A REVIEW WITH 58 REFS. A SUMMARY IS GIVEN ON THE ROLE OF THE CATIONS IN DEVELOPING THE RESISTANCE OF THE PLANTS TO INJURY FROM THE IONIZING RADIATION AND IN THE TREATMENT OF THE PLANTS DAMAGED FROM THE RADIATION.

FACILITY: BIOL. INST., RIGA, USSR.

UNCLASSIFIED

USSR

MILLERS, A., Institute of Biology, Academy of Sciences, Latvian SSR

"Protection of Cultivated Plants Against Ionizing Radiation by Mineral Cations

Riga, Izvestiya Akademii Nauk Latvyskoy SSR, No 3, 1970, pp 151-157

Abstract: This is a brief review of literature on the protection of cultivated plants against ionizing radiation. The complex participation of minerals in plant life processes considerably hinders determination of the radio protective mechanisms of individual elements. It is difficult to explain why the same element exhibits both protective and therapeutic properties. Cations have a broad spectrum of activities. Conclusive results are reported with Fe, Zn, and Cu -- enzyme activators. The participation of cations in biological processes depends on the ratio of other components in the nutritive solution. Until recently, research was confined to simple objects -- plant seeds, -- an approach hardly sufficient to solve the principal problem, plant protection against chronic irradiation. Research must now be oriented toward the protection of plants growing against an enhanced radiation background, where cation effects could be reflected differently. In contrast to chemical protection, use of mineral fertilizers does not affect crops. Besides, cations such as Ca, Mg, & not only reduce radiosensitivity of plants but, at the same time, inhibit the penetration of radioactive decay products into the plants, which is of particular importance in agricultural areas contaminated by radioactivity.

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1/2 047

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--ELECTRICAL CONDUCTIVITY AND RADIATION OF A HIGH TEMPERATURE
NITROGEN FLOW CONTAINING POLYDISPERSE MAGNESIUM AND ALUMINUM PARTICLES
AUTHOR--(05)-ZAKE, M., LEPIN, V., MELNIKOV, V.K., MILLERS, T., CIELENS, U.

COUNTRY OF INFO--USSR

SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, FIZ. TEH. ZINAT. SER. 1970, (2),
73-9

DATE PUBLISHED-----70

M

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--ELECTRIC CONDUCTIVITY, NITROGEN, MAGNESIUM, ALUMINUM, GAS
FLOW, METAL POWDER, NITRIDE, OXIDE, HIGH TEMPERATURE EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/1339

STEP NO--UR/0371/70/000/002/0073/0079

CIRC ACCESSION NO--AP0121832

UNCLASSIFIED

2/2 047

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121832

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELEC. COND., RADIATION, AND CHEM. COMPN. OF THE PRODUCTS FORMED FROM THE REACTION OF A HIGH TEMP. N FLOW WITH POLYDISPERSE PARTICLES OF MG AND AL AT 1200-2300DEGREEK WERE STUDIED. THE COND. OF THE N FLOW WITH MG AND AL PARTICLES STARTS INCREASING AT GAS TEMPS. OF 1600-1900 AND 2000DEGREEK, RESP. MG PARTICLES CHANGE THE ELEC. COND. OF THE FLOW WITH A DEPENDENCE SIMILAR TO THE EXPONENTIAL TYPE, WHEREAS AL PARTICLES SHOW A DEPENDENCE WITH A MAX. AT 2100 PLUS OR MINUS 100DEGREEK. THE CHARACTER OF THE CHANGE IN THE ELEC. COND. IS EXPLAINED ON THE BASIS OF EXISTING IDEAS ABOUT THE MECHANISM OF THE CHEM. REACTIONS OF MG AND AL WITH O. THE INTEGRAL RADIATION OF THE FLOW IS DETD. MAINLY BY THE CONC. OF THE PARTICLES. THE PRINCIPAL PRODUCTS OF THE REACTION OF MG AND AL PARTICLES IN INDUSTRIAL N ARE OXIDES AND NITRIDES, AND THE AMYS. OF THESE COMPOS. ARE DETD. BY THE TEMP. OF THE FLOW. FACILITY: FIZ. ENER. INST., RIGA, USSR.

UNCLASSIFIED

1/2 020

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--P SUB2 0 SUB5 MINUS SB SUB2 0 SUB3 R SUBX 0 SUBY SYSTEMS (R EQUALS CR, V, TI, FE). III. PHOSPHORUS PENTOXIDE AND ANTIMONY SESQUIOXIDE -U-
AUTHOR--(05)-DOMBROVSKAYA, V.K., MILLERS, T., KONSTANTS, Z., VAYVADS, A.,
VITINA, I.

COUNTRY OF INFO--USSR

SOURCE--LATV. PSR. ZINAT. AKAD. VESTIS, KIM. SER. 1970, (1), 10-14

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--THERMAL EFFECT, CHEMICAL SYNTHESIS, ELECTRICAL CONDUCTIVITY,
ANTIMONY COMPOUND, PHOSPHORUS COMPOUND, CHROMIUM COMPOUND, VANADIUM
COMPOUND, TITANIUM COMPOUND, IRON COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0610

STEP NO--UR/0464/70/000/001/0010/0014

CIRC ACCESSION NO--AP0105593

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0105593

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NH SUB4 H SUB2 PO SUB4 USED TO
 PREP. THE SPECIMENS HAD ONLY 1 ENDOTHERMIC EFFECT, AT SIMILAR TO
 200DEGREES. AT THIS POINT THE ELEC. COND. INCREASED SHARPLY. ABOVE
 THIS TEMP. THE PHOSPHATE GRADUALLY DECOMP. GIVING OFF NH SUB3 AND H
 SUB2 O. THE ENDOTHERMIC EFFECT AND THE SHARP INCREASE OF COND. WERE THE
 RESULT OF FUSION. BEYOND THE PEAK A NEW SOLID SUBSTANCE FORMED AND THE
 ELEC. COND. DROPPED TO ITS ORIGINAL VALUES. THE SB SUB2 O SUB3 UPON
 HEATING HAD 1 EXOTHERMIC EFFECT, AT 570-580DEGREES, CAUSED BY OXIDN. OF
 SB SUB2NEGATIVE O SUB3 TO SB SUB2 O SUB4. HEATING A MIXT. OF P SUB2 O
 SUB5 MINUS SB SUB2 O SUB3 TO 300DEGREES RESULTED IN THE FORMATION OF A
 COMPD. CORRESPONDING TO SB SUB2 O SUB3 TIMES P SUB2 O SUB5. THIS
 SUBSTANCE REMAINED CRYST. UP TO 1400DEGREES.

UNCLASSIFIED

1/2 024 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--P SUB2 O SUB5 AND SB SUB2 O SUB3 R SUBX O SUBY SYSTEM (R EQUALS CR,
V, TI, FE). IV. PHOSPHORUS PENTOXIDE, ANTIMONY SESQUISOXIDE AND FERRIC
AUTHOR--(04)-DOMBROVSKAYA, V.K., KONSTANTS, Z., MILLERS, T., VAYVADS, A.

COUNTRY OF INFO--USSR

SOURCE--LATV. PSR ZINAT. AKAD. VESTIS, KIM. SER. 1970, (1), 15-18

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--PHOSPHOROUS COMPOUND, X RAY ANALYSIS, ANTIMONY COMPOUND,
CHROMIUM COMPOUND, VANADIUM COMPOUND, TITANIUM COMPOUND, IRON OXIDE,
GLASS STRUCTURE, THERMAL EFFECT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0611

STEP NO--UR/0464/70/000/001/0015/0018

CIRC ACCESSION NO--AP0105594

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--19SEP70

CIRC ACCESSION NO--AP0105594

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TERNARY SYSTEM WAS STUDIED AT 1000, 1200, AND 1400DEGREES BY X RAY AND THERMOGRAPHIC ANAL. AT 1000DEGREES A GLASS WAS FORMED ONLY WHEN THE COMPN. WAS P SUB2 O SUB5 60, SB SUB2 O SUB3 20, AND FE SUB2 O SUB3 20 MOLE PERCENT. AT 1200DEGREES, 3 X RAY AMORPHOUS SUBSTANCES WERE OBTAINED CONTG. (1) P SUB2 O SUB5 60, SB SUB2 O SUB3 20, AND FE SUB2 O SUB3 20 MOLE PERCENT; (2) P SUB2 O SUB5 60 AND FE SUB2 O SUB3 40 MOLE PERCENT; AND (3) P SUB2 O SUB5 70, SB SUB2 O SUB3 10, AND FE SUB2 O SUB3 20 MOLE PERCENT. AT 1400DEGREES AN X RAY AMORPHOUS COMPN. EXTENDED OVER MORE THAN HALF OF THE 3 COMPONENT SYSTEM. WITHIN THIS SYSTEM FUSION OCCURRED ONLY IF THE FE SUB2 O SUB3 IN THE MIX DID NOT EXCEED 40 MOLE PERCENT AND THE P SUB2 O SUB5 CONTENT WAS GREATER THAN OR EQUAL TO 20 MOLE PERCENT.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--19SEP70
TITLE--GENESIS OF ABSORPTION SPECTRA OF BENZENE DERIVATIVES CONTAINING
N,TWO;DONOR AND N,TWO,ACCEPTOR CONTRA SYSTEMS -U-
AUTHOR--(03)-BARABASHOVA, G.D., IZMAYLSKIY, V.A., MILLIAREST, YE.YE.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSR 1970, 190(1), 95-8 (CHEM)
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ABSORPTION SPECTRUM, AMINE, BENZOIC ACID, ESTER,
ISOMER, ANILINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA#--1984/1581 STEP NO--UR70020770719070017000570018
CIRC ACCESSION NO--AT0100199

UNCLASSIFIED

272 013

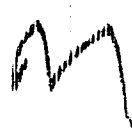
UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AT0100199

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ABSORPTION SPECTRA WERE REPORTED FOR 16 ESTERS OF AMINOBENZOIC ACID ISOMERS AND ANALOGS WITH AN SUB2, PHNH, ETNH AND ET SUB2 NH AND CO SUB2 ET GROUPS IN VARIOUS POSITIONS ABOUT THE RING. THESE WERE COMPARED TO SPECTRA OF BZDEET AND PHNH SUB2. THE SPECTRA WERE SHOWN GRAPHICALLY AND THEIR NUMERICAL DATA WERE TABULATED. THE SPECTRAL BANDS OF ET OMEGA-AMINOBENZOATE WERE GENETIC TO ALL THE OTHER SPECTRA IN THE GROUP AND THE PRINCIPLE OF GENESIS OF SPECTRAL BANDS FROM THOSE OF SIMPLE STRUCTURAL UNITS WAS DEMONSTRATED IN EACH INSTANCE.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--QUASIAUTONOMOUS SYSTEMS IN THE ABSORBANCE SPECTRUM OF
2,4,DINITRO,1,NAPHTHYLAMINE -U-
AUTHOR-(02)-MILLIARES, YE.YE., RUCHKINA, N.G. 
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD.-NAUK SSSR 1970, 190(3), 600-3 (CHEM)
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ABSORPTION SPECTRUM, NAPHTHALENE, AMINE, ORGANIC NITRO
COMPOUND, MOLECULAR STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/1580 STEP NO--UR/0020/70/190/003/0600/0603
CIRC ACCESSION NO--AFO100198
UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--19SEP70

CIRC ACCESSION NO--AT0100198

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ABSORPTION SPECTRA WERE REPORTED FOR 1-NAPHTHYLAMINES WITH 2 AND 4-NO SUB2 GROUPS IN VARIOUS COMBINATIONS. ALSO REPORTED WERE SPECTRA FOR 14 ANALOGS WITH 1 POSITION SUBSTITUTED BY HU SUB2, NHET, OR NET SUB2, AND 2 AND (OR) 4 SUBSTITUTED NO SUB2 GROUPS. THE SPECTRUM OF EACH WAS DISCUSSED AS A DERIV. OF THE SPECTRUM OF THE BASIC STRUCTURE OF NITRONAPHTHYLAMINES. THE LIKELY ELECTRON TRANSITIONS RESPONSIBLE FOR THE BANDS WERE BRIEFLY STATED.

UNCLASSIFIED

1/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--SYNTHETIC REGULAR POLYTRIPETIDES AND PROTEINS OF THE COLLAGEN

CLASS -U-

AUTHOR--(05)--ANDREYEVA, N.S., YESIPOVA, N.G., MILLIONOVA, M.I.,
ROGULENKOVA, V.A., TUMANYAN, V.G.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(2), 198-205

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES, CHEMISTRY

TOPIC TAGS--PEPTIDE, CHEMICAL SYNTHESIS, GLYCINE, AMINO ACID, COLLAGEN, X
RAY ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--3003/0918

STEP NO--UR/0127/70/015/002/0198/0205

CIRC ACCESSION NO--AP0129983

UNCLASSIFIED

2/2 028 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0129983
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REGULAR SYNTHETIC POLYTRIPETIDES
WITH GLYCINE IN THE 1ST AND AMINO OR IMINO ACIDS IN THE 2ND AND 3RD
POSITION WERE STUDIED AS MODELS OF STRUCTURAL PECULIARITIES OF COLLAGEN
PROTEINS. THE NECESSARY AND SUFFICIENT CONDITION FOR THE EXISTENCE OF
COLLAGEN STRUCTURE IS THE OCCURRENCE OF GLYCINE IN THE 1ST AND OF AT
LEAST ONE IMINO ACID IN THE 2ND OR 3RD POSITION IN THE TRIPLET. X RAY
ANAL. OF CRYST. GLYCINE, IMINO ACID, AMINO ACID POLYMERS VERIFIED THE ROLE
OF AGGREGATES OF THIS TYPE IN THE STRUCTURE OF COLLAGEN.
FACILITY: INST. MOL. BIOL., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 532.517

MILLIONSHCHIKOV, M. D., Academician, SUBBOTIN, V. I., Corresponding Member of the Academy of Sciences USSR, IBRAGIMOV, M. KH., TARANOV, G. S., and KCBZAR', L. L.

"Experimental Study of Turbulent Flow in Pipes With Artificial Wall Roughness"

Moscow, Doklady Akademii Nauk SSSR, Vol 207, No 6, 1972, pp 1292-1295

Abstract: The authors studied turbulent flow in circular pipes with regular, artificially created wall roughness. The roughness was created by cutting single and multiple cross threads and circular recesses on the inside surface of Duralumin pipes. There were 15 variants. The experiments were conducted in air ($Re = 5000-200,000$) and water ($Re = 70,000-1 \cdot 10^6$). It was found that the dependence of the resistance coefficient on the Reynolds number for the investigated types of rough surfaces differs from the relations obtained for sand-grain roughness or for commercial rough pipes. There was found to be an earlier hydraulic appearance of roughness. In most cases this effect occurs at $u_{\tau}k/\nu < 3$, where u_{τ} is the dynamic velocity, k the height of the roughness elements, ν the fluid viscosity. At Reynolds numbers ranging

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MILLIONSHCHIKOV, M. D., et al., Doklady Akademii Nauk SSSR, Vol 207, No 6, 1972, pp 1292-1295

up to 10^6 practically no interval is observed where a square resistance law would occur, in which λ for one and the same type of thread is determined only by the relative roughness height. The mean relative height of the roughness elements is far from being the complete characteristic of a rough surface. The resistance coefficient is considerably influenced by the pitch of the mutual arrangement of the roughness elements and their shape. Further studies are under way to determine the mechanism of the interaction between turbulent flow and roughness elements and to obtain generalizing relations and develop calculation procedures.

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USSR

UDC. 532.517

MILLIONSHCHIKOV, M. D., Academician; SUBBOTIN, V. I., Corresponding Member USSR Academy of Sciences; IBRAGIMOV, M. Kh.; TARANOV, G. S.; KOBZAR', L. L.

"Experimental Investigation of the Turbulent Current in Tubes With Artificially Roughened Walls"

Moscow, Doklady Akademii Nauk SSSR, vol 207, No 6, 1972, pp 1292-1295

Abstract: Asserting that the experimental and theoretical work on tubes with roughened walls lags behind similar analysis of currents in tubes with smooth walls, the authors describe experiments they performed to investigate turbulent flow in circular tubes of accurate design and with artificially roughened walls, the latter being created by cutting the inner surfaces of the duralumin with grooving and threading devices. The method of cutting is described in some detail, and a table of variants of these roughened tubes, showing diagrams of the cuts and their parameters, is given. The experiments were conducted with air and with water, the Reynolds numbers for each varying from 5000-200,000 and 70,000-1.10⁶ respectively. Curves for the resistance of the tubes with various

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MILLIONSHCHIKOV, M. D., et al, Doklady Akademii Nauk SSSR, vol 207,
No 6, 1972, pp 1292-1295

types of cut along the inner walls are plotted. The authors recom-
mend further research to help clarify the mechanism of current and
wall interactions.

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USSR

UDC 532.542.4

MILLIONSHCHIKOV, M. D.

"Turbulent Flow in Tubes with Noncircular Cross Section"

Moscow, Atomnaya Energiya, Vol 29, No 1, July 1970, pp 16-18

Abstract: This article contains an investigation of turbulent flow in tubes of arbitrary cross section. A previously proposed model of turbulent flow in wall layers is used in this study. The velocity distribution law and the formula for the drag in tubes of arbitrary cross section are derived. It is noted that from the point of view of the theory of "rolling eddies" the role of the "secondary eddies" can be such that they distort the uniform distribution U_0 with respect to the curve established by the "rolling eddy" model. The values of the drag obtained by measurements for tubes of various noncircular cross sections are plotted on a graph along with the calculated curve. It is noted that in general the experimental data agree satisfactorily with the calculated curve, and it is concluded that the "rolling eddy" model is experimentally confirmed by the drag measurements in tubes of various shapes.

Both turbulent and laminar conditions are considered, in terms of the "rolling eddy" model. An explanation is given for the fact that in the case of turbulent flow in accordance with the extremal "rolling eddy" model the velocity

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MILLIONSHCHIKOV, M. D., *Atomnaya Energiya*, Vol 29, No 1, July 1970, pp 16-18

field is depicted by isotachs following the shape and attracted to the points of maximum velocity of the tube outline, including the corner points. The experimental values of the drag for certain nonround cross sections with comparatively small Reynolds numbers are somewhat higher than follows from the law for a round tube. This is explained by the "secondary flows" the role of which reduces to decreasing the flow cross section of the tube. With an increase in the Reynolds number, this effect decreases, and the drag of all the tubes is plotted on a single curve.

USSR

UDC: 523.542

MILLIONSHCHIKOV, M. D.

"Turbulent Heat and Mass Exchange"

Moscow, Atomnaya Energiya, Vol. 29, No. 6, December 1970, pp 411-416

Abstract: This article is in the nature of a survey of the theories that have been developed on the subject of turbulent heat and mass exchanges occurring near the walls of conducting tubes. The current interest in this problem was sparked by the discovery that conventional views could not explain the behavior of the law of heat and mass exchange at Prandtl numbers much greater than unity, where the Prandtl number is the ratio of the molecular kinematic viscosity factor to the thermal conductivity temperature factor. Some materials have Prandtl numbers of 3000 and more. Based on his experimental work with such materials, Beissler derived a special theory of heat and mass exchange which leads, with the proper choice of constants, to good agreement with the experimental data. The author also discusses the theories of L. D. Landau and V. G. Levich corresponding to the Kapitza idea of the existence of stable fluid wave motion in the layers near the tube walls. Concluding, the author notes that a description

MILLIONSHCHIKOV, M. D., Atomnaya energiya, Moscow, Vol. 29, No. 6,
December 1970, pp 411-415

of the turbulent heat and mass exchange process for a wide range
of Prandtl numbers can be obtained by using the principle of super-
position of molecular and turbulent viscosity as well as the con-
cept of a laminar sublayer with different thicknesses for hydro-
dynamics and for heat-mass exchanges.

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1/2 055 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--POSSIBILITIES FOR USING GAS TURBINE ASSEMBLIES AND
MAGNETOHYDRODYNAMIC GENERATORS IN A NUCLEAR POWER STATION WITH HIGH
AUTHOR--(04)-MILLIONSHCHIKOV, M.D., LYULKA, A.M., NEDOSPASOV, A.V.,
SHEYNDLIN, A.YE.
COUNTRY OF INFO--USSR
SOURCE--TOPLOFIZ. VYS. TEMP. 1970, 8(2), 379-93
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY

TOPIC TAGS--GAS TURBINE, MAGNETOHYDRODYNAMICS, NUCLEAR POWER PLANT, MHD
GENERATOR, GAS COOLED NUCLEAR REACTOR/10130DOMW REACTOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3008/0589

STEP NO--UR/0294/70/008/002/0379/0393

CIRC ACCESSION NO--AP0137674

UNCLASSIFIED

2/2 055

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137674

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERMODYNAMIC EFFICIENCIES (ECONOMICS) AND REDUCED LEVELS OF THERMAL POLLUTION ATTAINABLE IN HE GAS COOLED REACTORS COUPLED TO GAS TURBINES OR MAGNETOHYDRODYNAMIC (MHD) GENERATORS ARE DISCUSSED. GAS TURBINE DESIGNS, THEIR COUPLING TO 1200-MW REACTORS, THEIR OPERATION AT 850, 950, AND 1200DEGREES, AND THEIR EFFICIENCIES OF 46.2-54.5PERCENT ARE COMPARED AND ARE DISCUSSED IN RELATION TO COUNTERFLOW AND CROSS FLOW REGENERATOR CHARACTERISTICS. THE CHARACTERISTICS AND EFFICIENCIES OF CARBIDE FUELED 3000-MW REACTORS COUPLED TO MHD GENERATORS OPERATING ON AR-CS OR HE-CS MIXTS. AT GAS COUTLET TEMPS. OF 1733-1973DEGREEK AND REACTOR PRESSURES OF 5-50 ATM ARE DISCUSSED. AN EFFICIENCY OF 57-9PERCENT WAS CALCD. FOR A 3000-MW MHD COUPLED REACTOR OPERATING AT A GAS OUTLET TEMP. OF 2273DEGREEK AT A HEAT RECOVERY OF 90-3PERCENT; INCREASING THE INLET PRESSURE FROM 30 TO 60 ATM REDUCED CAPITAL INVESTMENTS BY SIMILAR TO 25PERCENT AND THE COST PER KW-HR BY SIMILAR TO 11PERCENT.

UNCLASSIFIED

1/2 043 UNCLASSIFIED PROCESSING DATE--2/NOV70
TITLE--TURBULENT FLOW IN THE NEAR WALL LAYER AND IN PIPES -U-
AUTHOR--MILLIONSHCHIKOV, M.O. *M*
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, AKADEMIYA NAUK SSSR, ATOMNAYA ENERGIYA, VOL 28, NO 5, MAR
70, PP 206-220
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--TURBULENT FLOW, PIPE, PIPE FLOW, MOTION EQUATION, REYNOLDS
NUMBER, INTRINSIC VISCOSITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3003/0640 STEP NO--UR/0089/70/029/003/0205/0220
CIRC ACCESSION NO--AP0129810
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129810

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A THEORETICAL STUDY WAS MADE OF TURBULENT FLOW IN THE NEAR WALL LAYER AND IN PIPES ON THE BASIS OF THE PRINCIPLE OF THE SUPERPOSITION OF MOLECULAR AND TURBULENT VISCOSITY. THE FIRST PART OF THE ARTICLE IS A HISTORICAL REVIEW OF THEORETICAL AND EXPERIMENTAL STUDIES ON TURBULENT FLOW IN GENERAL AND INCLUDES A STUDY OF THE VARIOUS APPROACHES TO THE PROBLEM OF TURBULENT VISCOSITY. THE CONCEPT OF THE TURBULENT VISCOSITY COEFFICIENT IS USED IN CONSTRUCTION OF THE EQUATION OF MOTION IN THE NEAR WALL LAYER. THE EQUATION IS SOLVED, YIELDING A CORRELATION BETWEEN THE LONGITUDINAL AND TRANSVERSE COMPONENTS OF VELOCITY FLUCTUATION IN THE NEAR WALL LAYER. THE THEORETICAL RESULTS AGREE WELL WITH I. LAUFER'S EXPERIMENTAL DATA. SPECIAL FEATURES OF TURBULENT FLOW IN CIRCULAR PIPES AND THE TURBULENT DRAG IN PIPES AT VARIOUS REYNOLDS NUMBERS ARE CONSIDERED ON THE BASIS OF AN ANALYSIS OF EXPERIMENTAL DATA. NIKURADZE'S RESULTS ARE USED TO ANALYZE THE TURBULENT FLOW IN A NEAR WALL LAYER AND IN PIPES IN THE PRESENCE OF WALL ROUGHNESS AND TO ANALYZE THE BEHAVIOR OF THE DRAG COEFFICIENT. THE PRINCIPLE IS USED FOR DETERMINING THE TOTAL VISCOSITY COEFFICIENT. THIS METHOD IS VALID FOR THE CASE OF MIXED MOLECULAR AND TURBULENT EXCHANGE, AND ALSO FOR THE MORE COMPLEX CASE OF WALL ROUGHNESS.

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UDC 532.542.4

MILLIONSHCHIKOV, M. D.

"Principal Regularities of Turbulent Boundary-layer Motion"

Moscow, Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 317-320

Abstract: Motion in wall boundary layers is characterized by wall action which decelerates or accelerates the flow. The article considers the case of complete adhesion to the wall. In this case the flow changes its velocity within the wall boundary layer to the value of the wall velocity. In the particular case of an immobile wall there is complete flow deceleration. In a turbulent regime it is appropriate to consider averaged velocity and pressure characteristics. For averaged motion characteristics -- velocity, pressure drop, and other quantities -- experimentally confirmed regularities are known which indicate that turbulent motion possesses integral peculiarities, which it is possible to attempt to describe by a flow model in an averaged velocity field. The article attempts to construct such a flow

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MILLIONSHCHIKOV, M. D., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 317-320

model. A theory is suggested, the principal thesis of which is that turbulent motion is considered in a field of averaged characteristics, in the same way as laminar motion, in the form of a superposition of vortices rolling over the boundary surface. However, unlike laminar motion, the velocity of vortex displacement is not simply equal to the flow rate, but is a certain, more general velocity function, with the surface of vortex rolling being the boundary surface of the laminar sublayer characterized by dimensionless thickness δ . Thus, the principal equation of the suggested turbulence model can be written as

$$(\eta - \delta) \frac{d\tilde{u}}{d\eta} = f(\tilde{u}),$$

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MILLIONSHCHIKOV, M. D., Atomnaya Energiya, Vol 28, No 4, Apr 70, pp 317-320

where $f(\tilde{u})$ is an unknown function. The article may be considered as a theoretical substantiation of hypotheses previously suggested by the author on the structure of the coefficient of turbulent viscosity, as well as methods for calculating turbulent motions.

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USSR

MILLIONSHCHIKOV, M. D., LYUL'KA, A. M., NEDOSPASOV, A. V., SHEYDULIN, A. YE.

"Possibilities of Using Gas Turbines and Magnetogas-Dynamic Generators at Atomic-Electric Power Plants with High-Temperature, Gas-Cooled Reactors"

Moscow, Teplofizika Vysokikh Temperatur, Vol 8, No 2, March-April 1970, pp 379-393

Abstract: This article describes an investigation of the possibilities of atomic-electric power plants with gas turbines and magnetogas-dynamic generators, using as examples preliminary designs of 1,200-megawatt power units. Although power units of this type will not be built in the near future, selection of them for this study has permitted not only evaluation of the technical parameters of the plants but also their basic economic indexes. The article is based on a report presented at the meeting of the magnetogas-dynamic generator group under the International Atomic Agency in Paris, January 1970.

The article contains discussions of the thermal circuit and basic elements of atomic-electric power plants with gas-cooled reactors and closed gas turbines, the equipment composition of these plants, design principles for plasma magnetogas-dynamic generators for electric power plants, the thermal circuit of atomic-magnetohydrodynamic electric power plants with steam turbine compressor drive, and 1/2

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MILLIONSHCHIKOV, M. D., et al., *Teplofizika Vysokikh Temperatur*, Vol 8, No 2, March-April 1970, pp 379-393

the layout of an atomic-magnetohydrodynamic-electric power plant with a 2,000°C reactor and gas turbine. Economic indexes showing the cost of electric power and specific calculated expenditures of atomic-electric power plants with gas turbines and magnetogas-dynamic generators based on the 1980-1985 price level are tabulated. The tabulated data shows that atomic power plants with gas-cooled reactors have better over-all technical and economic indexes than plants using organic fuel. The specific annual expenditures of the atomic electric power is 2-3 times lower. The specific capital investments in equipment are approximately the same for steam power plants using organic fuel and for atomic-electric power plants with gas turbines at 850°C or for magnetogas-dynamic generators at 1,700°C. It is concluded that even the simplest atomic-electric power plants with gas turbines at temperatures of 850°C cannot be put into operation in less than ten or fifteen years.

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USSR

UDC 532.542.4

MILLIONSHCHIKOV, M. D. *m*

"Turbulent Flow in the Near-Wall Layer and in Pipes"

Moscow, Akademiya Nauk SSSR, Atomnaya Energiya, Vol 23, No 3, Mar 70, pp 207-220

Abstract: A theoretical study was made of turbulent flow in the near-wall layer and in pipes on the basis of the principle of the superposition of molecular and turbulent viscosity. The first part of the article is a historical review of theoretical and experimental studies on turbulent flow in general and includes a study of the various approaches to the problem of turbulent viscosity. The concept of the turbulent viscosity coefficient is used in construction the equation of motion in the near-wall layer. The equation is solved, yielding a correlation between the longitudinal and transverse components of velocity fluctuation in the near-wall layer. The theoretical results agree well with I. Laufer's experimental data. Special features of turbulent flow in circular pipes and the turbulent drag in pipes at various Reynolds numbers are considered on the basis of an analysis of experimental data. Nikuradze's results are used to analyze the turbulent flow in a near-wall layer and in pipes in the presence of wall roughness and to analyze the behavior of the drag coefficient. The

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USSR

MILLIONSHCHIKOV, M. D. *Atomnaya Energiya*, Vol 28, No 3, Mar 70, pp 207-220

principle is used for determining the total viscosity coefficient. This method is valid for the case of mixed molecular and turbulent exchange, and also for the more complex case of wall roughness. Orig. art. has: 6 figures, 45 formulas, and 17 references.

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MILLIONSHCHIKOV, N. D., SUBBOTIN, V. I., et al

"Hydraulic Drag and Velocity Curves in Tubes Having Artificially Roughened Walls"

Moscow, Atomnaya Energiya, April 1973, pp 235-245

Abstract: Experimental data on the drag coefficients and velocity curves in the range of Reynolds numbers from $4 \cdot 10^3$ to 10^6 are presented. Surface roughness consists of single threads of various profiles, multiple cross threads of triangular profile, circular grooves, pyramids, and semi-spherical ribs of varying thickness. Hydrodynamic flow characteristics depend on the average height of features causing surface roughness, dispersion of their heights, and the form and spacing of these features. The variety of roughened tubes available made it possible to study the effect of each of the above factors on hydrodynamic flow, other geometric characteristics remaining unchanged.

The article includes five figures, one table. There are 19 references.

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1/2 029 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--THEORY OF INFRARED LATTICE VIBRATION ABSORPTION BY OPTICAL PHONONS
IN BINARY METALLIC ALLOYS -U-
AUTHOR--IPATOVA, I.P., MARADJIN, A.A., MILLS, D.L.
COUNTRY OF INFO--USSR M
SOURCE--SOLID STATE COMMUN. 1970, 8(7), 561-8
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--CRYSTAL LATTICE VIBRATION, BINARY ALLOY, IR ABSORPTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/1332 STEP NO--05/0000/70/008/007/05-1/0148
CIRC ACCESSION NO--A0010/806

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UNCLASSIFIED

PROCESSING DATE--11SEP79

CIRC ACCESSION NO--AP0107805

ABSTRACT/EXTRACT--(U) GP-D- ABSTRACT. A SIMPLE THEORY OF THEIR LATTICE VIBRATION ABSORPTION BY THE OPTICAL MODES OF CUBIC BINARY METALLIC ALLOYS IS PRESENTED AND ITS STRENGTH IS ESTD. WITH RESPECT TO THE STRENGTH OF THE BACKGROUND ABSORPTION BY FREE CARRIERS. THE POSSIBILITY OF EXPTL. OBSERVATION OF THIS ABSORPTION IS DISCUSSED.

Radiation Chemistry

USSR

UDC 548.3

MINTS, R. I., MIL'MAN, I. I., KRYUK, V. I., and TARASOV, L. S., Ural Polytechnical Institute, Sverdlovsk, and Institute of Geochemistry and Analytical Chemistry imeni I. V. Vernadskiy, Academy of Sciences USSR, Moscow

"Exoelectronic Emission of Particles of Lunar Anorthosite Rocks Supplied by the Automatic Station 'Luna-20'"

Moscow, Geokhimiya, No 5, May 73, pp 683-688

Abstract: The experiments carried out showed that particles of the lunar anorthosite rocks recovered by the lunar automatic station "Luna-20" possess natural exoelectronic emission. The characteristics of this electronic emission is related to the structural state of the fragments under investigation. With increased degree of recrystallization the number of emission peaks increases, especially of the high temperature peaks. This is accompanied by increased activation energy of the electron ejection. The exoemission parameters (such as temperature, location, number and intensity of the emission peaks, activation energy of the process) lead to an assumption that close to the surface of anorthosite particles there exist structural irregularities which differ by their energetic stability.

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USSR

UDC: 621.382.2

KOLOMEYTSSEV, V. F., POSTNIKOV, I. V., MIL'MAN, S. I.

"A Gallium Arsenide Mixer Diode With Schottky Barrier"

Elektron. tekhnika. Nauch.-tekhn. sb. Poluprovodn. pribory (Electronic Technology. Scientific and Technical Collection. Semiconductor Devices), 1970, vyp. 5 (55), pp 3-11 (from RZh-Elektronika i yeye Primeneniye, No 6, Jun 71, Abstract No 6B217)

Translation: Design calculations and measurement results are given for a microwave mixer diode with Schottky barrier. The design of the semiconductor diode is based on an epitaxial planar structure with gold - gallium arsenide honeycomb contacts. The operations used include epitaxial growth, ion plasma application of a protective film, photolithography and electrochemical and vacuum deposition. The parameters of the resultant semiconductor diodes are also presented. Resumé.

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USSR

UDC: 539.5

Drozd, N. P., Ivashchenko, R. K., Maksimovich, G. G., Mil'man, Yu. V.,
Slenzak, G. Ye., Trefilov, V. I., Kiev-L'vov

"Studies of Stability of the Structure and Mechanical Properties of Molybdenum
Under Long-term Temperature and Stress"

Kiev, Problemy Prochnosti, No 4, Apr 72, pp 68-75.

Abstract: The influence of long-term application of temperature and stress on the structural stability and mechanical properties of molybdenum-based low alloys with preliminary formation of cellular structure is studied. It is shown that changes in mechanical properties of deformed molybdenum alloy during annealing under load are determined basically by the annealing temperature, not by the load or holding time at the temperature, within the temperature range studied (800-1000°C). The action of the load during annealing of deformed molybdenum causes no significant increase in temperature of transition to the brittle state. The introduction of dispersed second phase particles allows reliable stabilization of the cellular structure in molybdenum at 1000°C with significant loads over long periods of time. If annealing of deformed molybdenum is performed in the temperature interval in which primary recrystallization occurs, additional application of loads during annealing can slightly increase the recrystallization rate and decrease strength characteristics.

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USSR

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UNC: 659.28'849'706

FREZE, N. I., SHCHUKIN, A. A., APALIKHIN, A. V., MALININ, M. V., KIL'KAR,
Yu. V., KURDYUMOVA, G. G.

"All-Union Scientific Research and Design Institute of Refractory Metals
and Hard Alloys"

"A Molybdenum-Based Alloy"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraboty, Tovarnyye Znaki,
No 12, Apr 72, Author's Certificate No 334270, Division C, filed 28 Sep 70,
published 30 Mar 72, p 104

Translation: This Author's Certificate introduces a molybdenum-based alloy
which contains rhenium. As a distinguishing feature of the patent, the
physicomechanical properties of the alloy are improved by adding carbon,
taking the components in the following proportions in percent:

rhenium 35-50
carbon 0.02-0.2
molybdenum base

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Mechanical Properties

USSR

UDC 669.017:620.18

KARSANOV, G. V., KURDYUMOVA, G. G., ~~MIL'MAN, Yu. V.~~, PONOMAREV, Yu. N.,
SARZHAN, G. F., TREFILOV, V. I., FIRSTOV, S. A., KHAZANOVA, T. P., and YUSHKO,
V. G., Moscow, Kiev

"Investigation of the Structural Condition and Mechanical Properties of a Two-Phase Alloy Containing Chromium and Nickel"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 71, pp 67-74

Abstract: The structure of a chromium alloy containing 34.4 wt % Ni was investigated by methods of electron-microscopy of thin foils and X-ray and metallographic analyses, after being subjected to various thermal and thermo-mechanical treatments. The investigation data are compared with mechanical bending test data and analyzed from the standpoint of dislocation concepts and ideas of the character of the electronic structure of transition metals. Reference is made to microphotographs of the structure of the hardened alloy Cr - 34.4 Ni and its structural changes resulting from annealing at different temperatures and to diagrams showing effects of annealing at 900°C on mechanical properties, lattice parameter, hardness, and relative quantities of α - and γ - phases. The probability is indicated of increasing the strength

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USSR

KARSANOV, G. V., et al., Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 71, pp 67-74

characteristics of the investigated alloy at the expense of precipitation strengthening. Five illustr., 12 biblio. refs.

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USSR

UDC 539.5

DANYUSHCHENKOV, I. A., IVASHCHENKO, R. K., MIL'MAN, YU. V.,
TREFILOV, V. I., YAKUSHINA, A. I., Kiev

"Influence of Structure and Testing Conditions on the Mechanical Properties of Low-alloyed Molybdenum"

Kiev, Problemy Prochnosti, No 12, Dec 70, pp 58-63

Abstract: A correlation is established between the mechanical characteristics produced in testing of type TSM-2A sheet molybdenum with various structural states in extension and flexure. It is demonstrated that the ratio of these characteristics decreases slightly as the deformation rate is increased. The plasticity characteristics are independent of the deformation rate if the test temperature is much higher than the temperature of transition to the brittle state, and decrease rapidly as the deformation rate increases if the test temperature is near the temperature of transition to the brittle state.

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USSR

UDC:539.3

MIL'MAN, Yu. V., TREFILOV, V. I., UDOVENKO, A. A., Kiev

"Specifics of the Mechanism of Plastic Deformation of Niobium"

Kiev, Problemy Prochnosti, No. 12, Dec 70, pp. 45-50

Abstract: The change in the dislocation structure and mechanical properties of polycrystalline niobium resulting from plastic deformation and annealing is studied. The differences in the mechanism of plastic deformation of niobium from that of molybdenum and other body centered cubic metals in group VIA are related to the decreased rigidity (directivity) of the interatomic bond and the increased value of activity volume V in niobium.

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Transformation and Structure

USSR

UDC 669.27.017

VEDERNIKOVA, V. A., MIL'MAN, Yu. V., POSTNOV, L. M., POPOV, A. P., SLENZAK, G. YE., TREFILOV, V. I., and SHUMILOV, I. N., Institute of Metal Physics, Academy of Sciences, Ukr SSR

"Structural Changes During Annealing of a Precipitation Hardened Tungsten Alloy"

Kiev, Metallofizika, No 40, 1972, pp 45-49

Abstract: Translucent electron microscopy, metallography, and diffraction line width measurements were used to study the structural changes resulting from the annealing of deformed tungsten in which 0.2% ZrC had been added during melting. At up to 1800°C a dispersed cellular structure is preserved in the alloy along with a structure stabilized by precipitations of a second phase. These were identified as ZrC in an x-ray investigation of the deposit obtained during electrochemical dissolving of the tungsten. In isolated sections of the alloy, with an increased density of second-phase particles, the cellular structure was preserved even after annealing at 2340°C. Increased recrystallization temperature is accompanied by increased heat resistance. 4 figures, 9 bibliographic references.

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BERENYAKO, A. I., and MIL'KIN, A. S., Zhurnal SSSR Fizicheskoy Khimii, Gorkiy

"Influence of Substrate Temperature on Perpendicular Anisotropy of Permalloy Films"

Sverdlovsk, Zhurnal Metallov i Metallovedeniya, Vol 35, No 1, 1984

Abstract: A study is made of the influence of substrate temperature on the perpendicular anisotropy of permalloy films on the basis of the data obtained by evaporation of permalloy in a vacuum. The dependence of perpendicular anisotropy measured as $K_{100} - K_{111}$ depends strongly on the temperature and changes its sign in the 30-40°C temperature range. The constant of perpendicular anisotropy is on the order of 10^4 erg/cm² while the magnetostatic energy of permalloy is very small. It is shown that the anisotropy results from anisotropy of the form of the surface of permalloy composing the film.

UDC 612.89

USSR

MILOKHIN, A. A., RESHETNIKOV, S. S.

Reflektornaya samoregulyatsiya neyronov (Reflex Self-Regulation of Neurons),
Izd. LGU, 1972, 72 pp

Annotation

An original conception of the autoregulation of neurons -- the basic elements in the nervous system -- is advanced on the basis of morphological studies of the sensory innervation of ganglionic cells conducted by the authors on the example of autonomic and encephalospinal ganglia. Principles in the structural organization of the autoregulation of nerve cells are investigated in detail. A hypothesis is advanced as to the significance of these mechanisms in sustaining a high measure of stability and reliability in the functioning of the nervous system. 43 ill. Biblio: 91 titles.

Introduction

The recent discovery of the receptor innervation of neurons based on the example of ganglia of the autonomic nervous system (Milokhin, 1959 a, b, 1961, 1963; Kolosov and Milokhin, 1963) has made it possible to find new and probably quite unexpected avenues to the understanding and solution of such age-old and extremely important problems in neurobiology as autoregulation and reliability in the functioning of the nervous system. There is no need to mention the broad applied spectrum of these problems in the most diverse areas of knowledge -- from medicine to bionics and cybernetics.

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USSR

MILOKHIN, A. A. PESHETNIKOV, S. S., Izd. LGU, 1972, 72 PP

Indeed the existence of receptors in the autonomic ganglia and especially the ascertainment of the receptor innervation of the ganglionic neurons per se take on genuinely fundamental importance especially in view of the fact that these morphological observations make it possible to extend to the nervous system proper the selfsame mechanisms of autoregulation that are already well known and that have been studied in detail in other organs and systems of the living organism.

At the same time the existence of receptors that are linked to ganglionic nervous structures most definitely and unequivocally indicates that the nervous system is not only a system for storing and processing the information that it received but that it can itself be the source of information as well. And this particular information about the functional state of the nervous elements unquestionably is fundamentally important to the normal functioning of the nervous system and of the entire organism as a whole. It is precisely in this aspect that the receptor innervation of ganglionic neurons -- this new type of interneuronal link in the nervous system -- will be examined here.

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