"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 539.216.2:538.2

KIM, P. D., POTYLITSYN, V. I., BOGATYREVA, L. A., RODICHEV, D. M., and SAFONOV, I. A., Krasnoyarsk Polytechnical Institute

"Energy of Domain Boundaries in Permalloy Films"

Moscow, Fizika Metallov i Metallovedeniye, Vol 30, No 5, 1970, pp 903-907

Abstract: A method is suggested for measuring the energy density of domain boundaries in thin permalloy films with circular anisotropy. The measurements, performed on a film 1,100 Å thick, yield values of domain boundary energy density γ near 4.2 erg/cm^2, which agrees well with the theoretical estimates for films of this thickness. In the area of thicknesses less than 1,000 Å, the measured energy values exceed the expected values, reaching 18 erg/cm^2. An attempt is made at experimental study of γ as a function of the constant field intensity applied perpendicular to the plane of the circular boundary.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 911.3.616.61-002.151(47)

POVALISHINA, T. P., KUDRYSHOVA, N. I., and VISHNYAKOV, S. V.

"The Fauna of Trombiculid Mites and Their Hosts in a Number of Foci of Hemorrhagic Fever with Renal Syndrome in European USSR"

V sb. Vtoroye Acarologicheskoye soveshchaniye. Ch. 2. Tezisy dokl. (Second Acarological Conference. Part 2. Theses of Reports -- collection of works) Kiev, "Nauk. dumka," 1970, pp 82-83 (from RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.65)

[No abstract]

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC 616.61-002.151-036.21(470.312)

POVALISHINA, T. P., SADOVSKAYA, Ye. V., SHTERN, M. A., and KUZ'MENKO, S. V., Institute of Poliomyelitis and Viral Encephalitides, USSR Academy of Medical Sciences

"Sites of Infection With Hemorrhagic Fever With a Renal Syndrome in One of the Foci in Tul'skaya Oblast"

Moscow, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 5, May 71, pp 41-45

Abstract: The Leninskiy rayon in Tul'skaya oblast is a forest-covered recreational area which has many summer cottages and is periodically visited by nonimmune vacationers. Since it also is a focus of hemorrhagic fever with a renal syndrome, many zoological, parasitological, and epidemiological observations were conducted there between 1951 and 1966. During these 15 years, a total of 5,031 small rodents of 17 different species were caught, with Clethrionomys glareolus the most numerous and representing 67.2% of rodents caught inside cottages. Annual outbreaks of the disease, involving a few to several hundred cases, are characteristically limited to small areas and occur in the spring and summer season, with peaks in June-August. Most people are infected inside the makeshift accommodations (cottages and tents) while tidying

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVALISHINA, T. P. et al, Zhurnal Mikrobiologii Epidemiologii i Immunobiologii, No 5, May 71, pp 41-45

up the facilities or during sleep. No clear-cut correlation was found between the severity of the outbreak and the size of the rodent population. On the other hand, the duration of the rodents' reproductive period seems to be of great significance, since late autumn and winter breeding periods are preceded by the greatest outbreaks of hemorrhagic fever. Of the many preventive methods developed, rodent extermination in housing facilities is more effective than extermination in the rodents' natural habitats. The best preventive measure is construction of better-quality cottages, which are inaccessible to rodents.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

UDC 616.988-614.4

USSR

RETINA, T. N., ~~BOVARESHINA, T. B.~~, MARTSINKEVICH, Ch. I., VASYUTA, Yu. S., KLUG, L. S., and FILIPPENKOVA, Ye. D., Republic Sanitary Epidemiological Station of the Bashkir SSR, Institute of Poliomyelitis and Viral Encephalitides of the USSR Academy of Medical Sciences, Main Sanitary Epidemiology Administration, of the RSFSR Ministry of Health, and the Ufa City Sanitary Epidemiological Station

"Epidemiological Analysis of Hemorrhagic Fever Diseases With a Renal Syndrome Observed in Health Institutions in the City of Ufa"

Kazan', Kazanskiy Meditsinskiy Zhurnal, No 1, Jan/Feb 71, pp 74-76

Abstract: The 1964-1965 epidemic of hemorrhagic fever with a renal syndrome in the Bashkir ASSR was thoroughly analyzed to elucidate the source and route of infection. A total of 99 cases of the disease were recorded in the resort city of Ufa among students, employees, and tourists: 11 cases in the pioneer camp, 13 in the Sanitary Forest School, 34 in the Children's Tuberculosis Sanatorium, and 41 cases at the rest home. During

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

RETINA, T. N., et al., Kazanskiy Meditsinskiy Zhurnal, No 1, Jan/Feb 71, pp 74-76

the epidemic, the Ufa region was infested with rodents; field and house mice and voles were found in attics and basements and under porches of poorly constructed houses and in the forest. The pathogen was transmitted mainly through the air to individuals who breathed air with dust-containing particles emitted by infected rodents. This included persons working within buildings, sleeping in tents, or employed in field work. The main preventive measure is eradication of rodents living in buildings and in natural environments.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC: 620.193.2'198

KVOKOVA, I. M., DRUZHININA, T. A., LAPINA, L. N., POVALISHNIKOVA, T. Ye., Moscow Institute of Steel and Alloys

"Investigation of a Multilayered Galvanic Coating Based on Nickel for Corrosion Protection Under Open-Sea Conditions"

Moscow, Zashchita Metallov, Vol 9, No 3, May/Jun 73, pp 264-269

Abstract: The paper deals with problems of the corrosion behavior of a multilayered nickel-based galvanic coating under the atmospheric conditions of the tropic seas. A layer of dull nickel 15-30 μm thick is applied to a base of Armco iron, copper and Kovar. As a preliminary step, all substrates were cathodically degreased in an alkaline solution for 5 minutes and then chemically etched: the Armco iron in hydrochloric acid; the copper in a mixture of orthophosphoric, sulfuric and hydrochloric acids; the Kovar in a mixture of nitric, acetic and hydrochloric acids. The composition of the tinning electrolyte (g/l): $Na_2SnO_3 \cdot 3H_2O$ 80, $NaOH_{fr}$ 13-18, CH_3COONa 25. The bright nickel electrolyte (g/l): $NiSO_4 \cdot 7H_2O$ 250; NaCl 15; H_3BO_3 30; 1,4-butyldiol 0.7; sodium allylsulfonate 0.5; chloramine B 1. On the basis of testing of multilayer coatings on all three substrates it

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USSR

KVOKOVA, I. M. et al., Zashchita Metallov, Vol 9, No 3, May/Jun 73, pp 264-269

is concluded that a coating of Ni_{dull} (15 μm)—Sn (15 μm)—Ni_{br} (10 μm) can be recommended for protecting important components from corrosion under tropical sea conditions with steady-state operating schedules without intense cooling to temperatures where tin undergoes an allotropic change and the coating loses its protective properties.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 541.127 + 542.938 + 661.718.1

BEL'SKIY, V. YE., IVASYUK, N. V., POVARENKINA, S. V., SHERMERGORN, I. M., Institute of Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Kinetics of the Hydrolysis of Bis-(chloromethyl)-thiophosphinic Acid"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 70, pp 1407-1409

Abstract: Aqueous and alkaline hydrolysis of bis-(chloromethyl)-thiophosphinic acid was studied in an attempt to elucidate the reaction mechanism. They hydrolysis was performed at 50-70°C. In the aqueous run the acid was titrated with KOH against the first appearance of phenolphthaline color. Analysis of kinetic data showed that the process occurs in two stages: first, one HCl molecule splits off rapidly, then another at a much slower rate; the first stage is a first order reaction. In alkaline hydrolysis HNO_3 was used for titration, the process occurring in one phase. In accordance with such kinetic rates the reaction mechanism con-

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

BEL'SKIY, V. YE., et al, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 6, Jun 70, pp 1407-1409

sists of a slow step in which the sulfur atom migrates from the phosphorus to a carbon atom of the chloromethyl group, followed by a rapid hydrolysis of the intermediate product. The first step occurs by an intramolecular S_N2 mechanism, and the rate of the second step is determined by the ionization of the mercapto group, which in alkaline medium occurs very rapidly.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 033 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--LAW OF DISPLACEMENT OF INFRARED ABSORPTION BANDS OF SOME MINERALS -U-

AUTHOR-(02)-POVARENNYKH, A.S., GEVORKYAN, S.V.

P

COUNTRY OF INFO--USSR

SOURCE--DOPOV. AKAD. NAUK UKR. RSR, SER. B 1970, 32(2), 118-21

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--MINERAL, IR ABSORPTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/0721 STEP NO--UR/0442/70/032/002/0118/0121

CIRC ACCESSION NO--AT0122800

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 033 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0122800

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DEFINITE DEPENDENCE WAS DETECTED BETWEEN THE POSITION OF CHARACTERISTIC IR ABSORPTION BANDS AND THE MAIN CRYSTALLOCHEM. PARAMETERS OF THE MINERALS DURING A STUDY OF 2 ISOSTRUCTURAL MINERAL GROUPS HAVING THE GENERAL FORMULAS OF R SUB5 PRIME2 POSITIVE (XO SUB4) SUB3 Z FOR MINERALS OF THE APATITE GROUP (APATITE, PYROMORPHITE, MIMETITE, AND VANADINITE) AND R SUB2 PRIME2 POSITIVE (XO SUB4(Z FOR THE LIBETHENITE GROUP (LIBETHENITE, OLIVENTITE, AND ADAMITE). THE WAVELENGTH OF THE CHARACTERISTIC IR ABSORPTION BAND WAS RELATED TO THE CRYSTALLOCHEM. PARAMETERS BY THE FORMULA, UPSILON EQUALS A(SIGMA RAD PLUS SIGMA CAT) CM PRIME NEGATIVE1 WHERE A IS A PROPORTIONALITY COEFF. DIFFERENT FOR VARIOUS ABSORPTION BANDS AND THEIR STRUCTURES WITHIN THE SAME ISOSTRUCTURAL GROUP, AND SIGMA RAD AND SIGMA CAT ARE THE STRENGTHS OF BONDS FOR RADICAL AND CATION, RESP.

FACILITY: INST. GEOKHIM. FIZ. MINER., KIEV, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

UNCLASSIFIED PROCESSING DATE--11DEC70

1/2 024

TITLE--INFRARED SPECTRA OF SEVEN MINERALS FROM MADAGASCAR -U-

AUTHOR--POVARENNYKH, A.S.

COUNTRY OF INFO--USSR

SOURCE--BULL. SOC. FR. MINERAL. CRISTALLOGR. 1970, 93(2), 224-34

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--CRYSTAL STRUCTURE, IR SPECTRUM, MINERAL, SPECTROSCOPIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO-----FD70/605002/D08 STEP NO--FR/0000/70/093/002/0224/0234

CIRC ACCESSION NO--AP0139458

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 024 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0139458

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY WAS MADE OF THE IR ABSORPTION SPECTRA OF 7 MINERALS FROM MADAGASCAR:HAMBERGITE, RHODIZITE, DUMORTIERITE, GRANDIDIERITE, KORNERUPINE, SAPPHIRINE, AND THORTVEITITE. AN ATTEMPT WAS MADE TO INTERPRET THE VARIOUS ABSORPTION BANDS IN TERMS OF THE CRYSTAL STRUCTURES. TENTATIVE BOND STRENGTHS IN THE MINERAL WERE CALCD. BY USING A SPECIAL FORMULA. FACILITY: INST. GEOCHIM. PHYS. MINER., KIEV, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

UNCLASSIFIED PROCESSING DATE--27NOV70

1/2 015

TITLE--PROBLEMS OF THEORETICAL MINERALOGY -U-

AUTHOR--POVARENNYKH, A.S.

COUNTRY OF INFO--USSR

SOURCE--GEOL. ZH. (UKR. ED.) 1970, 30(2), 24-47

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--MINERALOGY, MINERAL ANALYSIS, GEOCHEMISTRY, CRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3005/0961 STEP NO--UR/0008/70/030/002/0024/0047

CIRC ACCESSION NO--AP0133047

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 015

CIRC ACCESSION NO--AP0133047

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FOLLOWING MAIN PROBLEMS OF THEORETICAL MINERALOGY ARE BRIEFLY REVIEWED: CONSTITUTION AND PROPERTIES OF MINERALS, STRUCTURE OF MINERAL INDIVIDUALS AND IDEAL AND REAL CRYSTALS, CONSTITUTION AND GENESIS OF MINERALS, GEOCHEMISTRY, CRYSTALLOCHEMISTRY AND FORMATION OF MINERAL SPECIES, AND MINERALOGICAL ZONING AND COSMIC MINERALOGY. FACILITY: INST. GEOKHIM. FIZ. MINER., KIEV, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

Acc. Nr: AT0048307 Abstracting Service: CHEMICAL ABST. 5170 Ref. Code: UR0442

94926t Infrared absorption spectra and microhardness of the most important fluoroaluminates. Povarennykh, A. S.; Lebedeva, A. D. (USSR). *Dopov. Akad. Nauk Ukr. RSR, Ser. B* 1970, 32(1), 31–4 (Ukrain). Infrared spectra were obtained of 9 fluoroaluminates from Greenland: cryolite (Na_3AlF_6), cryolithionite ($Na_3Li_3Al_2F_{12}$), chiolite ($Na_5Al_3F_{14}$), weberite (Na_2MgAlF_7), prosopite ($CaAl_2(OH)_4F_4$), ralstonite ($Al_2(OH)_2F_4 \cdot H_2O$), thomsenolite ($NaCaAlF_6 \cdot H_2O$), pachnolite ($NaCaAlF_6 \cdot H_2O$), and gearksutite ($CaAl(OH)F_4 \cdot H_2O$). Finely ground minerals were mixed with KBr and pressed into pellets. The characteristic absorption bands at 630–560 cm^{-1} represent valence vibrations and those at 410 cm^{-1} deformation vibrations. The minerals contg. water have addnl. bands at 1060 cm^{-1}. The hydroxyl group gives addnl. peaks between 1200 and 800 cm^{-1}. Cryolithionite has a peak also at 466 cm^{-1} due to the valence vibrations of the Li-F bond. In weberite there are peaks at 520–470 cm^{-1} due to Mg-F valence vibrations, and in prosopite, thomsenolite and pachnolite peaks due to Ca-F valence vibrations are present. The microhardness of these minerals was in the range 170–410 kg/mm^2. Roman Mykolajewycz

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 8.74

POVARICH, M. P., TANAYEV, V. S.

"Synthesizing Flow Charts of Algorithms for Computing Complex Arithmetic Functions"

Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb. (Computer Technology in Machine Building. Scientific and Technical Collection), 1971, June, pp 16-23 (From RZh-Matematika, No 1, Jan 73, Abstract No 1V806 by S. Kuznetsov)

Translation: The paper describes a method of synthesizing flow charts of algorithms for calculating functions with intermediate arguments in the class of arithmetic functions which have been extensively used in the practice of automating processes of design in machine building. As a rule, these special arithmetic functions are given by tables with the values of the arguments and their corresponding values of the functions. The algorithm for computer lookup of values of the functions in accordance with data on the arguments is not complicated even when there may be changes in the information; however, accommodation of these tables demands an unjustifiably large memory volume and expenditures of machine time on realizing search procedures for such quantities. The proposed method of information input reduces to conventional representation of the data in the form of flow charts with

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USSR

POVARICH, M. P., TANAYEV, V. S., Vychisl. tekhn. v mashinostr. Nauch.-tekhn. sb., 1971, June, pp 16-23

appropriate organization of the lookup procedures. The process of constructing the flow charts and algorithms for calculating the corresponding arithmetic functions can be automated. The paper introduces a number of elementary operations on flow charts, which are used to describe the process of constructing a flow chart of a complex function in accordance with given flow charts of its component functions. This process may be computerized for functions with a large number of arguments.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVARICH, M. P., TANAYEV, V. S.

"Synthesis of Graph-Plans of Algorithms for Calculation of Complex Arithmetic Functions"

Vychisl. Tekhn. v Mashinostr. Nauch.-tekhn. Sb. [Computer Equipment in Machine Building. Scientific and Technical Collection], June, 1971, pp 16-23 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V806 by S. Kuznetsova).

Translation: A method is described for synthesis of graph plans of algorithms for calculation of functions with intermediate arguments in the class of arithmetic functions, popular in the practice of automation of processes of planning in machine building. As a rule, these special arithmetic functions are fixed by tables of values of arguments and the corresponding values of functions. The algorithm for search for values of functions, based on the given values of arguments using the computer, is not complex and remains simple even with possible changes of information, although unjustifiably large volumes of memory and machine time are required for storage of these tables and performance of search procedures. The method suggested for fixation of information can be reduced to the known method of representation of information in the form

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

POVARICH, M. P., TANAYEV, V. S., Vychisl. Tekhn. v Mashinostr. Nauch.-tekhn. Sb., June, 1971, pp 16-23.

of graph plans with the corresponding organization of search procedures. The process of construction of graph plans and algorithms for calculation of the corresponding arithmetic functions can be automated. A number of elementary operations are introduced on graph plans and are used to describe the process of construction of the graph plan of a complex function using the fixed graph plans of its component functions. For functions with large numbers of arguments, this process can be realized by computer.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVAROV, G. N., GORYUNOV, V. I.

"Machine Study of Group Invariance of Boolean Functions"

Ekon.-mat. Metody i Programmir. Plan.-ekon. Zadach. [Mathematical Economics Methods and Programming of Planning and Economic Problem -- Collection of Works], Moscow, 1972, pp 19-33 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V629 by V. Orlov).

Translation: The problem is studied of recognition of the invariance of Boolean functions relative to Jevons transforms (renaming of variables and replacement of variables with their negatives) by means of computers. Programs are presented for solution of this problem for functions of 4 and 5 variables.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--KINETICS OF ELECTRODE REACTIONS IN AN IODINE IODIDE SYSTEM. I -U-

AUTHOR-(03)-BARBASHEVA, I.YE., POVAROV, YU.M., LUKOVTSEV, P.D.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(1), 92-7

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTRODE REACTION, IODINE, PLATINUM ELECTRODE, REACTION KINETICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1989/0465 STEP NO--UR/0364/70/006/001/0092/0097

CIRC ACCESSION NO--AP0107071

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 011 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0107071

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KINETICS OF THE ANODIC AND CATHODIC REACTIONS IN THE I SUB2-I PRIME NEGATIVE SYSTEM WAS STUDIED AT 25DEGREES BY MEASURING THE POLARIZATION AT A PT ROTATING DISK ELECTRODE (1 MM DIAM.) MOUNTED IN TEFLON (8 MM DIAM.). THE SOLN. CONTAINED 0.2 N KI PLUS 10 PRIME NEGATIVE2. THE CATHODIC CURVES SHOWED DIFFUSION LIMITATIONS, WHEREAS NO LIMITING DIFFUSION CURRENT WAS OBSERVED ANODICALLY. THE ANODIC REACTION WAS 1ST ORDER IN I PRIME NEGATIVE, AND THE CATHODIC REACTION WAS 1ST ORDER IN I SUB3 PRIME NEGATIVE. THE UNSYM. ANODIC AND CATHODIC PARTIAL CURRENTS WERE PLOTTED FOR CATHODIC POTENTIALS TO 50 MV AND ANODIC POTENTIALS TO 200 MV. NO LINEAR TAFEL REGION WAS OBSERVED. BECAUSE NO FILM WAS FORMED ANODICALLY AND BECAUSE THE ANODIC REACTION PROCEEDED AT A POTENTIAL 83 MV MORE NEG. THAN THE REACTION (1) 21 PRIME NEGATIVE YIELDS I SUB2 PLUS 2E, THE MOST LIKELY OVERALL ANODIC REACTION WAS 31 PRIME NEGATIVE YIELDS I SUB3 PRIME NEGATIVE PLUS 2E, WHICH PROBABLY INVOLVED SOME INTERMEDIATE BECAUSE THE SUM OF THE ANODIC AND CATHODIC TRANSFER COEFF. DID NOT EQUAL 1. AT HIGH I PRIME NEGATIVE CONCN. AND LARGE POLARIZATION, REACTION (1) ALSO OCCURRED; UNDER THESE CONDITIONS THE ANODIC REACTION WAS CONTROLLED BY MIXED KINETICS. FACILITY: INST. ELEKTROKHIM., MOSCOW, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--EFFECTS OF THE NATURE OF ELECTRODE METAL AND STATE OF THE ELECTRODE SURFACE ON THE LIMITING DIFFUSION CURRENT IN OXIDATION REDUCTION SYSTEMS

AUTHOR-(03)-POVAROV, YU.M., TRUKHAN, A.M., LUKOVTSEV, P.D.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(4), 602-12

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--METAL ELECTRODE, PLATINUM ELECTRODE, GOLD, PALLADIUM, IRIDIUM, REDOX REACTION, IRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0686 STEP NO--UR/0364/70/006/004/0602/0612

CIRC ACCESSION NO--AP0124358

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124358

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT ROTATING DISK ELECTRODES (EITHER 0.5 OF 1 MM DIAM.) OF PT, PD, IR OR AU, THE LIMITING DIFFUSION CURRENTS (I SUBD) FOR THE 2 REDOX SYSTEMS, FE (CN)SUB6 PRIME3 NEGATIVE-FE(CN)SUB6 PRIME4 NEGATIVE AND I PRIME NEGATIVE-I SUB2 AT 0-50DEGREES WERE MEASURED. THE VALUES OF I SUBA AT ACTIVATED ELECTRODES OF PT, PD AND AU WERE APPROX. IDENTICAL AND SHOWED A LINEAR DEPENDENCE ON THE SQUARE ROOT OF ROTATION RATE (OMEGA PRIMEONE HALF). FOR THE IR ELECTRODE WITH BOTH REDOX SYSTEMS, THE I SUBD-OMEGA PRIMEONE HALF RELATION WAS NONLINEAR; INLINEARITY WERE ASSUMED, THEN THE INTERCEPT WAS NOT AT ZERO. AT THE PASSIVATED PT ELECTRODE IN THE FE REDOX SYSTEM AND AT A POISONED PD ELECTRODE, THE I SUBD-OMEGA PRIMEONE HALF RELATION WAS NONLINEAR. FOR THE ACTIVATED PT, PD, AND AU ELECTRODES, THE LIMITING CURRENT ACTIVATION ENERGY (E SUBA) WAS SIMILAR TO 2.3 KCAL-MOLE FOR THE FE SYSTEM AND INDEPENDENT OF THE ROTATION RATE, BUT AT THE IR ELECTRODE E SUBA VARIED FROM 0.4 TO 1.6 KCAL-MOLE WHEN THE ROTATION VARIED FROM 960 TO 7200 RPM. THESE RESULTS ARE EXPLAINED ON THE BASIS OF HINDERED ELECTRON TRANSFER AT NONUNIFORM ELECTRODE SURFACES, WHICH WERE INACTIVATED BY ADSORPTION OF O OR MOLES OF ORG. OR INORG. SUBSTANCES. THE DIFFUSION COEFFS. FOR THE VARIOUS SPECIES AT 25DEGREES ARE GIVEN.

FACILITY: INST. ELEKTROKHIM., MOSCOW, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 007 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--IODINE ELECTROREDUCTION ON A PLATINUM ELECTRODE -U-

AUTHOR-(03)-BARBASHEVA, I.YE., POVAROV, YU.M., LUKOVTSEV, P.D.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(2), 175-81

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ELECTROCHEMICAL REDUCTION, IODINE, PLATINUM ELECTRODE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/1146 STEP NO--UR/0364/70/006/002/0175/0181

CIRC ACCESSION NO--AP0121705

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 007 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0121705

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ELECTROREDN. OF I AT THE ROTATING PT ELECTRODE IN A SOLN. OF KL PLUS I SUB2 WAS SUTDIED IN THE PRESENCE OF EXCESS NA SUB2 SO SUB4. THE LIMITING CATHODIC CURRENT I SUBL GRADUALLY DECREASES IN TIME; THIS MAY BE RELATED TO THE DECREASE IN THE NO. OF ACTIVE SITES ON THE ELECTRODE SURFACE. THE LIMITING CURRENT INCREASES LINEARLY WITH THE SQUARE ROOT OF V (V IS ROTATIONAL VELOCITY IN RPM) AT LOW CURRENTS. THE I SUBL FOR AN ACTIVATED ELECTRODE IS PRACTICALLY INDEPENDENT OF THE MICROROUGHNESS OF THE ELECTRODE OVER THE ROUGHNESS FACTOR RANGE FROM 1 TO 300. FACILITY: INST. ELEKTROKHIM., MOSCOW, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--ANOMALOUS DEPENDENCE OF LIMITING CURRENT ON THE ROTATION RATE OF AN ELECTRODE IN PT FE(CN)SUB6 PRIME4 NEGATIVE-FE(CN)SUB6 PRIME3 NEGATIVE

AUTHOR-(03)-TRUKHAN, A.M., POVAROV, YU.M., LUKOVTSEV, P.D.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(3), 425-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PLATINUM ELECTRODE, FERRICYANIDE, LOW TEMPERATURE EFFECT, CATHODE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/0844 STEP NO--UR/0364/70/006/003/0425/0429

CIRC ACCESSION NO--AP0124509

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124509

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A ROTATING PT ELECTRODE WAS INVESTIGATED. THE CURVES OF THE CATHODIC LIMITING CURRENT (I SUBE VS. OMEGA PRIME0.5, WHERE OMEGA IS THE ROTATION RATE OF THE ELECTRODE) WERE RECORDED FOR SOLNS. (1) OF 2 TIMES 10 PRIME3 NEGATIVE M K SUB3 FE(CN)SUB6 PLUS 0.2 M K SUB4 FE(CN)SUB6 AND (2) OF 0.2M KI PLUS 5 TIMES 10 PRIME2 NEGATIVE M I SUB2 FOR VARIOUS TEMPS. THE CURVE AT 25DEGREES IS LINEAR AND PASSES THROUGH THE ORIGIN. THE DIFFUSION COEFFS. ARE 7.6 TIMES 10 PRIME6 NEGATIVE AND 9.5 TIMES 10 PRIME6 NEGATIVE CM PRIME2-SEC, RESP. AT LOW TEMPS. (1-5DEGREES), THE CURVE DEVIATES FROM LINEARITY BUT IT DOES PASS THROUGH THE ORIGIN. THE ANODIC CURVES EXHIBIT SIMILAR CHARACTERISTICS. FOR (1) SOLNS., THE ACTIVATION ENERGY, DELTA E OF THE LIMITING CURRENT IS DEPENDENT ON OMEGA. WITH INCREASE OF OMEGA, THE VALUE OF DELTA E VARIES FROM 1.6 TO 2.3 KCAL-MOLE. FOR (2) SOLNS. AT 1-50DEGREES, DELTA E IS 1.95 KCAL-MOL., WHILE FOR A SOLN. CONTG. 0.2M K SUB3 FE(CN)SUB6 PLUS 0.2M K SUB4 FE(CN)SUB6, DELTA E IS INDEPENDENT OF OMEGA (AT 5-50DEGREES) AND IS 2.3-2.4 KCAL-MOL. ANOMALOUS BEHAVIOR OF I SUB3 VS. OMEGA PRIME0.5 CURVES CAN BE EXPLAINED BY THE HETEROGENEITY OF THE ELECTRODE SURFACE. FACILITY: INST. ELEKTROKHIM., MOSCOW, USSR.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 015 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--KINETICS OF ELECTRODE REACTIONS IN AN IODINE,IODIDE SYSTEM. II -U-

AUTHOR-(03)-POVAROV, YU.M., BARBASHEVA, I.YE., LUKOVTSEV, P.D.

COUNTRY OF INFO--USSR

SOURCE--ELEKTROKHIMIYA 1970, 6(3), 306-11

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CHEMICAL REACTION KINETICS, IODINE, CHEMICAL REACTION RATE, CHEMICAL REACTION MECHANISM, PLATINUM ELECTRODE, CHEMICAL REDUCTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1994/1864 STEP NO--UR/0364/70/006/003/0306/0311

CIRC ACCESSION NO--AP0115683

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 015 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0115683

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DEPENDENCE OF THE OXIDN. AND REDN. RATES IN THE SYSTEM I SUB2-I PRIME NEGATIVE AT 25DEGREES ON PT ELECTRODES AS A FUNCTION OF THE CONCNS. OF I PRIME NEGATIVE AND I SUB2 WAS DETD. A 5 STEP OXIDN. REDN. MECHANISM IS PROPOSED AND THE RATE CONSTS. WERE COMPUTED. FACILITY: INST. ELEKTROKHIM., MOSCOW, USSR.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

Corrosion

USSR UDC 620.197.5:629.123

BIBIKOV, N. N., LYUBLINSKIY, YE. YA., and POVAROVA, L. V.

"Electrochemical Protection of Ships From Corrosion"

Electrokhimicheskaya Zashchita Morskikh Sudov ot Korrozii, "Sudostroyeniye" Publishing House, Leningrad, 1971, 261 pp

Translation of Authors' Foreward: Corrosion protection of the underwater structures of ships is an important consideration in shipbuilding. The problem has grown more urgent in recent years because of the use of alloy steels and aluminum alloys in hulls, the employment of structures made of different kinds of metals and alloys, the increased speed of ships, and wider sailing ranges, including voyages to tropical and northern latitudes. The increased demands for the protection of ships against corrosion have led to the development and application of new and more effective paints and varnishes. However, in most cases the use of paints and varnishes alone cannot solve all the problems connected with protecting ships against corrosion that arise in shipbuilding. The combination of paints and varnishes with electrochemical protection is the most promising method of controlling corrosion.

The technical and economic benefits from electrochemical protection are not limited to the elimination of corrosion and the reduction of ship

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

BIBIKOV, N. N., et al., Elektrokhimicheskaya Zashchita Morskikh Sudov ot Korrozii, "Sudostroyeniye" Publishing House, Leningrad, 1971, 261 pp

repair costs. Electrochemical protection combined with the use of paints and varnishes opens up the possibility of increasing the profitability of ships. It increases freight transport volume by reducing the number and duration of dry-dockings. It reduces the thickness of the hull planking. Electrochemical protection simplifies the schedules for painting the underwater part of the hull by reducing the number of layers of anticorrosion coatings and, in some types of ships, by making it unnecessary to paint the underwater part of the hull. Electrochemical protection makes it possible to retain the rated speed of ships throughout the period between dockings while lowering fuel costs by making the underwater part of the hull smoother.

Electrochemical protection of ships is being used more and more. This has made it necessary to sum up the results of research on the subject and the experience gained in the design, installation, and operation of systems of electrochemical protection on naval vessesl.

The book discusses the problems involved in electrochemical protection of ships. It examines the underlying theory and deals with the physicochemical

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USSR

BIBIKOV, N. N., et al., Eleltrokhimicheskaya Zashchita Morskikh Sudov ot Korrozii, "Sudostroyeniye" Publishing House, Leningrad, 1971, 261 pp

properties of sea and river water, the physicochemical and mechanical properties of protective anodic, and other materials for components of the protection system and substantiates their choice, The book describes the electrochemical protection systems now in use and considers a number of matteris that must be kept in mind if there is to be efficient development and improvement of protection systems.

This book is the product of long-term research by the authors carried out jointly with L. I. Stoklitskiy, M. I. Dzyubenko, Ya. A. Tsenter, A. Yu. Tayts, F. N. Ginsburg, V. K. Fedorov, A. N. Antonov, Yu. L. Kuz'min, N. D. Sashchenko, T. M. Karatayeva, N. Z. Proskuryakova, M. S. Subbotina, D. A. Noritsyna, L. I. Katkov, R. S. Pomiranskiy, K. M. Sazonova, V. A. Nabokova, V. M. Pender, L. I. Ivanova, and others.

The authors thank A. L. Rotinyan, M. A. Dasoyan, and Yu. Ye. Zobachev for valuable advice.

Please send comments and suggestions to: Leningrad, D-65, 8 Gogol' Street, "Sudostroyeniye" Publishing House.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

BIBIKOV, N. N., et al., Elektrokhimicheskaya Zashchita Morskikh Sudov ot Korrozii, "Sudostroyeniye" Publishing House, Leningrad, 1971, 261 pp

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BIBIKOV, N. N., et al., Elektrokhimicheskaya Zashchita Morskikh Sudov ot Korrozii, "Sudostroyeniye" Publishing House, Leningrad, 1971, 261 pp

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BIBIKOV, N. N., et al., Elektrokhimicheskaya Zashchita Morskikh Sudov ot Korrozii, "Sudostroyeniye" Publishing House, Leningrad, 1971, 261 pp

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--EXCITATION OF ARGON IONS THROUGH ELECTRON ATOM COLLISIONS -U-

AUTHOR-(02)-FELTSAN, P.V., POVCH, M.M.

P

COUNTRY OF INFO--USSR

SOURCE--OPTIKA I SPEKTROSKOPIIA, VOL. 28, FEB. 1970, P. 217-222

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ARGON, ION, ELECTRON COLLISION, SPECTRAL LINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1485 STEP NO--UR/0051/70/028/000/0217/0222

CIRC ACCESSION NO--AP0112479

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 022 UNCLASSIFIED PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0112479

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DISCUSSION OF EXPERIMENTS IN WHICH ARGON IONS WERE EXCITED BY COLLISIONS WITH LOW ENERGY ELECTRONS, AND THE EXCITATION FUNCTIONS AND EFFECTIVE CROSS SECTIONS OF THE AR II LINES AND LEVELS WERE STUDIED BY OPTICAL METHODS. IT IS FOUND THAT THE QUARTET LINES INVESTIGATED HAVE A SINGLE MAXIMUM WHILE THE DOUBLET LINES POSSESS TWO MAXIMA. THE CROSS SECTIONS OF THE QUARTET LEVELS (WITHOUT ALLOWANCE FOR CORRECTIONS FOR CASCADE TRANSITIONS) EXHIBIT A MAXIMUM AT 70 EV AND DECREASE RAPIDLY AT HIGHER ENERGIES, WHILE THE DOUBLET LEVELS HAVE A WEAKLY EXPRESSED SECONDARY MAXIMUM. THIS (FOR UNKNOWN REASONS) DISAGREES WITH THE RESULTS OBTAINED BY BENNET ET AL. (1966).

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BIOLOGY

Agriculture

USSR UDC 551.586

POVELIUS, N. V.

"Growth of Pine Trees in Swamps With Changes in Environmental Conditions"

Leningrad, Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva, Vol 103, No 1, Jan/Feb 71, pp 83-88

Abstract: So far no system for a study of the annual growth of trees has been developed. This has an adverse effect on forestry work and dendroclimatology. For this reason, an attempt was made to find an index which clearly reacts to environmental changes, particularly to climatic factors. A profile with a 500 m extension into the Luga rivery valley with an outflow to a watershed ravine was studied, and samples were taken from different geographic complexes (and types of locations) at various terraces, on the flat watershed and fluvioglacial ravine, where the pine tree grows in the upper peat-moss marsh. The model trees taken were in most cases used, with other felled

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVELIUS, N. V., Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva, Vol 103, No 1, Jan/Feb 71, pp 83-88

specimens, for the construction of geographic stations. In each region, 3 to 10 model trees were taken for the study. All calculations were reduced to a 10-year mean. The effect of temperature and other meteorological data on growth was measured and compared with literature data. Numerous graphs were constructed: the growth rate of pine trees in different locations of the Leningrad region, the growth rate in the upper marshes, the change over the years in the annual growth of the pine tree, and the index of geo-active corpuscular radiation from the sun, as well as variations in the temperature gradient from Kiev to Leningrad during the cold part of the year and the growth indexes of pine tree growth in the marshes. The author's study of pine tree samples from the marshlands in the Carpathian Mountains and in the Leningrad region, and of larches in the Putoran, Yakutin, and Magadan regions and on Kamchatka indicates that marshland sites of these trees all resemble one

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVELIUS, N. V., Izvestiya Vsesoyuznogo Geograficheskogo Obshchestva, Vol 103, No 1, Jan/Feb 71, pp 83-88

another as far as humidity, oxygen insufficiency, and mineral deficiency of the nutrient medium are concerned. The author proposes that detailed studies of stagnant and swamp forests in the Soviet Union be made to improve productivity in forestry and to arrive at correct long-range forecasts concerning variations in environmental conditions and to plan suitable forestry measures.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 615.281:547.722.5].015.44:576.851.42

POVELITSA, F. D., and GURAL', A. G., Chair of Microbiology, Kiev Institute for Advanced Training of Physicians

"The Antibacterial Effect of Furacriline on Brucella"

Moscow, Antibiotiki, Vol 18, No 1, 1973, pp 71-74

Abstract: Furacriline exerts a pronounced bacteriostatic effect on three species of Brucella. The effective concentrations are: 8 mcg of the drug per ml of the culture medium for Brucella melitensis strain No 548; 1 mg/ml for Brucella abortus No 88 and 141; and intermediate concentrations for Brucella melitensis No 401, 398, and "Chuyko," Brucella abortus No 19, 281, 544, and 840, and Brucella suis No 1330. Administration of daily oral doses of 1 mg of aqueous furacriline for 7 days to mice intramuscularly inoculated with 0.2 ml of a Brucella suspension containing 200 million microbes does not cure the animals but considerably reduces the number of Brucella cells present in the liver, spleen, and lymph nodes.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVELYTSYA, F. D., DEKHTYAR, N. V., and GURAL', A. G., Kiev Scientific Research Institute for the Advanced Training of Physicians, Kiev

"The Effect of Antibiotics on Immunity in Brucellosis"

Kiev, Mikrobiologicheskiy Zhurnal, Vol 33, No 6, Nov/Dec 71, pp 786-787

Abstract: A number of investigators have noted that therapy of bacterial infections with antibiotics inhibits the development of postinfection immunity. The effects of intramuscular administration of streptomycin on the specific and nonspecific immunity of rabbits infected experimentally by intramuscular injection of Br. abortus 544 were studied. The agglutinin titer in Wright's reaction, the complement titer of the serum, the lysozyme level, the bactericidal activity of the blood serum, and the concentration of sialic acids were determined. The results showed that streptomycin lowered the specific immunity when administered in the first days after infection, because it reduced the amount of antibodies that formed, as indicated by the agglutinin titer. It did not affect the nonspecific immunity, because the indexes of this immunity (the complement titer, the bactericidal activity of the serum, the lysozyme level, and the sialic acid content) were not changed vs. those of infected animals not treated with the antibiotic.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC: 621.396.6.002.72(088.8)

ZAYTSEV, V. G., TARILOV, V. N., SOLOV'YEV, N. A., POVERENNAYA, T. V.

"A Magnetic Manipulator"

USSR Author's Certificate No 263706, filed 15 Aug 68, published 15 Jun 70 (from RZh-Radiotekhnika, No 12, Dec 70, abstract No 12V320 P)

Translation: This Author's Certificate introduces a magnetic manipulator designed for grasping and moving ferromagnetic elements. The device contains a permanent magnet located inside a housing. To simplify removal of ferromagnetic elements from the manipulator, the permanent magnet is fastened to a spring-return rod connected by hinged levers to a pushbutton located on the end face of the magnet housing.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC: 621.762:669.918.25(088.8)

POVIDAYLO, V. A., SILIN, R. I., TUMANOV, V. I., YUREVICH, R. V.

"Method of Processing of Metal Ceramic Products"

USSR Author's Certificate Number 354939, Filed 26/02/71, Published 13/11/72 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8G441), by S. Krivonosova).

Translation: The method suggested includes surface oxidation of products in air at 850-950°, cooling and subsequent removal of the oxide layer by vibration. In order to increase the mechanical properties of the products and simplify the technology of their processing, products are oxidized in a stream of compressed air heated to the oxidation point, then cooled at up to 100°/min. The method can be used in the production of hard alloy drilling and cutting tools, for example for hardening of hard-alloy teeth of drilling machines.

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APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC 621.372.8.049.75-416

LISENKO, G. A., BRITOV, L. A., ZAYTSEV, P. P., LEBEDEV, V. K., POVIKOV, O. N.

"Unshielded Bound Four-Layer Microstrip Line of Superhigh Frequency Integrated Circuits"

Tr. Ul'yanovsk. politekhn. in-ta (Works of Ul'yanovsk Polytechnic Institute), Vol 6, No 3, 1971, pp 193-199 (from RZh-Radiotekhnika, No 10, Oct 71, Abstract No 10B119)

Translation: A study was made of an unshielded band line comprising an external shield and central conductors of rectangular cross section arranged in a five-layer semiconductor substrate. The second, third and fifth layers are insulating layers which prevent modulation of the semiconductor conductivity; the first layer is a plastic filler. The primary parameters of the line (linear capacitance, leakage conductance and inductance) were calculated. The calculation was performed for cophasal and antiphase waves. There is 1 illustration and a 12-entry bibliography.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--MOSSBAUER STUDY OF THE THERMOMAGNETIC TREATMENT OF TICONAL ALLOYS -U-

AUTHOR-(05)-POVITSKY, V.A., GRANOVSKY, YE.B., FRIDMAN, A.A., MAKAROV, YE.F., PASHKOV, P.P.

COUNTRY OF INFO--USSR

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, FEB. 1970. 29, (2), 247-251

DATE PUBLISHED----FEB70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--ALLOY, MOSSBAUER EFFECT, MOSSBAUER SPECTRUM, SPECTROSCOPIC ANALYSIS, MAGNETIC PROPERTY, METAL HEAT TREATMENT, X RAY ANALYSIS/(U)TICONAL ALLOY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0212 STEP NO--UR/0126/70/029/002/0247/0251

CIRC ACCESSION NO--AP0129468

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 031 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129468

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECTS OF THERMOMAGNETIC TREATMENT (ISOTHERMAL QUENCHING IN A MAGNETIC FIELD) ON THE STRUCTURE AND PROPERTIES OF TWO TICONAL ALLOYS WERE STUDIED BY A TECHNIQUE BASED ON THE MOSSBAUER EFFECT. MOSSBAUER SPECTROSCOPY WAS EMPLOYED IN CONJUNCTION WITH X RAY DIFFRACTION TO TRACE THE BEHAVIOUR OF THE ALLOYS AT VARIOUS STAGES OF HEAT TREATMENT. IN THE FIRST STAGE OF AGEING AFTER QUENCHING IN A MAGNETIC PHASES OF THE ALLOY TOOK PLACE; IN THE SUBSEQUENT STAGE THE DEGREE OF ORDER OF THE WEAKLY MAGNETIC PHASE STARTED INCREASING.

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USSR UDC 669.71.48

POVKH, I. L., CHEKIN, D.V., SMIRNOV, V. A., BAZILEVSKIY, V. M., OKUNEV, V. M., POPOV, V. A.

"Study of the Possibility of the Impoverishment of Fused Salt Slags From Aluninum Production by Electromagnetic Weighting"

Tr. Donetsk. NII Chern. Metallurgii [Works of Donets Scientific Research Institute for Ferrous Metallurgy], 1970, No. 20(4), pp. 21-25. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G177 by the authors).

Translation: Studies performed on the electromagnetic weighting of salt slags produced in melting Al showed that it can be used to extract up to 98% of the Al and 83% of the oxides. 3 figs; 2 tables.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC: 538.4

POVKH, I. L., CHEKIN, B. V., SHCHELUKHIN, Ye. M.

"Determination of Fluid Pressure in a Rectangular Mold in the Presence of Crossed Electric and Magnetic Fields"

Tr. Donetsk. NII chern. metallurgii (Works of the Donetsk Scientific Research Institute of Ferrous Metallurgy), 1970, No 20 (4), pp 131-136 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7B10)

Translation: The authors consider distribution of electric current and Lorenz force in a rectangular parallelepiped all of whose walls are non-conductive with the exception of two identical electrodes of rectangular shape located opposite each other on parallel vertical walls. Constant current density is preassigned on the electrodes. An external magnetic field (the induced field is disregarded) which is uniform is horizontally directed across the main current. The solution is presented in the form of infinite series. Assuming that the parallelepiped contains a quiescent heavy fluid, and disregarding the horizontal component of the Lorenz force, the authors calculate the pressure in the fluid. A comparison with an experiment shows satisfactory accuracy of the calculation. S. A. Regirer.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

UDC:669.714

USSR

POVKH, I. L., CHEKIN, B. V., SMIRNOV, V. A., BAZILEVSKIY, V. M., OKUNEV, V. M. and POPOV, V. A., Donets State University, Donets Scientific Research Institute for Ferrous Metals, State Scientific Research and Planning Institute of Alloys and Nonferrous Metal Processing

"Extraction of Aluminum and Oxides From Salt Slags Using Electromagnetic Forces"

Ordzhonikidze, Izvestiya Vysshikh Uchevnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1971, pp 65-68

Abstract: The possibility in principle of the process of extraction of aluminum buttons and oxides from melted salt slags using electromagnetic forces is demonstrated. The basis of the phenomenon is the fact that when a weakly conducting liquid in which conducting droplets and non-conducting particles are suspended is placed in crossed electrical and magnetic fields, the specific gravity of the conducting phases increases.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVKH, I. L., et al., Izvestiya Vysshikh Uchevnykh Zavedeniy, Tsvetnaya Metallurgiya, No 1, 1971, pp 65-68

This causes the droplets to precipitate to the bottom and the non-conducting particles to rise to the top.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--EXTRACTION OF ALUMINIUM BUTTONS BEADS FROM SALT SLAGS BY MAGNETOHYDRO DYNAMIC SEPARATION -U-

AUTHOR--POVKH, I.L.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METALLY, MAR. 1970, (3), 63-65

DATE PUBLISHED----MAR 70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--ALUMINUM, ALUMINUM OXIDE, METAL SEPARATION, MAGNETO HYDRODYNAMICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1921 STEP NO--UR/0136/70/000/003/0063/0065

CIRC ACCESSION NO--AP0132183

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0132183

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXTRACTION OF AL BEADS FROM SALT SLAGS USED IN THE AL INDUSTRY, WHICH MAY CONTAIN AS MUCH AS 17PERCENT OF METALLIC AL, IS DESCRIBED. BY USING THE MAGNETOHYDRODYNAMIC SEPARATION TECHNIQUE, THE ECONOMIC EFFICIENCY OF THIS PROCESS IS GREATLY IMPROVED, FACILITATING THE SEPARATE EXTRACTION OF BOTH THE METAL AND THE CORRESPONDING OXIDE. A CONCENTRATION CONTG. 75-95PERCENT METALLIC AL MAY READILY BE OBTAINED IN THIS WAY, WITH A TOTAL RECOVERY OF UP TO 85PERCENT AL.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 621.791.856.2.03

GUREVICH, S. M., NERODENKO, M. M., POVOD, A. G., TETERVAK, A. F., ASNIS, YE. A., Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences UkrSSR, GRISHIN, V. K., FERTIKOV, V. G., ESTRIN, V. N., LEVKOVICH, R. M., Moscow

"Equipment for Welding Chemically-Active Refractory Metals in a Controlled High Purity Helium Atmosphere"

Kiev, Avtomaticheskaya Svarka, No 8, Aug 70, pp 45-47

Abstract: A description is given of equipment for manual and automatic electric welding of refractory metals in a controlled atmosphere of high-purity helium. The equipment, which was developed at the Institute of Electric Welding imeni Ye. O. Paton, ensures continuous control of oxygen, nitrogen, and water vapor impurities and helium regneration. It consists of a welding chamber with a vacuum system; 2) equipment for helium purification and 3) a helium purity control system. A photograph and schematic diagram of the installation are presented. The welding chamber (700 mm in diameter, volume, approximately 1000 l) is made of

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USSR

GUREVICH, S. M., et al., Avtomaticheskaya Svarka, No 8, Aug 70, pp 45-47

1Kh18N9T steel. It is provided with a VN-1 suction pump, making it possible to obtain a 2 x 10^{-5} torr vacuum in the chamber with full load. A sorption method using activated carbon and zeolite at liquid nitrogen temperature at an absorber pressure of 150 atm is used for helium purification. A KhG-type gas chromatograph is used for helium purity control.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 017 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--THE IMPORTANCE OF DYSFUNCTION OF THE ADRENALS IN THE PATHOGENESIS OF DIABETES MELLITUS AND DIABETIC ANGIOPATHIAS -U-

AUTHOR-(05)-KONISSARENKO, V.P., YEFIMOV, A.S., POVOLOTSKAYA, G.M., LIMANSKAYA, G.F., BEZVERKHAYA, T.P.

COUNTRY OF INFO--USSR

SOURCE--KLINICHESKAYA MEDITSINA, 1970, VOL 48, NR 5, PP 118-123

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DIABETES MELLITUS, ADRENAL GLAND, HORMONE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1772 STEP NO--UR/0497/70/048/005/0118/0123

CIRC ACCESSION NO--AP0129140

UNCLASSIFIED

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 017 UNCLASSIFIED

CIRC ACCESSION NO--AP0129140 PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPLEX EXAMINATION OF 154 PATIENTS SUFFERING FROM DIABETES MELLITUS REVEALED DYSFUNCTION OF THE ADRENALS MANIFESTED BY AN INCREASE OF THE GLUCOCORTICOID, ANDROGENIC AND ADRENAL FUNCTION IN A SIMULTANEOUS REDUCTION OF THE MINERALOCORTICOID ACTIVITY. THE NOTED DISTURBANCE WAS CHARACTERITIC FOR PATIENTS DURING DECOMPENSATION OF THE DISEASE. WITH THE CONCOMITANCE OF VASCULAR COMPLICATIONS THERE WAS SEEN A MORE MARKED RISE OF THE CATECHOLAMINE AND ADROGENIC ACTIVITY. GLUCOCORTICOID HYPERFUNCTION OF THE ADRENALS WAS MORE PECULIAR TO PATIENTS WITH INITIAL FUNCTIONAL LESIONS OF THE VESSELS. A SUPPOSITION IS MADE ON THE POSSIBLE PATHOGENETIC ROLE OF HYPERPRODUCTION OF CONTRINSULAR ADRENAL HORMONES IN THE DEVELOPMENT OF DIABETIC ANGIOPATHIAS. FACILITY: KIEV. N-I INSTITUT ENDOKRINOLOGII I OBMENA VESCHESTV.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVOLOTSKAYA, K. L., YEROFEYEVA, N. N., and KALIBERNAYA, Z. V.

"The Effect of Maleic Acid Hydrazide on Living Organisms"

V sb. Gidrazid Maleinovoy Kisloty kak Regulator Rosta Rast. (Maleic Acid Hydrazide as a Regulator of the Animals' Growth), Moscow, "Nauka", 1973, pp 333-335 (from RZh - Biologicheskaya Khimiya, No 22, Nov 73, Abstract No 2055)

Translation: Daily administration of the preparation GMK-D and GMK-Na in a dose of 0.75 - 6 mg/kg for 25-30 days to rats had no detrimental effects on weight and general state of the animals. The anatomic-pathological state was identical in the experimental and control group; GMK does not accumulate in organs.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC 669.187.2.083.4.621.365.2

POVOLOTSKIY, D. YA., GRECHIN, R. I., RECHKALOVA, A. V., KOFMAN, YY. V., and ROSHCHIN, V. YE.

"Behavior of Oxygen and Reduction Products in Vacuum-Arc Remelting"

Moscow, Stal', No 12, Dec 73, pp 1092-1095

Abstract: Low-carbon (0.03-0.09 % C) and carbon (0.20-0.70% C) steels were used for consumable electrodes in 5-ton arc furnaces for the purpose of studying oxidation and reduction processes in vacuum-arc remelting (VAR) and the behavior of inclusions. It was noted that in VAR, refining of the metal from deoxidation products occurs as a result of mechanical removal of inclusions and reduction of unstable oxides by carbon. Stable inclusions of complex shape (corundum crystals and grains) are more fully removed by mechanical means; however, the same does not hold true for inclusions of spherical shape (globular corundum and glasses) and unstable inclusions. New types of inclusions are formed in the VAR process. Non-equilibrium inclusions, which transfer from the initial metal into the VAR ingot change composition to a more equilibrium composition and change shape to a more idiomorphic form. The length of the refining period when melting the initial metal for VAR has

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVOLOTSKIY, D. YA., et al., Stal', No 12, Dec 73, pp 1092-1095

little effect on oxygen and inclusion content, so that there are savings in keeping the refining time as short as possible. Six figures, seven bibliographic references.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 669.046.5

POVOLOTSKIY, D. Ya., ROSHCHIN, V. Ye.

"Formation and Removal of Steel Deoxidation Products"

Moscow, V sb. "Sovremennyye problemy kachestva stali" (MISiS). (Collection of Works. Modern Problems of Steel Quality) (Moscow Institute of Steel and Alloys), Izd-vo "Metallurgiya," No 61, 1970, pp 29-35

Translation of Abstract: Data are presented on regularities in the formation of deoxidation products during diffusional iron deoxidation in pipes 4-6 mm in diameter by zirconium, aluminum, titanium, and silicon. The effect of metal motion on the rate of impurity removal with different physico-chemical properties is considered. Optimal conditions for the removal of coarse and fine impurities with various surface properties from steel are outlined. 3 figures, 9 references.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR UDC 669:532.72

POVOLOTSKIY, D. YA., ROSHCHIN, V. YE., and KEYS, A. N., Chelyabinsk

"Diffusion of Titanium and Zirconium in Liquid Iron"

Moscow, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 222-223

Abstract: This article contains a description of the results of an experiment to determine the diffusion constants of titanium and zirconium in molten iron containing different amounts of oxygen. By the experimental curves for the temperature dependence of the diffusion coefficients of titanium and zirconium in iron on the amount of oxygen from 0.003 to 0.010 % O_2 the following expressions were derived:

$$D_{Ti} = 83.3 \exp(-50{,}600/RT)$$

$$D_{Zr} = 5.58 \exp(-36{,}100/RT)$$

It was also discovered that varying the oxygen content in the iron causes variation of the diffusion coefficient and activation energy of the reducing elements. The oxygen dissolved in iron increases the binding energy of titanium and zirco-

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

POVOLOTSKIY, D. YA., et al, Izvestiya Akademii Nauk SSSR -- Metally, No 5, 1970, pp 222-223

nium and, obviously, other reducers in the quasi-crystalline lattice of the melt. High activation energy is required to bring the particles of these elements from the state of equilibrium preceding the transition to vacant sites with an increase in the oxygen content in the iron. From the table of diffusion coefficients of titanium and zirconium in iron it is apparent that for sufficiently high oxygen and reducing agent concentration, the oxygen and reducing agents are consumed for the formation of oxide inclusions and the apparent diffusion coefficient of the reducing agent decreases.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC 669.183.18.046.58

POVOLOTSKIY, D. YA., MISHCHENKO, V. YA., VYATKIN, G. P., and PUZYREV, A. V., Chelyabinsk Polytechnical Institute

"Physiocochemical Properties of Melts of the $CaO-Al_2O_3-CaF_2$ System"

Moscow, Ivestiya Vysshikh Uchebnykh Zavedeniy -- Chernaya Metallurgiya, No 12, 1970, pp 8-12

Abstract: An experimental study was made of the electrical conductivity, ductility, and surface tension of synthetic slags of the $CaO-Al_2O_3-CaF_2$ system (2 -- 61% CaO; 29 -- 56% Al_2O_3; 0 -- 60% CaF_2) at temperatures at 1400-1800° C. The effect of temperature and chemical composition on the properties of slags is presented graphically on sections of ternary diagrams. In the studied area of composition slags adjacent to the angle CaF_2 possess maximum electrical conductivity and slags adjacent to the angle CaF_2 possess minimum ductility. Calcium fluoride possesses the highest surface activity. Introduction of 0 to 60% of calcium fluoride into the melt reduces the surface tension at t = 1700° C from 550 to 254 erg/cm^2.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 017 UNCLASSIFIED

TITLE--ALLOY FOR ALLOYING STEEL -U- PROCESSING DATE--27NOV70

AUTHOR-(05)-STROGANOV, A.I., POVOLOTSKIY, D.YA., NAZAROV, V.F., TULIN, N.A., LYUBIMOV, V.N.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 263,889

REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,

DATE PUBLISHED--10FEB70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--CHEMICAL PATENT, STEEL CONSTITUENT, ALLOY STEEL, TUNGSTEN STEEL, SILICON STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/1833 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0132098

UNCLASSIFIED

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2/2 017 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AA0132098

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE ALLOY HAS THE FOLLOWING COMPN.: W 55-75, SI 10-25 WT. PERCENT, FE THE REMAINDER.

FACILITY: CHELYABINSKIY POLITEKHNICHESKIY INSTITUT.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

1/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--ALUMINUM IN CONSTRUCTION STEEL -U-

AUTHOR--POVOLOTSKIY, D.YA.

COUNTRY OF INFO--USSR

SOURCE--ALUMINUM IN CONSTRUCTION STEEL (ALYUMINIY V KONSTRUKTSIONNOY STALI) MOSCOW, METALLURGIYA, 1970, 231 PP.

DATE PUBLISHED--------70

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

TOPIC TAGS--CONSTRUCTION STEEL, ALUMINUM CONTAINING STEEL, STEEL DEOXIDATION, NONMETALLIC INCLUSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1305 STEP NO--UR/0000/70/000/000/0001/0231

CIRC ACCESSION NO--AM0130276

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4"

"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

2/2 015 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AM0130276

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TABLE OF CONTENTS: CHAPTER I PHYSICO CHEMICAL REGULARITIES OF THE INTERACTION OF ALUMINUM WITH LIQUID IRON 3. II NONMETALLIC INCLUSIONS IN STEEL DEOXIDIZED BY ALUMINUM 35 III THE INFLUENCE OF ALUMINUM ON THE QUALITY OF STEEL 106. IV THE TECHNOLOGY OF DEOXIDIZING STEEL WITH ALUMINUM 145. V CONSTRUCTION STEEL ALLOYED WITH ALUMINUM 196. LITERATURE 224. EXAMINED ARE QUESTIONS OF FORMATION AND REMOVAL OF NONMETALLIC INCLUSIONS IN DEOXIDIZING AND ALLOYING STEEL WITH ALUMINUM. THE BOOK IS FOR SCIENTISTS AND TECHNICAL ENGINEERS IN THE METALLUGRY AND MACHINE BUILDING INDUSTRY.

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USSR

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Rare Metals

UDC 669.14.018.8.046.51:669.655

POVOLOTSKIY, D. Ya., MAL'KOV, N. V., OSHCHEPKOV, Yu. P., and FILATOV, S. K.,
Chelyabinsk Polytechnical Institute

"Influence of Rare-Earth Metals on the Structure and Technological Plasticity of Chrome-Nickel Stainless Tube Steel"

Novokuznetsk, Izv. VUZ, Chern. Metallurgiya, No 10, 1970, pp 108-112

Abstract: The addition of 0.1% rare-earth elements (rem) to chrome-nickel steel has no influence on the structure of the ingot upon crystallization of the metal in the form of the ferrite, but decreases the transcrystallization zone and makes the grain finer upon crystallization as austenite. Addition of rem to austenitic chrome-nickel steel facilitates even distribution of nonmetallic inclusions through the cross section of ingots and rolled billets. Microalloying of chrome-nickel austenitic steel with rem causes a significant increase in technological plasticity of the metal at rolling temperatures.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

UDC: 51:621:391

USSR

POVOLOTSKIY, F. B.

"Evaluating the Effectiveness of A Method of Compressing Information"

Tr. Mosk. in-ta inzh. zh.-d. transp. (Transactions of the Moscow Institute of Railroad Engineering) No 395, 1971, pp 84-92 (from RZh--Matematika, No 8, 1972, Abstract No 8V507)

Translation: The random process $\xi(t)$ is quantized according to level and time with uniform steps. The difference between two consecutive values of the quantized process is coded by a binary number. It is proved that for Markov, Gaussian, and Wiener processes, the average number of binary symbols in the count is limited when the mean-square value of the error between the original and level-quantized processes vanishes. V. Yegarmin

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC: 51:621.391

POVOLOTSKIY, F. B.

"Evaluating the Effectiveness of One Method of Data Compression"

Tr. Mosk. in-ta inzh. zh.-d. transp. (Works of the Moscow Institute of Railway Transportation Engineers), 1971, vyp. 395, pp 84-92 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V507)

Translation: The random process $\xi(t)$ is quantized with a uniform step by level and in time. The difference between two successive values of the quantized process is coded by a binary number. It is shown that for Markov, Gaussian and Wiener processes, the average number of bits per readout is limited when the value of the mean-square error between the initial and level-quantized processes tends to zero. V. Yegarmin.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC 620.17:669.018.5

POVOLOTSKIY, YE. G., and RAKHLEVSKAYA, M. N., Saratov Polytechnic Institute

"Planning of an Experiment for the Optimization of the Properties of the Tikonal Alloy"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 5, May 73, p 76

Abstract: A method of experiment planning is utilized for the optimization of heat treatment and for deriving the highest magnetic properties of tikonal alloy. Alloys of the following composition were studied: 38% Co; 16% Ni; 6% Al; 8% Ti; 3.7% Cu; Fe -- the remaining percentage. Silit furnaces were used for preheating for hardening. The isothermal thermomagnetic treatment was carried out in molten tin bath, built in a gap of the electromagnet, whose temperature was regulated with an accuracy $\pm 3^{\circ}C$. A maximum level of three technically important magnetic characterisitcs of the alloy was obtained.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC 669.018.58:621.7.044

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

"Nature of Extremal Magnetic Property Change in Ticonal Alloys After Isothermal Thermomagnetic Treatment"

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

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

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

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

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USSR

POVOLOTSKIY, YE. G., Saratov Polytechnic Institute

UDC 669.295:538.221

"Magnetic Annealing Effect During Thermomagnetic Treatment of Ticonal Type Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 4, 1972, pp 864-867

Abstract: Single crystal samples (4x4x10 mm) of YuNDK35T5 and YuNDK40T7 alloys were subjected to thermomagnetic treatment (TMT) at 900-700°C. The magnetic field (H > 2000 oersted) was applied in 20-min. intervals along the long axis [001] of each sample. Maximal thermal expansion, increased coersive force of the hardened state, as well as of magnetic permeability were observed within 800-790°C. The magnetic annealing effect also took place at this temperature. Rod-like or plane segregations of the β-phase in all systems {100} < 100 > appeared during the alloy cooling within 800-790°C in the presence of a magnetic field. Similar segregations were observed along the [100] plane in the case of fixed thermomagnetic treatment, as was indicated by x-ray diffraction analysis and electron microscopy. The observed disintegration of crystal structure at 800-790°C signified the presence of the magnetic transformation. Thus, the appearance of the magnetic annealing

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POVOLOTSKIY, YE. G., Fizika Metallov i Metallovedeniye, Vol 34, No 4, 1972, pp 854-867

effect in both alloys was not related to the ferromagnetic transition in the initial single-phase β_2 solid solution but was caused by a direct magnetic field.

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UDC: 669.15.620.187.548.313.3

POVOLOTSKIY, YE. G., Saratov Polytechnic Institute

"Superstructural Defects in Single Crystals of Alnico-Type Alloys"

Sverdlovsk, Fizika metallov i metallovedeniye, Vol 33, No 1, Jan 72, pp 167-172

Abstract: This paper deals with the electron microscopy of superstructural defects in monocrystals of Alnico-type (YUNDK24 and YUNDK35T5) alloys of the following compositions (respectively): 24 and 35% Co, 14 and 15% Ni, 8 and 7.5% Al, 0 and 5.0% Ti, 3 and 4% Cu and the balance -- Fe. The study revealed superstructural defects in the single crystals of Alnico-type alloys. It is shown that the defects -- the thermal antiphase domains, antiphase boundaries and superdislocations -- conform to the $L2_0$ (β_2)-type of ordering. In the case of narrow-angle boundaries represented by the parallel and interlocked vertical walls of superdislocations there are dislocation configurations typical of alloys with DO_3 (possilly $L2_1$) ordering. There are also boundaries, where the distribution of dislocations indicate complete disordering along the boundary. (2 illustrations, 19 bibliographic references).

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USSR UDC 669.018.58

VASIN, G. P., and POVOLOTSKIY, YE. G., Saratov Polytechnical Institute

"Inhomogeneity of Magnetic Properties in Castings From YuNDK24 Alloy"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1970, p 34

Abstract: The inhomogeneity of the magnetic properties in castings of YuNDK24 alloys was studied after various regimes of thermomagnetic treatment. The cooling rate must be optimum within high temperatures (1280-850°C) to preclude high-temperature α-decomposition and must be below 850°C to provide optimum conditions for the α-decomposition. The heavier the magnet the more difficult it is to insure a given cooling rate. The inhomogeneity of magnetic properties was studied after thermomagnetic treatment by two methods: 1) comparing the properties of large-cross section specimens with those of small specimens cut from the large ones; 2) measuring the properties at various cross sections of long uncut specimens and subsequently comparing them with the properties at the same cross sections after cutting. It was shown that the magnetic properties of the YuNDK24 alloy in a highly coercive state are inhomogeneous. The

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VASIN, G. P., and POVOLOTSKIY, YE. G., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, 1970, p 34

degree of inhomogeneity depends on the presence of casting defects and on conditions of treatment. The lower the cooling rate during treatment, the more homogeneous the disperse decomposition structure and the properties. Property inhomogeneity may be most reliably determined by successive measurement of residual induction and coercive force in marked off cross sections with a ballistic coil.

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USSR

UDC 669.018.58:621.789

VLASKINA, K. I., KARTASHOVA, N. F., and POVOLOTSKIY, YE. G.

"Heat Treatment of Ticonal Alloys"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 2, 1970, pp 29-32

Abstract: This article contains the results of investigating the heat treatment and properties of crystal-isotropic ticonal alloys with 41-42% Co and a variable content of other components (nickel, aluminum, titanium, and copper). The magnetic properties of the alloys and their coercive force reach limiting values after isothermal thermomagnetic processing.

The thermal behavior of the permeability, coercive force, residual induction, and maximum magnetic energy were studied. The structure of the alloys was investigated by optical and electron microscopes.

The temperatures of existence of a homogeneous β_2-phase and the optimal hardening temperatures of all 22 alloys investigated are tabulated. Figures are presented showing the magnetic properties of certain alloys as a function of the isothermal treatment temperature.

It is concluded that in selecting the optimal hardening temperature of ticonal alloys, it is necessary to consider obtaining a homogeneous β_2-solid solution free

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VLASKINA, K. I., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 2, 1970, pp 29-32

of separations of the high-temperature α-phase and the intergrain "superheating structure" during heating. The isothermal treatment temperature (with a field or without it) must correspond to the beginning of intense development of the disperse β-decomposition. Here, the optimal temperature of isothermal treatment depends on the chemical Metallovedeniye i Termicheskaya Obrabotka Metallov, No 2, 1970, pp 29-32 composition of the alloy, especially on the titanium and copper content. In the investigated ticonal alloys, no Curie point was detected in the single-phase state preceding disperse $\beta_2 \rightarrow \beta + \beta_2$-decomposition; therefore, the effectiveness of heat treatment of these alloys must be considered the result of the effect of the applied magnetic field on β-decomposition, simultaneously converting the alloys to the ferromagnetic state. The alloy containing 42% Co, 14% Ni, 8% Al, 6.5% Ti, 3% Cu, and the rest iron in the crystal-isotropic state has a maximum magnetic energy of $6.24 \cdot 10^6$ gram-force·oersteds after isothermal heat treatment with a coercive force of ${}_{I}Hc$ = 1,810 oersteds (${}_{B}Hc$ = 1,680 oersteds).

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USSR

UDC 532.526

POVOTOROV, V. P.

"On the Distribution of Disturbances Through an Axial-Symmetrical Supersonic Boundary Layer"

Uch. zap. Tsentr. aerogidrodinam. in-ta (Scientific Notes of the Western Central Aerohydrodynamic Institute), Vol 3, No 6, 1972, pp 41-46 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4B854)

Translation: A quantitative evaluation of the influence of disturbances, distributed upwards in the flow through a supersonic boundary layer was conducted for the integral and local characteristics of axial-symmetrical flow around a stepped body. The calculations were conducted for different values of the parameter of viscous interaction, step-wise cooling of the surface of the body and the ratio of specific heat capacity. (Resume)

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UDC 621.791.89

USSR

POVSTYAN, V. I., KHOLOPOV, YU. V.

"Method of Stabilizing the Mechanical Strength of Joints in the Case of Ultrasonic Welding of Metals"

Kiev, Avtomaticheskaya Svarka, No 7, 1971, pp 75-76

Abstract: A method of stabilizing the mechanical strength of joints during ultrasonic welding of metals and experimental work performed at the All-Union Scientific Research Institute of Electric Welding Equipment confirming the principles on which the method is based are discussed. The mechanical power of an oscillatory system is equal to the product of the force times the velocity $P_{mech} = Fv$ (where F and v are the oscillatory force and the system velocity). The required P_{mech} can be obtained by varying these parameters of the oscillatory system. Decreasing the amplification coefficient K with a given power of the oscillatory system essentially increases its equivalent force, and this permits stabilization of the amplitude in the welding process [Kholopov, Elektronnaya tekhnika, Series 10, No 7, 1967]. From the nature of the deviation of the mechanical power during oscillation of the network voltage, the following conclusions are drawn: first, it is most efficient to use oscillatory systems with small K, in individual cases $K \leq 1$; secondly, stabilization of ξ_{weld} (the

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USSR

POVSTYAN, V. I., et al., Avtomaticheskaya Svarka, No 7, 1971, pp 75-76

oscillatory displacement amplitude) can be increased appreciably under the conditions of some power reserve of the power supply when the required amplitude of the mechanical oscillations is reached by increasing the power in the converter instead of by varying the amplification coefficient. When using this system to weld various materials (aluminum, copper and gold conductors with nickel, copper, gold and aluminum film circuits on metal, glass and silicon), joints are obtained with high stability of the mechanical strength.

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USSR

UDC 615.22:547.785.5

KOCHERGIN, P. M., LINENKO, V. I., TKACHENKO, A. A., SAMURA, B. A., POVSTYANOY, M. V.: All-Union Scientific-Research Economico-Pharmaceutical Institute imeni S. Ordzhonikidze, Moscow, and Zaporozh'ye Medical Institute

"Studies of the Imidazole Series. LIII. Synthesis and Pharmacological Action of Derivatives of Imidazo(1,2-f)Xanthine"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, No 2, Feb 71, Vol 5, pp 22-26

Abstract: Certain 7-acylmethyl-8-chloro(bromo)theophyllenes react with primary and secondary amines to form 7-acylmethyl-8-alkylamino (arylamino, dialkylamino)theophyllenes; the corresponding hydrazones were obtained from the latter, they are of interest because of their tuberculostatic properties. Also synthesized were a series of 7-acylalkyl-8-bromotheophyllines not previously described in the literature, and various derivatives of 1 H-imidazo(1,2-f) xanthine. Fifty-five compounds were studied.

The derivatives of 1 H-imidazo(1,2-f)xanthine were found to affect

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USSR

KOCHERGIN, P. M., et al, Khimiko-Farmatsevticheskiy Zhurnal, No 2, Feb 71, Vol 5, pp 22-26

the cardiovascular system (Preparation 3 depresses heart action in frogs, rabbits and cats; Preparations 1 and 2 increased contraction amplitude in excized frog hearts). Preparations 1 and increased arterial pressure in rabbits, among other effects.

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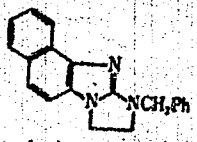
Acc. Nr: AP0045143 Abstracting Service: CHEMICAL ABST. Ref. Code: UR0409

90370j Synthesis of 2,3-dihydro derivatives of imidazo[1,2-a]imidazole systems. Kochergin, P. M.; Povstyanoi, M. V.; Priimenko, B. A.; Ponomar, V. S. (Vses. Nauch.-Issled Khim.-Farm. Inst. im. Ordzhonikidze, Moscow, USSR). *Khim. Geterotsikl. Soedin.* 1970, (1), 129 (Russ). Reaction of 2-haloimidazoles with halogenated alcs., olefin oxides, and 1,2-dihaloalkanes in an alk. medium gave the following: 1-(2-hydroxyethyl)-2-bromo-4,5-diphenylimidazole m. 165–6°; 2-chloro analog, m. 138–9°; 2-chloro-3-(2-hydroxyethyl)naphth[1,2-*d*]imidazole m. 186–7°. These heated with NH_3 or RNH_2 gave: 1-(2-hydroxyethyl)-2-phenylamino-4,5-diphenylimidazole, m. 219–20°; 2-benzylamino-3-(2-hydroxyethyl)naphth[1,2-*d*]imidazole, m. 173–5°, which with $SOCl_2$ gave: 1,5,6-triphenyl-2,3-dihydroimidazo[1,2-*a*]imidazole, m. 199–200°; 2,3-dihydroim-



(I)

idazo[1,2-*a*]benzimidazole (picrate, m. 180–2°); 1-benzyl-2,3-dihydroimidazo[3,2-*b*]naphth[1,2-*d*]imidazole. m. 136–7° (I). Similarly were prepd. 1-(2-bromoethyl)-2-bromo-4,5-diphenylimidazole, m. 147–8°; and 2-chloro-3-(2-bromoethyl)naphth-[1,2-*d*]imidazole, m. 106–7°. G. M. Kosolapoff

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USSR

UDC 547.785.5

POVSTYANOY, M. V., and KOCHERGIN, P. M., Zaporozh'ye Medical Institute; All-Union Scientific Research Chemico-Pharmaceutical Institute imeni S. Ordzhonikidze, Moscow

"Studies in the Imidazole Series. LXXV. Synthesis of 2-Methylmercapto-3-acylmethyl(beta-hydroxyalkyl)naphtho/1,2-d/imidazoles and Their Transformations into Derivatives of Naphtho/1,2-d/imidazo/3,2-b/imidazole and Naphtho/1,2-d/imidazo/3,2-b/imidazoline"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 72, pp 816-819

Abstract: In order to obtain physiologically active compounds 2-methylmercapto-naphtho/1,2-d/imidazole (I) was reacted with α-bromomethyl aryl ketones, ethylene chloro(bromo)hydrins, and ethylene, styrene, or p-nitrostyrene oxide to prepare derivatives of I substituted in the 3-position with $CH_2C(R)=O$, where R is Ph, p-MeC_6H_4, p-$MeOC_6H_4$, p-ClC_6H_4, or p-BrC_6H_4 (IV, V, VI, VII, and VIII, respectively) or with R, where R is $HOCH_2CH_2$, $PhCH(OH)CH_2$, or p-$NO_2C_6H_4CH(OH)CH_2$ (IX, X, and XI, respectively). 2-Mercapto-3-phenacyl- (II) and 2-mercapto-3-(beta-hydroxyphenethyl)naphtho/1,2-d/imidazole (III) yielded IV and X, respectively, on being methylated with MeI. II and III were synthesized by reacting the corresponding 2-chloro compounds with thiourea. Heating of IV-VI

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USSR

POVSTYANOY, M. V. and KOCHERGIN, P. M., Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 72, pp 816-819

and VIII with amines NH_2R (R =Ph, p-MeC_6H_4, p-$MeOC_6H_4$, p-ClC_6H_4, m-MeC_6H_4, m-ClC_6H_4, p-$EtOC_6H_4$, CH_2Ph) in MeOH at 170-5° in an autoclave resulted in substitution of the SMe group with NHR and also dehydration of the intermediate 2-arylamino(benzylamino)-3-acylmethylnaphtho/1,2-d/imidazoles with the formation of naphtho/1,2-d/imidazo/3,2-b/imidazole derivatives XV-XXX (table). The reaction of IX or X with arylamines under the same conditions stopped upon formation of 2-arylamino-3-(beta-hydroxyalkyl)naphtho/1,2-d/imidazoles, of which three (XII-XIV) were synthesized by reacting IX with m-$MeOC_6H_4NH_2$ or 3,4-$Me_2C_6H_3NH_2$ and X with $PhNH_2$. Under the action of $SOCl_2$, XII-XIV underwent cyclization with the formation of the respective naphtho/1,2-d/imidazo/3,2-b/imidazoline derivatives.

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Heat Treatment

USSR

UDC 669.293.5'296'786.018.44:621.785.783

ZVEZDIN, YU. I., POVYSHEV, I. A., PUGACHEV, G. S., YAKOVLEV, V. A.

"Effect of Heat Treatment on the Mechanical Properties of Nb-Zr-N and Nb-Zr-C Alloys"

Metallovedeniye -- V sb. (Physical Metallurgy -- collection of works), No 14, Leningrad, Sudostroyeniye Press, 1970, pp 233-237 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I784)

Translation: A study was made of the problems of heat treatment of dispersion-hardening alloys of the Nb-Zr-N and Nb-Zr-C systems. It was demonstrated that hardening of the alloys is achieved by separation of the interstitial phases in the aging process at 1,000-1,100°. The alloys have maximum strength after special heat treatment consisting in annealing at 1,800° with subsequent aging in the 1,000-1,100° range. There are 4 illustrations, 2 tables, and a 2-entry bibliography.

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"APPROVED FOR RELEASE: 08/09/2001 CIA-RDP86-00513R002202520013-4

USSR

UDC 669.755'822

SEREGIN, V. M., POYARKOV, A. M., LEBEDEV, V. A., NICHKOV, I. F., and PASPOPIN, S. P.

"Thermodynamic Properties of Uranium-Antimony Alloys"

Moscow, Atomnaya Energiya, Vol 32, No 5, May 72, pp 419-421

Abstract: The method of electromotive forces was applied in a study of the thermodynamic properties of liquid solutions and the USb_2 compound and for a more exact definition of the dissolution limit of U in liquid Sb. The results are discussed of experiments in which the emf between U and its two-phase ($L+USb_2$) alloys was measured. The thermodynamic characteristics of U in the USb_2 compound were calculated for 1000°K from the equation $E = 0.820 - 0.26 \cdot 10^{-3}T \pm 0.003$ v, which was found to characterize the linear nature of the emf temperature dependence. Tabulated data show the activity coefficients of U and its solubility in liquid Sb which were calculated from given formulas. Calculated values of U solubility limits in Sb are compared with data in other publications. Three tables, five formulas, five bibliographic references.

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Inorganic Compounds

USSR

UDC 669.8715'822 + 541.134

LEBEDEV, V. A., SEREGIN, V. M., POYARKOV, A. M., NICHKOV, I. F., and RASPOPIN, S. P., Ural Polytechnical Institute Imeni S. M. Kirov, Sverdlovsk

"Thermodynamic Properties of Liquid Alloys in the System Uranium-Gallium"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 47, No 3, Mar 73, pp 712-714

Abstract: Thermodynamic properties of the UGa_3 compound and liquid solutions in equilibrium with this compound have been investigated by means of e.d.s. method in temperature interval 423-811°C. The data agreed well with literature values. Existence of two modifications of UGa_3 has been proposed with characteristic ΔH and ΔS values, constant in a wide range of temperatures. The high temperature form of UGa_3 is more stable and ordered.

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USSR UDC 669.71'782.018.9

POYARKOV, V. G.

"Influence of Certain Factors on Flammability of Aluminum-Silicon Alloys in the Dispersed State"

Probl. inzh. okhrany truda [Problems of Engineering Protection of Labor -- collection of works] (Moscow Institute of Steels and Alloys, 63), Moscow, 1970, 21-29, (Translated from Referativnyy Zhurnal-Metallurgiya, No. 1, 1971, Abstract No. 1 G154 by the author).

Translation: The auto-ignition temperature of powders of binary Al plus Si alloys depends on the content of Si in the alloy and the phase composition of the alloy; it decreases with decreasing particle size and with increasing water vapor content in the medium. The lower concentration limit for explosiveness of aerosols, the luminance ignition temperature, and pressure developed upon explosion are studied for these alloys. 4 figures; 2 tables.

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Powder Metallurgy

USSR UDC 621.762:669.001.5

POYARKOV, V. G., MANUYEV, N. V., and TIMASHOV, V. V.

"Flammability of Powders of Binary Alloys of Aluminum With Silicon In the Aerosol State"

Kiev, Poroshkovaya Metallurgiya, No 7, Jul 70, pp 96-100

Abstract: Despite the wide acceptance of aluminum-silicon alloys in disperse state and powdered metal parts in major industries, little if any is known of the flammability of aluminum-silicon alloys. This paper concerns the characteristics of flammability of binary alloys of the aluminum-silicon system. The self-combustion temperature of the specimen, i.e., the temperature which disturbs the thermal equilibrium of the system and starts the spontaneous warm-up of the substance, is taken as the characteristic of flammability. The self-combustion temperature of powder of binary aluminum-silicon alloys varies with their composition and increases from 447 to 640° C with an increase of silicon from 2.3 to 9.0%. The lowest self-combustion temperature of binary aluminum-silicon alloys is 447° C for alloys with 2.3% silicon. At 12% silicon and higher, the alloy's melting temperature sharply rises. Alloys containing 50% Si did not ignite when specimens were heated to 1000° C. The self-combustion (SC) temperature of powders was also studied as a function of dispersity. The

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USSR

POYARKOV, V. G., et al, Poroshkovaya Metallurgiya, No 7, Jul 70, pp 96-100

SC temperature of this alloy within the dispersity of 0-56 to 313 microns varies within 575 to 742° C. A decrease in particle size lowers the SC temperatures due to the greater specific surface and lower oxidation activation energy. From 30 to 60 tests were carried out for each specimen to determine the lower combustion concentration limit (LCCL) of aerosols. The alloy with 2.3% Si appears to have the lowest LCCL value; its self-combustion temperature is also lower. The flame temperature of aerosols of aluminum-silicon temperatures decreases with an increase in silicon in them.

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