"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

KROPOTKIN, P. N., Corresponding Member of the Academy of Sciences USSR, Geological Institute, Academy of Sciences USSR, Moscow

"Elementary Particle Mass Spectrum and Weak Coupling Constants"

Moscow, Doklady Akademii Nauk SSSR, Vol 206, No 2, 1972, pp 304-306

Abstract: Two postulates are used to search for regularities in the relations of constants: a) any physical constant can in principle be expressed through fundamental constants, b) dimensionless relations close to one ($N \sim 10^0 - 10^1$) are considered nonrandom. Using, in addition, dimensional theory and taking as the fundamental constants electron mass m, elementary charge e, Planck's constant $\hbar$, the velocity of light c, and gravitational constant G, one can show that any dimensionless constant relations are expressed by equations of the form

$$Q = Nm^{2\mu}(e^2)^{\nu}\hbar^{-(\mu+\nu)}c^{-(\mu+\nu)}G^{\lambda} = NK^{-(\mu+\nu)}\beta^{-\lambda}.$$

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KROPOTKIN, P. N., Doklady Akademii Nauk SSSR, Vol 206, No 2, 1972, pp 304-306

Three groups of dimensionless relations can be distinguished:

1) Large coefficients close to 10^{40}, 10^{80}. Since some of these relations have already been considered, they need not be dwelt on in detail.

2) Small coefficients (10^2—10^7) are characteristic of microphysics and have the general form

$$Q = N_1K^p + N_2K^q \ldots + N_nK^r.$$

3) Numerical coefficients $N \sim 10^0$—10^1.

Along with known formulas of Gell-Mann, Okubo, Nambu, et al., an expression of equation type (3) can be suggested for the mass spectrum of elementary

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USSR

KROPOTKIN, P. N., Doklady Akademii Nauk SSSR, Vol 206, No 2, 1972, pp 304-306

particles. Good agreement with experimental values is given by the empirical formula

$$m_x = \left(2\pi a + \frac{3b}{2} + 2c\right) Km = am_\gamma + bm_\mu + cm_\pi,$$

where a = 0, 1, 2, 3; b = 0, 1/2, 1, 2, 3; c = 0, 1. The masses m_μ and m_π are close to the muon and pion masses. Equation (8) expresses, with deviations of 0.1—0.8 percent, the masses of all charged mesons and baryons. Many resonances correspond exactly to this same formula.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--POSSIBLE ROLE OF COSMIC FACTORS IN GEOTECTONICS -U-

AUTHOR--KROPOTKIN, P.N.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, GEOTEKTONIKA, NO. 2, 1970, PP 30-46

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--TECTONIC MOVEMENT, EARTH ROTATION, SEISMICITY, RADIOACTIVE DECAY, GRAVITATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/0054 STEP NO--UR/9056/70/000/002/0030/0046

CIRC ACCESSION NO--AP0103426

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 017 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0108426

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ATTEMPT IS MADE TO DEMONSTRATE THAT GEOLOGICAL AND GEOPHYSICAL DATA ACTUALLY INDICATE THAT IT IS NECESSARY TO FIND SOME EXTERNAL FACTOR, PROBABLY OF A GRAVITATIONAL NATURE, CAPABLE OF CAUSING CHANGES IN THE EARTH'S RADIUS AND THE COMPRESSION OF ITS LAYERS AND CREATING A NONUNIFORMITY OF TECTONIC PROCESSES IN TIME. THE FACTS SUPPORTING THIS CONCLUSION FALL IN FIVE CLASSES: 1) NONUNIFORMITY OF TERRESTRIAL TECTONIC PROCESSES IN THE GEOLOGICAL PAST; 2) NONUNIFORMITY OF THE EARTH'S ROTATION ABOUT ITS AXIS; 3) NONUNIFORMITY OF SEISMIC ACTIVITY, WHICH REVEALS A CORRELATION WITH NONUNIFORMITY OF THE EARTH'S ROTATION AND CHANGES IN THE SOLAR SYSTEM MAGNETIC FIELD; 4) THE GREAT MAGNITUDE OF THE TANGENTIAL (HORIZONTAL) STRESSES, WHICH EXCEEDS THE ESTIMATES CORRESPONDING TO THE EFFECT OF INTERNAL FACTORS (GRAVITATIONAL DIFFERENTIATION, THERMAL CONVECTION, ETC.); 5) SEASONAL CHANGES IN SEISMICITY AND THE RATE OF THE EARTH'S ROTATION. EACH OF THESE IS DISCUSSED IN GREAT DETAIL WITH REFERENCES TO NUMEROUS SOURCES. IT IS SHOWN THAT TECTONIC PROCESSES ARE EVIDENTLY THE RESULT OF TWO MORE OR LESS EQUALLY IMPORTANT FACTORS: THE INTERNAL EVOLUTION OF THE EARTH, ASSOCIATED WITH THE RELEASE OF HEAT DURING THE DECAY OF RADIOACTIVE ELEMENTS, AND THE GRAVITATIONAL DIFFERENTIATION OF THE MATTER OF ITS SILICATE ENVELOPE (SEGREGATION AND SUBSIDENCE OF IRON INTO THE EARTH'S CORE AND THE RISE OF LIGHTER MOLTEN AND SUPERHEATED MASSES TOWARD THE SURFACE) AND EXTERNAL COSMIC FACTORS. THE MOST IMPORTANT OF THESE MAY BE PERIODIC AND APERIODIC CHANGES IN THE GRAVITATIONAL CONSTANT OR CORRESPONDING CHANGES IN THE EARTH'S MASS.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

AP0 018825 GEOPHYSICAL ABST. 12/69 UR0011

275-025 Kropotkin, P. N. Absolyutnyy vozrast nekotorykh granitov Korei [Absolute age of some granites from Korea]: Akad. Nauk SSSR Izv. Ser. Geol., no. 6, p. 115-117, table, 1969.

Results are presented of K-Ar determinations on biotites from four granites from North Korea. The granite collected 3 km north of Hoch'on is Late Proterozoic, 1,200±30 m.y. old. The other three, formerly believed to be Lower Proterozoic or Archean, are Upper Mesozoic: the sample collected 20 km northwest of Namp'o is 118±5 m.y. old, that taken 50 km southwest of Pyongyang is 107±5 m.y. old, and one taken 34 km west-southwest of Pyongyang is 113±5 m.y. old. They thus belong to the time of the so-called Yenshan folding, widely manifested in the Chinese platform. – D.B.V.

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USSR

BONDAREVSKAYA, Ye. A., [redacted], and [redacted], A. A.

"Determining Micro-Mixtures of Aluminum in Silane Chlorides"

Moscow, Zavodskaya laboratoriya, No. 5, 1971, pp 539-540

Abstract: The silane chlorides with which this paper is concerned are the initial product of the synthesis of organic silicon compounds, which often contain an aluminum chloride impurity that lowers the quality of the final product. The process described involves precipitating the impurity, or micro-mixture, from the basic material and then determining the aluminum content from photometric spectroscopy. The reagent used for detecting the aluminum was S chromazurol, and the instrument used for the spectroscopic examination was the SF-10 spectrophotometer. Curves for the absorption spectra of S chromazurol and its complex with aluminum are plotted.

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UNCLASSIFIED PROCESSING DATE--16OCT70

1/2 016

TITLE--EFFECT OF PREPARATIONS OF MYCOBACTERIA AND DIAMINOPIMELIC ACID ON THE GROWTH OF CANDIDA TROPICALIS -U-

AUTHOR-(03)-SURGUCHEVA, N.A., KROSHIN, V.K., SAMOYLOV, P.M.

COUNTRY OF INFO--USSR

SOURCE--PRIKL. BIOKHIM. MIKROBIOL. 1970, 6(1), 79-82

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MYCOBACTERIUM, YEAST, CONTINUOUS CULTURE, CULTURE MEDIUM, VITAMIN, ORGANIC ACID, AMINO ACID

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/0610 STEP NO--UR/0411/70/006/001/0079/0082

CIRC ACCESSION NO--AP0117838

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 016 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0117838

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF THE CULTURE LIQ., EXT., AND HYDROLYZATE OF CULTURES MYCOBACTERIUM SMEGMATIS 77 AND M. RUBRUM 100 ON THE GROWTH OF THE BIOTIN DEFICIENT YEAST C. TROPICALIS IVFM-303, GROWING ON SYNTHETIC MEDIA WITH GLUCOSE OR PARAFFINS WAS INVESTIGATED. THE MYCOBACTERIAL PREPNS. COULD SUBSTITUTED FOR BIOTIN, WHEN ADDED AT 5 VOL. PERCENT IF THE YEASTS ARE CULTURED IN HEXADECANE OR GLUCOSE MEDIA. WITH CULTIVATION ON PARAFFINS C. TROPICALIS GREW WITHOUT BIOTIN. THE STIMULATING EFFECT OF THE MYCOBACTERIAL HYDROLYZATE WAS MUCH GREATER WITH THE ADDN. OF BIOTIN (10PERCENT OF THE OPTIMAL DOSE). 1,5,DIAMINOPIMELIC ACID (DAPA) WAS CAPABLE OF COMPLETE SUBSTITUTION FOR BIOTIN WHEN YEASTS WERE CULTIVATED IN HEXADECANE CONTG. MEDIUM. IN PARAFFIN CONTG. MEDIA GOOD GROWTH WAS FOUND EVEN IN ABSENCE OF DAPA, BUT IN GLUCOSE CONTG. MEDIA C. TROPICALIS DID NOT GROW WITH DAPA. DAPA CAN REPLACE 90PERCENT OF THE BIOTIN REQUIRED FOR C. TROPICALI 303 GROWING ON A GLUCOSE MEDIUM. FACILITY: INST. BIOCHEM. PHYSIOL. MICROORG., MOSCOW, USSR.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 044 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--THE IONOSPHERIC EXPERIMENT ON INTERCOSMOK 2 --U--

AUTHOR-(02)-VEDESHIN, L.A., KROSHKIN, M.G.

COUNTRY OF INFO--USSR

SOURCE--AKADEMIZ NAUK SSSR, VESTNIK, VOL. 40, MAR. 1970, P. 37-42

DATE PUBLISHED--------70

SUBJECT AREAS--SPACE TECHNOLOGY, NAVIGATION, ATMOSPHERIC SCIENCES

TOPIC TAGS--ARTIFICIAL EARTH SATELLITE, SPACECRAFT CARRIED EQUIPMENT, RADIO WAVE PROPAGATION, IONOSPHERE, RADIO TRANSMITTER, SATELLITE ORIENTATION, RADIO SIGNAL/(U)INTECOSMOS 2 SATELLITE, (U)MAYAK RADIO TRANSMITTER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1713 STEP NO--UR/0030/70/040/000/0037/0042

CIRC ACCESSION NO--AP0109681

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 044 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0109681

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF THE ONBOARD EQUIPMENT CARRIED ON THE INTERCOSMOS 2 IONOSPHERIC RESEARCH SATELLITE, LAUNCHED ON DEC. 25, 1969. THE INTERCOSMOS 2 CONSTITUTES A JOINT EFFORT ON THE PART OF THE SOVIET UNION AND VARIOUS OTHER SOCIALIST COUNTRIES TO PERFORM A COMPLEX OF MEASUREMENTS INCLUDING DIRECT PROBE MEASUREMENTS, OBSERVATIONS OF THE PROPAGATION OF RADIO SIGNALS EMITTED BY THE ONBOARD TRANSMITTER, AND STANDARD GROUND IONOSPHERIC OBSERVATIONS. TWO SPERICAL ION TRAPS USED FOR MEASURING THE POSITIVE ION CONCENTRATION ALONG THE SATELLITE ORBIT ARE DESCRIBED, AS WELL AS TWO CYLINDRICAL LANGMUIR PROBES AND A HIGH FREQUENCY PROBE USED FOR MEASURING THE ELECTRON TEMPERATURE, THE ENERGY DISTRIBUTION OF THE ELECTRONS, AND THE ELECTRON CONCENTRATION IN THE IONOSPHERE. THE 'MAYAK' ONBOARD RADIO TRANSMITTER SERVES TO MEASURE THE TOTAL ELECTRON CONCENTRATION BETWEEN THE SATELLITE AND RADIO RECEPTION POINTS ON THE GROUND, AND ALSO TO STUDY THE EFFECT OF ITS RADIATION ON THE OPERATION OF THE SATILLITE PROBE DEVICES. A SYSTEM WHICH INDICATES THE DIRECTION OF THE SATELLITE RELATIVE TO THE SUN IS ALSO PRESENT, AS WELL AS A MAGNETOMETER FOR MEASURING THE THREE MUTUALLY PERPENDICULAR COMPONENTS OF THE GEOMAGNETIC FIELD STRENGTH IN ORDER TO DETERMINE THE ORIENTATION OF THE SATELLITE IN SPACE.

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USSR UDC: 621.791.793

KROSHKIN, V. A., TSAREVSKIY, V. V., KABANOV, N. M., MAKSHANOV, V. S., FEDOSEYEV, B. A., GEYNISH, Z. V., GORKUNENKO, G. N., and GUBANOV, A. S., All-Union Scientific Research, Planning Technological Institute of Chemical Petroleum Equipment

"Electro-Slag Welding With Concomitant Normalization by the Induction Method"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 73, pp 48-51

Abstract: The authors study methods for increasing the resistance to brittle fracture of joints made from low-alloy grades of steel and which were electro-slag welded. The results show that the coincidence of the heat cycles ensures the required impact strength for all joint zones up to 60 mm thick down to -70°C during the pilot introduction of the new technology for the electro-slag welding of the 09G2S grade steel. The developed industrial frequency, induction unit makes it possible to coincide the heat cycles of electro-slag welding with the concomitant normalization of the longitudinal and annular seams on large and small equipment made from cold-resistant and heat-resistant, low-alloy grades of steel. Further study is required to select the optimal heat cycles for electro-slag welding and normalization of joints as a function of thickness and steel grade.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

RUBENCHIK, YU.I., KROSHKIN, V.A., MEDINSKAYA, I.P., FROLOV, O.F., ZHERDEV, A.V., and VAYNTRAUB, S.S., VNIIPTkhimnefteapparatury and Kommunarsk Metallurgical Plant

"High-Strength Sheet Steel 10G2FR"

Moscow, Metallurg, No 8, Aug 71, pp 25-26

Abstract: On the basis of investigating 09G2S and 16GS low-alloy steels, melted in 100-kg induction and 3-ton electric furnaces, the optimum composition of 10G2FR steel was established. At the Kommunarsk Metallurgical Plant two heats were melted in 300-ton open-hearth furnaces by conventional technology and deoxidized with ferrosilicon, silicomanganese, and aluminum. The resulting slabs were rolled into sheet and the mechanical properties of the sheet were determined. Then the sheet was heat treated by heating to 930-950°C water quenching, and tempering at 660°C. In all cases the heat-treated sheet exhibited much greater mechanical properties for all thicknesses tested than were shown by the steel in the hot-rolled state. It was found that 10G2FR steel also possesses good weldability without pre-heating. At the Volgograd Petroleum Equipment Plant imeni Petrov the first batch of fabricated vessels were made of 10G2FR steel and are designated to be used under pressures of 8-55 kg/cm² at temperature down to -40°C.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

K

USSR [illegible]

RUBENCHIK, Yu. I., [illegible], V. A., [illegible], I. P., [illegible], S. S., and SUR[illegible], A. G., [illegible] Kommunarsk Metallurgical Plant

"Work Hardening of 10G2FR Plate Steel"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, [illegible] 55-57

Abstract: A study was made of the effect of thermal hardening and [illegible] of 10G2FR plate steel on its mechanical properties. In the [illegible] hardened state at elevated temperatures the tensile strength of [illegible] does not change up to 400° C, but thereafter decreases [illegible] 450° C the thermally work hardened metal does not differ from [illegible] one. The mechanical properties of 10G2FR steel of different [illegible] hot rolled and thermally work hardened states are presented. [illegible] metals make it possible to produce a sulfurless metal with [illegible] tion of segregated units along the plate section, [illegible] and strength of the metal when it is made into plates of [illegible].

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR UDC: 621.396.2:621.371.1

KROSHKO, A. N.

"Radio Communications on Gas Lines"

Radiosvyaz' na gazoprovodakh (cf. English above), "Nedra", 1970, 88 pp, ill. 32 k. (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11A215 K)

Translation: The author discusses systems of microwave radio equipment for organizing intra-rayon technological radio communications on pipelines and gas enterprises. The technical characteristics of the equipment and the technical and economic indices of microwave radio channels are given as compared with analogous channels of wire type systems, as well as data on current sources, antenna towers, etc. The prospects for development of these systems are discussed. Forty illustrations, twelve tables. L.S.

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USSR UDC: 539.3:534.1

KROSOVSKIY, V. L.

"Effect of Loaded Area on Stability of Smooth Cylindrical Shells Compressed by Local Longitudinal Forces Distributed Along Arcs of Circle"

Dnepropetrovsk, Sb. Resheniye Nekotor. Fiz.-Tekhn. Zadach (Symposium on Solution of Certain Physical-Technical Problems), 1972, pp 53-58 (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2V297 by V.V. Kabanov)

Translation: Tests are described of circular cylindrical shells loaded by axial forces applied to local sections of the circumference. Shells were fabricated by spot welding out of KH18N9N steel plate. Shell radius is 286 mm, thickness 0.25 mm, length 572 mm. Tests were conducted on UMM-50 test machine. Compressive loads were applied by means of devices providing boundary conditions close to free supports. The ends of the shell were lapped. Shells were measured before testing, the mean initial deformations were 0.2-0.3 of the shell thickness. Maximum initial deformations in the zone of the weld were 0.5-0.6 of the shell thickness. Results of tests are presented as experimental critical loads being a function of number and width of loaded sections. It is pointed out that, with the total loaded area equal to one-half the circumferential

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

KROSOVSKIY, V. L., Sb. Resheniye Nekotor. Fiz.-Tekhn. Zadach, 1972, pp 53-58

area, the amplitude of compression stress is 15% lower than the critical stress with uniform axial compression. The critical compression stress increases if the loaded area increases or decreases from the above value. With a very small or very large loaded area the critical compression stress exceeds the one with uniform compression.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

UDC 612.17:612.766

KROSNYKH, I. G.

"Heart Deconditioning Under Long-Term Hypodynamia"

Moscow, Voyenno-Meditsinskiy Zhurnal, No 12, Dec 73, pp 54-56

Abstract: The effects of a 30 day hypodynamia on heart function were studied. The first group of healthy volunteers remained in bed, the second in a room of small dimensions and the third in bed but performing complex physical exercises. Heart size, heart-beat blood volume and contractile function of the myocardium were determined by telerentgenokymogram. In the first group the heart size decreased 20% immediately and one month after the experiment, while blood volume decreased 27.7% immediately and 13.3% one month after. Both returned to normal after two months. This group complained of dyspnea and palpitations during exertion and joint and muscle pain in the lower extremities. The contractile function also changed. In the second group the heart size and blood volume both decreased by 10% immediately after the experiment but returned to normal in one month. The contractile function changed less than in the first group. No changes were observed in the third group. These results are said to indicate heart deconditioning in the first and second groups, confirmed by the lack of heart-beat blood volume increase

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

KROSNYKH, I. G., Voyenno-Meditsinskiy Zhurnal, No 12, Dec 73, pp 54-56

in response to exertion observed in them after the experiment. This is said to confirm the importance of physical training for soldiers, particularly those in professions characterized by limited physical activity.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 028 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--KINETICS OF THE SPONTANEOUS OXIDATION OF URANIUM III IN CHLORIDE SOLUTIONS -U-

AUTHOR-(03)-PERETRUKHIN, V.F., KROT, N.N., GELMAN, A.D.

K

COUNTRY OF INFO--USSR

SOURCE--RADIOKHIMIYA 1970, 12(1), 96-101

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--URANIUM, CHLORIDE, CHEMICAL KINETICS, ACTIVATION ENERGY, OXIDATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1712 STEP NO--UR/0186/70/012/001/0096/0101

CIRC ACCESSION NO--AP0125333

UNCLASSIFIED

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

UNCLASSIFIED PROCESSING DATE--27NOV70

2/2 028

CIRC ACCESSION NO--AP0125333

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SPONTANEOUS OXION. OF U PRIME3PLUS IN AQ. CHLORIDE SOLNS IS A REACTION OF THE 1ST ORDER WITH RESPECTS TO U; AT 22DEGREES, THE HALF CONVERSION TIME T SUBONEHALF INCREASES FROM 0.45 TO 1360 AND THEN DECREASED TO 0.66 HR (THE RESP. VALUES OF THE APPARENT RATE CONST. OF THE REACTION K ARE 4.27 TIMES 10 PRIME NEGATIVE4, 1.4 TIMES 10 PRIME NEGATIVE7, AND 2.91 TIMES 10 PRIME NEGATIVE4 SEC PRIME NEGATIVE1) WHEN THE HCL CONCN. IS INCREASED FROM 10 PRIME NEGATIVE4.1 TO 0.2 TO 9.3M. RESP. AT A CONST. HCL CONCN. (9.5M), K INCREASES FROM 1.84 TIMES 10 PRIME NEGATIVE7 TO 1.6 TIMES 10 PRIME NEGATIVE4 SEC PRIME NEGATIVE1 (AND T ONE HALF DECREASES FROM 1040 TO 1.2 HR) WHEN THE LICL CONCN. IN THE SOLN. IS INCREASED FROM 0 TO 9.5M. A 10DEGREE INCREASE IN THE TEMP. INCREASES THE VALUE OF K BY A FACTOR OF 2 AND 1.7 IN 0.5 AND 6.0M HCL SOLNS., RESP.; THE CALCD. ACTIVATION ENERGIES FOR THE SPONTANEOUS OXIDN. IN 0.5 AND 6.0M HCL ARE 13 AND 9.9 KCAL-MOLE, RESP.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 017 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--EFFECT OF ANIONS ON THE KINETICS OF THE SPONTANEOUS OXIDATION OF URANIUM III IN AQUEOUS SOLUTIONS -U-

AUTHOR-(03)-PERETRUKHIN, V.F., KROT, N.N., GELMAN, A.D.

K

COUNTRY OF INFO--USSR

SOURCE--RADIOKHIMIYA 1970, 12(1), 101-5

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OXIDATION, URANIUM, AQUEOUS SOLUTION, ANION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1713 STEP NO--UR/0186/70/012/001/0101/0105

CIRC ACCESSION NO--AP0125334

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

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CIRC ACCESSION NO--AP0125334

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE APPARENT RATE CONST. OF SPONTANEOUS OXION. OF U PRIME 3PLUS (K) IN 0.5 AND 6.0M HCLO SUB4, 0.25 AND 4.0M H SUB2 SO SUB4, 0.5 MOLAR HCL, 0.5 MOLAR HCL CONTG. CH SUB3 COOH (1 MOLE-1), 1.34 M AC O PRIME NEGATIVE SOLN. AT PH 2; ACO PRIME NEGATIVE AT PH 4.5, ACO PRIME NEGATIVE CONTG. (NH SUB4) SUB2 SO SUB4 (0.5 MOLE-1.) AT PH 4.3, AND 1.3 M ACETATE SOLN. CONTG. EDTA (0.03 MOLE-1.) AT PH 4.3, AT 22DEGREES, HAS VALUES OF 1.91 TIMES 10 PRIME NEGATIVE5, 8.7 TIMES 10 PRIME NEGATIVE4, 8.52 TIMES 10 PRIME NEGATIVE7, 4.66 TIMES 10 PRIME NEGATIVE5, 1.8 TIMES 10 PRIME NEGATIVE7, 1.9 TIMES 10 PRIME NEGATIVE 7, 3.8 TIMES 10 PRIME NEGATIVE6, 1.91 TIMES 10 PRIME NEGATIVE3, 3.75 TIMES 10 PRIME NEGATIVE4 AND 3.8 TIMES 10 PRIME NEGATIVE3 SEC PRIME NEGATIVE1, RESP. IN THE HCLO SUB4 AND H SUB2 SO SUB4 SOLNS., AN INCREASE IN THE TEMP. TO 57-61DEGREES INCREASES THE VALUE OF K BY NEARLY 2 ORDERS OF MAGNITUDE. THE ADDN. OF RONGALITE TO 0.5 M HCL INCREASES SOMEWHAT THE RATE OF OXION. OF U PRIME 3PLUS, WHILE THE ADDN. OF AMMONIUM OXALATE TO DIL. CH SUB3 COOH SOLNS. CAUSES INSTANTANEOUS OXION. OF THE U PRIME 3PLUS TO U PRIME 4PLUS. THE ENERGY OF ACTIVATION FOR THE OXION OF U PRIME 3PLUS IN HCLO SUB4 AND H SUB2 SO SUB4 SOLNS. IS 22 AND 13 KCAL-MOLE, RESP.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

Inorganic Compounds

USSR UDC 546.799.3 226-386+546.791.6 226-386

MEFOD'YEVA, M. P., KROT, N. N., BUGAKOVA, L. N., and GEL'MAN, A. D., Institute of Physical Chemistry, Acad. Sc. USSR

"Synthesis of Some Neptunium (VI) and Uranium (VI) Sulfates"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 17, No 5, May 72, pp 1423-1428

Abstract: Complex sulfates of hexavalent neptunium and uranium were prepared from aqueous solutions of the starting materials. Following complexes were isolated: $K_2NpO_2(SO_4)_2 \cdot 2\ H_2O$, $Cs_2NpO_2(SO_4)_2$, $Cs_2(NpO_2)_2(SO_4)_3$, $[Co(NH_3)_6]_2NpO_2(SO_4)_4 \cdot n\ H_2O$ (n = 5 or 8), $[Co(NH_3)_6]_2UO_2(SO_4)_4 \cdot n\ H_2O$ (n = 5 or 8), $[Co(NH_3)_6]_2(UO_2)_2(SO_4)_5 \cdot 6H_2O$, $[Co(NH_3)_6]_4Cs_6[UO_2(SO_4)_4]_3 \cdot 8\ H_2O$.

It has been established that the bond strength of neptunium and uranium with the SO_4 groups increases when the $Co(NH_3)_6^{3+}$ ions are partially substituted in the internal sphere with the Cs^+ ions. The bond strength of oxygen with

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

MEFOD'YEVA, M. P., et al, Zhurnal Neorganicheskoy Khimii, Vol 17, No 5, May 72, pp 1423-1428

neptunium in disulfate complexes is about the same as in the tetrasulfates; these complexes may coexist in the solutions. Selective isolation of one of these forms in preference to the other depends on the selection of the cation. The frequencies of the antisymmetric vibrations in the IR spectra of uranium and neptunium complexes are about the same for similar composition types.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR UDC 541.138 + 546.799.4

PERETRUKHIN, V. F., KROT, N. N., and GAL'MAN, A. D., Institute of Physical Chemistry, Academy of Sciences USSR

"Formal Redox Potentials of Hepta- and Hexavalent Plutonium in Alkaline Solutions"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, Nov 70, pp 2644-2645

Abstract: The authors measured (to ± 0.002 V) in 1-14 M NaOH the formal redox potentials E_0 for the pair Pu(VII)-Pu(VI), as well as the pair Np(VII)-Np(VI). The results indicate that the oxidizing properties of heptavalent plutonium and neptunium decrease with increased alkali concentration. Neptunium (VII) is thermodynamically stable toward reduction with water at alkali concentrations in excess of 6 M NaOH, while Pu(VII) is unstable over the entire investigated range of alkali concentrations. The potentials of the pair Pu(VII)-Pu(VI) in 1-7 M NaOH are poorly reproducible and depend on the solution stirring rate.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

Inorganic Compounds

USSR UDC 541.51:546.799.3

KROT, N. N., MEFOD'YEVA, M. P., SHILOV, V. P. and GEL'MAN, A. D.

"Heptavalent State of Transuranium Elements. IX. New Methods for Obtaining Neptunium (VII). Disproportionation of Neptunium (VI) in Alkaline Media"

Leningrad, Radiokhimiya 12, No 3, 1970, pp 471-477

Abstract: In dilute alkaline solutions, neptunium (VI) is reversibly oxidized to the heptavalent state by ferricyanide ions. For a constant value of the ionic strength, the equilibrium constant of the reaction is proportional to $[OH^-]^3$. The interaction of neptunium (VI) with silver oxides was studied in alkaline media. It was established that silver suboxide oxidizes neptunium (VI) to an appreciable extent only in solutions with an alkali concentration of more than 8 N. In the presence of AgO, neptunium (VII) is formed with 0.2M KOH. Neptunium (VI) is practically quantitatively oxidized by an excess of AgO when the alkali concentration is 2-3 N. An excess of $KBrO_3$ (at 290-310°) or $KClO_3$ (at 390-400°) will completely and rapidly oxidize neptunium to the heptavalent state in alkali metal melts. The interaction of NpO_2 with the above oxidizing agents is slow and does not go to completion. In some alkaline solutions, neptunium (VI) is to a substantial extent disproportionated into neptunium (VII) and (V). The equilibrium constant of this extremely rapid reaction increases sharply with increasing alkali concentration.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

Thorium and Uranium

UDC 546.799:541.5

USSR

KOMKOV, YU. A., KROT, N. N., and GEL'MAN, A. D.

"Heptavalent State of Transuranium Elements. XI. Reaction of Plutonium (VII) With Some Reducing Agents in Alkaline Solutions"

Leningrad, Radiokhimiya, Vol 12, No 5, 1970, pp 692-697

Abstract: The kinetics of plutonium (VII) reduction in 0.5-4 M KCH by means of iodide and iodate ions was studied spectrophotometrically. The effect of various factors on the rate of these reactions was studied and a possible mechanism for them was proposed. Semiquantitative studies of other reducing agents made it possible to classify them according to their reaction rate. The first group covered the most active reducing agents, including iodides, iodates, hydrogen, ferrocyanide, hydrazine and hydroxylamine peroxides, ascorbic acid, tin (II), and formate and sulfite ions. In the intermediate group the following were included: methanol, ethanol, formaldehyde, and thiosulfate ions. The compounds which react with plutonium more slowly than water reacts comprised the third group and included the nitrile, acetate, and oxalate ions.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR K UDC 542.943:546.791.3

PERETRUKHIN, V. F., KROT, N. N., GEL'MAN, A. D.

"Kinetics of Spontaneous Oxidation of Trivalent Uranium in Chloride Solutions"

Leningrad, Radiokhimiya, Vol 12, No 1, 1970, pp 96-101

Abstract: A kinetic study was made of spontaneous oxidation of uranium (III) at room temperature in chloride solutions in the absence of oxygen in the acidity range from pH = [illegible] to 8.3 M HCl, as well as in 0.5 M HCl with a varying LiCl concentration from 0 to 9.5 M. In each case the reaction rate constant K was calculated, as well as the oxidation half-life of trivalent uranium $T_{1/2}$, connected with the constant by the simple relation $T_{1/2}$ = In 2/K. It was found that under all the investigated conditions the reaction has a first order according to uranium (III) and is complexly dependent on the hydrogen and chloride ion concentration. The oxidation rate is minimal in 0.2-0.5 M HCl (1.5 percent uranium (III) in 24 hours) and increases with an increase in HCl concentration from 0.2 to 8.3 M, as well as with a decrease

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USSR

PERETRUKHIN, V. F., et al., Radiokhimiya, Vol 12, No 1, 1970, pp 96-101

in acidity to pH = 3-4. The oxidation rate also increases with additions of lithium chloride. The reaction rate constants were not found to be heavily dependent on temperature. With a 10°C rise in temperature there is a 1.7-fold increase in the reaction rate in 6 M HCl and not more than a 2-fold increase in 0.5 M HCl. The activation energy was found to be 9.9 kcal/mole for 6 M HCl and not more than 13 kcal/mole for 0.5 M HCl. The oxidation rate in chloride solutions is especially great under conditions where uranium (III) occurs in hydrolyzed or complex forms.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--HEPTAVALENT STATE OF NEPTUNIUM AND PLUTONIUM -U-

AUTHOR-(03)-KROT, N.N., GELMAN, A.D., MEFODYEVA, M.P.

K

COUNTRY OF INFO--USSR

SOURCE--VESTN. AKAD. NAUK SSSR 1970, 40(3), 47-61

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NEPTUNIUM, PLUTONIUM, REDOX REACTION, CHEMICAL VALENCE, HYDROGEN ION CONCENTRATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0825 STEP NO--UR/0030/70/040/003/0057/0061

CIRC ACCESSION NO--AP0116354

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 019 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116354

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTS. PROVING THE EXISTENCE OF NP PRIMEVII AND PU PRIMEVII ARE SURVEYED. REDOX POTENTIALS OF NP PRIMEVII-NP PRIMEVI AND PU PRIMEVII-PU PRIMEVI WERE EXPTL. DETD. AS 0.6 AND 0.95 PLUS OR MINUS 0.15V IN M NAOH. THE POTENTIAL OF NP PRIMEVII-NP PRIMEVI AT PH SMALLER THAN 7 WAS DETD. AS GREATER THAN 2 V.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 006 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--HEPTAVALENT STATE OF THE TRANSURANIUM ELEMENTS. IX. NEW NEPTUNIUM VII COMPOUNDS -U-

AUTHOR-(01)-MEFODYEVA, M.P., KROT, N.N., GELMAN, I.A.

COUNTRY OF INFO--USSR

K

SOURCE--RADIOKHIMIYA 1970, 12(2), 232-7

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NEPTUNIUM COMPOUND, COBALT COMPLEX, COMPLEX COMPOUND, STABILITY CONSTANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1228 STEP NO--UR/0186/70/012/002/0232/0237

CIRC ACCESSION NO--AP0128644

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 006 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128644

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A NEW CRYST. COMPD. OF NP(VII) OF COMPN. (CD(EN) SUB3) NPO SUB5. 6H SUB2 O HAS BEEN ISOLATED. IT IS SOL. IN ALKALI AND WHEN STORED IN A DRY STATE IT GRADUALLY DECOMPS. WITH THE TRANSITION OF NP TO A HEXAVALENT STATE. A SPECTROPHOTOMETRIC STUDY OF COMPLEX FORMATION OF NPO SUB2 PRIME3 POSITIVE IN HCL SOLNS. WITH SULFATE IONS SHOWS THAT AT LESS THAN OR EQUAL TO 7 TIMES 10 PRIME NEGATIVE2 M NA SUB2 SO SUB4 AND MU EQUALS 1.0, THE COMPLEXES (NPO SUB2 SO SUB4) PRIME POSITIVE AND (NPO SUB2 (SO SUB4) SUB2) PRIME NEGATIVE ARE FORMED WITH STABILITY CONSTS. OF 1.0 TIMES 10 PRIME2 AND 1.1 TIMES 10 PRIME4, RESP. CONDITIONS ARE GIVEN AT WHICH NPO SUB2 PRIME3POSITIVE FORMS PPTS. WITH PHOSPHATE AND PERIODATE IONS.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 054 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--INITIAL STAGE IN CAVITATION DAMAGE TO LEAD --U-

AUTHOR-(03)-KROT, YU.YE., BOLSHUTKIN, O.N., PROKHVATILOV, A.I.

COUNTRY OF INFO--USSR

K

SOURCE--FIZIKA METALLOV I METALLOVEDENIE, MAR. 1970, 29, (3), 651-652

DATE PUBLISHED----MAR70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--LEAD, ULTRASONIC IRRADIATION, CRYSTALLIZATION, WATER, LIQUID OXYGEN, TEST METHOD, CAVITATION, SURFACE PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0205 STEP NO--UR/0126/70/029/003/0651/0652

CIRC ACCESSION NO--AP0129461

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 054 UNCLASSIFIED PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129461

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INITIAL STAGES IN THE CAVITATIONAL EROSION OF PB WERE STUDIED BY A METALLOGRAPHIC METHOD, WITH SPECIAL REF. TO THE TYPE OF CHANGE MOST EVIDENT ON THE SURFACE OF THE METAL (THE CAVITATION WAS INDUCED BY MEANS OF ULTRASOUND, BOTH WATER AND LIQUID O BEING USED AS MEDIA). THERE APPEARED TO BE A DIFFERENT MECHANISM OF CAVITATION IN LIQUID O AS COMPARED WITH WATER IN THE INITIAL STAGES, THE DAMAGE OCCURRING WITHIN THE GRAIN RATHER THAN AT GRAIN BOUNDARIES. THIS DIFFERENCE WAS ATTRIBUTED TO RECRYSTALLIZATION PROCESSES WHICH DIFFERED SUBSTANTIALLY IN THE TWO CASES FOR REASONS OF TEMP.

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USSR UDC: 621.317.784.023(088.8)

KARPOV, R. G., GRUZDEV, S. V., OSOKIN, V. I., DUBOVOY, N. D., KROTENKO, V. I., MAKSIMOV, Yu. N.

"An SHF Power Meter"

USSR Author's Certificate No 263006, filed 30 Apr 68, published 8 Jun 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A277 P)

Translation: This Author's Certificate introduces an SHF power meter which contains a self-balancing thermistor bridge with a selective amplifier in the self-balancing circuit, and a heater for the thermistor. As a distinguishing feature of the patent, measurement precision is improved by using a high-frequency oscillator as the thermistor heating source.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

GORBACHEV, B. I.: IVANITSKIY, P. G.: KHOZENKO, V. T.: PASECHNIK, M. V.
(Institute of Nuclear Research of the Ukrainian Academy of Sciences, Kiev)

"Study of Inelastic Scattering of Slow Neutrons by Nickel Specimens of Differing Isotopic Composition"

Kiev, Ukrainskiy Fizicheskiy Zhurnal; April 1973, pp 558-63

Abstract: Inelastic scattering cross sections of slow neutrons by polycrystalline specimens of nickel with a natural isotopic mixture, with an incoherent dispersive isotopic mixture and with the isotopic mixture enriched by the isotope Ni^{62} to $\sim 95\%$, were measured with high statistical accuracy. With respect to these scattering cross sections the frequency distribution functions $g(\Delta E)$ of the normal oscillations of the atoms in a nickel lattice were derived.

The effect of coherence on the accuracy of the derivation of the function $g(\Delta E)$ of the coherent diffusers in the incoherent approximation and the effect of the isotopic composition of the specimens on the function $g(\Delta E)$ were discussed.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

KROTEVICH, N. F.

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JPRS 60767

13 December 1973

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MAGNETIC MICROVARIATIONAL MEASUREMENTS AND APPARATUS FOR MAGNETOTELLURIC RESEARCH

[Selected portions of a book by ~~N. F. Krotevich~~ Magnetics; Novosibirsk, Magnitnyye mikrovariatsionnyye izmereniya i apparatura dlya magnitotelluricheskikh issledovaniy, Russian, Izdatel'stvo "Nauka", Siberian Division, Academy of Sciences of the USSR, Institute of Geology and Geophysics, 1972, pp 95-99, 108-117, 154-188, and 179-182].

Pages 95-99

Chapter 6

ELECTRICAL CIRCUITS AND DESIGNS OF MICROVARIATIONAL STATIONS OF TYPE GG42

Requirements Imposed Upon Designs of Microvariational Instruments of the Magnetostatic Type

Magnetostatic systems, in principle, make it possible to measure magnetic fields to billionths of an oersted, i.e., to those magnitudes at which the natural noises of the measuring system begin to be felt. In optical-mechanical measuring systems, the lower limit of measurement is determined by Brownian molecular motion. In electromechanical systems, such as, for example, in magnetometers with photoelectric conversion, the lower limit of measurement is determined basically by noises in the electronic circuits, and this limit is difficult to decrease to a magnitude less than 10^{-8} oersteds. In practice, in magnetic microvariometers the noise level varies from 10^{-8} to 10^{-7} oersteds.

The main advantages of the magnetostatic method of measurements are the adequately high sensitivity and linearity of the recording apparatus in that range of frequencies which embraces the absolute majority of the known types of geomagnetic disturbances. As experience in microvariation measurements demonstrates, systems based on the magnetostatic principle make it possible to record all types of disturbances of the magnetic field with a very high degree of accuracy, with the exception of high-frequency

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

oscillations (above 5 hertz). The impossibility of measuring high-frequency variations is a consequence of the inertia of the magnetic pickups and is the most essential shortcoming of the magnetostatic method of measurement.

The principle of the magnetostatic method of measurement was developed a comparatively long time ago and adequately completely. However, developments of recent years testify to the fact that many unsolved problems in magnetostatic measurement still remain.

Until recent times, the technique of macrovariation measurements was at a quite low level, not to mention microvariation measurements which did not exist at all.

The development of new magnetostatic systems (by V. F. Shel'ting and V. N. Bobrov) and electrical methods of their stabilization (R. R. Brunelli), which made it possible to achieve a qualitative improvement in the level of magnetovariation measurements and determined a new trend in microvariation engineering, should be considered as great progress in this field of measurements.

In practice, magnetometers with photoelectric conversion have proven themselves well, as in recent years they have occupied the leading place among other microvariation instruments: magnetometers with induction pickup, flux-metering measuring systems, and others. This is explained to a considerable degree not only by their metrological advantages, but also by their simple design and high operating qualities.

From the name "microvariation instrument", which all magnetometers with photoelectric conversion are called, it should not follow, in general, that these instruments are limited by the framework of measurement of microvariations alone. Magnetostatic pickup, which are the basis of these instruments, cannot "sort" the field acting on them into microvariations and macrovariations. The amplitude range of microvariometers is not limited by variations with any intensity existing in practice, but only by the rate with which these variations occur, i.e., upon their period depends the error with which these variations may be measured. The effect of zero drift leads to the fact that long-period variations are distorted more strongly than short-period variations. But in this case, an equality of their amplitudes is assumed. However, the structure of the field is such that the intensity of geomagnetic variations, as a rule, increases with an increase of the period (which is a favorable moment for the use of a microvariometer for the purpose of recording them) and, consequently, it is not quite clear whether long-period variations are distorted more strongly than the variations of a shorter period.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

Adsorption

USSR

UDC: 621.9-496:532.546:546.284

KROTIKOV, V. A., TIKHONOVA, K. P., KHARITONOV, N. P., and DENISOVA, N. A., Institute of Chemistry of Silicates imeni I. V. Grebenshchikov, Leningrad, Academy of Sciences USSR, and Leningrad State University imeni A. A. Zhdanov, Leningrad, Ministry of Higher and Secondary Specialized Education RSFSR

"Preparation of Rigid, Chemically Resistant Porous Bodies on the Basis of the System Polyorganosiloxane-Quartz"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 43, No 6, Jun 70, pp 1229-1234

Abstract: Rigid, chemically inert diaphragms are essential for the study of phenomena involving liquid flow through fine pores. The material of the diaphragms must be rigid to preclude displacement of parts of the diaphragm under the effect of liquid flow. Cylidrical diaphragms that fulfill this condition were prepared from quartz powder and organosilicon lacquer KO-815 (GOST 11066-64). Quartz powder with particle diameters of 16-44, 44-52, or 52-75 μ was combined with the polyorganosiloxane in a ratio of 9:1 by weight, using a toluene solution of the polymer. On evaporation of the toluene, the mixture was subjected to cold pressing in a mold (2000 kg/cm^2 for 10 min for a cylinder with a diameter of 30 mm and height of 90-120 mm). The diaphragm was then kept at 280° for 3 hrs and calcined at 550° for

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

KROTIKOV, V. A., et al, Zhurnal Prikladnoy Khimii, Vol 43, No 6, Jun 70, pp 1229-1234

24-72 hrs. KO-815 (polyphenylsiloxane with a branched structure) decomposed during the thermal treatment, forming SiO_2 that cemented together the quartz. The total porosity of the diaphragms was 20-30%. The mean pore radius, which increased with the quartz particle size and with the length of the time of calcination, ranged from 2.7 μ (quartz particle size 16-44 μ, 48 hrs at 550°) to 6.1 μ (quartz particle size 52-75 μ, 72 hrs at 550°). The diaphragms were chemically stable to prolonged boiling in 0.01 N solutions of KCl and HCl. Comparison of the electrokinetic characteristics (zeta potential and the coefficient of effectiveness α in KCl solutions) of the diaphragms and powdered quartz showed that SiO_2 derived from KO-815 covered the quartz particles in the form of a dense layer and that the surface of this layer had a structure different from that of quartz.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 029 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THERMAL HARDENING OF COMPOSITIONS CONTAINING POLY(METHYLPHONYISILOXANE) AND FINELY DISPERSED LAMINATED SILICATES -U-

AUTHOR-(05)-DENISOVA, N.A., KROTIKOV, V.A., KHARITONOV, N.P., FILINA, L.V., NEFEDOV, V.D.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(2), 362-7

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--HARDNESS, SILOXANE, LAMINATED PLASTIC, TALC, ASBESTOS, ALCOHOL, POLYMER CROSSLINKING, THERMAL EFFECT, BUTANOL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0623 STEP NO--UR/0363/70/006/002/0362/0367

CIRC ACCESSION NO--AP0119535

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 029 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119535

ABSTRACT/EXTRACT--(U) GP-O- POLY(METHYLPHENYLSILOXANE) (I) WERE HARDENED IN THE PRESENCE OF FINELY DIVIDED MUSCOVITE, TALC, ASBESTOS, AND MONTMORILLONITE (WHICH HAD BEEN TREATED WITH BOILING BUOH, OCTANOL, OR DECANOL AT 180-300DEGREES). DTA INDICATED THAT THE HYDROXIYLATED SURFACE OF THE LAMINATED SILICATES REACTED WITH ALCS. ONLY AT LARGER THAN OR EQUAL TO 200-300DEGREES. THUS, THE SIOH GROUPS PARTICIPATED IN CONDENSATIONS OCCURRING DURING THE HARDENING OF I. THERMAL HARDENING OF I WITHOUT LAMINATED SILICATES PROCEEDED WELL ONLY AT LARGER THAN OR EQUALS TO 200-300DEGREES. THE THERMAL HARDENING OF I WAS ACCOMPANIED BY EVOLUTION OF GASEOUS PHME, C SUB6 H SUB6, AND CO SUB2. A CROSSLINKING MECHANISM FOR THE HARDENING OF I WAS PROPOSED. FACILITY: INST. KHIM. SILIKAT. IM. GREBENSHCHIKOVA, LENINGRAD, USSR.

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Acc. Nr: AP0043735 Abstracting Service: 5/70 Ref. Code:
INTERNAT. AEROSPACE ABST. UR 0141

KROTIKOV V. D.

A70-23132 Certain problems of constructing radio interferometers with autonomous reception (Nekotoryye voprosy postroeniia radiointerferometrov s avtonomnym priemom). V. A. Alekseev, E. D. Gatelyuk, V. D. Krotikov, V. N. Nikonov, V. S. Troitsku, and A. I. Chiken (Gor'kovskii Gosudarstvennyi Universitet, Gorki, USSR). *Radiofizika*, vol. 13, no. 1, 1970, p. 5-15, 24 refs. In Russian.

IZVUUZ

Discussion of the design principles of astronomical radio interferometers which feature autonomous reception—i.e., the absence of coupling between the reception points. The data are recorded at each reception point in conjunction with reference signals from frequency standards. The sensitivity of correlation devices which process data in digital form or in computer binary code is analyzed, and attention is given to possible improvement in high-resolution radio interferometers. T.M.

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USSR

UDC 621.317.773

ALEKSEYEV, V. A. and KROTIKOV, V. D., Applicant: Scientific Research Institute of Radiophysics.

"Apparatus for Generation of Radio Interferometer Coherent Signals"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 1, 1970, p 65, Author Certificate No 258454 Class 21e.

Abstract: This author certificate introduces a device for generating radio interferometer coherent signals. The device consists of two receiving channels, each consisting of an amplifier, a bias cell and a generator. To decrease the effect of fluctuation of the electrical lengths of the coupling lines between antennas, the generator output of the first receiving channel is connected through the coupling line to the input of the bias cell of the second receiving channel, and also to the input of the bias cell of the channel, while the generator output of the second receiving channel is connected to the second input of the bias cell of the first channel and to the second input of its channel.

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Acc. Nr.: AA0040445

Ref. Code: UR0182

JPRS 52248

UDC 621.317.773

USSR

ALEKSEYEV, V. A. and KROTIKOV, V. D., Applicant: Scientific Research Institute of Radiophysics.

"Apparatus for Generation of Radio Interferometer Coherent Signals"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 1, 1970, p 65, Author Certificate No 258454 Class 21e.

Abstract: This author certificate introduces a device for generating radio interferometer coherent signals. The device consists of two receiving channels, each consisting of an amplifier, a bias cell and a generator. To decrease the effect of fluctuation of the electrical lengths of the coupling lines between antennas, the generator output of the first receiving channel is connected through the coupling line to the input of the bias cell of the second receiving channel, and also to the input of the bias cell of the channel, while the generator output of the second receiving channel is connected to the second input of the bias cell of the first channel and to the second input of its channel.

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USSR UDC 621.365:530.145.6:681

ALEKSEYEV, V. A., KROTIKOV, V. D., Scientific Research Institute of Radio [illegible]

"A Device for Shaping Coherent Radio Interferometer Signals"

USSR Author's Certificate No 256454, Filed 8 Jan 68, Published [illegible] (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D498 P)

Translation: This Author's Certificate introduces a device for shaping coherent radio interferometer signals. The device contains two reception channels, each of which is made up of an amplifier, mixer and oscillator. As a distinguishing feature of the patent, the effect of fluctuations in the electrical lengths of the communication lines between antennas is reduced by connecting the output of the oscillator of the first reception channel through a communication line to the input of the mixer in the second reception channel and simultandously to the input of the mixer in the given channel, while the output of the oscillator in the second reception channel is connected through a communication line to the second input of the mixer in the first channel and simultaneously to the second input of its own channel.

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USSR UDC 629.78.015:533.6

GLUSHKOV, N. N., KROTKOV, D. P., and SHKADOV, L. M.

"Variation of Aerodynamic Shape for Decreased Resistance"

Uch. Zap. Tsentr. Aerogidrodinam. In-ta (Scientific Writings of the Central Aerohydrodynamics Institute), Vol 3, No 2, 1972, pp 11-20 (from Referativnyy Zhurnal--Raketostroyeniye, No 8, 1972, Abstract No 8.41.86)

Abstract: A direct method of improving the aerodynamic characteristics of aircraft by means of a small variation of its surface is proposed. In the limits of linear theory with the use of inverse flow theorems an expression for variation of local angles of attack, leading to decreased resistance of an aircraft while preserving size, lift, longitudinal moment, etc., was examined. Pressure distribution on the surface of a specific shape of assembled bodies, which is necessary to know for plotting the improving variation, should be found experimentally. The effect of viscosity forces and the nonlinear relationship of pressure to local angle of attack can be analyzed on individual examples of plane flow. It was shown that in all the examined cases, obtained in the limits of linear theory, the expression for the improving variation provides deformation of the surface in the direction corresponding to decreased resistance. Author's view, 2 figures, 2 bibliographical references.

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USSR UDC 533.692/.661.013

GLUSHKOV, N. N., KROTKOV, D. P., SHKADOV, L. M.

"Variation in the Aerodynamic Shape of a Body Leading to a Decrease in Its Resistance"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamic Institute), 1972, Vol. 3, No. 2, pp 11-20 (from RZh-Mekhanika, No 8, Aug 72, Abstract No 8B438)

Translation: A direct gradient method is proposed for improving the aerodynamic characteristics of an aircraft by a small variation in its surface. An expression is obtained for the variation in local angles of attack which lead to a decrease in the resistance of the pressure of the aircraft while conserving volume, lift, longitudinal moment, etc. An expression is obtained within the framework of the linear theory using a theorem on the reversibility of the flow. It is proposed that the pressure distribution over the surface of bodies selected in a certain way, which must be known for constructing the improving variation, be found experimentally. The effect of viscosity forces and of the nonlinear dependence of pressure on the local angle of attack is analyzed in individual examples of a plane flow. It is shown that in all cases considered the expressions obtained

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GLUSHKOV, N. N., et al, Uch. zap. Tsentr. aero-gidrodinam. in-ta, 1972, Vol. 3, No. 2, pp 11-20

within the framework of the linear theory for improving the variation ensures deformation of the surface in a direction corresponding to a decrease in resistance. Resume.

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KROTKOV, F., Academician, Academy of Medical Sciences USSR

"Doctors Guard Nature"

Moscow, Leninskoye Znamya, 13 Jun 72, p 4

Abstract: Soviet hygienists play an important role in environmental protection. They study the formation of pollutants, how they get into the environment, and their effects on animal and plant life. The first step is the establishment of compulsory limits on concentrations of pollutants in the air, water, and foods, as well as the development of countermeasures. Adequate controls for sulfur dioxide and aerosol pollution by ferrous and non-ferrous metal industries have been proposed. Carbon monoxide pollution remains the most serious hygienic problem. The State Committee of Soviet Ministers USSR for Science and Technology estimates a 25 percent reduction of air pollution by 1980. It is not realistic to prohibit liquid industrial wastes or insist on their complete purification. Strict controls on the concentration of pollutants in liquid wastes must be maintained until feasable methods for the utilization of these wastes are developed. In the Soviet Union obligatory limits, PDKs [predel'no dopustimyye kontsentratsii; maximum permissable concentrations],
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KROTKOV, F., Leninskoye Znamya, 13 Jun 72, p 4

have been established for 114 atmospheric pollutants, 24 of their most common combinations, and 294 water pollutants. Antipollution measures are complex: Harmful substances whose effects are difficult to determine are emptied into the environment in still unknown ways.

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UDC 614.7

KROTKOV, F. G., Professor, Moscow

"Scientific and Technical Progress and Maintenance of a Clean Environment"

Moscow, Gigiyena i Sanitariya, No 10, Oct 70, pp 3-7

Abstract: A general review is presented of ecological changes resulting from man's activities. The scientific and technological revolution has had profound effects on the work and living conditions of man, as well as on our hygienic and sanitary environment. The industries generating the most pronounced environmental effects are the petrochemical and agrochemical enterprises and the coal, chemical, and automobile industries. The air, water, and soil are being contaminated by synthetic and organic materials, the effects of which on man are not yet completely known. Another grave problem for humanity is the increased tempo of life in industrial societies, with its damaging psychophysiological effects on man. It appears that the mechanisms of biological and social adaptation no longer suffice. Another source of contamination of our environment stems from the use of radioactive materials and sources of ionizing radiation in industry and agriculture, as well as in medicine and scientific research. The World Health

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KROTKOV, F. G., Gigiyena i Sanitariya, No 10, Oct 70, pp 3-7

Organization has for many years tried to establish universal regulations and standards for maintaining acceptable safety margins in all of these areas. Much will have to be done on a national level as well. The control of DDT and food additives is cited to illustrate what is being done about such problems in various countries.

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Public Health, Hygiene and Sanitation

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KROTKOV, F., Professor, Academician AMN SSSR

"Television Rays"

Moscow, Sovetskaya Rossiya, 7 Feb 70, p 4

Abstract: Soviet scientists have set 100 microroentgens of radiation an hour as the maximum permissible dose at a distance of 10 cm from a television set. A recent study of Soviet-produced television sets conducted by the Institute of Radiation Hygiene showed that only the Rubin 110 and Rubin 111 emitted 100 microroentgens an hour from certain parts of the screen at a distance of 10 cm. In all the other sets, the dose rate was from 20-50 microroentgens an hour. The Institute advises both for the sake of radiation safety and eye health that viewers sit no closer to the screen than 1½ to 2 meters and that adults and children spend no more than 3-4 and 2-3 hours a day, respectively, watching television programs.

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UDC 389.0.009.01(4:103):621.317.335

KROTKOV, I. N. and GUSHCHINA, T. M.

"Unity of Electric Capacitance Measurements in Member Countries of the Council of Mutual Economic Aid"

Moscow, Izmerital'naya Tekhnika, No 6, 1972, pp 9-12

Abstract: A report is given on the state of electric capacitance measurements in member countries of the Council of Mutual Economic Aid. A description is given of the verification system, developed in the USSR, which forms the basis for the provision of measurement unity among the member countries; also described are the methods and equipment used for applying the upper element of this verification system. Results of comparisons, among the member nations, of standard capacitors on the 10^5 and 10 picofarad level are presented. Accomplishments over the past five years include an increase of exactness, to the extent of one or two orders of magnitude, and correctness in the reproduction of electrical units (capacity, resistence, inductivity), as well as unity in the transmission of unit size within a rather large range of nominal values and frequencies. 5 tables. 3 references.

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USSR UDC: 621.396.69:621.318.4

KROTKOV, I. N., KUROCHKIN, F. Ye.

"Effect of Winding Configuration on the Q of Toroidal Coils"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 36-41 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V389)

Translation: The authors consider the problem of finding the ratio between coil dimensions which minimizes winding resistance for a given inductance. Optimum ratios are found for single-layer toroidal coils of circular and rectangular cross section. Two illustrations, bibliography of one title. N. S.

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UDC: 621.317.33

KROTKOV, I. N., KLEBANOV, M. Ya., GUR'YANOV, V. S., MCHEDLIDZE, G. V.

"Methods and Equipment for Precision Measurements of the Parameters of Resistors on Alternating Current"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. Izmeraniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 33-37 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A359)

Translation: The paper discusses briefly the problems which arise in precision measurements of the parameters of resistors on alternating current: "absolute" reproduction of the unit dimension of resistance (the ohm), retention and transmission of the unit dimension on alternating current, and determination of the residual parameters of resistors. It is pointed out that it would be advisable to develop a set of equipment for measuring the parameters of resistors with fairly high precision over a wide range of frequencies and resistances. Bibliography of 7 titles. E. L.

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UDC: 621.317.73

KROTKOV, I. N., SOKOLOV, B. S.

"Measures of Inductance and Mutual Inductance of 1 nH-1 μH"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 42-45 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A297)

Translation: The authors have developed standards for small inductances and mutual inductances based on devices which are coaxial sections with end walls; an advantage of such devices is absence of the effect of eddy currents and the effect of proximity. Structural diagrams are given as well as computational formulas for a single-turn and multiple-turn inductance standard and for a mutual inductance standard; a design is given for a mutual inductance standard which assures a low temperature coefficient and high stability. A circuit is given for connecting a mutual inductance standard to check a four-terminal bridge. Four illustrations, bibliography of two titles. E. L.

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[illegible]

KROTKOVA, Ye. Ye., POCOLINA-ALEKSEYEVA, N. M., KREMLEV, [illegible]
I. S.

"Properties and Structure of 40Kh Steel with Thermoultrasonic [illegible]

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 12, [illegible]
64-65

Abstract: A study was made of electrically smelted steel of the [illegible] composition: 0.43% C; 0.64% Mn; 0.33% Si; [illegible] Cr; 0.05% Ni; [illegible] and 0.020% S. The application of ultrasound (19-20 kc, [illegible]) in the process of tempering at 100-500° C results in higher [illegible] resistance of 40Kh steel, which can be explained by the [illegible] martensite decomposition and the state of the carbide [illegible] tempering does not eliminate the irreversible temper brittleness [illegible] the extent of the zone -- 200° C as compared to 350° C [illegible] Minimum impact toughness is observed at 350° C regardless of the [illegible] tempering.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

UDC [537.226+537.311.33]:[537+535]

VALKYAVICHYUS, R. A., KROTKUS, A. I., and REPSHAS, K. K.

"Transverse Magnetoresistance in n-Ge in Strong Electric Fields"

Lit. fiz. sb. (Collection of Lithuanian Works on Physics), 1971, 11, No 2, pp 247-252 (summaries in Lithuanian and English) (from RZh-Fizika, No 10, Oct 71, Abstract No 10YE734 by authors)

Translation: The authors present and explain theoretically the experimental results of a study of transverse magnetoresistance of n-type Ge as a function of electric field intensity at the temperature of liquid nitrogen in the case in which $j \parallel \langle 111 \rangle$ and the magnetic field is perpendicular to the (110) plane of the specimen.

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UDC 678.029+661.66

ANDRIANOV, K. A., SOSEDOV, V. P., PATALAKH, I. I., KROPOV, A. I., RAZUMOV, L. L., and KAVEROV, A. T.

"Some Features of the Formation of Novel Thermally Stable Reinforced Plastics"

Moscow, Doklady Akademii Nauk SSSR, Vol200, No 6, Oct 71, pp 1343-1344

Abstract: One of the most important problems in the area of chemistry and physics of solid bodies concerns development of mechanically strong thermally stable materials. The reinforced materials currently available are either not sufficiently strong or thermally instable. With this in mind, experiments were carried out in which glass fiber KN-11 and a hydrocarbon fiber were treated with siliconorganic polymer (polymethyloxydiphenylproganesiloxane) followed by thermal activation in a reducing medium and in hydrocarbon medium. In this fashion materials with high specific strength at elevated temperatures were obtained, exceeding considerably the properties of known construction materials.

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USSR

UDC 616.155.1-073.155:612.014.426

GOLOBOKIN, N. K., and KROTOV, A. V., All-Union Scientific Research Instrument of Medical Instrumentation

"The Effect of a Brief Exposure to a Magnetic Field on the Blood Sedimentation Rate in Health and Disease"

Kiev, Vrachebnoye Delo, No 6, 1973, pp 12-14

Abstract: Duplicate blood samples collected in identical capillary tubes from 44 patients with disturbed cerebral circulation and hypertension (group I), 22 patients with hepatitis and cholecystitis (group II), and 36 healthy individuals (group III) were placed in two separate containers with screens shielding the samples from random, external magnetic fields. In one container, an alternating demagnetizing magnetic field (DMF) of 200-400 oersted and 50 c/sec was generated for 10-15 sec. Blood sedimentation readings taken 1 hr later revealed a decelerated sedimentation rate in 93% of group I samples, 64% of group II samples, and 27% of group III samples. The difference ranged from 1 to over 10 mm/hr or 13-100% as compared with the controls. The average deceleration was 2.7 mm/hr in group I, 1.14 cm/hr in group II, and 0.19 mm/hr in group III. It is concluded that after in vitro exposure to the DMF, the difference in the

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GOLOBOKIN, N. K., and KROTOV, A. V., Vrachebnoye Delo, No 6, 1973, pp 12-14

deceleration of the sedimentation rate of blood from patients and from healthy individuals is signficant and may be of diagnostic value.

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KROTOV, I.I.

II-6. CONDITIONS OF ORIENTED GROWTH OF CADMIUM TELLURIDE FOR CRYSTALLIZATION FROM THE VAPOR PHASE

[Article by A. Y. Yanyukov, I. I. Krotov, Ye. A. Mikolyuk, Moscow; Novosibirsk, III Simposium po Protsessam Rosta i Sinteza Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 16]

The epitaxial layers of cadmium telluride on different substrates were grown by synthesis from the elements cadmium and tellurium in a hydrogen flow. A study was made of the effect of the temperature of the substrate, the flow rate of the gas carrier, the temperature gradient in the crystallization zone and the composition of the vapor-gas mixture on the process of epitaxial growth and perfection of the crystal structure of the films obtained. The supersaturation factor was estimated by the variation of the isobaric potential $\Delta Z = -RT(\Pi/K_p)$ where $\Pi = P_{Cd}(P_{Te_2})^{1/2}$ is the product of the partial vapor pressures of the components.

Oriented crystallization of cadmium telluride on the crystal-substrate is insured by the optimal relation between the temperature and supersaturation related by the distribution law of a defined type. The nature of this distribution is determined by the cooling rate of the vapor-gas mixture, the sufficiently broad range of values of which in the presence of a linear temperature gradient creates unfavorable conditions for the epitaxial growth of CdTe with respect to the entire length of the crystallization zone. The variation of the relation of the partial pressures of Cd and Te_2 in vapor over the growing film has a significant effect on the growth rate which is maximal in $P_{Cd}:P_{Te_2} = 2$; however, the nature of the distribution $\Delta Z = f(T)$ does not vary here.

The most perfect epitaxial layers of cadmium telluride were grown at cooling rates of 19.6-23.6 deg/sec. The supersaturation values in the temperature range of 580-780°C were 0.05-2.00 kcal/mole. The ratio of $P_{Cd}:P_{Te_2}$ changed from 0.5 to 9.0 which permitted CdTe films to be obtained of both the p and n-types of conductivity with a broad set of properties.

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V-14. KINETICS OF THE EPITAXIAL GROWTH PROCESS OF SOLID SOLUTIONS OF $Cd_xHg_{1-x}Te$ UNDER ISOTHERMAL CONDITIONS

[Article by I. I. Krotov, Ye. A. Mikolyuk, A. V. Vanyukov, Moscow; Novosibirsk, III Simposium po Proteessam Rosta i Sintezu Poluprovodnikovykh Kristallov i Plenok, Russian, 12-17 June, 1972, p 63]

The cadmium telluride obtained by oriented crystallization on fluoride and gallium arsenide and the source of the material which was powdered mercury telluride were at a defined distance from each other under isothermal conditions.

The study was performed by varying the process temperature, the distance between the source and the substrate, the duration of the experiment and the subsequent measurement of the thicknesses of the specimens obtained with an accuracy of ± 0.1 microns. It was demonstrated that the temperature dependence of the thickness of the epitaxial layer in the 500-650°C range is described quite well by an equation of the type

$$\delta = A \exp(-B/T),$$

where the coefficients A and B are defined primarily by the substrate thickness.

As a result of a study of the time functions it turned out that the growth rate of the epitaxial layer is not constant with time and the corresponding curves have S-type shape with a characteristic retarded growth section in the initial stage of the process (incubation period). In general form the curves obtained are described well by the equation

$$\delta = A(t - I)^{1/2} + \delta_n$$

where δ_n is the thickness of the epitaxial layer formed during the incubation period; A is the coefficient which depends on the substrate thickness. The variation in thickness of the epitaxial layer during the growth process is determined by the diffusion processes occurring in the solid phase and, after subtracting the incubation period, is proportional to the square root of the time.

A study was made of the effect of the excess partial pressure of mercury. The effect of the substrate on the topography of the $Cd_xHg_{1-x}Te$ film surface and the degree of perfection of their crystal lattice were investigated.

KROTOV, I.I.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

Hydraulic and Hydrostatic

USSR

UDC: 551.46.086

FEL'DMAN, A. Ye., KUMAN, V. V., KROTOV, V. A., PYANTKOVSKAYA, E. P.

"A Device for Measuring Wind Parameters From on Board a Moving Ship"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 6, Feb 72, Author's Certificate No 328390, Division G, filed 28 Jul 69, published 2 Feb 72, p 137

Translation: This Author's Certificate introduces: 1. A device for measuring wind parameters from on board a moving ship. The device contains a wind gauge connected to a device for converting wind speed and direction to angle of turn. The conversion device is connected to a vector plotter. The measurement device also contains instruments which relay the ship's course and velocity. As a distinguishing feature of the patent, the device is designed for vector averaging of the true wind speed and direction. For this purpose it is equipped with two averaging blocks, each of which is made in the form of an integrating drive connected through an electromagnetic clutch to a linearly rotating transformer and a device for resetting readings to zero. The device is also equipped with programming and commutating devices. The averaging blocks are connected between the output

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

FEL'DMAN, A. Ye. et al., USSR Author's Certificate No 328390

circuits of the sine-cosine rotating transformer of the central instrument and the vector plotting inputs. The power supply for the electromagnetic clutches is connected through the commutating device, which is controlled by the programming device. The output circuits of the sine-cosine rotating transformer of the central instrument are connected to the inputs of the integrating drives through controlled phasing devices. Connected between the outputs of the linearly rotating transformers of the averaging blocks and the inputs of the sine-cosine rotating transformer in the vector plotter are scaling rotating transformers and resistance-controlled transformers. 2. A modification of this device distinguished by the fact that provision is made for storage of the average vector values found for the wind parameters and for relaying these parameters in the next averaging period. The power supply for the elements of the vector plotter and the linearly rotating transformer of the averaging block is connected through the commutating device controlled by the programming device. The programming device actuates the commutating device at the end of the averaging period before reset of the readings on the averaging block.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

KROTOV, V. P.

JPRS 56030
18 May 72

UDC 617-001.16-07:616.12-008.1-072.7

CARDIAC ACTIVITY CHANGES IN DOGS DURING ACUTE OVERHEATING AND THE PROGNOSTIC IMPORTANCE OF ELECTROCARDIOGRAPHIC DATA

[Article by [illegible], [illegible], [illegible], [illegible] and V. P. Krotov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 2, March-April 1972, pp [illegible], submitted for publication 5 February 1971]

Abstract: Anesthesized dogs were exposed to acute overheating and their cardiovascular changes were examined in comparison with respiratory variations. The prognostic significance of the ECG ventricular spikes was noted during the period preceding the development of heat-induced collapse. The changes in the voltage of the ECG waves during acute overheating were shown to be associated with several factors, the most important of which were adrenergic effects during early heating and anoxia during late heating periods. The paper describes the periods of overheating and the cardiac arrhythmias and discusses the cardiovascular disturbances accompanying hyperthermia.

During space flights acute overheating can arise in different situations, especially during emergency descents of biological satellites carrying experimental animals incapable of independently leaving the ship's cabin immediately after landing.

Man is subjected to overheating when working in hot shops, in closed cabins in the case of malfunctioning of heat-regulating systems, and also when performing considerable physical work in insulating suits and spacesuits.

The experimental investigation of overheating in human subjects yielded valuable information on tolerance to heat stresses and on the influence of hyperthermia on man's performance (M. Ye. Marshak and N. D. Rozenbaum; D. A. Chevelyubskiy; A. A. Dorodnitsina and Ye. Ya. Shepelev; Ye. Ya. Shepelev; S. M. Gurodinskiy, et al., and others). However, man's overheating in an experiment usually is stopped when he reaches the point of swooning; this limits

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

KROTOV, V. P.

JPRS 56030
18 May 72

UDC 612.014.461.3+612.015.31]-06:612.766.2

STUDY OF WATER-MINERAL METABOLISM DURING RESTRICTED MOTOR ACTIVITY

[Article by V. P. Krotov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 2, March-April 1972, pp 66-74, submitted for publication 21 December 1970]

Abstract: The hypokinetic effect on the pattern of changes in fluid and electrolyte metabolism was studied in rabbits. On the first day of hypokinesia plasma liquefaction was noted, accompanied by a decrease in the hematocritic index and the hemoglobin concentration. The plasma volume as calculated by the Strauss method was found to increase by 5.1%. During the three subsequent weeks of hypokinesia fluid redistributions occurred between the plasma and red blood cells. The potassium and sodium concentration in the plasma decreased with lengthening of hypokinesia. The pattern of changes in the plasma calcium concentration [illegible] the variations in total blood serum protein. [illegible] to be one of the factors which are responsible for the pronounced disturbances in the plasma calcium concentration in hypokinetic animals. The [illegible] in various myocardial parts of the experimental rabbits varied in different ways. A study of variations in potassium and sodium content in the femur extensor and the back long muscle revealed no significant disturbances in the changes in electrolyte content. This may be attributable to a generalized pattern of the electrolyte metabolism disturbances. The fluid redistribution in rabbits exposed to hypokinesia was studied by the indicator dilution method. The data obtained show the lack of dehydration of animals during their exposure to hypokinesia.

Investigations made during recent years have established the influence of a marked restriction of motor activity on functioning of the neuroendocrinal

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

KROTOV, V. P.

JPRS 55689
12 Apr 1972

UDC 612.461.6:546.32"52"-06:612.821.7-064

DIURNAL DYNAMICS OF POTASSIUM EXCRETION IN HUMAN URINE DURING PROLONGED WAKEFULNESS

[Article by A. A. Zykova, L. A. Lugovoy and V. P. Krotov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 6, No 1, pp 62-66, 1972, submitted for publication 5 July 1971]

Abstract: Diurnal variations in human urine potassium excretion were investigated in ten test subjects confined to an isolation chamber but adhering to a normal work-rest cycle during a 72-hour period of continuous wakefulness. Sleep deprivation brought about considerable disturbances in diurnal potassium excretion which varied in their pattern and level from subject to subject. In some cases a displacement of minimum and maximum points prevailed; in others there was a decrease in the amplitude of diurnal variations. The results reveal an appreciable variability in functioning of circadian periodic systems in different subjects. This result can be applied in spacecrew selection with respect to biorhythmological parameters.

It has been established that the excretion of potassium in the urine transpires with a clearly expressed endogenous diurnal cyclicity with maximum values during the daytime hours and minimum values during the nighttime hours (O'Connor; Hertz; Simpson and Lobban; Lyaonau and Dzenisevich, and others). That it is of an endogenous nature is indicated by the prolonged retention of the initial period of this cyclicity when the length of day is changed; under such conditions a restructuring of the diurnal rhythm of potassium excretion has been observed relatively rarely and transpired over a long period (Lewis, et al.; Lobban; Mills and Stanbury, Simpson and Lobban). In such cases the rhythm of potassium excretion is far more stable than the rhythm of change in body temperature (Lobban, Mills and Stanbury), diuresis, and excretion of sodium and chlorides (Simpson and Lobban, Mills and Stanbury). After transmeridional flights the restructuring of the diurnal rhythm in potassium excretion occurs more easily and transpires relatively more rapidly than in cases with a modified duration of day (Lafontaine, et al.). During a 45-day experiment with the use of accumulated social time sensors it was

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 017 UNCLASSIFIED

TITLE--DIRECT MEASUREMENT OF GIBBS ELEASTICITY OF LIQUID FILMS -U- PROCESSING DATE--27NOV70

AUTHOR-(02)-KROTOV, V.V., RUSANOV, A.I.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(4), 866-8

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--TEST METHOD, SURFACE FILM, MODULUS OF ELASTICITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1271 STEP NO--UR/0020/70/191/004/0866/0868

CIRC ACCESSION NO--AT0128685

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 017 UNCLASSIFIED

CIRC ACCESSION NO--AT0128685 PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE GIBBS ELASTICITY WAS STUDIED FOR FILMS OF AQ. SOLNS. OF NA DODECYL SULFATE USING A METHOD FOR MEASURING THE ELASTICITY OF FILMS ISOLATED ON A HORIZONTAL PT FRAME WITH A MOVABLE MEASURING THREAD 40 MU IN DIAM. THE MEASUREMENTS WERE MADE AT 20DEGREES AND THE EXPTL. VALUES OF THE ELASTICITY MODULUS WERE TABULATED ALONG WITH VALUES CALCD. BY THE FORMULAS GIVEN EARLIER (A. SHELUDKO, 1966; M. VAN DEN TEMPEL, ET AL., 1965). FOR A FILM THICKNESS OF 1-4 MU AND CONCNS. OF 0.4-1.3 TIMES 10 PRIME NEGATIVE3 M, GOOD AGREEMENT WAS FOUND. THE AGREEMENT INDICATES THAT THE ELASTICITY OF THICK FILMS UNDER THE GIVEN QUASISTATIC CONDITIONS IS DETD. COMPLETELY BY THE GIBBS EFFECT. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR UDC: 621.391:519.2

KROTOV, Yu. I.

"On the Structure of an Optimum CW Receiver"

V sb. Tonkiye magnitn. plenki, vychisl. tekhn. i radiotekhn. T. 1 Thin Magnetic Films, Computer Technology and Radio Engineering--collection of works), Krasnoyarsk, 1970, pp 10-14 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A77)

Translation: A formula is derived which defines the procedure of discriminating a message with a limited spectrum from a narrow-band signal under conditions of minimization of the weighted mean square error of reproduction with simultaneous satisfaction of the condition of ideal reception in the absence of noises (where the received message exactly reproduces the transmitted message). One illustration, bibliography of one title. M. S.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

UDC: 621.391:519.2

KROTOV, Yu. I.

"Interference Resistance of Spaced Reception in Accounting for the Mutual Effect of the Spacing Channels"

V sb. Tonkiye magnitn. plenki, vychisl. tekhn. i radiotekhn. T. 1 (Thin Magnetic Films, Computer Technology and Radio Engineering--collection of works. Vol. 1), Krasnoyarsk, 1970, pp 15-18 (from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A45)

Translation: The author discusses spaced reception of Gaussian signals with identical channels in the presence of noises of a thermal character. The resistance to reception interference is evaluated for a channel without fading with single-phase transmission in the case of reception by the method of phase comparison, or frequency-shift transmission in the case of incoherent reception. One illustration, bibliography of one title. N. S.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

UDC 678.743.41:541.515.701:53

VILENSKIY, A. I., VIRLICH, E. E., STEFANOVICH, N. N., RADTSIG, V. A., VLADYKINA, T. N., and KROTOVA, N. A.

"The Effect of Peroxide Radicals on the Adhesive Properties of Fluoroplast-4"

Moscow, Plasticheskiye Massy, No 10, 1971, pp 43-45

Abstract: Results are reported of the study of the adhesive activity of polytetrafluoroethylene (PTFE) as a function of the concentration of peroxide radicals generated during the treatment of PTFE in silent discharge. It was determined that current density has no effect on the maximum concentration of free radicals; however, it does shorten the process. Thermal treatment of the activated PTFE films leads to the formation of polar -CC and -C;C-groups which lead to high adhesive strength. In such thermally treated samples hydrogen bonds may form between the C;O groups of the films and OH groups of the epoxy resin. The experiments have shown that the high adhesive strength of the fluoroplast-4 activated in silent discharge is determined by stable peroxide radicals formed during the activation, which interact with the adhesive forming hydrogen bonds of an electrostatic character.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

NAUMOVA, V. I., KOLESNIKOV, V. A., and KROTOVA, O. A., Scientific Research Institute of Vegetable Growing

UDC 632.954:635.13

"The Use of Herbicides on Fall Plantings of Carrots and Beets"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 6, 1971, pp 46-48

Abstract: In 1967-1969 the Perlovskoye Department of the Experimental Model Farm of the Scientific Research Institute of Vegetable Growing conducted experiments for the purpose of establishing the optimum times and methods for the use of herbicides (Propazine and Pyramin) on fall plantings of carrots and beets to assure early production. It was found that Propazine is most effective against annual dicotyledonous weeds in carrot plantings when applied in the fall in a dose of 2.5 kg/ha. The effectiveness of Propazine in a dose of 1.5 kg/ha is the same in the case of spring or fall application. The average two-year carrot yield in variants of 1.0, 1.5 and 2.5 kg/ha dosages of Propazine was at the level of control, but hand weeding labor was 58, 83 and 90 percent less respectively. Pyramin was found to be most effective for beet plantings at a dose of 7.5 kg/ha applied in the fall. The effectiveness of Pyramin at a dose of 5 kg/ha was the same whether applied in the spring or fall. At doses of 3 and 4 kg/ha Pyramin was more effective in a fall than a spring

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

NAUMOVA, V. I., et al., Khimiya v Sel'skom Khozyaystve, Vol 9, No 6, 1971, pp 46-48

application. There was no decrease in the beet yield, while there was a 54-80 percent decrease in the hand weeding labor.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR UDC: 550.380:621.317.444

TEREKHIN, Yu. V., PROSTUN, O. A., POLYAKOV, V. V., KROVOTYNTSEV, V. A.

"Automated Marine Proton Magnetometer APM-1"

Mor. Gidrofiz. Issled. [Marine Hydrophysics Studies -- Collection of Works], No 1(57), Sevastopol', 1972, pp 106-114 (Translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 4, 1973, Abstract No 4.32.1336).

Translation: A description is presented of a marine automated proton magnetometer, the APM-1, developed at the Marine Hydrophysics Institute, Academy of Sciences, UkSSR, and tested in the 24th cruise of the research vessel *Mikhail Lomonosov*, as well as the second cruise of the research vessel *Akademic Vernadskiy*. Results are presented from studies of various types of sensors and selection of the optimal version of a sensor of several possible versions. The basic units in the devices are described, and results of determination of deviation, convergence of indications and metrological tests are presented.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

UDC: 539.214:620.175

BOGATOV, A. A., KOZLOV, G. D., KOLMOGOROV, V. L., KROVSHKIN, R. P., and PLAKHOTIN, V. S.

"Plasticity of Metals with Sign-Changing Deformation"

Izv. VUZ, Chernaya Metallurgiya, No 6, 1970, pp 83-86

Abstract: Experimental investigations and analytical methods were used to establish the regularity of the growth of plasticity of a number of types of steels and nonferrous alloys under alternating deformation (twisting) with symmetrical and pulsating cycles. The value of the Coffin factor was determined, and the method of determining constant C in Coffin's formula was clarified. Data were obtained on the plasticity of steel and nonferrous alloys with alternating deformation which can be used for the calculation of cracking under cyclical loading. One illustration; six biblio. refs.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR UDC: 658.562.012.7

BAUMBERG, I. D., KRUASHVILI, Z. Ye., FAYN, V. B.

"Method of Centralized Testing of Several Objects"

USSR Author's Certificate Number 306466, filed 19/02/69, published 21/07/71 (translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 3, 1972, Abstact No 3 A372 P)

Translation: A method is suggested for centralized testing of several objects by converting the parameters being tested with repect to their deviation from fixed limits into sequences of irregularly distributed pulses not coinciding with each other in time. In order to increase the effectiveness of the central testing device, the sequences produced are compared with the cycling sequence, and the object whose pulse sequence contains the pulse which first coincides with the cycling sequence pulse is tested.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR UDC: 621.438:621.45:

YAZIK, A. V., KRUCHAN, I. S., YASTREBOV, L. A., REZNIKOV, V. S.

"The GTU-2000 -- a Promising Mobile Gas Pumping Installation"

Tr. Ukr. NII prirodn. gazov (Works of the Ukrainian Scientific Research Institute of Natural Gases), 1970, vyp. 4(8), pp 315-318 (from RZh-Turbostroyeniye, No 5, May 71, Abstract No 5.49.68)

Translation: The Ukrainian Scientific Research Institute in cooperation with the Leningrad Administration of Gas Mains has developed a pilot model of the GTU-2000 gas-pumping unit based on the AI-20 aircraft engine and the 102-11-1 forcing gas pump. The AI-20 engine is a single-shaft unit with a rating of 3675 hp at a turbocompressor speed of 12,300 rpm. The enginer has an axial ten-stage compressor, $\pi_K = 7.5$. The turbine is a three-stage reaction unit. The gas temperature following the turbine is no more than 500°C. The modified engine weighs about one ton. The 102-11-1 is a centrifugal pump with a single stage, $\pi_H = 1.31$, power consumption is 1720 kW, gas flow under suction conditions is Q = 75 cu. m. per min, and forcing pressure is $p_H = 56$ kg/cm^2.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR

UDC: 621.396.6-181.5

BRITSIS, A. B., GOTLIB, D. S., KRUCHAN, Ya. Ya., OZOLS, K. K., and SHARLOVSKIY, B. V.

"Investigating the Characteristics of Thin Film Contact Areas for Hybrid Integrated Circuits"

Elektron. tekhnika. Nauchno-tekhn. sb. Mikroelektronika (Electronic Engineering, Scientific-Technical Collection, Microelectronics) 1970, No. 2(23), pp 20-27 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3V330)

Translation: It is shown that copper films can be used instead of gold as the conducting layer of contact areas for hybrid micro-circuits when the assembly is sealed. Resume

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

USSR UDC: 621.396.967

KUCHEROV, A. S., KRUCHENETSKIY, V. Z., MOLCHANOV, A. N., ZUBANOV, M. A.

"Doppler Shift Imitator on an Intermediate Frequency"

Tr. Novosib. elektrotekhn. in-ta (Works of the Novosibirsk Electrical Engineering Institute), 1970, vyp. 2, kn. 1, pp 39-47 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 6G46)

Translation: The authors consider a method of simulating the Doppler shift on intermediate frequencies by means of phase-variable circuits. The signal spectrum at the output of the imitator is determined by the amplitude of the phase shift during the sawtooth voltage period. The minimum phase lead for obtaining a monochromatic signal is equal to 2π. The proposed method permits variation of the Doppler frequency over a broad range without disrupting signal monochromaticity. Five illustrations, bibliography of two titles. A. M.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--PHASE TRANSFORMATIONS AND SOLUBILITY OF CALCIUM SULFATE IN NITRIC ACID SOLUTIONS AT 60DEGREES -U-

AUTHOR-(02)-KRUCHENKO, V.P., BEREMZHANOV, B.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK KAZ. SSR, SER. KHIM. 1970, 20(1), 25-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CALCIUM COMPOUND, SULFATE, NITRIC ACID, GYPSUM, PHASE TRANSITION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1508 STEP NO--UR/0360/70/020/001/0025/0029

CIRC ACCESSION NO--AP0120289

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 019 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120289

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LEAST SOL. FORM OF CASO SUB4 IS THE ANHYDRITE, THE MAX. SOLY. OF WHICH IS 3.00PERCENT OF 15PERCENT HNO SUB3. AS THE CONCN. OF THE ACID INCREASES (15-55PERCENT), THE SOLY. OF CASO SUB4 DROPS (3.00-0.49PERCENT). 38PERCENT HNO SUB3 IS THE BREAK POINT FOR THE SOLY. OF CASO SUB4 .2H SUB2 O AND CASO SUB4 .0.5H SUB2 O; BELOW THIS CONCN., GYPSUM IS LESS SOL. AND ABOVE THIS CONCN., THE SESQUIHYDRATE IS MORE STABLE. THE MAX. SOLY. OF GYPSUM (3.56PERCENT) IS IN 20PERCENT HNO SUB3. IN 5-10PERCENT HNO SUB3 THE SOLID PHASE IMMEDIATELY AFTER PPTN. IS GYPSUM, AT 15-30PERCENT HNO SUB3 THE PPT. IS A MIXT. OF THE SESQUIHYDRATE AND THE DIHYDRATE; THIS MIXT. SOON CHANGES INTO DIHYDRATE. AT 30-35PERCENT HNO SUB3, THE TRANSFORMATION OF DIHYDRATE INTO ANHYDRITE IS FASTER THE HIGHER THE ACID CONCN. AT 40PERCENT HNO SUB3 AND ABOVE, THE PPTD. SESQUIHYDRATE IMMEDIATELY TRANSFORMS INTO ANHYDRITE. THE RATE OF TRANSFORMATION INCREASES WITH AN INCREASE OF THE ACID CONCN. THUS, AT 5-35PERCENT HNO SUB3 THE PHASE TRANSFORMATION PROCEEDS ACCORDING TO: SESQUIHYDRATE YIELDS DIHYDRATE YIELDS ANHYDRITE; IN 40PERCENT HNO SUB3 AND HIGHER IT PROCEEDS ACCORDING TO: DIHYDRATE YIELDS SESQUIHYDRATE YIELDS ANHYDRITE. FACILITY: KAZ. GOS. UNIV. IM. KIROVA, ALMA-ATA, USSR.

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"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--VARIABILITY OF THE EXCITATIVE PROCESS STRENGTH IN THE RAT ONTOGENY -U-

AUTHOR--KRUCHENKO, ZH.O.

K

COUNTRY OF INFO--USSR

SOURCE--FIZIOLOGICHNIY ZHURNAL, 1970, VOL 16, NR 1, PP 68-73

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOLOGIC AGING, RAT, NERVOUS SYSTEM, CAFFEINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1982/0889 STEP NO--UR/0238/70/016/001/0068/0073

CIRC ACCESSION NO--AP0052312

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

2/2 023 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0052312

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EXCITATIVE PROCESS STATE WAS STUDIED IN RATS IN DIFFERENT AGE PERIODS (1,6 AND 12 MONTHS). THE STRENGTH OF THE EXCITATIVE PROCESS WAS DETERMINED ACCORDING TO THE RESULTS OF CAFFEINE TESTS. CAFFEINE SOLUTION WAS ADMINISTERED SUBCUTANEOUSLY 30 MIN BEFORE THE BEGINNING OF THE EXPERIMENT AT A RATE OF INCREASING DOZES PER 1 KG OF THE ANIMAL WEIGHT UP TO THE APPEARANCE OF TRANSULTIMATE INHIBITION. THE DOSE OF CAFFEINE, CAUSING NO TRANSULTIMATE INHIBITION, WAS CONSIDERED TO BE OPTIMAL. THE DYNAMICS OF QUANTITATIVE INDICES OF CONDITIONED MOTOR AND INTERSIGNAL REACTIONS WERE SIMULTANEOUSLY INVESTIGATED. IT IS ESTABLISHED THAT THE STRENGTH OF EXCITATIVE PROCESS ESTIMATED BY THE MAXIMUM DOSE OF CAFFEINE, ENDURED BY THE ANIMALS WITHOUT DISTURBANCES OF THE HIGHER NERVOUS ACTIVITY, CHANGES WITH AGE. IN ONE MONTH AGE THE RATS WITH A GREAT STRENGTH OF THE EXCITATIVE PROCESS PREDOMINATE. THE DECREASE IN THE EXCITATIVE PROCESS STRENGTH IN SOME INDIVIDUALS TAKES PLACE IN DIFFERENT PERIODS OF ONTOGENY. THE INTENSITY OF THE MOTOR REACTION TO THE CONDITIONAL STIMULATOR AND IN THE INTERSIGNAL PERIOD DECREASES WITH AGE.

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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1"

"APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002201610017-1

1/2 018 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--CONTACTLESS WIDE PULSE TEMPERATURE CONTROL FOR THERMOPLASTIC AUTOMATED HEATING -U-

AUTHOR-(03)-KRUCHENYKH, G.S., MAKAROV, G.A., TELIS, A.I.

K

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, KUZNECHNO-SHTAMPOVOCHNOYE PROIZVODSTVO, NO. 2, 1970, PP 20-24

DATE PUBLISHED-------70

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

TOPIC TAGS--THERMOPLASTIC MATERIAL, HEATING, PLASTIC FABRICATION, AUTOMATIC CONTROL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/0266 STEP NO--UR/0182/70/000/002/0020/0024

CIRC ACCESSION NO--AP0100775

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UNCLASSIFIED PROCESSING DATE--18SEP70

2/2 018

CIRC ACCESSION NO--AP0100775

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PROCESSING OF THERMOPLASTIC MATERIALS TAKES PLACE UNDER HEATING, WHERE THE RAW MATERIAL IS PLACED IN A SPECIAL HEATING CYLINDER ON THE OUTSIDE SURFACE OF WHICH ARE DISTRIBUTED ELECTRICAL THERMAL ELEMENTS. THE TEMPERATURE IN THE HEATING ZONE OF THESE CYLINDERS MUST BE CAREFULLY CONTROLLED TO PRODUCE HIGH QUALITY PLASTICS; AN ACCURACY OF PLUS OR MINUS 20DEGREES C IS NECESSARY. THE AUTHORS PRESENT EXPERIMENTALLY OBTAINED CURVES INDICATING THAT THE PROCESS OF HEATING THE MATERIAL IS AUTOMATIC THERMOPLASTIC MACHINES IS CHARACTERIZED BY INERTIA. THE PRESENT DAY HEATING CONTROL SYSTEM USING A TWO POSITION REGUALTOR OF THE "ON,OFF" TYPE IS UNSATISFACTORY BECAUSE OF THE OSCILLATIONS FROM ONE POSITION TO THE OTHER; THESE OSCILLATIONS CANNOT BE REDUCED BECAUSE OF THE INERTIA OF THE SYSTEM. SUCH DEFECTS AS WELL AS THE MORE MINOR ONES TO BE FOUND IN IMPROVED SYSTEMS OF FOREIGN FIRMS, SOME OF WHICH ARE DISCUSSED IN THIS ARTICLE, ARE ELIMINATED IN A SEMICONDUCTOR ELECTRONIC HEATING CONTROL SYSTEM DEVELOPED AND TESTED BY THE UKRAINIAN SCIENTIFIC RESEARCH INSTITUTE FOR MACHINES AND INSTRUMENTS (UKRNIISIP). A BLOCK DIAGRAM, SCHEMATIC, AND LIST OF TECHNICAL SPECIFICATIONS FOR THE INSTRUMENT ARE GIVEN. THOSE WHO PARTICIPATED IN THE DEVELOPMENT AND TESTS WERE E. I. DAVYDOVA, V. I. PERLOVA, AND S. S. OLENDER. A COMPLETE DESCRIPTION OF THE CIRCUIT'S OPERATION IS GIVEN.

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In the opinion of the authors, one of the most promising applications of plasma heating in metallurgy is volumetric heating of metal in the thermal reduction stage.

If the process of carbothermal reduction of metallic oxides in the high-temperature gas stream is examined, then it becomes clear that the requirements on the energy and gas-dynamic characteristics of the plasmatrons will vary considerably, depending on the form of metal, productivity of the installation and numerous special requirements of a given reduction process.

The most important of the basic properties of plasmatrons for industrial application is the continuous service life, which in consideration of the requirements of continuity of the technological process and performance features of metallurgical machinery under industrial conditions, should be at least 100-200 hrs.

The following parameters of plasmatrons are of key importance.

1. Kind, flow rate and pressure of the plasma-producing gas, which are determined by the requirements of a given reduction process.

2. Power of the plasmatron, determined by the specific energy consumption of the process and productivity of the metallurgical installation.

3. Specific enthalpy and mean mass temperature of the gas jet at the exit from the nozzle of the plasmatron, insuring the required concentration of energy in the working space for maintaining the process in the steady state mode of operation of the metallurgical installation.

We will discuss what we think are the two most promising areas of industrial application of plasma carbothermal reduction of metals:

1) Nonferrous metals and 2) rare metals. It is known that the energy consumption of the reduction process for the first group of metals is 1-2 kW hrs/kg, and the required enthalpy of the gas jet at the exit from the plasmatron nozzle is 5-20 kcal/g [1]. For a gas jet with the given enthalpy level, and in consideration of the requirements of the process of carbothermal reduction, hydrogen, carbon dioxide and natural gas may be used as the working gas for nonferrous metals.

The power and number of the plasmatrons and the gas flow rate depend on the required productivity of the installation.

The energy consumption of the process is 5-10 kW hrs/kg for the second group of metals, and the required nozzle exit flow enthalpy is 50-100 kcal/g [1]. Such high flow enthalpies can be achieved only when hydrogen is used as the heating agent. Experience in the development and adoption of plasmatrons in metallurgy and plasmochemistry has shown that the facility of the output electrode, and consequently the service life of a plasmatron are determined by the mean mass temperature of the gas jet at nozzle exit. For hydrogen this critical temperature is 4000-4500°K [2,3].

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UDC 547.831'781.1

KHRISTICH, B. I., KRUCHININ, V. A., POZHARSKIY, A. F., and SIMONOV, A. M.,
Rostov-on-Don State University

"Effect of the Basicity of Aza-groups on the Course of Nucleophilic Substitution in Imidazo [4,5-f] quinolines"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 71, pp 814-817.

Abstract: Imidazo [4,5-f] quinoline was selected as a model compound because it contains two potentially active centers with respect to the nucleophilic reagents such as phenyllithium, sodamide, - namely positions 2 and 7. It was established that the quinoline nucleus is more reactive towards these reagents than the imidazole nucleus. An assumption was stated that the course of nucleophilic attacks is principally determined by the relative basicity of the aza group. The nucleophilic attack occurs at the carbon atom adjacent to the more basic nitrogen atom. This assumption was supported by molecular orbital calculations and pK_a values. The positive charge or the energy of anionic localization on C_2- and C_7- atoms in a neutral molecule appear to be of no consequence to the course of nucleophilic attack.

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1/2 028 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--PRESSED POWDER SOLDER FOR SOLDERING CERAMICS WITH METAL -U-

AUTHOR-(02)-KRUCHININ, V.P., TRUSHECHKIN, D.P.

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COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 267,313
REFERENCE--OTKRYTIYA, IZUBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--PATENT, SOLDER, COPPER, SILVER, MANGANESE, TUNGSTEN, FILLER, METAL TO NONMETAL BONDING, CERAMIC MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1413 STEP NO--UR/0482/70/000/000/0000/0000

CIRC ACCESSION NO--AA0128812
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CIRC ACCESSION NO--AA0128d12

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SOLDER CONSISTED OF SOLDER BASED ON A CU-AG SYSTEM AND A FILLER COMPOSED OF A 20-50PERCENT MIXT. OF MN 5-40 AND W THE REMAINING.

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1/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--EFFECT OF SULFIDE SULFUR ON THE BLOATING CAPACITY OF BLAST FURNACE SLAGS -U-

AUTHOR--KRUCHININ, YU.D.

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COUNTRY OF INFO--USSR

SOURCE--STROIT. MATER. 1970, (1), 35-7

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SUBJECT AREAS--MATERIALS

TOPIC TAGS--BLAST FURNACE, SPECIFIC DENSITY, METALLURGIC SLAG, SULFIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/0442 STEP NO--UR/0228/70/000/001/0035/0037

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2/2 012 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0053418

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BLOATING OF BLAST FURNACE SLAGS IN MAINLY CAUSED BY DISSOLVED GASES AND NOT BY GAS FORMING PRODUCTS FROM THE INTERACTION OF S WITH WATER, AIR AND FE SUB2 O SUB3.

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USSR UDC 632.95

DYATLOVITSKAYA, F. G., GLADENKO, Ye. F., and KRUCHININA, A. A.

"Determination Methods of Chloroorganic Insecticides in Reservoir Water"

V sb. Problemy Analiticheskoy Khimii (Collection of Works on Problems of Analytical Chemistry), Vol 2, Moscow, Nauka, 1972, pp 43-46 (From Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, L-S), No 1(II), 1972, Abstract No 1N442 by T. A. Belyayeva)

Translation: A chlorophenyl chlorobenzenesulfonate is extracted from 500 ml of water with 2x30 ml of C_6H_6, the extract is concentrated by evaporation at 50-60°C, the residue is dissolved in alcohol, saponificated with KOH in alcohol, acidified, and p-ClC_6H_4OH is removed from it by distillation. The latter is determined calorimetrically with 4-aminoantipyrine. The determination sensitivity is 0.2 mg/liter. DDT is also extracted from water with C_6H_6, the extract is evaporated, the residue is dissolved in alcohol, evaporated, nitrated, extracted with ether, the extract is neutralized with alkali, dried over Na_2SO_4, and concentrated by evaporation. The residue is dissolved in C_6H_6 and condensed with KOH in MeOH. After appearance of a blue color, DDT is determined calorimetrically. The sensitivity of the method is 10 ug per sample. Heptachlor and DDT can be also determined by

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DYATLOVITSKAYA, F. G., et al., Problemy Analiticheskoy Khimii, Vol 2, Moscow, Nauka, 1972, pp 43-46

paper chromatography in the system acetone - water (7:3). Heptachlor is extracted from water with ether. Thin layer chromatography with Al_2O_3 in n-hexane is used for the individual determination of aldrin, dieldrin, hexachlorocyclohexane, and DDT.

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