

USSR

IYEVLEVA, YE. A., et al., *Neftepererabotka i Neftekhimiya*. Ref. Sb., No 3, 1972, pp 53-54

with the Na salt. The threshold concentrations of triethylamine salt in commerical samples were considerably lower than those of model samples of identical fractional composition, despite the fact that the latter contained Na salts of alkyl sulfates. It is concluded that low-molecular alcohols decrease considerably the irritating effect of PAV.

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USSR

UDC 621.315.592:546.682'86

SANDULOVA, A. V., PETRUSHKO, I. A., KHUTORYANSKIY, L. D.

"Thin Layers of Indium Antimonide with High Mobility Obtained by Liquid Metal Pressure"

Elektron. tekhnika. Nauchno-tekhn. sb. Kriogen. elektronika (Electronic Engineering. Scientific and Technical Collection. Cryogenic Electronics), 1970, vyp. 1 (2), pp 91-96 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4G494)

Translation: Thin layers of indium antimonide are obtained by squeezing a molten drop of InSb between two parallel substrates with subsequent crystallization. The electrophysical properties of the thin layers are investigated in a broad temperature range. The mobility of the carriers in the samples with electron conductivity reaches 70,000 cm²/volt-second at room temperature. The bibliography has 11 entries.

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PETRUSHOV V.A.

AA0101376

UR 0482

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Soviet Inventions Illustrated, Section III Mechanical and General,
Derwent, 2-70

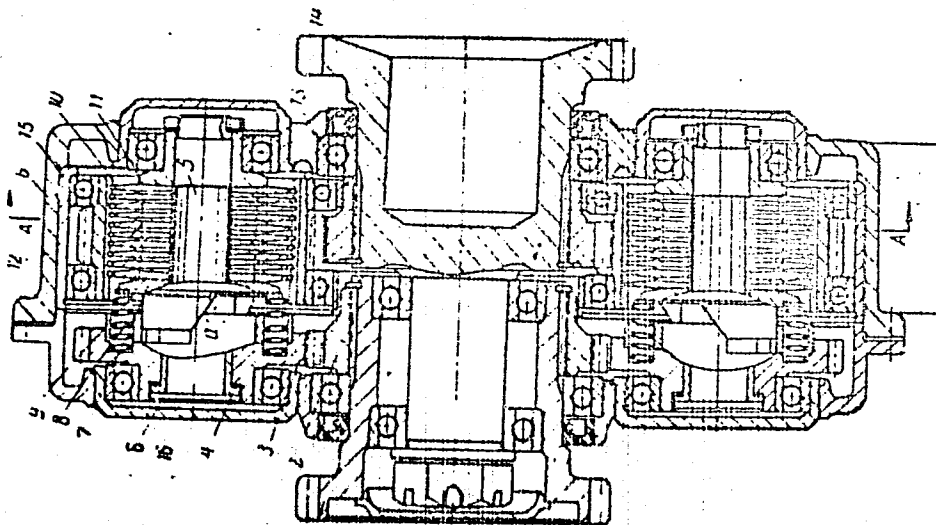
238304 FRictionAL MULTI-DISC PLANETARY TWO-ROW
SPEED CHANGER containing sets of friction-
bevelled pairs of discs 9 and 10 with internal
contact which differs, in order to provide greater
efficiency, simpler gear-ratio control and greater
range, in having the planet wheels in the form of
gears with the first row 3 on shafts 5 carrying
the small diameter discs and the second row 12
made hollow to contain the large diameter discs.
For control of the gear ratio the hollow planet
wheels 12 are set in a rotating ring 15 that is
coaxial with housing 6, so that the ratio can be
changed by turning ring 15 in relation to housing
6. 26.2.65. as 945823/25-28. N.A ASTROV et al.
Car and Engine Res. Inst. and Mitishchi Machine
Bldg Works. (3.7.69.) Bul.9/20.2.69. Class 47h.
Int.Cl. F06h.

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19851213

AAU101310



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JL

19851214

AA0101376

AUTHORS: Astrov, N. A.; Yerokin, V. V.; Klemm, A. N.; Leonov,
V. I.; Petrushov, V. A.; Speranskiy, N. G.; Strigin, I. A.

Tsentral'nyy Nauchno-Issledovatel'skiy Avtomobil'nyy i Avtomotorny
Institut i Mytishchinskiy Mashinostroitel'nyy Zavod

3/3

19851215

1/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--CONCEPT OF ELECTRODE CHARGE AND THE LIPP MANN EQUATION -U-
AUTHOR--(03)-FRUMKIN, A.N., PETRY, O.A., DAMASKIN, B.B.
COUNTRY OF INFO--USSR *P*
SOURCE--ELEKTROKHIMIYA, APR. 1970, 6, (4), 614-630
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--THERMODYNAMICS, ELECTRODE, SURFACE PROPERTY, POLAROGRAPHIC
ANALYSIS, PLATINUM ELECTRODE, MERCURY, THALLIUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1283 STEP NO--UR/0364/70/006/004/0614/0630
CIRC ACCESSION NO--AP0134957
UNCLASSIFIED

2/2 024

CIRC ACCESSION NO--AP0134957

UNCLASSIFIED

PROCESSING DATE--13NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE GENERAL PRINCIPLES UNDERLYING THE CONCEPT OF THE CHARGE OF AN ELECTRODE AND ITS RELATION TO THE LIPPMANN EQUATION ARE DISCUSSED WITH SPECIAL REF. TO THE CASES OF PT AND TL-HG ELECTRODES. IT IS SHOWN THAT A DISTINCTION MUST BE DRAWN BETWEEN THE TOTAL CHARGE ENTERING INTO THERMODYNAMIC RELATIONSHIPS AND THE FREE CHARGE ASSOCIATED WITH A PARTICULAR MODEL OF THE ELECTRIC DOUBLE LAYER ON THE ELECTRODE SURFACE. EXPRESSIONS FOR THE TOTAL CHARGE OF SUCH SYSTEMS ARE GIVEN FOR CASES IN WHICH THE L. EQUATION IS SATISFIED, AND THE RESULTS ARE APPLIED TO THE QUESTION OF ELECTROCAPILLARY PHENOMENA OBSERVED UNDER POLAROGRAPHIC CONDITIONS.

UNCLASSIFIED

USSR

UDC 541.182.2/3:628.511.4

USHAKOVA, E. N., KOZLOV, V. I., PETRYANOV, I. V., Physical Chemistry
Institute imeni L. Ya. Karpov

"Regularities of Aerosol Capture by FP Filtering Material"

Moscow, Kolloidnyi Zhurnal, vol 35, No 5, September-October 73,
pp 993-995

Abstract: Experimental and calculated values for the dependence of the capture coefficient of stearic acid aerosols by FP filter material fibers on the average hydrodynamic radius (0.4-3.8 μm) of the fibers, filtration rate (0.5-10 cm/sec), and particle radius (0.16-0.4 μm) agreed when the interception parameter was greater than 0.1 and the Stokes number less than 0.2. With an interception parameter less than 0.5 and a Stokes number less than 0.2, the capture coefficient could be calculated from the fan filter model formulas.

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1/2 024
 UNCLASSIFIED
 TITLE--ADSORPTION OF PERCHLORATE ANIONS ON PLATINUM AND RHODIUM ELECTRODES
 -U-
 AUTHOR--(02)-VASINA, S.YA., PETRYY, O.A.
 COUNTRY OF INFO--USSR
 SOURCE--ELEKTRKHEMIYA, FEB. 1970, 6, (2), 242-246
 DATE PUBLISHED----FEB70
 SUBJECT AREAS--CHEMISTRY
 TOPIC TAGS--PLATINUM, RHODIUM, PERCHLORATE, BIBLIOGRAPHY, METAL ELECTRODE, ADSORPTION
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--2000/0302
 CIRC ACCESSION NO--AP0124061
 STEP NO--UR/0364/70/006/002/0242/0246
 UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--ZONOV70

CIRC ACCESSION NO--AP0124061

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADSORPTION OF PERCHLORATE ANIONS ON THE SURFACE OF PT-Pt AND RH ELECTRODES WAS STUDIED BY PLOTTING THE CORRESPONDING CHARGING CURVES IN 0.1N-HClO₄ AND 0.1N-H₂SO₄ SOLUTIONS. EVEN THE SMALLEST QUANTITIES OF SO₄²⁻ IONS IN THE SOLUTION PREVENTED THE ADSORPTION OF ClO₄⁻ AS WELL AS ITS REDUCTION, NORMALLY REPRESENTED BY THE EQUATION ClO₄⁻ + 4H⁺ + 2e⁻ = Cl⁻ + 2H₂O. THERE WAS ALSO VERY LITTLE REDUCTION OF ClO₄⁻ IN HClO₄-HCl SOLUTIONS. THE NUMBER OF Cl⁻ PRESENT INCREASED WITH INCREASING HClO₄ CONCENTRATIONS. THE REDUCTION OF ClO₄⁻ TOOK PLACE MORE RAPIDLY ON RH THAN ON Pt ELECTRODES.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--CATALYTIC HYDROGENATION OF NITRILES ON A STATIONARY NICKEL ALUMINUM
CATALYST -U-
AUTHOR--ZELENAYA, SH.A., BASOV, A.S., PAVLOV, A.A., PETRYAKOVA, N.K.,
GUSHCHIN, N.V.
COUNTRY OF INFO--USSR
SOURCE--KHIM. PROM. (MOSCOW) 1970, 46(1), 11-12
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, MATERIALS
TOPIC TAGS--CATALYTIC HYDROGENATION, NICKEL BASE ALLOY, ALUMINUM
CONTAINING ALLOY, ORGANIC NITRILE COMPOUND, PRIMARY AMINE, FATTY ACID
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1452 STEP NO--UR/0064/70/046/001/0011/0012
CIRC ACCESSION NO--AP0101538
UNCLASSIFIED

2/2 025

CIRC ACCESSION NO--AP0101538
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT. A CATALYST FOR THE HYDROGENATION OF NITRILES WAS PREPD. BY PARTIAL LEACHING OF AL FOR 1:1 NI AL ALLOY BY 20PERCENT NAOH AT 100DEGREES. THE NITRILES OF C SUB17 TO C SUB20 SYNTHETIC FATTY ACIDS WERE HYDROGENATED BY H IN THE PRESENCE OF NH SUB3 AT 85 TO 120DEGREES-50 ATM, WITH FLOW RATE OF NITRILES 0.25 AND NH SUB3 0.32 VOL.-HR, TO GIVE 100PERCENT CONVERSION TO AMINES. THE CONC. OF PRIMARY AMINES IN THE PRODUCT WAS 84.8PERCENT, THAT OF SECONDARY AND TERTIARY AMINES WAS 11.9PERCENT. AT GREATER THAN 10DEGREES, THERE WAS A SHARP DECREASE IN SELECTIVITY.

UNCLASSIFIED

Microbiology

USSR

UDC 614.715-07:62-784.412.2

SADOVSKIY, B. F. and PETRYANOV, I. V., Institute of Physical Chemistry imeni
L. Ya. Karpov, Moscow

"Use of FP Filtering Material in Impactors"

Moscow, Gigiyena i Sanitariya, No 5, 1973, pp 74-76

Abstract: Inertial precipitators called impactors are used to study the distribution of aerosol particles by size. The resulting data are the basis of distribution curves. FP [Petryanov's filters] filtering material is placed at the outlet of the impactors to determine the number of particles 0.5 to 1 μ m in diameter. A disk or strip of the filtering material is secured to a metal or glass backing before it is inserted into the compactor. It is hydrophobic, thin, and has a stable weight. Backing made of FP can be used to analyze radioactive aerosols, smoke employed in curing meats, and mists of acids as well as to evaluate the functioning of gas purifiers and respirators.

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PETRYANOV, I. V.

meteorology

INVESTIGATION OF THE MOISTURE CONTENT IN THE STRATOSPHERE
Article by B. I. Ogorodnikov, V. I. Kozhevnik and I. V. Petryanov; Moscow, Doklady Akademi Nauk SSSR, Russian, Vol 266, No 6, 1971, submitted 7 April 1971, pp 1333-1335

JUNE 55285
28 February 1972

UDC 551.571

From 1967-1969, for studying the stratospheric moisture distribution over the central part of the USSR European territory we conducted 17 flights of aerostats at heights ranging from 12 to 32 km. The collection of samples was conducted with the aid of a heat exchanger trap cooled by liquid nitrogen. All measures were adopted to see that prior to the flight and during the flight collection, the entrance of extraneous moisture within the sample would be excluded.

Prior to the flight, the internal cavity of the trap was heated to 120° and was carefully dried by blasting with dry nitrogen having a dew point of about -166°. The sample-collecting equipment was located several tens of meters below the aerostat and the parachute. After raising the aerostat to a prescribed height for evaporating the moisture which could be trapped from Earth or in the troposphere, it was allowed to drift for at least 30 minutes. The sealed baffles were then opened and the outside air was pumped through the trap at a constant rate. At this time, the collecting opening was moved to one side from the equipment, while the cold air having passed through the trap was channeled below the equipment together with the evaporated nitrogen.

After landing, the equipment was delivered to the laboratory immediately. The trap was heated to 120° and was dried with dry helium filtered at -166° through filter #n [5] until complete stoppage of the appearance of moisture traces in the intake sector of the U-shaped small glass tube equipped with a Schott filter submerged in liquid nitrogen.

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[I - USSR - E]

PETRYKINA, R. Ya.

TECHNOLOGY OF PRODUCING NEW MATERIALS

Translation of Russian-language collection: Polucheniya Novykh Materialov, 1972, Kiev, Technologiya

JPRS 59873
25 August 1973

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USSR.

UDC 621.762.4:621.77.2

PAVLOV, V. A., ZHIVOV, L. I., SHCHERBINA, V. V., LYASHENKO, A. P.,
PETRYKINA, R. YA., LITVIN, Zaporozh'ye Machine Building Institute imeni
V. Ya. Chubar'

"Hot Extrusion of Powdered Titanium"

Kiev, Poroshkovaya Metallurgiya, No 8, Aug 73, pp 15-19

Abstract: Hot extrusion of titanium powder was studied using a 1600 ton-force crank press. The raw powder, sintered billets, and, for comparison, sheet titanium were extruded. Both open and closed dies were used. It was observed that there was a decrease in grain size with a simultaneous increase of their total surface area, promoting intensification of intergranular diffusion which occurs with a significant increase in the diffusion rate, caused by the high specific force and temperature (950°C). Mechanical properties of briquets extruded at 950°C and heat treated by annealing at 750°C for three hours in a vacuum of $2 \cdot 10^{-4}$ mm Hg are compared with briquets which were vacuum sintered at 1200°C for three hours prior to extruding and given the same heat treatment as stated above after extruding. Density and mechanical properties of the vacuum sintered briquets is slightly higher than the non-vacuum sintered briquets but not enough to warrant the additional

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PAVLOV, V. A., et al., Poroshkovaya Metallurgiya, No 8, Aug 73, pp 15-19

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cost of vacuum sintering. The introduction of extruded powder-titanium parts and titanium-alloy powder parts to replace cast parts will result in increased savings by using a less expensive raw material, shortening of intermediate operations, increased die strength, increased labor productivity, and decreased metal losses. Three figures, one table, three bibliographic references.

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USSR

UDC 541.45:621.984.5/.8

SAMSONOV, G. V., PETRYKINA, R. Ya., and KOVAL'CHENKO, M. S., Institute of the Problems of Material Science, Academy of Sciences Ukrainian SSR

"Hot Pressing of Transition Metal Oxides"

Moscow, Neorganicheskiye Materialy, Vol 7, No 9, Sep 71, pp 1606-1611

Abstract: The caking principles in the hot pressing of oxides of transition metals TiO_2 , ZrO_2 , HfO_2 , Cr_2O_3 , and Nb_2O_5 were experimentally investigated.

In order to get conditions which are close to the ideal case of isothermal and isobaric caking, which is necessary for rating the curves of density depending on the caking time by hot pressing, the mold with the powder was heated up to the nominal temperature of hot pressing without loading and then the loading was applied instantaneously. From determined values of the shear ductility, depending on temperature and caking stages by hot pressing, the activation energies of caking by hot pressing (90 and 130 kg/cm²) of oxides were derived. The investigation results are discussed by reference to diagrams showing the relative densities of investigated transition metals as function of the caking time, the character of

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USSR

SAMSONOV, G. V., et al., Neorganicheskiye Materialy, Vol 7, No 9, Sep 71, pp 1606-1611

the activation energy of the caking process, and the shear ductility depending on the caking time by hot pressing of ZrO_2 . The caking activation energy by hot pressing was found to be determined mainly by that energy which is required for the activation of transition metals. Seven illustr., four tables, 16 biblio. refs.

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USSR

UDC 541.49:546.791:546.9

GRINBERG, A. A. (Deceased), PETRZHAK, G. I., and LOZHKINA, G. S.

"Tetravalent Uranium Compounds With Complex Platinum Cations"

Leningrad, Radiokhimiya, Vol 15, No 6, 1973, pp 879-880

Abstract: New complex uranium(IV) salts were synthesized: $[\text{Pt}(\text{NH}_3)_4]_2$
 $[\text{U}(\text{C}_4\text{H}_4\text{O}_6)_2(\text{C}_2\text{O}_4)_2]$ -- ditartratodioxalatouraneate of tetramineplatinum(II) --
and $[\text{Pt}(\text{NH}_3)_6][\text{U}(\text{C}_2\text{O}_4)_4] \cdot 3\text{H}_2\text{O}$ -- tetraoxalatouraneate of hexamineplati-
num(IV). It was shown that the derivative of uranoxalic acid with
tetracharged platinum(IV) cation is the least soluble one in water among
uranoxalic acid salts with mono-, tri-, and tetracharged complex cations.

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USSR

UDC 541.49:546.791:546.841

GRINBERG, A. A., (DECEASED), PETRZHEK, G. I., and LOZHKINA, G. S.

"Tetravalent Uranium and Thorium Benzoylacetonates"

Leningrad, Radiokhimiya, Vol 13, No 6, 1971, pp 904-906

Abstract: The IR spectra of benzoylacetonates of thorium and uranium are identical, indicating similarities in the structures of these compounds. The decomposition points were determined to be 190° for uranium benzoylacetonate and 209° for the thorium complex. The solubility in alcohol at 20°C was studied in a search for isomers of these compounds. However, it was not possible to isolate any isomeric forms of these complexes, probably because of rapid rearrangement inside the internal sphere.

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USSR

UDC 541.49:546.841

GRINBERG, A. A., (DECEASED), ~~PETZHKAK, G. I.~~, and LOZHKINA, G. S.,

"Complex Compounds of Thorium with Organic Ligands"

Leningrad, Radiokhimiya, Vol 13, No 6, 1971, pp 836-840

Abstract: To obtain mixed oxalate-citrate derivatives of thorium, crystalline thorium oxalate was dissolved in 0.1 M solution of potassium citrate, the solution was cooled and alcohol was added with stirring, precipitating the product: potassium dicitratooxalatothoreate $K_4 [Th(C_4H_4O_6)_2 \cdot (C_2O_4)_2] \cdot 3 H_2O$, decomposition point $279^\circ C$. Potassium ditartratodioxalatothoreate $K_4 [Th(C_4H_4O_6)_2 \cdot (C_2H_4)_2] \cdot 3H_2O$, decomposition point $243^\circ C$ was obtained analogously.

Both compounds had structures similar to the $U^{(VI)}$ complexes. They are fine white crystalline products, stable in air, soluble in water and dilute nitric, hydrochloric, and sulfuric acids. Infrared spectra of both compounds are quite similar, indicating similarity in their structures. An assumption is made that thorium and uranium form the citrate complexes by H^+ exchange of the hydroxyl and two carboxyl groups; in the oxalate-tartrate complex the addition of the tartrate ion occurs obviously by hydrogen exchange of the hydroxyl and carboxyl groups.

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USSR

UDC 541.49:66.074.7

PETRZHAK, G. I., STEPANOVA, L. N., and KARAGO, L. V.

"Complexation in Solution Studied by Determination of Charge on Anionic Complexes, Using Ion Exchange"

Moscow, Radiokhimiya, Vol 12, No 2, 1970, pp 266-272

Abstract: Oxalates of uranium (IV), thorium, and neptunium(IV) and (V) were studied by investigating ions formed in solution. It was found possible to study complexation in solutions of complexes with K from 10^{-28} to 10^{-3} . It was found in addition that the complexes $U(C_2O_4)_2 \cdot 6H_2O$ and $Th(C_2O_4)_2 \cdot 6H_2O$, isomorphous in the crystalline state, in aqueous solutions and in oxalic acid behave differently. Uranium oxalate in aqueous solution forms a mono-charged anion, but no anionic complexes were detected for thorium. The presence of free acids of composition $H_2Th(C_2O_4)_3$ and $H_4U(C_2O_4)_4$ in solution was established. It is shown that at concentrations of 10^{-3} to 10^{-4} M, U(IV), Th, and Np(IV) in oxalate solutions form tetra-charged saturated coordination complex anions $[Me(C_2O_4)_4]^{4-}$. No higher charged anions were detected in the solutions studied. A study was made of the behavior of $K_2U_2(C_2O_4)_5 \cdot 8H_2O$ in water and

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USSR

PETRZHAK, G. I., et al, Radiokhimiya, Vol 12, No 2, 1970, pp 266-272

of the behavior of solutions of HNO_3 , HClO_4 , LiClO_4 , $\text{H}_2\text{C}_2\text{O}_4$, and $\text{K}_2\text{C}_2\text{O}_4$. It was established that in solution di- or tetra-charged complexes anions of proposed composition $[\text{U}(\text{C}_2\text{O}_4)_3]^{2-}$, $[\text{U}_2(\text{C}_2\text{O}_4)_5]^{2-}$, and $[\text{U}(\text{C}_2\text{O}_4)_4]^{4-}$ are formed as a function of solution concentration and composition.

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1/2 017 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--COMPLEXING IN SOLUTION STUDIED BY DETERMINING THE CHARGE OF ANION
COMPONENTS BY AN ION EXCHANGE METHOD -U-
AUTHOR-(03)-PETRZHAK, G.I., STEPANOVA, L.N., KARAGO, L.V.
COUNTRY OF INFO--USSR
SOURCE--RADIOKHIMIYA 1970, 12(2), 266-72
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ION EXCHANGE, URANIUM COMPOUND, THORIUM COMPOUND, NEPTUNIUM
COMPOUND, OXALATE, COMPLEX COMPOUND, ABSORPTION SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----F070/605012/803 STEP NO--UR/0186/70/012/002/0266/0272

CIRC ACCESSION NO--AP0140238

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140238

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. U(IV), TH(IV), NP(IV), AND NP(V)
OXALATES IN SOLN. WERE STUDIED BY DENT. OF THE CHARGE OF ANIONIC SPECIES
BY AN ION EXCHANGE METHOD BY USING: SHOWN ON MICROFICHE.

UNCLASSIFIED

USSR

UDC 541.28

SKOVORODKIN, N. V., SOROKINA, A. V., BUGORKOV, S. S., KRIVOKHATSKIY, A. S.,
and PETRZHAK, K. A.

"Radiochemical Determination of the Yields of Rare Earth Elements in the
Fission of ^{239}Pu and ^{241}Pu by Slow Neutrons. II. Yields of Rare Earth
Elements with Half-Lives Exceeding Ten Days"

Leningrad, Radiokhimiya 12, No 3, 1970, pp 492-496

Abstract: The isotopes were classified into two groups depending on their
half-lives. To the first group with half-lives of less than two months
belong: ^{141}Ce , ^{144}Ce , ^{143}Pr , ^{147}Nd , ^{156}Eu and ^{91}Y . The isotopes with half-
lives of more than two months are: ^{144}Ce , ^{147}Pm , ^{155}Eu , as well as ^{91}Y . For
the first group, the target was irradiated approximately 15 days, for the
second group, the target was irradiated no longer than five hours so that
 ^{147}Pm was not burned up during the irradiation process.

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USSR

UDC 613.644+613.65]-07:612.824

YEVDOKIMOVA, I. B., PETSKALEV, A. Z., and SHKARINOV, L. N., Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR, Moscow

"Investigation Into Cerebral Circulation Under Separate and Joint Effects of Intensive Noise and Physical Loads"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 7, 1973, pp 1-5

Abstract: Effects of noise, physical exertion, and their combination on cerebral circulation were studied rheoencephalographically on tire plant laborers experiencing either noise alone (85-105 db) or noise (82-101 db) and physical exertion, and experimentally on males in a soundproof room subjected to either 108 db for 1 hour, physical exertion, or both. In the industrial setting blood circulation changed in both groups following a hypertensive pattern to varying degrees. Arterial tonus changed in most cases. Heightened noise (108 db) produced a drop in venous tonus and encumbered venous backflow. In the experimental setting noise alone resulted in weaker vasoconstriction and reduced blood flow, work alone resulted in heightened vasoconstriction and increased flow, while the combination lowered inflow in the presence of heightened vasoconstriction, indicating

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USSR

YEVDOKIMOVA, I. B., et al., Gigiyena Truda i Professional'nyye Zabolevaniya,
No 7, 1973, pp 1-5

a sharp increase in vascular tonus. It is suggested that under pathological conditions stable noise (85 db) alone and variable noise plus work would produce a hypertensive pattern, while stable noise at higher intensities would cause an atonic pattern coupled with poor venous backflow. Although noise and work combined facilitate cerebral circulation the heightened vessel tonus may cause malnutrition in brain cells. Thus all conditions studied here should be considered potentially dangerous.

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USSR

UDC: 621.317.361(088.8)

PETUKH, A. M., Physicomechanical Institute, Academy of Sciences, UkrSSR

"Speed-Optimum Mathematical Models Which Operate With Low-Frequency, Pulse-Frequency Input Information Converted to Intermediate Digital Code"

Kiev, Othor i Peredacha Informatsii, Resp. Mezhved. Sb., No 30, 1971, pp 45-48

Abstract: The author discusses the structures of a digital tracking periodometer and a digital tracking frequency meter. It is shown that additional organization of the binary multiplier in the structure of the digital tracking periodometer enables construction of different speed-optimum, low-frequency, pulse-frequency models. Models are presented which are comprised of combinations of two tracking frequency meters and two tracking periodometers each, as well as the class of functions realized by them.

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USSR

UDC: 681.14

LAVROV, G. N., Engineer, PETUKH, A. M., Engineer

"An Averaging Follow-up System for Digital Frequency Meters"

Moscow, Pribory i Sistemy Upravleniya, No 1, Jan 72, pp 39-40

Abstract: The paper gives a block diagram of a follow-up device for computing the average running value of a periodically changing parameter in accordance with the formula

$$x_{n+1} = \frac{\sum_{i=1}^n a_i + a_{n+1}}{n+1} = \frac{x_n n + a_{n+1}}{n+1} = x_n + \frac{a_{n+1} - x_n}{n+1}$$

where x_n is the running average value of the parameter after n measurements, a_i is the "instantaneous" value of the parameter being measured, n is the number of measurements of the "instantaneous" values since the beginning of the averaging period, x_{n+1} is the average value after $n+1$ measurements, a_{n+1} is the "instantaneous" value at the $(n+1)$ -th measurement.

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USSR

LAVROV, G. N. et al., Pribory i Sistemy Upravleniya, No 1,
Jan 72, pp 39-40

The operating principle of the device is explained. An averaging follow-up frequency meter and an averaging follow-up analog-digital converter utilizing the described averaging device have been developed at the L'vov "Order of Lenin" Polytechnical Institute. One figure.

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USSR

UDC 621.374.44

FETUKH, A. M., SHVETSKIY, B. I., L'vov Polytechnic Institute

"Wide Band Frequency Multiplier"

USSR Author's Certificate No 304680, filed 11 December 1969, published 24 May 1971 (from Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 17, 1971, No H 03k 3/72)

Translation: A wide band frequency multiplier executed in the form of a pulse control system and containing a controlled oscillator and frequency divider in the feedback circuit is introduced. It is distinguished by the fact that in order to improve the speed it will contain a phase comparator with three outputs, a direct current integrating amplifier and switches. The output of the amplifier is connected to the input of the controlled oscillator, two outputs of the phase comparator are connected to the controlled inputs of the switches, the outputs of the switches are connected to the amplifier input, and the third output of the comparator is connected to the counter divider reset bus.

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- 1 -

USSR

UDC 621.376.223

PETUKHOV, A.A., POPOVA, L.A., TIFLIN, E.K.

"Switch Parameters Of Integrated Interruptor"

V sb. Elektronnaya tekhnika v avtomatika (Electronics Techniques In Automation--
Collection Of Works), Moscow, Izd-vo "Sovetskaya Radio," No 2, 1971, pp 59-64

Abstract: The results are presented of a statistical study of the parameters of the IP-1 silicon integrated interrupter [preryvatel'] which is used as a precision analogue switch in various automatic and telemechanic devices for commutation of voltages up to 6 v. The principal electrical circuit and the numbering of the base lead outs of the IP-1 are presented. An estimated is made of the errors possible during commutation. 4 fig. 2 ref.

1/1

USSR

UDC 017.620.178.3:629.703

PEKTIKHOV, A. N., Central Scientific Research Institute of Aircraft Engines
imeni P. I. Baranov

"The Fatigue Strength of Materials and Design Elements of a Gas Turbine
Engine Under Conditions of Contact Friction Corrosion"

Kiev, Problemy Prochnosti, No 2, Feb 72, pp 99-103

Abstract: Some research results are presented on the influence of various factors that intensify the process of contact friction corrosion (the amplitudes of the relative shifts and the specific pressures), which affects the fatigue strength of structural materials (alloys AK4-1, VT3-1, and steel EI961). The fatigue strength of these materials under conditions of contact friction corrosion in relation to various values of specific pressures in the contact zone is determined. The role of this process in the formation of the carrying capacity of the lock junction of a gas-turbine engine compressor blade is shown. Two tables, 6 figures, 5 references.

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USSR

UDC 547.245

BUGESENKO, YE. F., PETUKHOVA, A. S., BORISENKO, A. A., CHERNYSHEV, YE. A.

"Problem of the Structure of the Products of Interaction of Alkyl Silane Halides with Sodium Dialkyl Phosphites"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, p 216

Abstract: For the products of the interaction of $(\text{CH}_3)_3\text{SiCl}$, $(\text{CH}_3)_2\text{SiCl}_2$, CH_3SiCl_3 and SiCl_4 with sodium diethyl phosphite, in the ^{31}P nuclear magnetic resonance spectra, signals are observed which are split into a quintet as a result of the interaction of the phosphorus nuclei with the four CH_2 -protons of the ethoxyl groups ($J \approx 8$ hertz). The chemical shifts of the observed signals with respect to 85% of the orthophosphoric acid δ_p lie within the limits of -123 to -128, that is, in the range characteristic of trialkyl phosphites [J. R. Van Wazer, et al., J. Am. Chem. Soc., No 78, 5715, 1956] and organylsilyl phosphinates [K. Lesleib, et al., Angew. Chem., No 79, 59, 1967] and not the derivatives of the four-coordination atom of phosphorous. Thus, the ^{31}P nuclear magnetic resonance spectra confirm the structure of the products of interaction of trialkyl silane halides with sodium dialkyl phosphites, just as the derivatives of trivalent phosphorus containing the SiOP fragment. 1/1

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--USE OF COMPUTERS FOR SOLVING SOME GEOCHEMICAL PROBLEMS -U-
AUTHOR--(02)-ZAYDEL, A.R., PETUKHOV, A.V. P
COUNTRY OF INFO--USSR
SOURCE--IZV. VYSSH. UCHEB. ZAVED., NEFT. GAZ 1970, 13(1), 13-17
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., EARTH SCIENCES AND
OCEANOGRAPHY
TOPIC TAGS--GEOCHEMISTRY, COMPUTER APPLICATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1093 STEP NO--UR/0152/70/013/001/0013/0017
CIRC ACCESSION NO--AT0119952
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AT0119952

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COMPUTER PROGRAM PROVIDED FOR MATH. STATISTICS AND CORRELATION OF THE ANAL. RESULTS, PROCESSING SIMULTANEOUSLY DATA UP TO 16 COMPONENTS. EXPANSION IN SERIES OF GRAMMA CHARLIER ON THE LOGNORMAL DERIVS. WAS PROVIDED FOR THE ANAL. OF THE DISTRIBUTION FORM. THE COMPUTING RESULTS WERE PRESENTED AS TABLES, CORRELATION MATRIX, AND DISTRIBUTION PLOTS OF THE GEOCHEM. DATA. FORMS AND COORDINATION DISTRIBUTION OF COMPONENTS ARE PRESENTED.

FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

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UDC 612.766.1-06:613.24

USSR

KAKURIN, L. I., PURAKHIN, YU. N., GEORGYEVSKIY, V. S., KATKOVSKIY, B. S.,
VYSOTSKIY, V. G., CHEREPAKHIN, M. A., USHAKOV, A. S., LARICHEVA, K. A.,
PETUKHOV, B. N., IVANOV, P. P., MACHINSKIY, G. V., MIKHAYLOV, V. M., POMETOV,
YU. D., and SMIRNOVA, G. I.

"Locomotor Activity of Man Kept on a Reduced Food Ration"

Moscow, Voprosy Pitaniya, No 3, May/June 1971, pp 7-12

Abstract: The combination of drastic limitation in locomotor activity with reduction to a low-calorie diet (down to basal metabolism) was studied in six healthy men 24-35 years of age who were confined to bed for a number of days under conditions of hypokinesia. Pronounced changes were observed in the functions of the cardiovascular, respiratory, nervous, and muscular systems of the body. Tabular data were collected on physiological tremor of closed eye, maximum physical work fitness, muscle tone dynamics, and the cardiovascular system in the orthostatic position. Asthenia of the nervous system and a slowing down of the biopotentials in the cerebral cortex were observed. Likewise, it was noted that hypokinesia caused disturbances in body coordination and statics. The pulse rate increased and the arterial pulse pressure was

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KAKURIN, L. I., Voprosy Pitaniya, No 3, May/Jun 1971, pp 7-12

reduced in persons subjected to the orthostatic test. Three persons reached a state of near collapse. These changes were attributed to a significant reduction in the compensating actions of the blood circulation. It was found that after about 10 days, the observed changes gradually decreased in the test subjects. This regression was largely of a functional character and was linked to the "detraining" of the various systems of the body. The authors believe that the severity of the changes in the body functions is directly proportional to the degree of hyperkinesia to which the tested persons were subjected. It is proposed that maintenance of homeostasis requires a certain level of motor activity even with a low-calorie ration.

2/2

PETUKHOV, B. N.

Space
Physiology

SO:IPAS 5384
12 AUG 71

UDC 612.473-06:612.766.2

ELECTRIC ACTIVITY OF LEG MUSCLES DURING STANDING AFTER A 120-DAY

REDNESS CONFERENCE

Article by B. N. Petukhov and Yu. K. Pechenkin, Moscow; Kosmicheskiye Biologiya i Meditsina, Moscow, Vol 3, No 3, 1971, pp 64-68, submitted 12 January 1970.

Abstract: Changes in the electromyogram (EMG) of 10 healthy subjects were studied following a 120-day bed-rest experiment. The test subjects were classified into three groups: the first, a control group, included four persons; the second and third groups included three men each. The second group of test subjects received glutathione and DOCA to prevent changes in water and mineral metabolism. The test subjects in the third group were given Verhol to prevent deviations in protein metabolism. Electrograms were registered from the tibialis and gastrocnemius muscles of the test subjects as they occupied comfortable and strained positions. The records were made twice before the bedrest experiment and three or four days and thirty days thereafter. The EMG from the gastrocnemius muscle was registered better during comfortable standing. After the hypokinesia the EMG amplitude exhibited a distinct decrease in the test subjects of the first and third groups and a less marked decrease in the second group of test subjects. This was especially typical of the EMG registered from the gastrocnemius muscle.

The effect exerted on man by conditions created in laboratories, in part similar to the conditions of prolonged spaceflight, is rather widely discussed in the present-day literature: experiments in a water medium, 63- and 72-day hypokinesia, year-long confinement of human subjects in a closed space, etc. (L. I. Kuzmina, 1968; A. V. Korobkov, 1966; A. I. Budyakov, et al., 1965, and others).

USSR

UDC 536.24

PETUKROV, B. S., KURGANOV, V. A., GLADUNTSOV, A. I., Institute of High Temperatures of the Academy of Sciences USSR

"Experimental Study of Heat Transfer to a Turbulent Flow of Multiatomic Gas Under High-Temperature Heads"

Moscow, Teplofizika Vysokikh Temperatur, No 6, Nov/Dec 70, pp 1311-1315

Abstract: New experimental data are presented on local heat transfer in the heating of a turbulent flow of nitrogen and ammonia for which, as for other multiatomic gases, it is characteristic to have a more considerable change in viscosity, specific heat, and especially heat conductivity with temperature than in the case of simple gases. The measurements were conducted in two stainless steel tubes with internal diameters of 3 and 4 mm. The length of the heating zone was 90-95 calibers. The tubes were heated by passing a dc current directly through the wall. Local heat releases were determined on the basis of the current and voltage drops at sections between potentiometric leads. Experiments on ammonia were conducted for Reynolds numbers of 10^4 - $2.4 \cdot 10^5$ at the output, an initial gas temperature of 20-150°C, and a wall temperature up to 900°C. The density of the heat flux varied from $1.1 \cdot 10^4$ to $1/2$

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USSR

PETUKHOV, S. B., et al., Teplofizika Vysokikh Temperatur, No 6, Nov/Dec 70, pp 1311-1315

$1.5 \cdot 10^6$ w/m². Control experiments on N₂ were conducted at a gas temperature at the output of $\sim 20^\circ\text{C}$; the Reynolds number varied from $3 \cdot 10^4$ to 10^5 and the heat flow density varied from $17.5 \cdot 10^3$ to $5 \cdot 10^5$ w/m². The data show that in the case of the heating of ammonia, the functional dependence of Nu on Re and Pr retains approximately the same form as in isothermal flow. A considerable increase in the heat conductivity of ammonia, especially in the region near the wall (the more heated region), to a considerable degree compensates for the weakening of convective exchange associated with the decrease in gas density under heating, and this causes a considerably weaker dependence of the Nusselt number on the temperature factor.

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1/2 023 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--STRUCTURE OF POLYMERS WITH LONG SIDE BRANCHES -U-
AUTHOR--(03)-ZUBOV, YU.A., PETRUKHIN, B.S., SHIDAYEV, V.P.
COUNTRY OF INFO--USSR
SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(4), 290-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--X RAY ANALYSIS, MOLECULAR STRUCTURE, MODEL, CRYSTAL STRUCTURE,
METHYL METHACRYLATE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1247 STEP NO--UR/0460/70/012/004/0290/0294
CIRC ACCESSION NO--AP0134921
UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134921

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STRUCTURAL MODEL WAS PROPOSED FOR POLY(ALKYL ACRYLATES) (I) AND POLY(ALKYL METHACRYLATES) (II) FROM RESULTS OF X RAY ANAL. OF POLY(HEXADECYL ACRYLATE) (III) AND POLY(HEXADECYL METHACRYLATE) (IV). THE MODEL ACCOUNTED FOR THE 1 LAYER OR 2 LAYER HEXAGONAL PACKING OF SIDE CHAINS AND FOR THE FORMATION OF EVEN AND ODD REFLECTIONS AT SMALL ANGLES. A FORMULA WAS DERIVED FOR THE AZIMUTHAL DISTRIBUTION OF INTENSITY SCATTERING. X RAY PATTERNS OF III, IV AND HEXADECYL ACRYLATE ISO-PR ACRYLATE COPOLYMERS SUGGESTED THAT I AND II HAD A GAS CRYST. STRUCTURE. FACILITY: FIZ.-KHIM. INST. IM. KARPOVA, MOSCOW, USSR.

UNCLASSIFIED

1/2 031 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--STRUCTURE AND PHASE TRANSITIONS IN LONG CHAIN CRYSTALLINE VINYL
MONOMERS -U-
AUTHOR--(03)-PETRUKHIN, B.S., SHIBAYEV, V.P., PLATE, V.A.
COUNTRY OF INFO--USSR P
SOURCE--VYSOKOMOL. SOEDIN., SER. A 1970 12(3) 687-91
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ACRYLATE, STEARIC ACID, ESTER, MONOMER, CHEMICAL SYNTHESIS, X
RAY DIFFRACTION, IR SPECTRUM, CRYSTAL, PHASE TRANSITION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/0308 STEP NO--UR/0459/70/012/003/0687/0691
CIRC ACCESSION NO--AP0111502
UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0111502

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. C SUB16-18 ALKYL ACRYLATES (I),
CETYL METHACRYLATE (II), AND VINYL STEARATE (III) WERE PREPD. BY METHODS
DESCRIBED EARLIER (S., ET AL., 1968). X RAY DIFFRACTOMETRY,
THERMOGRAPHY, AND IR SPECTROSCOPY SHOWED THAT THESE MONOMERS EXIST IN
SEVERAL CRYSTALLOGRAPHIC FORMS. I HAVE HEXAGONAL AND TRICLINIC
CRYSTALS, II IS TRICLINIC, AND III IS RHOMBIC. THE HEXAGONAL FORM OF I
IS STABLE TO SIMILAR TO 10DEGREES BELOW ITS M.P. ONLY WITH A C SUB17
ALKYL GROUP. OTHER I DURING STORAGE ARE TRANSFORMED INTO TRICLINIC
FORMS.

UNCLASSIFIED

Acc. Nr. **AP0048842**

Abstracting Service:
CHEMICAL ABST.

5-70

Ref. Code
U R 0459

90929y Effect of the flexibility of the main chain on the structure of crystalline polymers and copolymers with long side branches. Shibaev, V. P.; Petrukhin, B. S.; Plate, N. A.; Kargin, V. A. (Mosk. Gos. Univ. im. Lomonosova, Moscow, USSR). *Vysokomol. Soedin., Ser. A* 1970, 12(1), 140-8 (Russ). X-ray diffractometric data, thermogravimetry, and detns. of m.p., entropy (ΔS) and enthalpy (ΔH) of melting show that in atactic or isotactic title polymers (I) the character of the side chain packing is detd. by the flexibility of the main chain. Poly(vinyl stearate), poly(*n*-heptadecyl acrylate), poly(*n*-octadecyl acrylate), and poly(hexadecyl acrylate) have relatively high m.p., ΔS , ΔH , and 2-layer side chain packing. Poly(hexadecyl methacrylate) and hexadecyl acrylate-iso-Pr acrylate copolymer have relatively low m.p., ΔS , ΔH , and single-layer side chain packing. All I have hexagonal crystal structure.

CPJR .

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REEL/FRAME
19800609

USSR

UDC 536.24:539.196.6

PETUKHOV, B. S., MAYDANIK, V. N., NOVIKOV, G. A.

"Experimental Study of Heat Transfer with Turbulent Flow of a Nonequilibrium
Dissociating Gas in a Circular Pipe"

Moscow, Teplofizika Vysokikh Temperatur, Vol. 9, No. 2, Mar-Apr 71, p. 316-319.

Abstract: An experimental study is performed of heat transfer with turbulent flow of a nonequilibrium dissociating gas (nitrogen dioxide) in a circular pipe. The experimental data shows significant dependence of heat transfer on the rate of the dissociation reaction. A dependence is suggested for calculation of heat transfer considering the finite rate of the reaction.

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USSR

UDC 536.24.532.542.4:535.338

PETUKHOV, B. S., MAYDANIK, V. N., and NOVIKOV, G. A.

"Experimental Investigation of Heat Transfer with Turbulent Flow through Round Tube of Gas Under Dissociation Equilibrium"

Moscow, Teplofizika Vysokikh Temperatur, Akademiya Nauk SSSR, Vol 9, No 1, Jan-Feb 71, pp 116-123

Abstract: Experimental investigation of heat transfer with turbulent flow of nitrogen tetroxide was conducted. The gas was flowing through a round tube which was heated by electric current, the heat was transferred from the walls of the tube to the gas. The temperature of the tube wall was measured by thermocouples welded to the outside of the tube. The gas temperature was measured by thermocouples at the inlet and outlet of the tube. The relation between the gas temperature and the length of the tube was obtained by varying the length of the tube being heated.

The experiments were conducted with the range of pressures of 3 to 45 atmospheres, gas temperatures from 50 to 600°C, wall temperatures from 70 to 700°C, Reynolds number from 25,000 to 250,000.

The dissociation of nitrogen tetroxide occurs in two stages. At the

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USSR

PETUKHOV, B. S., et al., *Teplofizika Vysokikh Temperatur*, Akademiya Nauk SSSR, Vol 9, No 1, Jan-Feb 71, pp 116-123

temperature from 20 to 180°C the nitrogen tetroxide dissociates into nitrogen dioxide, the proportion of the latter increases with the temperature. The change of such proportion occurs practically instantaneously with the change of temperature. Equilibrium condition is assumed to exist at each point at this stage. At the temperatures from 150 to 900°C the nitrogen dioxide dissociates into nitrogen monoxide and oxygen, this reaction occurs slowly and it is assumed that the chemical composition of the gas in this stage does not change along the length of the tube.

Graphs of gas temperature, wall temperature and heat transfer coefficient along the length of the tube are given for both stages of dissociation.

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1/2 029 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--INVESTIGATION OF HEAT EMISSION DURING BOILING OF LIQUID SODIUM IN A
VERTICAL TUBE -U-
AUTHOR--(03)-PETUKHOV, B.S., ZEYGARNIK, YU.A., LITVINOV, V.O.
COUNTRY OF INFO--USSR
SOURCE--MINSK, IZVESTIYA VYSSHIKH UCHEBNYKH ZAVEDENIY, ENERGETIKA, PP
102-109
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--LIQUID METAL BOILER, HEAT TRANSFER RATE, SODIUM, BOILING,
METAL TUBE, TWO PHASE FLOW
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1999/1662 STEP NO--UR/0143/70/000/000/0102/0109
CIRC ACCESSION NO--AT0123494
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0123494

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN EXPERIMENTAL INVESTIGATION OF HEAT EMISSION DURING BOILING OF SODIUM IN A VERTICAL TUBE 3.54 MM IN DIAMETER AND 745 MM IN LENGTH WAS CARRIED OUT. THE INVESTIGATED RANGE OF HEAT FLOWS WAS (200 DIVIDED BY 705) TIMES $10 \text{ PRIME}^3 \text{ W-M PRIME}^2$, WEIGHT VAPOR CONTENT UP TO 60PERCENT, VAPORIZATION RATE UP TO 460 M-SEC, AND PRESSURE BEYOND WORKING RANGE 0.75-0.8 BAR. EXPERIMENTS WERE PERFORMED WITH FEEDING INTO THE INLET OF THE WORKING SECTION OF A SMALL AMOUNT OF INERT GAS, WHICH ENSURED THE FORMATION OF ANNULAR FLOW REGIME.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--THERMAL CONVERSION OF DELTA-FeOOH TO ALPHA-Fe₂O₃ STUDIED BY MOSSBAUER SPECTROSCOPY AND X RAY DIFFRACTION METHODS -U-

AUTHOR--(05)-VLASOV, A.YA.; LOSEVA, G.V.; MAKAROV, YE.F.; MURASHKO, N.V., PETUSHKOV, F.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(5), 1499-503

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, CHEMISTRY

TOPIC TAGS--MOSSBAUER EFFECT, SPECTROSCOPY, CRYSTAL STRUCTURE, X RAY DIFFRACTION, IRON OXIDE, HEMATITE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

COPIES REEL/FRA--3005/0953

STEP NO---UR/0181/70/012/005/1499/1503

ARC ACCESSION NO--AP0133039

UNCLASSIFIED

025

UNCLASSIFIED

PROCESSING DATE--04DEC70

RC ACCESSION NO--AP0133039

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CRYSTAL STRUCTURE OF SYNTHESIZED DELTA-FeOOH AT THE TEMP. OF TRANSFORMATION INTO ALPHA-FeOOH SUB2 O SUB3 WAS STUDIED BY MOESSBAUER SPECTROSCOPY AND X RAY DIFFRACTION. INVESTIGATIONS WERE CARRIED OUT AT ROOM TEMP. USING SPECIMENS PREVIOUSLY HEATED FOR 30 MIN AT 23-650DEGREES. AT 23-155DEGREES DELTA-FeOOH EXISTS IN THE SUPERPARAMAGNETIC STATE. THE MOESSBAUER PARAMETERS ARE: ISOMER SHIFT DELTA EQUALS 0.64 PLUS OR MINUS 0.06 MM-SEC RELATIVE TO NA NITROPRUSSIDE AND QUADRUPOLE SPLITTING 2 EPSILON EQUALS 0.48 PLUS OR MINUS 0.06 MM-SEC. THE LATTICE CONSTS. ARE A EQUALS 2.546 PLUS OR MINUS 0.005 AND C EQUALS 4.57 PLUS OR MINUS 0.05 ANGSTROM. THE TRANSFORMATION OF DELTA-FeOOH INTO HEMATITE OCCURS AT 55-225DEGREES WITH A SHARP DECREASE IN THE MAGNITUDE OF THE EFFECT, A JUMP IN THE ISOMER SHIFT, AN INCREASE IN THE WIDTH OF THE MOESSBAUER LINES, AND MAX. BROADENING OF THE X RAY POWDER DIAGRAM. HEMATITE FORMED AT 225-650DEGREES HAS A EQUALS 5.032 PLUS OR MINUS 0.005 AND C EQUALS 13 PLUS OR MINUS 0.1 ANGSTROM. THE EFFECTIVE FIELD ON THE NUCLEUS IN HEMATITE VARIES FROM H SUBEFF EQUALS 409 PLUS OR MINUS 30 TO 515 PLUS OR MINUS 10 KOE AT CONST. DELTA EQUALS 0.61 PLUS OR MINUS 0.06 MM-SEC AND 2 EPSILON EQUALS 0.34 PLUS OR MINUS 0.06 MM-SEC. FACILITY: INST. IZ., KRASNOYARSK, USSR.

UNCLASSIFIED

USSR

UDC: 681.32.001

MAYOROV, S. A., PETUKHOV, G. A., SKORUBSKIY, V. I., SOKOLOVA, N. S., CHESNOKOV, M. N.

"Problem of Arrangement of Structural Units When Planning and Designing Digital Devices"

Skaisiavimo technika, Vychisl. Tekhnika. T. 1 (Computer Engineering, Vol 1), Kaunas, 1970, pp 275-279 (from RZh-Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 9, Sep 70, Abstract No 9B200)

Translation: A generalized statement of the arrangement problem for devices of any level is presented by introducing the concept of the functional-structural unit and mounting space. The following steps in obtaining optimal arrangement are investigated: selection of the initial arrangement, optimization of the circuits connecting more than two contacts, processing the connection list, and improvement of the selected arrangement. The results of practical execution of the described problem on the Minsk-22 digital computer are presented. There is one illustration and a two-entry bibliography.

1/1

USSR

UDC 622.011.43

PETUKHOV, I. M., FEL'DMAN, I. A., YAKUBSON, G. G.

"Experimental Study of the Deformation of Worked Strata"

Tr. VNII gorn. geomekh. i marksheyd. dela (Works of the All-Union Scientific Research Institute of Mining Geomechanics and Surveying), 1970, Collection 74, pp 423-428 (from RZh-Mekhanika, No 9, Sep 71, Abstract No 9V690)

Translation: The technique and experimental results are presented on measuring deformations of the elastic restoration of worked strata at the "Vorkutaugol" combine. It was found that deformations attenuate with distance from the working according to the exponential law $\epsilon = 0.0007 \cdot e^{-7y/2x_0}$ (where ϵ is the deformation, $2x_0$ is the width of the working, and y is the distance from the working). It is pointed out that it is possible to use these results in calculating cleaned zones in cold beds dangerous for strata shocks. A. B. Fadeyev.

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USSR

PEPIKHOV, I. V.; TROITSKIY, V. A. (Leningrad)

"Variational Problems of Optimization for an Hyperbolic-Type Equation"

Moscow, Prikladnaya Matematika i Mekhanika; July-August, 1972; pp 578-88

ABSTRACT: The article concerns problems of the optimization of control processes for systems described by second-order hyperbolic equations put in a form related to the bivariate Bolza equation of variational calculus. The necessary conditions for stability are found. It is shown that Lagrange multipliers which may have discontinuities within the region of allowable variation correspond to optimal solutions.

Optimal problems for hyperbolic equations with conditions for the characteristics for the simplest type of functional have been studied by A. I. Yegorov by means of Pontryagin's maximum principle ("Optimal Equation for Processes in Distributed Plants", FM, 1963, Vol 28, No 4; "Necessary Conditions for Optimality in Systems with Distributed Parameters", Mat. Sh., 1966, Vol 68, No 3).

1/1 The article includes 60 equations. There are seven references.

USSR

UDC 612.273.2:612.616/.617.015.1

PETUKHOV, M. I., Chair of Biochemistry, Kalinin Medical Institute

"Change in the Activity of Glucose-6-Phosphatases in Rats Testes During Hypoxia"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 70, No 9, Sep 70, pp 34-36

Abstract: A spectrophotometric method based on reduction of NADP was used in a study of the activity of hexokinase and glucose-6-phosphate dehydrogenase in the testes of white Wistar rats subjected to acute and chronic hypoxic hypoxia. The rats weighed 150-200 g. Acute hypoxia was caused by placing the rats into a barochamber at p = 200 mm Hg for 1.5 hrs, and chronic hypoxia, by placing the rats in the chamber at p = 260 mm Hg for 6 hrs per day over a period of 5 weeks. The testes were rinsed thoroughly to remove blood, the membrane was removed, and they were then homogenized in cold. The homogenate was centrifuged, and the activity of hexokinase and dehydrogenase was determined spectrophotometrically in the supernatant. In acute hypoxia, hexokinase activity decreased by 44%; in chronic hypoxia it increased by 53%. Dehydrogenase activity increased during acute and chronic oxygen starvation by 71 and 44%, respectively. Injection of hydrocortisone (50 mg/kg) had no effect on the activity of these enzymes in rats with chronic hypoxia.

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USSR

PETUKHOV, S. V., Moscow Physicotechnical Institute

"The Dynamics of Processes in the Vestibular Labyrinth"

Moscow, Biofizika, Vol 17, No 5, 1972, pp 930-931

Abstract: An enlarged glass model of the human semicircular canal system was employed to determine the nature of cupule displacement upon rotation of the head in sagittal and frontal planes. The model was built on the basis of the theory of dynamic similitude. Relative displacement of the three semicircular canals is graphed with respect to angular acceleration. Data on such displacement can be used to analyze changes in neural pulsation in response to head rotation.

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USSR

UDC: 536.2:536.63

(14)

PELETSKIY, V. E., CHERHOVSKOY, V. Ya., SOVITSKIY, Ye. M., TYLKINA, M. A.,
AMASOVICH, Ye. S., ARSKAYA, Ye. P., ZAYCHENKO, V. M., PETUKHOV, V. A.,
Institute of High Temperatures of the Academy of Sciences of the USSR,
Institute of Metallurgy imeni A. A. Baykov of the Academy of Sciences of
the USSR

"Some Physical Properties of a New Alloy in the Nickel-Rhenium-Molybdenum
System"

Moscow, Teplofizika Vysokikh Temperatur, Vol 11, No 2, Mar/Apr 73, pp
435-436

Abstract: The authors study the heat conduction, coefficient of thermal expansion and resistivity of an alloy in the nickel-rhenium-molybdenum system containing 10 wt.% Re and 15 wt.% Mo. Curves are given showing the temperature dependence of the measured parameters between 100 and 1000°C. The results indicate structural transformation of the alloy in the solid state. Analysis points to the possibility of formation of the so-called K-state observed in the region of solid solutions of the nickel-chromium system with more than 16% chromium. However, a final explanation of the observed anomalies will require further research.

1/1

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USSR

UDC 577.153.3

BOLDYREV, A. A., PETUKHOV, V. B., PUTOV, V. B., SPIKKINA, G. D., and TKACHUK, V. A.

"Role of Acetylcholine and Imidazole-Containing Dipeptides in the Control of Cation Transport Through Muscle Membranes"

Ukrainskiy Biokhimicheskiy Zhurnal, Vol 43, No 1, 1971, pp 125-135

Abstract: Acetylcholine in the neuromuscular apparatus has an additional function to its synaptic effect: it acts on the enzymatic properties of extrasynaptic muscular membranes, sarcolemma and sarcoplasmic reticulum. The effect of acetylcholine in combination with imidazole-containing compounds was studied. In particular, experimental data were collected on the effect of imidazole on contractile activity and the end plate potential of a nerve-muscle preparation from a frog, during rhythmic stimulation of a nerve. Experiments were conducted to determine the dependence of ATP-ase activity of heart muscle sarcolemma in a rabbit on the Na^+ ; K^+ ratio, the effect of addition of $CaCl_2$ and EGTA [ethyleneglycol-bis(β -aminoethyl-ether'-N,N-tetraacetate)] on the hydrolysis rate of ATP and acetyl phosphate of cardiac sarcolemma and the skeletal muscle; the dependence of inhibition of Ca^{2+} -ATP activity on the concentration of acetylcholine or buffer

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- 5 -

USSR

BOLDYREV, A. A., et al., Ukrainskiy Biokhimiicheskiy Zhurnal, Vol 43, No 1, 1971, pp 125-135

solution; and the effect of acetylcholine on Ca^{2+} transport in a preparation of sarcoplasmic reticulum of a rabbit in the presence of acetylcholine. Fatigue or blocking of neuromuscular transmission by competing toxins is reduced and eliminated by imidazole-containing dipeptides. As a result, an increase in amplitude of the end plate potential is observed and its transformation into an action potential is facilitated. Intensified, spontaneous bioelectrical activity at the myoneural junction. Enzymatic activity of sarcolemma and sarcoplasmic reticulum transport ATP-ase is inhibited by acetylcholine but enhanced by imidazole and its derivatives. The synergistic effect of both dipeptides and acetylcholine is a more complete inhibition of active ion transport. Experimental data are reported on some mechanisms for the transfer of sarcolemma excitation to the contraction process. Under the effect of acetylcholine, there may be a change in cation transfer. It is assumed that acetylcholine in combination with imidazole-containing dipeptides regulates the intensity and direction of cation transport through muscular membranes.

2/2

Pharmacology and Toxicology

USSR

UDC 612.617.1

SEVERIN, S. Ye., BOLDYREV, A. A., and PETUKHOV, V. B., Moscow State University
imeni M. V. Lomonosov

"Presynaptic Effect of Imidazole and Carnosine"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 2, 1970, pp 471-474

Abstract: A study was made of the effect of imidazole (20 mM) and carnosine (10 and 20 mM) on the frequency and amplitude of miniature end-plate potentials (MEP) derived from electrodes implanted in *Rana temporaria* M. cutaneous pectoris in Ringer's solution and in the presence of KCl or d-tubocurarine. The addition of imidazole to the solution increased the MEP frequency by a factor of 1.5-2 and reduced the mean amplitude by 15 to 30%. The increase in frequency was particularly marked after potassium depolarization. After the preparation was washed with Ringer's solution, the frequency and, somewhat later, the mean amplitude returned to their normal levels. Carnosine in either concentration increased the MEP frequency by a factor of three, but reduced the mean amplitude only slightly. Addition of imidazole and carnosine after d-tubocurarine increased the MEP frequency but did not prevent the amplitude from decreasing. The increase in quantum composition of the end-plate potentials brought about by imidazole and carnosine is direct evidence of the presynaptic action of these agents.

1/1

Turbine and Engine Design

USSR

UDC: 621.438-71.001.5

ZHAROV, G. G., Doctor of Technical Sciences, Professor, VENTSYULIS, L. S.,
PETUKHOV, V. G., Candidates of Technical Sciences

"Promising System for Cooling High Temperature Gas Turbines"

Leningrad, Energomashinostroyeniye, No 8, 1970, pp 10-13

Abstract: A relatively simple, reliable and economical method of cooling the stressed parts of gas turbines is the use of a closed system of air cooling (with the cooling medium exhausted away from the turbine). An analysis of the cooling conditions of a turbine with this type of cooling system is presented. Blade designs suitable for this type of turbine are described, and the temperature distribution around the profiles of three types of blades with this type of cooling are noted. On the basis of the calculated analysis of temperature around the profile of a cooled blade, it is concluded that the temperature difference with a constant clearance for passage of cooling air with an initial gas temperature of 1200°C will not exceed 80-100°C, even as the cooling air flow is varied from 1 to 4% of the gas flow. The blade edges are at the same temperature level as the central portion of the blade, with a

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USSR

UDC:621.438-71.001.5

ZHAROV, G. G., Doctor of Technical Sciences, Professor, VENTSYULIS, L. S.,
PETUKHOV, V. G., Candidates of Technical Sciences, Leningrad, Energomashinostroy-
eniye, No 8, 1970, pp 10-13

local cool spot near the bent portion of the blade up to 100° cooler. Increasing the cooling air clearance increases the wall temperature. Changing the cooling air temperature at the input to the blade with unchanged air flow rate has little influence on blade temperature.

2/2

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USSR

UDC 519.2

PARNEV, I. V., PETUKHOV, V. I., SADOVSKIY, G. A.

"Estimating the Errors of Empirical Distribution Laws of Random Processes"

Tr. Ryazan. radiotekhn. in-ta (Works of Ryazan' Radiotechnical Institute), 1971, vyp. 28, pp 248-261 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V187)

Translation: Let $x_i = x(i\Delta t)$, $i = 1, \dots, n$ be successive readings of the stationary ergodic random process $x(t)$ by which it is necessary to construct the estimate of the probability distribution density $w(x)$ of the process $x(t)$. It is proposed that the digitalization step Δt exceeds the correlation radius of the process $x(t)$, and the probability density $w(x)$ is an analytical function which depends on a finite number of parameters: $w(x) = w(x, a_1, \dots, a_m)$. The estimation error arising a) as a result of the limited nature of the sample and b) as a result of amplitude quantizing of the readings of the process $x(t)$ are investigated separately.

1/1

USSR

UDC: 621.777:546.621

PETUKHOV, V. I., ABRAMOV, O. V., ZUBKO, A. M. and MANEGIN, YU. V.

"Extrusion of Aluminum in an Ultrasonic Field"

Moscow, Kuznechno-shtampovochnoye proizvodstvo, No 3, Mar 72, pp 5-7

Abstract: Discussed are various techniques of applying ultrasonic vibrations in the process of direct and indirect extrusion. The test materials included cold-extruded aluminum and aluminum extruded with the application of ultrasonic vibrations. A coordinate grid was used to evaluate the metal flow. The ultrasonic vibration technique was most effective in direct extrusion when applied to the deformation area through both the male and female dies simultaneously and for indirect extrusion -- through the male die and deflector simultaneously. Increasing the shift amplitude of elastic vibrations results in a drop of the extrusion force and the degree of nonuniform deformation of the metal. Increasing the extrusion rate and the length of the formable slab decreases the effect of ultrasonic vibrations on the power parameters of extrusion. The reduced degree of deformation force under elastic vibrations is unaffected by changes in

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USSR

PETUKHOV, V. I., et al, Kuznechno-shtampovochnoye proizvodstvo, No 3,
Mar 72, pp 5-7

the amount of deformation (from 26 to 75%), the die angle (from 60 to 120°)
and the lubricant's viscosity. A table reflects the effect of technological
parameters on the process of aluminum extrusion. (5 illustrations,
1 table).

2/2

- 18 -

UDC: 681.333:519.2

USSR

PETUKHOV, V. I., KOLOMIYETS, O. M., BERKUTOV, A. M., PROSHIN, Ye. M., SADOVSKIY, G. A., Ryazan Radio Engineering Institute

"A Static Analyzer"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 18, 1970, Author's Certificate No 271911, Filed 30 Dec 68, p 115

Abstract: This Author's Certificate introduces a static analyzer which contains an analysis level discriminator, a controlled step voltage generator, a generator which produces pulses to fill the intervals corresponding to the dwell period of a realization higher (lower) than the given level of analysis, an analysis time key circuit, a pulse frequency divider, a filler pulse counter, and a unit which introduces the number for the initial counter setting. As a distinguishing feature of the patent, the analyzer is designed for simplification in determining numerical characteristics. It contains an inhibiting logic circuit with the output of the frequency divider connected to one of its inputs while the second input is connected to the output of the pulse counter, whose set input is connected to the unit for introducing a number into the

1/2

USSR

PETUKHOV, V. I., et al, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 18, 1970, Author's Certificate No 271911 Filed 30 Dec 68, p 115

counter. The output of the inhibiting logic circuit is connected to the input of the controlled step voltage generator, whose output is connected to the analysis level discriminator.

2/2

1/2 014
UNCLASSIFIED
TITLE--ACTION OF ANTICHOLINERGICS ON THE COURSE OF TRAUMATIC SHOCK -U- PROCESSING DATE--16OCT70
AUTHOR--PETUKHOV, V.I.
COUNTRY OF INFO--USSR
SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970, LENINGRAD, USSR.
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--NERVOUS SYSTEM DRUG, CHOLINOLYTIC, TRAUMATIC SHOCK
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0069 STEP NO--UR/0390/70/033/002/0170/0173
CIRC ACCESSION NO--AP0120769
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0120769

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AMIZIL (0.5 MG-KG) AND, TO A
 LESSER EXTENT, ARPENAL (5 MG-KG) GIVEN I.V. TO RABBITS AFTER A PRIMARY
 INJURY INCREASED THE RESISTANCE OF THE ANIMALS TO SUBSEQUENT, MORE
 SEVERE TRAUMA AND INCREASED THE LIFE SPAN OF RABBITS WHICH HAD ALREADY
 DEVELOPED SHOCK. PEDIPHEN (5 MG-KG) AND METAMIZIL IODOMETHYLATE (0.5
 MG-KG) GIVEN I.V. HAD NO PROTECTIVE EFFECT. THEREFORE, CENTRAL
 M,CHOLINOLYTICS PROTECT ANIMALS AGAINST TRAUMATIC SHOCK, WHEREAS
 PERIPHERAL M,CHOLINOLYTICS AND CENTRAL N,CHOLINOLYTICS DO NOT.
 FACILITY: LENINGRAD. SANIT.-GIG. MED. INST., LENINGRAD, USSR.

UNCLASSIFIED

USSR

BAKAYEV, A. A., PETUKHOV, V. S., KHAYRNASOV, M.

"Automated System for Operational Calculations (ASOR) Involved in the Processing of Export Cargo in a Port"

Upravlyayushchiye Sistemy i Mashiny [Control Systems and Machines], 1972, No 1, pp 50-54 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V677, by the authors).

Translation: The basic principles of formation and processing of information for the main files of an automated system are presented, using the data from primary messages concerning movement of export cargoes in a port.

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USSR

UDC 612.822.3+612.821.6

PETUKHOV, V. V. and ORLOV, V. M., Institute of Biophysics, Academy of Sciences
USSR, Pushchino-na-Oke

"Chronic Implantation of Electrodes and Recording of Evoked Potentials During
the Formation of Conditioned Reflexes in Unrestrained Rats"

Moscow, Zhurnal Vyshey Nervnoy Deyatel'nosti, No 5, 1972, pp 1085-1086

Abstract: Special T-shaped rods to hold the plug and socket unit are inserted into holes (made with a dental drill) in the occipital and frontal bones of the animals and then turned 90° to secure them under the bone. The free ends of the rods projecting above the skull are covered with a quick-setting plastic. The rods remain in place for 1 1/2 to 2 months and the experimental animals can be studied daily during this period of time. The rods do not injure or inflame the dura mater at the site of contact. To permit commutation of the animal with the amplifying apparatus and stimulators, the electrodes are soldered to a special block with the necessary number of contacts.

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ATO 032088

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NUCLEAR SCI. ABST. 770 UR0000

5364 (SLAC-Trans-104) HIGH-FREQUENCY POWER SUPPLY OF THE VEPP-2 STORAGE RING. Gorniker, E. I.; Karliner, M. M.; Petrov, V. M.; Petukhov, V. V.; Shekhtman, L. A. (Akademiya Nauk SSSR, Novosibirsk, Institut Yadernoi Fiziki). Translated by T. Watt for Stanford Linear Accelerator Center, Calif., from Russian Preprint No. 235. 12p. Dep. CFSTI.

The equipment described consists of two tuned power amplifiers, a master oscillator, and a control system. One of the amplifiers, operating at a wavelength of $\lambda_1 = 4$ m, has a rated power of 150 kW, so that it can be used to develop a voltage of up to 300 kV across the accelerating gap, which is necessary to ensure a short bunch length. The other amplifier has a rated power of 20 kW and operates at a wavelength $\lambda_2 = 12$ m. It is used to take the stored particles from three separatrices onto one. The common master oscillator and the control system ensure correct phasing of the voltages at the two frequencies. The control units stabilize the operation of the system, automate the operation of recapture, and contain feedback circuits which suppress electromechanical oscillations of the resonator. (auth)

MA

19700274

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USSR

UDC 669.71.472(088.8)

PETUKHOV, Yu. N.

"Device for Continuous Loading of Alumina into an Aluminum Electrolyzer"

USSR Author's Certificate No. 298686, filed 28/08/69, published 16/04/71.
(Translated from Referativnyy Zhurnal Metallurgiya, No 2, 1972, Abstract No. 2G167P by G. Svodtseva).

Translation: In order to simplify the design and allow more even charging of Al_2O_3 into the electrolyzer, a dosing system is made in the form of an hour glass and one end is connected to an aeration trough, the other to a transport tube fastened to the inner wall of the anode cover. When the Al_2O_3 enters the transport tube, it encounters the resistance of gases formed in the process of electrolysis and is separated into powder. In the powdered state, the Al_2O_3 passes through various temperature zones from 20 to 960° , is well heated and settles onto the surface of the electrolyte. 4 figs.

1/1

USSR

UDC 547.241 547.245 547.732

CHERNYSHEV, YE. A., BUGERENKO, YE. F., PETUKHOVA, A. S.

"Thiophene Derivatives With Silicon and Phosphorus"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 10, 1971, pp 2186-2189

Abstract: A series of previously unknown ethyl α -thienyl(triorganosilyl) methylphosphinates (I-VI), potential antiwear additives to silicone oil, were synthesized by the Arbuzov reaction (at 120-140°) between diethyl α -thienylphosphonite (VII) and chloromethyltriorganosilanes, where the organic group is methyl, phenyl, or ethoxy. Reactivity of (VII) in the cited reaction was compared with that of diethyl phenylphosphonite, using gas-liquid chromatography. The comparative plots of the yield and reciprocal values of concentration of the reaction products versus time show that VII is less reactive than its phenyl analog. This expected result could be explained by a decrease in nucleophilic activity of P atom in VII in relation to the phenyl analog. The formulas and some physical constants of the I-VI compounds are tabulated and the preparation procedures are described.

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1/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--SYNTHESIS OF ORGANOSILICON ORGANOPHOSPHORUS COMPOUNDS BY THE
ARBUZOV REACTION -U- 2
AUTHOR-(03)-BUGERENKO, YE.F., PETUKHOVA, A.S., CHERNYSHEV, YE.A.
COUNTRY OF INFO--USSR P
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(3), 609-11
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ORGANIC SYNTHESIS, ORGANOSILICON COMPOUND, ORGANIC PHOSPHORUS
COMPOUND, CHLORINATED ORGANIC COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1175 STEP NO--UR/0079/70/040/003/0609/0611
CIRC ACCESSION NO--AP0128597
UNCLASSIFIED

2/2 014
CIRC ACCESSION NO--AP0128597
ABSTRACT/EXTRACT--(U) GP-0-
GRAPHIC INFORMATION.

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. MICROFICHE OF ABSTRACT CONTAINS

UNCLASSIFIED

USSR

UDC 669.794.669.25

VOSKRESENSKAYA, L. A., PETUKHOVA, A. S., PIKUNOV, M. V.

"Study of Distribution of Tantalum in the Structure of Yttrium by Contact Micro-
roentgenography"

Nauchn. Tr. N-i. i Proyechn. In-t Redko met. Prom-sti [Scientific Works of Scientific Research and Planning Institute for the Rare Metals Industry], 1971, Vol. 32, pp. 34-37. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 1710 by the authors).

Translation: The distribution of Ta in Y produced by various methods was studied. The method of contact microroentgenography was found to be the only possible method for this purpose. It was established that Y is contaminated to a significant extent with tantalum. The nature of the distribution of Ta in Y and the influence of Cu and Fe impurities on this distribution were determined. 3 figs; 5 biblio refs.

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Acc. Nr.: AP0029510

P

Ref. Code: UR 0240

5

PRIMARY SOURCE: Gigiyena i Sanitariya, 1970, Nr 1, pp 61-66

FEATURES TO PECULIAR GLOBAL CESIUM-137 AND STRONTIUM-90 REACHING THE POPULATION OF POLECIA BY DIFFERENT FOOD SUPPLY ROUTES

A. N. Marey, R. M. Barkhudarov, V. K. Chumak, E. V. Pstukhova,
E. B. Tyuryukanova, G. A. Kuznetsova, N. YZ. Novikova,
S. B. Pozhivilova, G. A. Bogdanovich

The paper presents investigation data on the order of passage of abovementioned isotopes from the soil into food products with due regard for the soil nature and the accumulation of isotopes in the human body. The finding was that the extent of the passage of cesium-137 from the soil into food products fluctuated considerably and depended on the type of soil. Thus, in a soil consisting mainly of a sand fraction the passage of cesium-137 was more pronounced. Similar observation were made in respect to all of the objects examined. However, no differences in the migration of strontium-90 could be detected. Due to the high passage of cesium-137 into food products its content in the human body was high as well.

1/1

REEL/FRAME

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USSR

Graphite

UDC 666.764.4:620.17

URSIN, V. A., ANUFRIYEV, YU. P., PETUKHOVA, I. A., and LAUKHINA, N. S.

"On the Evaluation of the Strength of Graphite Materials"

Moscow, Zavodskaya Laboratoriya, Vol 38, No 12, 1972, pp 1518-1519

Abstract: Regression functions were used to determine effective coefficients of stress concentration α_σ in graphites for which a correlation relationship between strength and density exists and the correlation coefficients are in the 0.5-0.9 limits. By applying this correlation relationship, the error in determining α_σ could be reduced by more a factor at two in comparison with usual methods, where for α_σ is taken the relation of arithmetic mean values. The material strength depends on a series of technological factors, whereas α_σ -values are determined by the graining of the material. One figure, three formulas, three tables, five bibliographic references.

1/1

Organ and Tissue Transplantation

9

USSR

UDC 612.174-612.2157-089.843

PRIYMAK, A. A., GERASIMENKO, N. I., ANICHKOV, M. N., VIGDORCHEK, I. V.,
AVERBAKH, M. M., DOBKIN, V. G., DEMIDOV, B. S., VIGDORCHEK, S. I., PAKHOKOVA,
Z. I., PETUKHOVA, I. V., VAKSMAN, B. M., GALAYEVA, V. N., and KOZLOV, P. D.

"Use of an Isolated Heart-Lung Preparation in Experimental Transplant Surgery"

Moscow, Voenno-Meditsinskiy Zhurnal, No 2, 1971, pp 22-23

Abstract: Brief preliminary report on the use of an isolated heart-lung preparation with a working heart in more than 200 experiments on dogs, swine, calves, and sheep. The isolated heart-lung preparation is connected by special cannulas to the peripheral vessels of the recipient's systemic circulation. The isolated lungs inspire an air mixture under hyperventilation conditions. The parameters of electrical activity of the donor's and recipient's hearts, recipient's brain, hemodynamics, biochemical changes in blood, external respiratory function, blood gases, morphology of the tissues of the isolated heart-lung preparation (in various stages of survival) and of the recipient (following biological oxygenation) are investigated. The experiments showed that the physically stabilized heart-lung preparation when used as a biological oxygenator remains viable and ensures good lung and heart function for 10 to 15 hours. It is capable of adjusting automatically to the recipient's circulation and without traumatizing the formed elements

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USSR

PRIYMAK, A. A., et al., Voenno-Meditsinskiy Zhurnal, No 2, 1971, pp 22-23
of the blood maintains the necessary blood flow rate.

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1/2 031

UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--INDICATIONS AND TECHNIQUE OF OSTEOTOMY OF THE PELVIS IN
COXARTHROSIS -U-

AUTHOR--PETUKHOVA, L.I.

P

COUNTRY OF INFO--USSR

SOURCE--ORTOPEDIYA, TRAVMATOLOGIYA I PROTEZIROVANIYE, 1970, NR 2, PP 23-27

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--X RAY STUDY, BONE, ORTHOPEDIC SURGERY, CLINICAL MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1983/1435

STEP NO--UR/9115/70/000/002/0023/0027

CIRC ACCESSION NO--AP0054297

UNCLASSIFIED

2/2 031

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--A0054297

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AT THE 1ST CLINIC OF THE RIGA INSTITUTE OF TRAUMATOLOGY THE SUPRA ACETABULAR OSTECTOMY OF PELVIS AFTER CHIARI WAS DONE TO 18 PATIENTS BETWEEN THE AGES OF 16 AND 50 YEARS WITH CONGENITAL ETIOLOGY OF COXARTHROSIS. COXARTHROSIS IN THE STAGE OF DEVELOPMENT WITH MODERATELY PRONOUNCED FUNCTIONAL DISORDERS ON THE SIDE OF THE EXTREMITY WAS AN INDICATION FOR OPERATION. SPECIAL ATTENTION WAS GIVEN TO THE ROENTGENOGRAPHIC PICTURE OF THE DISEASE. CORRECT LEVEL OF DISSECTION OF THE PELVIC BONE IMMEDIATELY ABOVE THE UPPER BORDER OF THE ACETABULAR ROOT IS CONSIDERED TO BE THE NECESSARY CONDITION OF THE OPERATION. IF AFTER DISPLACEMENT OF THE PERIPHERIC FRAGMENT OF THE PELVIC BONE WITH THE HIP JOINT INWARDLY ITS RETENTION COULD NOT BE MAINTAINED, A SUPPLEMENTARY FIXATION WITH HOMOBONE WAS USED. THE HOMOGRAFT WAS DRIVEN INTO THE SPONGIOUS SUBSTANCE OF THE PERIPHERIC FRAGMENT TO THE PELVIC BONE THUS PREVENTING REDISPLACEMENT OF THE FRAGMENTS. THE RESULTS OF OPERATION HAVE BEEN FOLLOWED FOR PERIODS FROM 1 TO 1.5 YEARS IN 11 PATIENTS. EXCELLENT RESULTS WERE OBTAINED IN 5 AND GOOD IN 6 PATIENTS.

UNCLASSIFIED

USSR

UDC 8.74

ZAIKIN, O. A., PETUKHOVA, N. M.

"Problem of Efficient Allocation of the Information Files on Magnetic Tape"

V sb. Probl. sistemotekhniki. Vyp. 2 (Problems of Systems Engineering. Vyp. 2 --collection of works), Sudostroyeniye, 1972, pp 67-77 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V479)

Translation: The following problem which is characteristic of automated control systems is solved: let $\{M\} = \{M_1, M_2, \dots, M_n\}$ be a set of files belonging to the magnetic taps; λ_i is the length of the file M_i , $i = 1; n$; $\|M\|$ is the matrix of the interrelation of the files; m_{ij} is the element of the matrix $\|M\|$ equal to the number of direct references from file M_i to file M_j . Searching the magnetic tapes essentially depends on the mutual arrangement of the files M_i and M_j . Let λ be the length of the tape searched, $\lambda = F(\|M\|, R)$; $\|M\|$ in the given case is equal to a const, R is the n -dimensional vector giving the arrangement of the files on the magnetic tapes. The integral function has the form:

$$F(R) = \sum_{k=1}^{n-1} \int_k^{\lambda} \left[\sum_{i=0}^{k-1} \sum_{j=k+1}^n m_{ij} \right] + \sum_{k=1}^n \int_k^{\lambda} \sum_{j=1}^{k-1} m_{kj}$$

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USSR

ZAIKIN, O. A., et al., Probl. sistemotekhniki. Vyp. 2, Sudostroyeniye, 1972,
pp 67-77

where $m'_{ij} = m_{ij} + m_{ji}$. It is required that we find R^0 which minimizes $F(R)$.

The estimate conditions of optimality of the integral function are presented.
The algorithms for finding the impasse and optimal permutations are constructed.
The above stated problem is generalized to the case of parallel processing of
files for which it is demonstrated that the conditions of optimality of allo-
cation of the files on the magnetic tapes remain as before.

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USSR

UDC 619:616.981.45:591.613

PETUKHOVA, O. S., PINIGIN, A. F., ZABRODIN, V. A., VAGINA, L. A., and
ZABRODINA, YE. F., Scientific Research Institute of Agriculture of the Far
North

"Isolation of Brucella From Wild Animals"

Moscow, Veterinariya, No 4, 1971, pp 41-42

Abstract: In 1968-1970 in the Taymyr National District of Krasnoyarskiy Kray (Central Siberia), 41 Brucella cultures were isolated from indigenous wild animals: 15 from wild reindeer, 15 from wolves, 10 from polar foxes, and 1 from a wolverine. All these strains grew under aerobic conditions and in most cultural and morphological properties were identical to those isolated from domestic animals, reindeer in particular. While the former tended to be more resistant to penicillin than the latter, they were generally less virulent. In Siberian foci of brucellosis, wild reindeer are in frequent contact with domestic animals and apparently become readily infected by them.

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- 42 -

USSR

UDC: 535.211:537.581

PETUKHOVA, T. M., BUKHALENKOV, V. V., GROKHOVSKIY, V. I., Sverdlovsk

"State of a Metal Surface After Laser Exposure"

Kishinev, Elektronnaya Obrabotka Materialov, No 4(46), Aug/Sep 72, pp 28-31

Abstract: The paper gives the results of a study of the surface relief, chemical composition, microhardness, structure and exoemission properties of steel and iron surfaces exposed to a laser beam from a K-3M ruby laser in the free emission mode with a pulse duration of $3 \cdot 10^{-3}$ s. The beam was concentrated by a lens with a 10 mm focal length. The emission energy in the pulse was of the order of 1.5 J. It was found that the high temperature gradients stimulated by the powerful luminous energy flux cause an abrupt change in the mechanical and physical properties and the chemical composition in the zone near the crater. The structure of the metal determines the nature of pits, the relief, and hardening when a metal surface is laser-machined.

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USSR

UDC 523.2/7:539.24:536.42

MINTS, R. I., PETUKHOVA, T. M., and SEGAL', V. M., Ural Polytechnic Institute

"Structure of a Metallic Fragment of a Lunar Substance"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, Jan 73,
pp 2-3

Abstract: A metallic fragment of a lunar substance, supplied by the Luna-16 space vehicle, was investigated. Maximum size of the particles was 450 microns and it had the following average composition: Fe + 5.5% Ni + 0.6% Co. No carbon was detected. In a metallographic study of the fragment a subgrain with martensitic dendrite morphology was observed in one of the cross sections. Niemann bands were visible in the twinning formations of the fragment. These morphological structures and crystallographic features (90% of the particle was in the alpha-solid solution) made it possible to relate the dendritic martensite of the lunar nickel-iron to the group of athermal martensites. 5 bibliographic references.

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PROCESSING DATE--16OCT70

TITLE--EFFECT OF THE STRUCTURE OF STEEL ON THE FORMATION OF PITS BY THE ACTION OF A LASER BEAM -U-

AUTHOR--(02)-MINTS, R.L., PETUKHOVA, T.M.

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STEELS WITH STRUCTURES OF FERRITE, PEARLITE, MARTENSITE, TROOSTITE, GRANULAR CEMENTITE, AND AUSTENITE WERE STUDIED BY RUBY LASERS WITH 3 TIMES 10 NEGATIVE PRIME3 SEC IMPULSES. THE RADIATION ENERGY OF AN IMPULSE WAS 1.5 J. METALLOGRAPHIC ANAL., MICROHARDNESS, RELIEF, AND TOPOGRAPHY ON THE SURFACE, STRESSES AROUND THE HOLE, AND CHANGES IN THE CHEM. COMPN. OF THE STEEL UNDER THE EFFECT OF LASER RADIATION WERE DETD. THE CHARACTER AND PROPERTIES OF PITS FORMED BY THE LASER BEAM DEPENDED MUCH ON THE STRUCTURE OF THE STEEL: THE SMALLEST DIAM. PITS WERE MADE IN FERRITE STEEL WHILE THE LARGEST OCCURED IN UNSTABLE AUSTENITE. TROOSTITE AND GRANULAR CEMENTITE GAVE PRACTICALLY THE SAME SIZE OF CRATERS. PEARLITE AND MARTENSITE HAD THE HIGHEST RELIEF WHILE THE LOWEST OCCURED WITH STABLE AUSTENITE. THE ACTION OF THE LASER BEAM WAS MAINLY THERMAL; HOWEVER, THERE WAS ALSO AN INCREASE OF HARDNESS IN THE FOLLOWING ORDER: FERRITE, PEARLITE, AUSTENITE, WHICH HAD, IN THE ZONES OF HIGHER RELIEF, MICROHARDNESS 3000, 5000, AND 7500 KG-MM PRIME3, RESP., WHILE THE NEIGHBORING REGIONS HAD INITIAL VALUES OF 200-300 KG-MM PRIME2. FACILITY: URAL POLITEKH. INST. FACILITY: SVEDLOVSK. USSR.

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USSR

UDC: 669.14-15:620.18

MINIS, R. I., and PETUKHOVA, T. M.

"Influence of Steel Structure on the Formation of Pitting by a Laser Beam"

Izv. VUZ, Chernaya Metallurgiya, No 2, 1970, pp 102-107

Abstract: The effect of the electromagnetic radiation of a laser beam on steel is to increase the local temperature to 10^4 - 10^7 ° C, resulting in instantaneous evaporation of the metal and the formation of plasma jets, creating a pressure of up to 10^{15} atm. at the surface of the metal. This results in surface damage in the form of pitting. The combination of a great variety of factors (mechanical, chemical, thermal, electrical, etc.) is characteristic. The behavior of ferrite, pearlite, austenite, martensite, troostite, and cementite under the influence of laser pulses was studied by the metallographic and topographic methods, and the relief and microhardness were determined. It was established that with the electromagnetic radiation power present in the laser beam (power density 10^8 - 10^{10} w/cm², area of application 10^{-4} cm²) the nature of the pitting and the relief near the crater depend on the structure of the metal. Five illustrations; two tables; seven biblio. refs.

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Ref. Code:

UR 0472

94402u Effect of laser action on exoelectron emission from the surface of metals. Kortov, V. S.; Mints, R. I.; Petukhova, T. M. (USSR). *Fiz. Khim. Obrab. Mater.* 1970, (1), 3-7 (Russ). The effect of laser action on the surface of pure Au, Pt, Pd, Ni, and of alloys 1Kh18N9T and 40N25 was studied by the exoelectron emission method described previously (Kortov, *et al.*, 1966). No emission was observed at room temp. At higher temps. thermoemission passed through a max. Pt and Pd exhibited 2 peaks at different temps. Emission was due to laser action. Cracks and changes in relief and stresses occurred on the surface. The peaks of deformed specimens exposed to air decreased. This might be due to relaxation of stresses as well as to the deactivation of structural defects on the surface.

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Analysis and Testing

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UDC 535.211:537.581

KORTOV, V. S., MINTS, R. I., PETUKHOVA, T. M., Sverdlovsk

"The Effect of Laser Action on Exoelectronic Emission from Metallic Surfaces"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 1, Jan-Feb 70, pp 3-7

Abstract: Exoelectronic emission (the Cramer effect) is widely used in the study of plastic deformation and of structural and phase transformations in the surface layers of solids. Using a secondary-emission multiplier in a 10^{-5} mm Hg vacuum, the authors measured thermostimulated exoemission from the surface of pure Au, Pt, Pd, and Ni and from austenitic alloys 1Kh18N9T and 40N25 when subjected to pulsed laser action. Maximum exoemission appeared in the 100-300°C range. Relief and interferometric data established a connection between the parameters of exoemission and the structural changes in the metallic surfaces. It is suggested the present method may be used to study locally deformed portions of metallic surfaces.

USSR

UDC 629.783.014.525(47)

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BALAYEV, N. F., GRODZOVSKIY, G. L., DANILOV, Yu. I., ZAKHAROV, V. M.,
KRAVTSEV, N. F., KUZ'MIN, R. N., MAROV, M. Ya., MOROZOV, P. M.,
NIKITIN, V. Ye., PEROV, S. P., PETUNIN, A. N., UTKIN, V. M., and
SHVIDKOVSKIY, Ye. G.

"Scientific Data on the Flight of Automatic Ionospheric "Yantar"
Laboratories"

Uch. zap. Tsentr. Aerogidrodinam. in-ta (Scientific Notes of the
Central Aerohydrodynamic Institute) 1971, Vol 2, No 2, pp 58-65
(from Referativnyy Zhurnal, Raketostroyeniye, No 11, Nov 71,
Abstract 11.41.87 Resume)

Abstract: Launches of automatic ionospheric "Yantar" laboratories
with gaseous plasma-ionic engines up to 100-400 km altitudes were
conducted with the aid of geophysical rockets, for the purpose of
studying prospects of controlled flight, in upper layers of the
atmosphere. Performance of gaseous plasma-ionic engines under iono-
spheric conditions was studied. Parameters characterising the
ion jet-ionospheric plasma interaction, as well as parameters of
neutral atmosphere were measured. Scientific data on conducted ex-
periments is presented. 9 figures, 1 table, 11 references.

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USSR

UDC: 517.943

~~PETUNIN, A. I.~~

"Classification of Singular Points in a Pfaff Differential Equation"

Uch. zap. Smolensk. gos. ped. in-ta (Scientific Notes, Smolensk State Institute of Pedagogy) 1970, no. 23, pp 46-56 (from RZh-Matematika, No. 3, March 71, Abstract No. 3B215)

Translation: For the fully integrable Pfaff equation

$$P(x,y,z)dx + Q(x,y,z)dy + R(x,y,z)dz = 0$$

where P, Q, and R are nonhomogeneous second-degree polynomials the location of the integral surfaces in the neighborhood of the coordinate origin is described. L. Reyzin'

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USSR

UDC: 517.943

PETUNIN, A. P.

"Behavior of the Integral Surfaces of a Pfaff Differential Equation in the Neighborhood of an Infinitely Remote Point"

Uch. zap. Smolensk. gos. ped. in-ta (Scientific Notes, Smolensk State Institute of Pedagogy) 1970, No. 23, pp 57-71 (from RZh-Matematika, No. 3, March 71, Abstract No. 3B216)

Translation: The fully integrable Pfaff equation

$$P(x,y,z)dx + Q(x,y,z)dy + R(x,y,z)dz = 0,$$

where P, Q, and R are nonhomogeneous second-degree polynomials, leads either to a form integrable in quadratures or to one of eight possible forms called "canonical." The location of the integral surfaces in each case is described. L. Reyzin'

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