

REEL # 12
KALABIN, G.A.

Acc. Nr

AP0041853

Abstracting Service:
CHEMICAL ABST.

4/70

Ref. Code
UR0366

4

89688n Rearrangement in the thiolysis of 2-methyl-2-(hydroxymethyl)-1,3-dioxolane. Trofimov, B. A.; Atayin, A. S.; Mikhaleva, A. I.; Kalabin, G. A.; Vasil'ev, N. P. (Irkutsk Inst. Org. Khim., Irkutsk, USSR). Zh. Org. Khim. 1970, 6(1), 190-1 (Russ). The reaction of 2-methyl-2-(hydroxymethyl)-1,3-dioxolane with RSH (R = Pr or iso-Bu) in acid medium gave 5-10% (RS)₂CMeCH₂OH and 80-90% (RS)₂CHCHMeSR. The expected "normal" reaction products (RS)₂CMeCH₂SR were not formed. CPJR

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172 011 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--STRUCTURE OF PRODUCTS OF THE ADDITION OF DIALKYL PHOSPHITES TO
DIETHYL ETHERS OF GEM DIOLS -U-
AUTHOR--(05)--KALABIN, G.A., ATAVIN, A.S., GAVRILOVA, G.M., TROFIMOV, B.A.,
SHOSTAKOVSKIY, M.F.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(4), 849-52 (CHEM)
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ETHER, HETEROCYCLIC OXYGEN COMPOUND, PHOSPHATE ESTER, NUCLEAR
STRUCTURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1894 STEP NO--UR/0020/70/190/004/0849/0852
CIRC ACCESSION NO--AT0101938
UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AT0101938

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM THE NMR SPECTRA OF THE PRODUCTS OF REACTION OF (R PRIME1 O) SUB2 PHO WITH RCH(OCH:CH SUB2) SUB2 (PROFIMOV, ET AL., 1969), THE STRUCTURES OF THE PRODUCTS WERE SHOWN TO BE I (R EQUAL H OR ALKYL, R PRIME1 EQUAL ALKYL). THUS WERE PREPD, I (R EQUAL H, R PRIME1 EQUAL R PRIME2 EQUAL ME), I (R EQUAL H, R PRIME1 EQUAL PR, R PRIME2 EQUAL ME), AND I (R EQUAL R PRIME1 EQUAL R PRIME2 EQUAL ME). THE SPECTRAL DATA ARE TABULATED IN DETAIL. THE REACTION IS STEREOSPECIFIC, YIELDING CIS,4,5,SUBSTITUTED-I.

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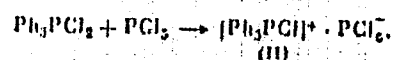
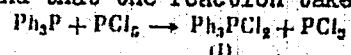
UDC: 547.241

ROZINOV, V. G., GRECHKIN, Ye, F., and KALABINA, A. V., Irkutsk State University

"Reaction Between Triphenylphosphine and Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 39 (101), No 3, Mar 69, p 712

Abstract: The interaction between triphenylphosphine and phosphorus pentachloride in nitrobenzene was studied by conductometric titration of the phosphine with a solution of phosphorus pentachloride, followed by hydrolysis and chromatography. It was found that the reaction takes place as follows:



Triphenylchlorophosphoniumhexachlorophosphate (II) has not been previously described. It is a white crystalline substance which melts at 175°C. An electric current is conducted by solutions of this complex in organic solvents with a high dielectric constant. Hydrolysis of the initial reaction mixture yielded triphenylphosphine oxide, which proves that triphenyldichlorophosphine (I) is formed during the reaction.

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USSR

UDC 632.95

KRON, YE. M., POPOVA, M. N., STEPANOV, D. YE., KALABINA, A. V.

"Thylation of Aroxynorbornenes"

Irkutsk, Khimiya aromat. i nepredel'n. soedin.--sbornik (Chemistry of Aromatic and Unsaturated Compounds -- collection of works), 1971, pp 305-310 (from RZh-Khimiya, No 10, May 73, Abstract No 10N533 by T. G. Chekareva)

Translation: Compounds of general formula (I)

[R = Bu, Ph, MeCO, (MeO)₂PS, (EtO)₂PS, R' = aryl] are produced by thylation of aroxynorbornenes. Examples: 5.5 g of PhSH is added by drops to 10 g of 4-cresoxynorbornene. Catalyst is HCl (gas). The mixture is held for 3 hours at 45-50°C, and 9.3 g of compound I is isolated by vacuum distillation (R = Ph, R' = 4-MeC₆H₄), boiling point 162-5°C/0.01, n_D²⁰ 1.5985, yield 63%.

BuSH is added analogously, but at 85-90°C. Addition of (MeO)₂PSSH and (EtO)₂

PSSH is done without a catalyst. The following type I compounds are synthesized (given are R, R', boiling point in °C/mm, n_D²⁰, d₄²⁰, yield in %): MeCO, 1/3

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KRON, YE. M., et al., Khimiya aromat. i nepredel'n. boyedin.--sbornik, 1971, pp 305-310

2-MeC₆H₄, 145-8/0.03, 1.5585, 1.1464, 54; MeCO, 3-MeC₆H₄, 142-5/0.03, 1.5581, 1.1456, 69; MeCO, 4-MeC₆H₄, 160-2/0.03, 1.5608, 1.1424, 62.2; MeCO, 4-ClC₆H₄, 210-5/1, 1.5684, 1.1266, 69.6; Ph, 2-MeC₆H₄, 153-9/0.03, 1.6015, 1.1420, 56.5; Ph, 3-MeC₆H₄, 152-3/0.03, 1.6019, 1.1429, 59.7; Ph, 4-ClC₆H₄, 129-33/0.08, 1.5413, 1.112, 50.1; Ph, 4-BrC₆H₄, 172-4/0.08, 1.6114, —, 54; (MeO)₂PS, 2-MeC₆H₄, —, 1.5655, 1.1849, 95.5; (MeO)₂PS, 3-MeC₆H₄, —, 1.5547, 1.1630, 98; (MeO)₂PS, 4-MeC₆H₄, —, 1.5665, 1.2005, 94.4; (MeO)₂PS, 1-naphthyl, —, 1.5995, —, 99; Bu, 2-MeC₆H₄, 142-7/0.06, 1.5465, —, 62; Bu, 4-MeC₆H₄, 141-4/0.03, 1.5451, 1.0328, 65; Bu, 3-MeC₆H₄, 150-2/0.06, 1.5443, 1.1004, 67; Bu, 4-ClC₆H₄, 200-3/0.03, 1.5545, 1.3006, 60; (EtO)₂PS, 2-MeC₆H₄, —, 1.5545, —, 97.9; (EtO)₂PS, 4-MeC₆H₄, —, —, —

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KRON, YE. M., et al., Khimiya aromat. i nepredel'n. sovedin.--sbornik., 1971, pp 305-310

1.5541, 1.1546, 99; $(EtO)_2PS$, 3-MeC₆H₄, —, 1.5552, —, 98.2; $(EtO)_2PS$, 4-ClC₆H₄, —, 1.5619, —, 97.8; $(EtO)_2PS$, 2-MeOCC₆H₄, —, 1.5549, —, 99. Compounds I have acaracidal properties, but are not up to the accepted standards for activity. It is shown that the acidity of the corresponding thiol determines the ease with which the reaction takes place.

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UDC 632.95

USSR

KALAHINA, A. V., BYCHKOVA, T. I., STEPANOV, D. Ye., KRON, V. A.

"Synthesis of New Physiologically Active Compounds Based on Aroxyethylenes"

V sb. Khimiya atsetilena (Chemistry of Acetylene--Collection of Works), Moscow, Nauka, 1972, pp 121-125 (from RZh-Khimiya, No 6 (II), Abstract No 6N610)

Translation: Substances with the formula $CNXX'CH(OR')S(S)P(OR)_2$ (I) were synthesized and tested, (X, X', R, R', the boiling point °C/mm, d_{20}^{20} and n_{20}^{20} are presented): Cl, Cl, Et, 2-MeC₆H₄, 140-5/0.03, 1.2674, 1.5540; Cl, Cl, Et, 4-MeC₆H₄, 160-2/0.07, 1.2748, 1.5540; Cl, Cl, Et, 3-MeC₆H₄, 133-6/0.02, 1.2500, 1.5498; Cl, Cl, Et, 4-ClC₆H₄, 154-9/0.05, 1.3593, 1.5632; Cl, Cl, Et, 2,4-Cl₂-C₆H₃, 157-162/0.04, 1.3923, 1.5672; Cl, Cl, Me, Ph, 140-2/0.04, 1.4100, 1.5772; Cl, Cl, Me, 4-ClC₆H₄, 150-7/0.03, 1.4310, 1.5812, H, Br, Et, Ph, --, 1.3535, 1.5680; Cl, Br, Et, Ph, --, 1.4153, 1.5700; Br, Br, Et, Ph, --, --, 1.5820; and also CH₂ClCh(OPh)SCOMe, boiling point 90-1°/0.1, melting point 41-2°; CH₂ClCh(OC₆H₄Me-2)SCOMe, boiling point 91-3°/0.07, melting point 43°; CHCl₂-CH(OPh)SC(S)NEt₂, melting point 60-1°. The I reveals high activity with respect to the tetranychoida superfamily and houseflies. The tests demonstrate that the adducts of vinyl esters of phenols with cyclopentadiene and

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KALABINA, A. V., et al., V sb. Khimiya atsetilena, 1972, pp 121-125

its derivatives are significantly inferior to the compounds used at the present time with respect to fungicidal, insecticidal and acaricidal activity. The pesticidal activity of the adducts increases as a result of the addition of thylating reagents.

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USSR

UDC 547.558.1

TIMOKHIN, B. V., GRECHKIN, YE. F., KALABINA, A. V., Irkutsk State University imeni A. A. Zhdanov, Irkutsk, Ministry of Higher and Secondary Specialized Education RSFSR

"Reaction of Internal Triphenylphosphoniumoxopentachlorophosphate With Grignard Reagents"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70, pp 2133-2134

Abstract: When internal triphenylphosphoniumoxopentachlorophosphate (I) was reacted with phenylmagnesium bromide (II) at a ratio of 1:1 or 1:2, the only product obtained was triphenylphosphine oxide. When the ratio of (I) to (II) was increased to 1:5, triphenylphosphine was formed, showing that (I) is reduced to the trivalent phosphorus in this process.

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UNCLASSIFIED

PROCESSING DATE--16OCT70

1/2 030

TITLE--INTERACTION OF STRUCTURAL GROUPS IN MOLECULES CONTAINING A
PHOSPHORUS ATOM AT THE DOUBLE BOND -U-

AUTHOR--(05)-RATOVSKIY, G.V., DOROKHOVA, V.V., FROLOV, YU.L., GRECHKIN,
YE.F., ~~KALABINA, A.V.~~

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(5), 1124-7

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--IR SPECTRUM, ORGANIC PHOSPHORUS COMPOUND, MOLECULAR ORBITAL,
ELECTRON CLOUD, CHLORINE, EXCITATION ENERGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1591

STEP NO--UR/0200/70/190/005/1124/1127

CIRC ACCESSION NO--AT0116999

UNCLASSIFIED

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PROCESSING DATE--16OCT70

2/2 030

CIRC ACCESSION NO--ATO116999

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

ABSTRACT. IR SPECTRAL DATA WERE TABULATED IN
 DETAIL FOR ROCH:CHPOCL SUB2 RPCH:CHPCL SUB2, ROCH:CHPSCL SUB2, AND
 ROCH:CHPO(DRPRIME1) SUB2, AS WELL AS PHCH:CHPCL SUB2, PHCH:CHPOCL SUB2,
 PHCH:CHPSCL SUB2 AND PHCH:CHP(O)ET SUB2, WHERE R WAS SELECTED FROM ET,
 BU, PH OR-P-BRC SUB6 H SUB4, AND R PRIME1 EQUALS ET OR BU; ALSO INCLUDED
 WAS PHOCH:CB²PSCL SUB2. FROM THESE DATA THE COMPARISON MADE WITH THE
 CALCD. MO ENERGY LEVELS OF MEPI(D)CL SUB2, CH SUB2:CHPOLC SUB2, AND
 MEIOCH:CHPOCL SUB2 SHOWED THE CLEARLY POLAR NATURE OF BOTH THE P(O) AND
 THE P(CL) BONDS IN THESE COMPS. THE D ORBITALS OF CL AND P TAKE ALMOST
 NO PART IN FORMATION OF THE MOLECULAR ORBITALS OF THE OCCUPIED
 CATEGORIES, BUT THEY DO DET. THE NATURE OF THE RELATIVELY LOW 2, 4 AND
 11 VACANT ORBITALS OF THESE MOLS. AS A RESULT THESE MOLS. CAN BE
 EXPECTED TO SHOW ENHANCED ELECTRONIC POLARIZABILITY AND LOW EXCITATION
 ENERGIES. THUS, THE PRESENCE OF A POCL SUB2 GROUP AFFECTS THE
 POLARIZABILITY OF THE ELECTRON CLOUD OF THE DOUBLE BOND, WHILE
 ALTERATION IN THE DISTRIBUTION OF THE LATTER AFFECTS THE PROPERTIES OF
 THE P CONTG. GROUPING, WITH SOME PARTICIPATION OF THE CL ATOMS IN THIS
 PROCESS.

FACILITY: IRKUTSK. GOS. UNIV., IRKUTSK, USSR.

UNCLASSIFIED

USSR*

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RATOVSKIY, G. V., DOROKHOVA, V. V., FROLOV, YU. L., GRECHUKIN, YE. F., and KALABINA, A. V., Irkutsk State University imeni A. A. Zhdanov, Irkutsk, Ministry of Higher and Secondary Specialized Education RSFSR; Irkutsk Institute of Organic Chemistry, Irkutsk, East Siberian Affiliate, Siberian Department, Academy of Sciences USSR

"Interaction of Structural Groups in Molecules Containing a Phosphorus Atom at a Double Bond"

Moscow, Doklady AN SSSR, Vol 190, No 5, Feb 1970, pp 1124-1127

Abstract: The effect of phosphorus containing groups on beta-substituted vinyl esters is manifested by a 20-30 cm^{-1} shift towards lower frequency of the double bond valence vibration and a 3-4 fold increase in the intensity of ν_{1620} . Presence of groups such as $-\text{PCl}_2$, $-\text{P}(\text{O})\text{Cl}_2$, $-\text{P}(\text{S})\text{Cl}_2$ in vinyl aryl esters affects the characteristics of the phenyl ring, due to the intramolecular interaction of the phosphorus group with π -electrons of the $\text{C}_6\text{H}_5\text{CH}=\text{CH}$ radical system. The intensity of the symmetric and antisymmetric vibrations of the $-\text{PCl}_2$ group changes considerably on interaction with double bonds. Substitution of a phenyl radical for an

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RATOVSKIY, G. V., et al., Doklady AN SSSR, Vol 190, No 5, Feb 70, pp
1124-1127

alkyl radical almost doubles the $I_{460+490}^{\text{as}}$ value. Consequently, I_{450}^{as} of
the symmetric vibration line of the P-Cl bond in -P(S)Cl_2 increases in
a series of butyl, phenyl, p-bromophenyl vinyl esters and in styrenes.
The authors conclude that presence of a POCl_2 group should have an ef-
fect on the polarizability of π -electron cloud.

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USSR

UDC 536.46:533.6

KALABUKHOV, G. V., RYZHIK, A. B., YURAMNOV, Yu. A., SIDOROV, V. M., OSIPOV, B. R., FAYERMAN, S. N.

"On the Effect of Reaction-Kinetic Properties of an Inflammable Flow in the Combustion of Aluminum Powders"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 204-206 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B969)

Translation: Shock tube studies were made of the combustion of aluminum powder when detonation waves act on it. These waves differ in intensity and chemical composition. It was established that the increase in the detonation rate of the gas mixtures impedes combustion to a greater degree than the detonation temperature is lowered. The positive effect of oxygen, carbon dioxide, and small quantities of nitrogen and argon on the combustion of disperse aluminum is noted. Rarefaction of the stoichiometric mixture of hydrogen and oxygen with light gases (hydrogen and helium) leads to a decrease in the degree of combustion of the powder. 5 ref. Authors' abstract.

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USSR

UDC 621.383.51/52

ALTAYSKIY, YU.M., KALABUKHOV, N.P., KISELEV, V.S.

"Investigation Of The Local Characteristics Of The Photoelectric Effect In β -SiC"

Vestn. Kiyev. politekhn. in-ta. Ser. radioelektron (Bulletin Of Kiev Polytechnical Institute. Radioelectronics Series), 1970, No 7, pp 123-26 (from RZh--Elektronika i yeye primeneniye, No 1, January 1971, Abstract No 1B254)

Translation: A description is presented of the equipment and the results of an investigation of the local (probe) characteristics of the photoelectric effect in monocrystals of β -SiC. It is shown that the light probe method can be used for detection of inhomogeneities of specimens and determination of the area and configuration of p-n junctions. The results of the investigation show that the platy crystals of β -SiC, which are obtained by decomposition of methylchlorosilan in hydrogen, in the majority of cases have a high degree of structural uniformity. Determination of the area of a p-n junction by the method described is found in good agreement with microscopic measurements and computations. 3 ill. 8 ref. N.S.

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USSR

UDC 620.17

GOL'DSHMIDT, M. G., KALABUKOV, N. I.

"Device for High-Speed Testing of Materials"

Dokl. IV Nauch.-tekhn. konf. Tekhn. progress v mashinostr. (Report of the 4th Scientific and Technical Conference. Technical Progress in Machine Building), Tomsk, 1972, pp 173-175 (from RZh--Mekhanika, No 6, Jun 73, Abstract No 6V1184)

Translation: A description is presented of the schematic and the operation of a device for high-speed compressive testing of materials. The device makes it possible to record the process in the given stages of deformation using Liesegang rings of different thickness. The effect of the device is based on the fact that the striker of the moving element of the unit is held during the operating process by a sunk key which is sheared when the given degree of deformation is reached. The deformation rate remains constant in practice for corresponding selection of the key parameters. The schematic of the device can be used to build a unit for not only compressive testing but also tensile testing.

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USSR

UDC 621.382:522.617.3

ALTAYSKIY, YU.M., KALABUKOV, N.P.

"Some Systems For Optical Investigation Of Solid Bodies At Low Temperatures"

Vestn. Kiyev. politekhn. in-ta. Ser. radioelektron. (Bulletin Of Kiev Polytechnical Institute. Radioelectronics Series), 1970, No 7, pp 127-128 (from RZh--Elektronika i yeyu primeneniyy No 2, February 1971, Abstract No 2A239)

Translation: The two cryostats described are intended for operation in the temperature range 77--800° K with the object of studying photoelectric phenomena, and optical measurements of the parameters of solid bodies, N.S.

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USSR

UDC 621.721.541.121

KALABUKHOVA, S. V. and MIKHEYEV, V. S., Institute of Metallurgy imeni A. A. Baykov

"Polythermal Section of Ti-EMo-Ni(9:1) of the Ternary System Ti-Mo-Ni"

Kiev, Poroshkovaya metallurgiya, No 2, Feb 72, pp 33-37

Abstract: A study has been made of the titanium angle of the Ti-Mo-Ni system within the range of molybdenum-rich alloys. The study centered on the section with a Mo:Ni=9:1 ratio containing up to 55% of EMoNi. Use was made of microstructure, hardness, resistivity, dilatometric, and x-ray diffraction analysis data to plot a partial polythermal section of Ti-EMMoNi(9:1). The $\alpha+\beta$ two-phase region expands with a decrease in temperature and is limited by EMoNi content: at 800°--6, at 700°--14, at 600°C--17 wt.%. The presence of a $\beta+Ti_2Ni$ phase is revealed at 5% EMoNi and above. Curves show the hardness of the alloys as a function of quenching temperature and their resistivity as a function of composition. (5 illustrations, 1 table, 5 bibliographic references).

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USSR

GUBANOV, V. I., YEFIMOV, A. K., KALACHENKO, A. A.

"Algorithm and Program for Pattern Recognition with Automatic Clarification of Objects"

Mat. metody. i geol. [Mathematical Methods in Geology -- Collection of Works], No 2, Alma-Ata, 1971, pp 197-207 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V689)

Translation: An algorithm is described, calling for recognition of patterns on the basis of search for the most frequently encountered combinations of components, reflecting the greatest probability of membership of the object being recognized in a given category. The initial information for learning might be chemical analysis of rocks, different qualitative and quantitative characteristics of rocks, ores, types of deposits and ore manifestations, characteristics and estimates made during geological survey work. Learning is performed with matrices including 39 objects with 13 components, each of which yields three characteristics. The characteristics are defined as functions of the qualitative or quantitative aspects of the components. For example, if silicon oxide is a component, the maximum and minimum values are taken as two learning data, while their difference is divided into three

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USSR

GUEANOV, V. I., et al., Mat. metody. i geol., No 2, Alma-Ata, 1971, pp 197-207

parts, which are then used as determining characteristics in the production of the learning matrix. A one indicates the interval within which the content of the element of the object to be recognized falls. Solution of the problem consists in running through all combinations of characteristics in units of three elements. The 80 most frequently encountered characteristics are then determined, on the basis of both frequency and weight.

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USSR

BASKAKOV, V. V., KALACHENKO, A. A., SPIRIDONOV, N. G.

"Algorithm and Program for One-Dimensional Trend with Estimation of Regression Line and Construction of Confidence Boundaries"

Mat. Metody v Geol. [Mathematical Methods in Geology -- Collection of Works], No 2, Alma-Ata, 1971, pp 137-152 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V703, by A. Doroshenko).

Translation: An algorithm is described and a program is presented for regression analysis of the results of measurement of a certain quantity Y as a one-dimensional function of X . Based on the set of N measurements by the method of least squares, a smoothing polynomial of power n is constructed. Statistical analysis determines the adequacy of representation of the function by the power n polynomial. To do this, the regularity of alternation of the rules of deviation of experimental values of the dependent variable of the corresponding calculation curve is studied. The basic criterion used to check the hypothesis of proper selection of the hypothetical curve is the difference between the calculated and tabular values of probabilities $P(u)$ that there will be u jumps in the random sequence of n_1 positive deviations and n_2 negative deviations. One supplementary criterion is the ratio of

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Baskakov, V. V., Kalachenko, A. A., Spiridonov, N. G., Mat. Metody v Geol., No 2, Alma-Ata, 1971, pp 137-152.

dispersions of the corresponding quantities. A program written for the Ural-2 computer allows the arithmetic mean, sample dispersions, mean square deviations, variation factor and area between indicated pairs of regression curves to be calculated, and also allows estimation of the reliability of the results produced and calculation of confidence intervals. The program occupies 2134₈ locations of machine memory.

USSR

BASKAKOV, V. V., KURMANBAYEVA, F. M., GORELOV, G. Ya., KALACHENKO, A. A.

"Algorithm and Program for Statistical Analysis"

Mat. Metody v Geol. [Mathematical Methods in Geology -- Collection of Works], No 2, Alma-Ata, 1971, pp 161-176 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V701, by A. Doroshenko).

Translation: A program is suggested for statistical analysis of experimental data, the need for which arises in performance of various applied tasks, particularly in optimization of the process of enrichment of polymetallic ores. The program allows calculation of the following characteristics: mean value; dispersion of the mean; asymmetry and excess indicators; variation factor; mean square error of measurement of these quantities; paired correlation factor; partial and set correlation factors; estimates of reliability of correlation factors and significance of set correlation factor; linear regression equation and value of its coefficients. A program is presented in Ural-2 code, occupying a machine memory volume of 2180₈ locations. 2 biblio. refs.

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USSR

GENDLER, V. Ye., KALACHENKO, A. A., SPIRIDONOV, N. G.

"Algorithm and Program for Separation of a Sample with Normal Distribution"

Mat. Metody v Geol. [Mathematical Methods of Geology -- Collection of Works], No 2, Alma-Ata, 1971, pp 190-196 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V702, by A. Doroshenko).

Translation: A program is described, allowing screening of elements of a sample distorting the normal distribution on the basis of the condition of normality with respect to asymmetry and excess. Points are screened out which do not fall into the interval $\bar{x} \pm 3s$. The statement of the problem is as follows. For each of n samples of N points each, the statistics are defined up to the fourth moment inclusively. The normality of the distribution rule of the sample is determined by the asymmetry and excess from the condition of fulfillment of inequalities $|A/\sqrt{6/N}| \leq 3$ $|E/2\sqrt{6/N}| \leq 3$. If the sample does not correspond to the normal distribution, the point with the greatest distance from the interval $\bar{x} \pm 3s$ is eliminated and the condition of normality is tested once more for the remaining elements of the sample. The process continues until the condition of normality of the distribution rule is fulfilled. The program is written for the Ural-2 computer, occupying 610₈ memory locations and permitting up to 1100 sample points.

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USSR

UDC 624.07:534.1

KAN, S. N., INGUL'TSOV, V. L., KALACHEV, A. Yu.

"Stability and Free Oscillations of Conjugate Conical Shells"

Soprotivl. materialov i teoriya sooruzh. Resp. mezhved. nauch.-tekhn. sb.
(Resistance of Materials and the Theory of Structures, Republic Inter-
departmental Scientific-Technical Collection), 1972, No. 18, pp 31-33
(from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V300)

Translation: The problem is solved within the framework of the engineering
moment theory. The equilibrium equation and the corresponding boundary
conditions are represented in displacements. The search for critical loads
and natural frequencies consists in reducing the boundary value problem to
a series of Cauchy problems, the solution of which is obtained by the Runge-
Kutta numerical method. Authors' abstract.

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Heat Treatment

USSR

UDC: 669.293

YELISEYEV, S. A., SHPITSBERG, A. L., RYABYSHEVA, N. D., KALACHEV,
I. B., and SAVINOV, A. T.

"Alloys With A Niobium Base for Elastic Sensing Elements"

Moscow, Tsvetnyye Metally, No 7, Jul 70, pp 61-62

Abstract: The purpose of the experiments described by this article was to develop alloys which can be used as elastic sensing elements at temperatures above 500-550°, the present-day limit. Taking up where an earlier article left off (Yeliseyev, S. A., et al, Tsvetnyye metally, No. 12, 1968) the authors processed two alloys consisting of various proportions of refractory elements Mo, Zr, Ti, Cr, C, Nb, and N+O. The proportions of the last two were the same in both cases, the proportion of Nb being standard. The alloys were given two smeltings in a vacuum electric-arc furnace with soluble electrodes, and the ingots were given hot and cold deformations for conversion into sheets 0.3 mm thick. Investigating the effect of thermal processing on these sheets, the authors found that they could get effective hardening by a vacuum procedure consisting of tempering in oil and subse-

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USSR

YELISEYEV, S. A., et al., Tsvetnyye Metally, No 7, Jul 70, pp
61-62

quent aging. From their experiments, the authors concluded that the alloys can be toughened, with niobium as the basis, through vacuum processing with tempering in the 1400-1800° C range, and aging at 950-1050° C. They found also that they can develop alloys that can work as elastic sensing elements at temperatures of 800°.

2/2

1/2 012

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--CERTAIN METHOD OF MULTIPLE DIFFERENTIATION OF SIGNAL IN AUTOMATIC CONTROL SYSTEMS -U-

AUTHOR--KALACHEV, M.G.

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA I TELEMEXHANIKA, 1970, NR 6, PP 29-36

DATE PUBLISHED-----70

SUBJECT AREAS--MATHEMATICAL SCIENCES, MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--AUTOMATIC CONTROL SYSTEM, MATHEMATIC MODEL, RANDOM PROCESS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1018

STEP NO--UR/0103/70/000/005/0029/0036

CIRC ACCESSION NO--AP0124677

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0124677

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE IS CONSIDERED THE PROBLEM OF OBTAINING THE DERIVATIVES OF THE INPUT SIGNAL OF THE OBJECT OF CONTROL OBSERVED AGAINST THE BACKGROUND OF NOISE, THE PROBLEM REPRESENTED AS THE PROBLEM OF THE FILTERING OF CERTAIN RANDOM PROCESSES. FOR THE OBJECT WITH KNOWN PARAMETERS SUCH AN APPROACH ALLOWS TO TAKE INTO ACCOUNT ANY ADDITIONAL INFORMATION CONCERNING THE CONTROLLING ACTION. THE OBJECT WITH UNKNOWN PARAMETERS IS SUBSTITUTED BY A SUFFICIENTLY GENERAL MATHEMATICAL MODEL. IT IS RECOMMENDED TO USE THE FILTER CONSTRUCTED FOR THE MATHEMATICAL MODEL FOR THE APPROXIMATE DIFFERENTIATION OF THE INPUT SIGNAL OF THE OBJECT WITH UNKNOWN PARAMETERS.

UNCLASSIFIED

USSR

UDC 669.017 : 620.17

SEVERDENKO, V. P., KALACHEV, M. I., and ANKUT, P. P., Physicotechnical Institute, Academy of Sciences Belorussian SSR

"Titanium Flow Curves in Octahedral Coordinates Under Various Strain Conditions"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh Nauk, No 1, 1973, pp 5-8

Abstract: Flow curves in octahedral coordinates were plotted for commercial-pure titanium VT1-1 according to the results of tests described in a previous article by the authors. The straining followed three different stressed state schemes (tension, compression, torsion) in the $-196 - 300^{\circ} \text{C}$ range. An analysis of the curves for variations in octahedral shear stress indicates that the process of titanium plastic flow is largely influenced by such factors as the plastic strain mechanism and structural transformations taking place during strain. The extent to which these factors are manifested depends on the straining conditions and the stressed state scheme. Finely dispersed phases isolated in the slip zones signify that the critical

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USSR

SEVERDENKO, V. P., et al., Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh Nauk, No 1, 1973, pp 5-8

shear stress begins to be affected by normal stresses acting along the shear planes. The shape of the strain hardening curves to a certain extent may be influenced by the twinning process.

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USSR

UDC 620.171.3

KALACHEV, M. I., SURIN, V. M., Physicotechnical Institute of the Academy of Sciences BSSR

"Effect of Temperature-Rate Conditions on the Deformation Resistance of Austenitic Steels"

Minsk, Doklady Akademii nauk BSSR, No. 3, Mar 71, pp 222-224

Abstract: Analysis of the effect of temperature-rate conditions of deformation of two austenite steels on the change in their mechanical properties indicated the presence of temperature zones of phase transformations and of breakdown under plastic flow. It is observed that austenitic steels are unstable as to structure and this instability may appear externally in the characteristic change in the mechanical properties of the metal in certain temperature intervals of deformation; the rate of deformation also causes an anomalous change in the resistance to flow of the metal if plastic deformation is accompanied by certain structural transformations or breakdown. These characteristics of the change in the mechanical properties of the metal were studied in two steels of the austenitic class Kh18N10T and Kh23N18 that are widely used in industry. The tests were made by

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USSR

KALACHEV, M. I., SURIN, V. H., Doklady Akademii nauk USSR, No. 3, Mar 71, pp 222-224

linear stretching and compression of cylindrical samples initially subjected to heat treatment (heating up to 1080°C and quenching in water). A wide temperature interval of deformation from -196 to 800°C was used with a deformation rate for each temperature of the test varying from $5 \cdot 10^{-3} \text{ min}^{-1}$ to 2.0 min^{-1} . The octahedral shifting stress of the two steels is graphed as a function of temperature under stretching and under compression. A characteristic feature of deformation of these steels is the strong growth of resistance to flow in the low temperature zone and the presence of a maximum in the temperature curves for octahedral stress in the interval 250-550°C. These characteristic temperature intervals are distinguished by the fact that the ordinary rate characteristic for the change in true deformation resistance breaks down. The increased deformation rates do not cause an increase in the octahedral shifting stress but, on the contrary, lead to a considerable drop in it. The growth in deformation resistance with a decrease in the flow rate is explained by more complete phase transformations occurring in the metal. The true deformation resistance increases with an increase in the rate of plastic flow in temperature regions in which phase changes do not occur or their intensity is lowered to a considerable degree, and the degree of rise of defects and distortions in the crystal lattice plays a basic role in deformation strengthening of the metal. This characteristic appears to the greatest degree at temperatures above 600°C when the metal begins to take on the properties of a viscous-plastic body.

USSR

UDC: 621.396.677.001.5

ZHELEZNYAK, M. M., KALACHEV, V. N., KASHIN, V. A.

"On the Theory of Statistical Synthesis of Antenna Arrays"

Moscow, Radiotekhnika i Elektronika, Vol 17, No 9, Sep 72, pp 1807-1815

Abstract: A previous paper (V. A. Kashin, Radiotekhnika i Elektronika, 1971, Vol 16, No 11, p 2082) proposed a method of statistical phase synthesis of antenna arrays with discrete phase regulation. There the method was applied to the simplest case of synthesizing the radiation pattern of a square aperture in one of its principal planes. In this paper the method is extended to synthesis of the volumetric radiation pattern of a flat aperture. The technique of synthesis is considered both in the case of cophasal current distribution and in the case where the initial distribution has undesirable phase distortions leading to a rise in the short-range side lobes of the antenna array. A circular flat aperture is considered.

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1/2 025 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--TREATMENT OF FRESHLY DETECTED CASES OF PULMONARY TUBERCULOSIS BY
SINGLE DIURNAL DOSES OF FIRST SERIES DRUGS -U-
AUTHOR--KALACHEVA, D.N. K
COUNTRY OF INFO--USSR
SOURCE--VRACHEBNOYE DELO, 1970, NR 3, PP 63-64
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--TUBERCULOSIS, LUNG, ANTITUBERCULAR DRUG, CHEMOTHERAPY, DRUG
DOSAGE RESPONSE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY PEEL/FRAPE--1986/0959 STEP NO--UR/0475/70/000/003/0063/0064
CIRC ACCESSION NO--AP0102898
UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0102898

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFICIENCY WAS STUDIED OF PROLONGED CHEMOTHERAPY IN 75 PATIENTS WITH FRESHLY DETECTED PULMONARY TUBERCULOSIS. IT WAS FOUND THAT SINGLE INTAKES OF THE DIURNAL DOSE PROVED MORE EFFICIENT THAN TAKING THE SAME DOSE IN SEPARATE SMALL PARTS.

UNCLASSIFIED

USSR

UDC 612.53+612.82+612.743

SHCHEGLOVA, A. I., and KALACHEVA, YE. L., Ecological Physiology Team,
Institute of Physiology I. P. Pavlov, Academy of Sciences USSR,
Leningrad

"Changes in Gas Exchange and Myoelectrical Activity in Rodents During Thermal
Adaptation"

Leningrad, Fiziologicheskiy Zhurnal SSSR I. M. Sechenov, Vol 58, No 5,
1972, pp 754-760

Abstract: A comparative study of long-term (45 days) thermal adaptation was performed on flat-toothed and white rats, which inhabit warm southern regions, and on white wistar rats. During adaptation to cold (5°C), O_2 consumption in white rats increases more (up 86%) than in flat-toothed rats (up 56%), while the electrical activity of skeletal muscles in white rats increases less than in flat-toothed rats. Body temperature of gray rats falls by 3.3°C , and the animals lose about 17% of their initial body weight. Body temperature of white rats falls by 2.6°C , but their body weight remains unchanged. During adaptation to heat (25°C), O_2 consumption and body temperature are similar in both types of rats, but flat-toothed rats display more myoelectrical activity yet gain more weight. It is concluded that flat-

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USSR

SHCHEGLOVA, A.I., and KALACHEVA, YE. L., Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 58, No 5, 1972, pp 754-760

toothed rats, which are naturally better adapted to heat, increase their heat production in a cold environment mainly by increasing the tonus and tremor of their skeletal muscles. In white rats exposed to cold, the metabolism of all tissues increases, resulting in greater total oxygen consumption, greater heat production per unit volume of O_2 consumed, and better maintenance of body temperature.

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USSR

UDC 539.171.12

BENGLI, N., GALAKHMATOVA, B. S., GULAMOV, I. R., KALACHEVA, Z. F., OMAR, M. R.
and ROMANOVSKIY, Ye. A.

"Polarization of Protons as a Function of Energy during Elastic Scattering in
 ^{24}Mg ."

Moscow, Izvestiya Akademii Nauk SSSR -- Seriya Fizicheskaya, Vol XXXV, No 8,
1971, pp 1695-1696

Abstract: The authors used the double-scattering method to measure the extent to which polarization of protons during elastic scattering in ^{24}Mg depends on energy. Their experiments were carried out for energies ranging from 5.9 to 6.5 million electron volts for 60° and 120° angles of scattering. While measuring the dependence of polarization on energy during elastic scattering, they also evaluated it for the case of inelastic scattering of protons in ^{24}Mg with an excitation level of 1.37 million electron volts, borrowing some needed data from another work. They found that polarization of protons varied considerably as a function of their energy for both angles in both types of scattering. The authors emphasize that their results are merely preliminary. They are planning further experiments to obtain spectroscopic information and data on the mechanism by which polarization is initiated.

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--ENERGY DISTRIBUTION OF ALPHA PARTICLES FROM THE P PLUS PRIME11 B
YIELDS 3 ALPHA REACTION -U-
AUTHOR--(05)--KOMAROV, V.V., POPOVA, A.M., ROMANOVSKIY, YE.A., KALACHEVA,
Z.F., SALMAN, KH.
COUNTRY OF INFO--USSR
SOURCE--IZV. AKAD. NAUK SSSR, SER. FIZ. 1970, 34(11), 84-8
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS, NUCLEAR SCIENCE AND TECHNOLOGY
TOPIC TAGS--ENERGY SPECTRUM, ALPHA SPECTRUM, PROTON BOMBARDMENT, BORON
ISOTOPE, CARBON ISOTOPE, EXCITED NUCLEUS, CALCULATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1988/0207 STEP NO--UR/0048/70/034/001/0004/0088
CIRC ACCESSION NO--AP0105283
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0105283

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CALCN. IS DEMONSTRATED OF THE WIDTH OF A 2 PARTICLE ALPHA ALPHA RESONANCE (L PRIMEPI EQUALS 2 POSITIVE), APPEARING IN THE ENERGY DISTRIBUTIONS OF THE ALPHA PARTICLES IN THE REACTION P PLUS PRIME11 B YIELDS 3 ALPHA WHICH OCCURS THROUGH THE STATES 1 MINUS AND 0 POSITIVE OF THE PRIME12 C NUCLEUS (E EQUALS 17.23 AND 17.77 MEV). THE CALCD. VALUES AGREE VERY WELL WITH THE EXPTL. DATA OBTAINED FROM THE EXPTS. WITH THE ENERGY OF THE INCIDENT P 1.7 AND 2.0 MEV, RESP.

UNCLASSIFIED

USSR

UDO 621.383.52.072.1

VARLAMOV, I.V., DESHEVOY, A.S., KALADZE, M.K., PETRUSEVICH, V.A., RZHANOV, A.YE.

"Measurement Of The Impedance Of Photoresistors In The Pinch-Off Region And At The Section Of Negative Differential Resistance"

Sb.nauch.tr.po probl.mikroelektron. Mosk. in-t elektron.tekhn. (fiz.-mat.seriya) [Collection Of Scientific Works On Problems Of Microelectronics. Moscow Institute Of Electronics Technology. (Physico-Mathematical Series)], 1972, Issue 9, pp 100-108 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972, Abstract No 10B242)

Translation: A device for measurement of impedance which uses the method of phase detection is described, and some of the measured parameters of the 4-layer structures at the section with negative resistance of the volt-ampere characteristics are presented. 4 ill. 5 ref. I.V.

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Microelectronics

USSR

UDC 621.383.52.072.1

VARLAMOV, I.V., KALADZE, M.K., PETRUSEVICH, V.A., RZHANOV, A.YE.

"Spectral Characteristics Of Silicon Photoresistors And The Parameters Of An Optoelectronic Switch"

Sb. nauch.tr. po probl. mikroelektron. Mosk. in-t elektron.tekhn. (fiz.-mat seriya) [Collection Of Scientific Works On Problems Of Microelectronics, Moscow Institute Of Electronics Technology. (Physico-Mathematical Series)], 1972, Issue 9, pp 109-114 (from RZh:Elektronika i yeye primeneniye, No 10, Oct 1972, Abstract No 10B243)

Translation: The dependence was studied of the photo emf of a photoresistor operating in an optoelectron switch paired with a GaAs light-emitting diode. The photoresistor was produced by building up of an epitaxial layer of n-Si with a resistivity of 1 ohm.cm and a thickness of 13 micron on a p-Si wafer with a resistivity of 10 ohm.cm and a thickness of 200 micron. The upper emitter and the collector of the junction were fulfilled by planar technology with the method of diffusion of P and B. The depth of occurrence of the junctions amounted to 1.5 and 3 microns, respectively. The spectral characteristics of each p-n junction were measured at light intensities corresponding to the linear section of the lux-voltage characteristics of each junction. During illumination of the

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USSR

VARLAMOV, I.V., et al. Sb.nauch.tr. po probl.mikroelektron. Mosk.in-t elektron tekhn. (fiz.-mat. seriya), 1972, Issue 9, pp 109-114

structure by light with $\lambda = 0.93$ micron, corresponding to the maximum of the radiation spectrum of the GaAs light-emitting diode, the process of generation of the free carriers involves the entire volume of the crystal including all three junctions; however, the maximum response of all the structure is found in the region of the shorter waves. Oscillograms were taken of the transient processes during connection of the photoresistor, and the voltage characteristics with various currents across the emitter and at various temperatures. 4 ill. 4 refs. I.V.

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USSR

UDC: None

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N.

"Spectra of Extraordinary Cyclotron Waves in a Metal"

Leningrad, Fizika Tverdogo Tela, No 11, 1973, pp 3312-3317

Abstract: This is a theoretical investigation of the dispersion of extraordinary electronic cyclotron waves in a degenerate Fermi gas of charged particles -- electrons, in this case -- with an isotropic dispersion law. Results are given for the numerical solution of the dispersion equation for these waves in a broad interval of variation of the wave vector. These results are plotted in the form of curves for various values of the parameter β , equal to the ratio of the electron energy density to the magnetic field energy density. Graphs of the frequency of the waves as a function of the wave vector indicate the frequency to be oscillatory, the result of the unevenness of the distribution function for a degenerate Fermi gas. The parameters of this oscillation are investigated.

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USSR

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N., Institute of Physics of the Academy of Sciences Georgian SSR, Tbilisi, and Khar'kov State University imeni A. M. Gor'kiy

"Spectra of Ordinary Cyclotron Waves in Metals"

Leningrad, Fizika Tverdogo Tela, Vol 15, vyp 1, Jan 73, pp 119-122

Abstract: The article gives results of detailed numerical calculations of the spectra of ordinary cyclotron waves in a degenerate Fermi gas of charge carriers with the square isotropic dispersion law $\mathcal{E} = p^2/2m$. The first fifteen natural frequencies are plotted as a function of the ratio of the Larmor radius to the wavelength for various values of the parameter $\beta \geq 10$ (β is the ratio of the electron energy density to the magnetic field energy density).

1/1

USSR

UDC 533.9

KALADZE, T. D., and LOMINADZE, D. G., Institute of Physics, Academy of Sciences Georgian SSR, Tbilisi

"Spectra of Potential Ion-Cyclotron Plasma Oscillations"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 9, Sep 72, pp 1994-1996

Abstract: The article studies the dispersion of potential ion-cyclotron oscillations in a homogeneous plasma. By numerical solution of the dispersion equation the relationships between the vector wave and the first fifteen natural cyclotron oscillation frequencies are obtained for various values of the ion temperature-to-electron temperature ratio. The authors thank K. N. STEPANOV for his discussion of the work and his advice.

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USSR

UDC: 533.951

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N.

"Investigating Cyclotron Wave Dispersion in a Plasma"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, No 2, 1972, pp 243-252

Abstract: An analysis is made of the dispersion equations of cyclotron waves propagated in a plasma perpendicular to the magnetic field. Especial attention is devoted to an analysis of the cases which do not lend themselves to simple analytic operations. Dispersion equations are obtained for high-numbered harmonics in the short-wave limit, and simple analytic expressions are found for the frequency of cyclotron waves in several limiting cases. A numerical analysis is made of the dispersion equations which fully represent the dispersion of plasma cyclotron waves. In the analyses, relativistic effects were ignored. The authors are associated with the Institute of Applied Mathematics, Tbilisi State University, Physico-technical Institute of the Ukrainian SSR Academy of Sciences at Kharkov.

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USSR

UDC 533.916

KALADZE, T. D., LOMINADZE, D. G., and STEPANOV, K. N., Scientific Research Institute of Applied Mathematics of Tbilisi State University, Institute of Physics of the Academy of Sciences Georgian SSR, Tbilisi, Physicotechnical Institute of the Academy of Sciences Ukrainian SSR, Khar'kov

"Study of Plasma Ion-Cyclotron Oscillation Spectra"

Kiev, Ukrainskiy Fizicheskij Zhurnal, Vol 16, No 3, Mar 71, pp 469-473

Abstract: The article describes results of the numerical solution of a dispersion equation for potential and nonpotential ion-cyclotron oscillations in a low-frequency plasma, as well as giving analytic solutions in the limiting case of a strongly non-isothermal plasma. The dispersion equation of low-pressure plasma ion-cyclotron oscillations ($4\pi n_0 T_\alpha / H_0^2 \ll 1$) takes the form

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USSR

KALADZE, T. D., et al., Ukrainskiy Fizicheskiy Zhurnal, Vol 16,
No 3, Mar 71, pp 469-473

$$1 + (T_i/T_r)/(1 - \xi) = f(\omega),$$

where

$$f(\omega) = e^{-\mu} \left[I_0(\mu) + 2 \sum_{n=1}^{\infty} \frac{\omega^2}{\omega^2 - n^2 \omega_{H_i}^2} I_n(\mu) \right]$$

$$\xi = (T_i/T_r) (\omega^2/\omega_{H_i}^2) \beta/\mu^2,$$

$$\beta = \kappa/\cos^2 \theta, \quad \kappa = 4\pi n_0 T_i/H_0^2,$$

$$\mu = k^2 v_T^2 / \omega_{H_i}^2 = k^2 Q_i^2,$$

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USSR

KALADZE, T. D., et al., Ukrainskiy Fizicheskiy Zhurnal, Vol 16,
No 3, Mar 71, pp 469-473

n_0 is the plasma density, H_0 the external magnetic field strength, $I_n(\mu)$ modified Bessel function, $\omega_{Hi} = \frac{eH_0}{m_i c}$ the ion cyclotron frequency, $v_{Ti} = (T_i/m_i)^{1/2}$ the ion thermal velocity, θ the angle between the magnetic field and wave vector, $\rho_i = v_{Ti}/\omega_{Hi}$ Larmor ion radius. A BESM-4 computer was used for the numerical solution of the dispersion equation for different values of the parameters $\alpha = T_i/T_e$ and $\beta = 4\pi n_0 T_i / H_0^2 \cos^2 \theta$. Graphs for the natural frequencies $\omega(\omega) =$

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USSR

KALADZE, T. D., et al., Ukrainskiy Fizicheskiy Zhurnal, Vol 16,
No 3, Mar 71, pp 469-473

$\omega_n(k)$ for parameter β values equal to 0, 0.1, 0.3, 1, 3,
and 10 indicate that the maximum value of the natural oscilla-
tion frequency $\omega_n(k)$ ($\omega_n < n\omega_{Hi}$) increasingly approximates
the frequency $n\omega_{Hi}$ with a decrease in the ratio T_i/T_e .

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USSR

KALADZE, V. A. and KAPLINSKIY, A. I.

"Synthesis of Two-Level Adaptive Random Search Algorithms"

Vopr. Optimal'n. Programmir. v Proizv. Zadachakh [Problems of Optimal Programming in Production Problems -- Collection of Works], Voronezh, 1972, pp 118-129 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V235)

Translation: The synthesis of two-level adaptive random search algorithms based on an approach common for both levels, indicating the common nature of all optimizing parameters for a given goal function, is studied. This work produces certain algorithms designed for search for local and global extremes, as well as random search algorithms with learning.

Author's view

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USSR

UDC: 51

KALADZE, V. A., KAPLINSKIY, A. I., RUBINSHTEYN, Ya. S.

"Adaptive Random Search Algorithms Modified for Use in 'Drift' Conditions"

Tashkent, Vopr. kibernetiki--sbornik (Problems of Cybernetics --collection of works), vyp. 53, 1972, pp 111-120 (from RZh-Kibernetika, No 5, May 73, abstract No 5V710 by the authors)

Translation: The authors investigate optimization of a unimodal object in a situation of measurement interference and extremum "drift". Regions of suitable application of the proposed algorithms are considered.

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USSR

KALADZE, V. A.

UDC: 519.2

"Determining a Gradient Without Trial Studies"

Sb. tr. Kafedry avtomatiki i telemekh. Voronezh. politekhn. in-t (Collected Works of the Department of Automation and Remote Control. Voronezh Polytechnical Institute), 1972, vyp. 3, pp 110-115 (from RZh-Kibernetika, No 5, May 73, abstract No 5V288 by the author)

Translation: An analytical approach is proposed for determining the gradient of a convex multidimensional function close to square-law when finding its extremum by the method of stochastic approximation. Convergence of the procedure of gradient identification is demonstrated.

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1/2 024

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--INFLUENCE OF INOCULATION WITH RHIZOBIA ON THE LEVEL OF GROWTH
REGULATORS IN LEGUMES -U-
AUTHOR--(02)-CHAYLAKHYAN, M.KH., KALADZHYAN, N.L.

K

COUNTRY OF INFO--USSR

SOURCE--BIOL. ZH. ARM. 1970, 23(4), 14-26

DATE PUBLISHED-----70

SUBJECT AREAS--AGRICULTURE, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LEGUME CROP, HYDROPONICS, BACTERIA, PLANT CHEMISTRY,
GIBBERRELLIC ACID, PROTEIN METABOLISM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/0015

STEP NO--UR/0427/70/023/004/0014/0026

CIRC ACCESSION NO--AP0137214

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE---04DEC70

CIRC ACCESSION NO--AP0137214

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOYBEANS AND KIDNEY BEANS WERE GROWN IN DISHES, IN STERILIZED SAND, ON A COMPLETE NUTRIENT CONTG. ONLY 25PERCENT OF THE NORMAL N LEVEL. HALF OF THE PLANTS WER INOCULATED WITH AN ACTIVE STRAIN OF RHIZOBIA. THE GROWTH, DEVELOPMENT, AND YIELD OF THE INOCULATED PLANTS WERE GREATER THAN THOSE OF THE NORMAL PLANTS. EXTS. OF THE LEAVES, ROOTS, AND RHIZOMES OF THE PLANTS WERE STUEID BY PAPER CHROMATOG. EXTS. OF THE LEAVES, ROOTS, AND RHIZOMES OF INOCULATED PLANTS CONTAINED GIBBERELLIN A SUB3, BUT THOSE OF THE NORMAL PLANTS DID NOT. THE EXTS. ALSO CONTAINED AUXINLIKE SUBSTANCES, AND INHIBITORS OF A PHENOLIC NATURE; THE FORMER PREDOMINATED IN INOCULATED PLANTS, BUT NOT IN NORMAL PLANTS. THE IMPROVED GROWTH AND YIELD OF INOCULATED PLANTS WAS CAUSED BY IMPROVED METABOLISM OF NITROGEN AND PROTEIN COMPOS. AND GIBBERELLINS AND AUXINS SYNTHEISZED BY RHIZOBIA OR INDUCED BY THEIR PRESENCE. FACILITY: INST. MIKROBIOL., EREVAN, USSR.

UNCLASSIFIED

KALAFATI, D.D.

PLANNING ATOMIC ELECTRIC POWER STATIONS WITH STEAM-COOLED REACTORS
Article by D. D. Kalafati, doctor technical sciences, and S. I. Petrov
and V. V. Ivanov, engineers, Moscow, Электротехника, No 3,
1972, pp 88-92)

UDC 621.311.2:621.039(=87)

Handwritten notes:
№ 82-113
21 June 1972

The coolants customarily used in atomic reactors are water under pressure or boiling water, liquid metals, and gases. It is possible, however, to use also superheated steam as a coolant for atomic reactors. Steam-cooled reactors differ from boiling-water reactors with steam superheat in that there is no boiling of the coolant in them.

Even in the combined system of a boiling reactor (BWR) connected in tandem with a reactor for separate steam superheat (SSR) [1 - 3], the reactor reactor is in essence steam-cooled, but does not constitute in this case an independent power installation.

As an independent power installation one can use a steam-cooled reactor with external evaporation in two variants:

- with the steam coolant obtained at saturation temperature in a mixed-type boiler (Loeffler scheme);
- with a surface-film steam generator.

The Loeffler scheme was previously used in steam generators using fresh fuel, and some of them are in operation to this day in a number of European countries. Such a steam generator was in operation until 1969 in the USSR at the Moscow thermal power plant No 9. The Loeffler scheme for atomic electric stations is characterized by the fact that the reactor is cooled with superheated steam (Fig. 1).

About 1/4 of the superheated steam from the reactor goes to the turbine, and the remaining 3/4 is diverted for intermediate superheating, after which it enters into a steam generator of the mixing type, where superheated steam from the feedwater results in dry saturated steam that is fed with a compressor into the reactor for new superheating [4, 5]. The intermediate

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UDC 621.311.25:621.039.526

KALAFATI, D. D., BOROVIKOVA, A. M.

"Binary Cycle with a Dissociating Working Medium in the Second Loop of Atomic Electric Power Plants with Fast Sodium Reactors"

Dissotsiiruyushch. gazy kak teponositeli rab. tela energ. ustanovok --- V sb. (Dissociating Gases as Heat Transfer Agents and the Working Medium of Power Plants -- Collection of Works), Minsk, Nauka i Tekhn. Press, 1970, pp 73-77 (from RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5U1E5)

Translation: The imperfection of turbine heat conversion systems at atomic electric power plants with fast reactors and liquid metal cooling (Na-Na-H₂O) is noted. The scheme of an atomic electric power plant (Na-Al₂Br₆+2AlBr₃-H₂O) with a fast sodium reactor is proposed. Application of aluminum bromides in the binary cycle permits the efficiency of the atomic electric power plant to be improved by 4.8 relative percent and the dimensions of turbines operating on Al₂Br₆+2AlBr₃ vapors to be decreased. Good compatibility of aluminum bromide with alkali metal is noted. There are 3 illustrations and a 6-entry bibliography

1/1

Materials

USSR

UDC 539.374+669.14.018.44

KOLOMYTSEV, P. T., IVANOV, YE. G., KALAFIROV, P. D., and STREKOPYTOV, S. A.,
Moscow

"Investigation of the Ductility of Coatings on Heat-Resistant Alloys"

Kiev, Problemy Prochnosti, No 6, 1973, pp 106-107

Abstract: Development of an algorithm is described for investigating the ductility of protective coatings on heat-resistant alloys over a wide temperature interval. Coatings were formed on alloys KhN70VMFTYu (EI826) and KhN55VMFKYu (EI 929) by calorizing in a mixture of ferroaluminum and aluminum chloride as well as chromium calorizing in a vacuum. It was found that when the aluminum content in the coating is increased the ductility properties of the coating are impaired. In calorizing, brittle aluminides NiAl and Ni₂Al₃ are formed whereas in chromium calorizing, aluminides NiAl and the ductile Ni₃Al are formed which imparts some ductility to the coating. 3 figures.

1/1

USSR

UDC 536.243

PCHELKIN, I.M., ~~KALAKUTSKAYA, N.A.~~ and
PAKFENT'YEVA, I.F.

"Effect of Length and Geometry of Laval Nozzle on Expansion
of Water-Air Mixture"

Moscow, Teplo-Massopernos v. Odnno-i Dvukhfaznykh Sredakh, 1971,
pp. 38-51

Abstract: An experimental investigation was conducted of the flow of
water-air mixture through a convergent-divergent Laval nozzle.

Four nozzles of different lengths were tested. All nozzles
had approximately the same throat and exit diameters.

The jet reaction of the nozzle and the mass flow were measured.
Since the jet reaction is equal to the product of the mass flow by
the mean velocity, the latter could be calculated. Fig. 1 shows the
mean velocity versus dryness for several values of the inlet
pressure.

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PCHELKIN, I. M., et al., Teplo-Massopernos v Odno-i Dvukhfaznykh Sredakh, 1971, pp 38-51

The ratio of the gas velocity to the water velocity was calculated from known mass flows and specific weights of the two phases, it is shown on fig. 2.

The efficiency of the nozzle is defined as the ratio of the sum of kinetic energies of the two phases to the sum of their potential energy drops. The efficiencies of the shortest and longest nozzles versus inlet pressure for several values of dryness are shown on fig. 5.

2/2

- 45 -

Heat, Combustion, Detonation

USSR

UDC 532.529.5.001.5

POHELKIN, I. K., KALAKUTSKAYA, N. A., PARENT'YEVA, I. F.

"An Investigation of Expansion of the ~~air-water~~ mixture in a Laval Nozzle"

Moscow, Dvukhfaznyye Potoki i Voprosy Teploobmena -- Sbornik (Two-Phase Flows and Questions of Heat Exchange -- Collection of Works), "Mauka," 1970, pp 15-25 (from Referativnyy Zhurnal, Teploenergetika, No 1, 1971, Abstract No 1G68)

Translation: In the article are presented the results of experimental investigation of the process of expansion of an air-water mixture in a Laval nozzle at initial pressures of 2 - 4 absolute atmospheres and dryness degrees of 0.02-0.30. Measurement of the nozzle thrust permitted determination of the true gas content of the mixture by volume at the cutoff, and of the phase slip. 14 figures, 2 tables, 8 bibliographic entries.

1/1

Heat, Combustion, Detonation

USSR

UDC 532.529.5.001.5

PHELKIN, I. K., ~~KALAKUTSKAYA, N. A.~~, PARENT'YEVA, I. F.

"An Investigation of Expansion of the Water-Air Mixture in a Laval Nozzle"

Moscow, Dvukhfaznyye Potoki i Voprosy Teploobmena --- Sbornik (Two-Phase Flows and Questions of Heat Exchange -- Collection of Works), "Nauka," 1970, pp 15-25 (from Referativnyy Zhurnal, Teploenergetika, No 1, 1971, Abstract No 1668)

Translation: In the article are presented the results of experimental investigation of the process of expansion of an air-water mixture in a Laval nozzle at initial pressures of 2 - 4 absolute atmospheres and dryness degrees of 0.02-0.30. Measurement of the nozzle thrust permitted determination of the true gas content of the mixture by volume at the cutoff, and of the phase slip. 14 figures, 2 tables, 8 bibliographic entries.

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Acc. Nr. **A70049505** - Abstracting Service:
CHEMICAL ABST. 570

Ref. Code:

GR0079

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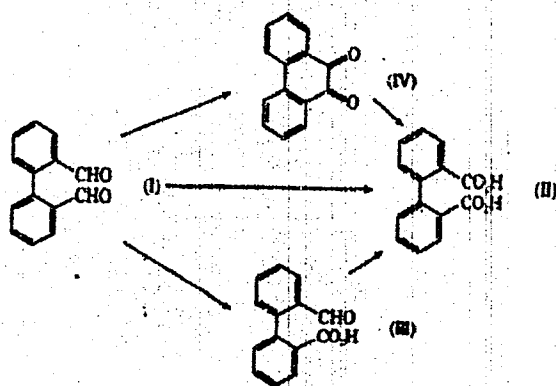
99808r Kinetics of 2,2'-biphenylaldehyde photooxidation. Kalakutskii, B. T.; Rus'yanova, N. D. (USSR). *Zh. Obshch. Khim.* 1970, 40(1), 178-82 (Russ). Kinetic data on photooxidn. of diphenaldehyde (aldehyde of diphenic acid) (I) are presented. In 390-450 mμ light, the reaction proceeds only in polar solvents, so that the yield of phenanthrenequinone under static conditions is 0% in isooctane, C₆H₆ or Et₂O, but 50% in 20% aq. Me₂CO, 40% in 8% aq. MeCOEt, 32% in dry Me₂CO, and less in Me₂COH, AcOH, CCl₄, and PhNO₂. The reaction also gave diphenic acid (II) and 2-formylbiphenyl-2'-carboxylic acid (III). In dry solvents, the reaction character indicates the intermediate formation of the quinone (IV) and III; the overall reaction is 1st order in respect to the aldehyde; oxidn. of the IV and III to II is also described by 1st order kinetics

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in each case. The best scheme of the reaction is that of parallel reactions as shown. The oxidn. of I in AcOH has activation energy 3.2 kcal/mole; in MeCOEt 5.9, in Me₂CO 2.0; and in 20% aq. Me₂CO 2.7. Data for rate const. from 10°-50° are tabulated for the various solvents. IV formation is not a chain reaction, but acidic products are formed in a chain process. The quinone behaves as a sensitizer transmitting the excitation to O₂ by converting it into the active singlet state, which then acts as the oxidizing agent. In dry systems, IV readily oxidizes to II, but as more H₂O is added (which forms H bonds with IV), this substance is stabilized and its yield increases. The formation of III is retarded under such conditions. G. M. Kosolapoff

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USSR
CHEMISTRY
Aerosols

USSR

UDC 541.182.2/.3

PODOL'SKIY, A. A., KALAKUTSKII, L. I., Kuibyshev Aeronautics Institute

"Effect of Particle Size on the Errors in Measurement of Aerosol Particle Size Distribution by Electroprecipitation Methods"

Moscow, Kolloidnyi Zhurnal, Vol 35, No 6, November-December 1973, pp 1188-1190

Abstract: The dependence on the semi-axis ratio of the dimensionless precipitation coordinate of charged conducting particles ellipsoidal in shape (flattened and elongated, with equal surfaces or equal volumes) moving lamina-ly in a plane condenser was calculated. This coordinate depended on the semi-axis ratio only for flattened ellipsoids with equal surfaces. The error in the precipitation coordinate was no more than 10% of the absolute value. The results indicated that the ratios obtained can be used for determining the electroprecipitation capability of fractional powders.

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USSR

UDC: 621.317.39: 543.275.3.08

TURUBAROV, V.I., PODOL'SKIY, A.A., KALAKUTSKIY, L.I.,
LOGVINOV, L.M., POPOV, B.I., RUMYANTSEV, V.V. and
VORONOV, A.F.

"High-Sensitivity Device for Continuous Measurement of Dust Concentration in Biosphere"

Sb. Fiz. metody i vopr. metrol. biomed. izmereniy (Symposium on Physics Methods and Biomedical Metrology Problems) Moscow, 1972, pp 288-289 (from Referativnyy Zhurnal-Metrologiya i Izmeritel'naya Tekhnika, No 8, 1972, Abstract No. 8.32.1007 by V.S.K.)

Translation: The design and operating principle are described of a continuous-action, electronic, induction dustmeter, developed by the Leningrad Aviation Instrument Building Institute jointly with the Kuybyshev Aviation Institute. The dust concentration measurement method is based on the relation between the size of aerosol particles and their charges received in the corona discharge field. This type

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TURUBAROV, V. I., et al., Sb. Fiz. metody i vopr. metrol. biomed. izmereniy, 1972, pp 288-289

dustmeter measures the surface concentration, therefore the change in dispersion concentration does not cause errors in dust concentration count. The dustmeter can be also calibrated by the weighing method with constant dispersion concentration and variation of weight concentration. Several modifications of electronic dustmeters characterized by sensitivity and range have been developed. The technical characteristics of EIP-3 dustmeter are: sensitivity, 10^{-2} mg/m³; weight, 5 kg; power consumption, 10 w; dynamic concentration range, -10^3 ; overall dimensions, 280 x 190 x 80 mm. Test results of electronic induction dustmeters are presented.

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- 178 -

Electromagnetic Wave Propagation

USSR:

UDC: 621.371.332(088.8)

ABRAMOV, G. V., KALAKUTSKIY, L. I., Kuybyshev Aviation Institute

"A Wave Tank for Studying the Propagation of Surface Waves in a Liquid"

USSR Author's Certificate No 258416, filed 21 Mar 67, published 21 Apr 70
(from RZh-Radiotekhnika, No 2, Feb 71, Abstract No 2A266)

Translation: The device covered by this patent can be used to simulate processes of radio wave propagation. The surface wave activator is a discharge gap between two electrodes, one of them in the liquid and the other above the surface. The pickups are capacitive: the larger plate of the pickup is immersed in the liquid, and the smaller plate (in the form of a narrow strip) is above the surface. N. S.

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USSR

UDC 550.834

ABRAMOV, G. V. and KALAKUTSKIY, L.I.I., Applicant: Kuybyshev Aviation Institute im. Academician S. P. Korolev

"Wave Basin for Investigating the Propagation of Surface Waves in a Liquid"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 1, 1970, p 54, Author Certificate No 258416 Class 21c.

Abstract: This author certificate introduces a wave basin for investigating the propagation of surface waves in a liquid. It contains a reservoir partially filled with a liquid (e.g. water), a surface wave energizer and measuring equipment. To achieve higher accuracy and better reproducibility of measurements, the surface wave energizer consists of a discharge gap between electrodes placed one above the other with one of them located above the liquid surface in the basin and the other below this surface.

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Acc. Nr.: AA0040534

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Ref. Code: UR0482

USSR

JPRS 50248
UDC 550.834

ABRAMOV, G. V. and KALAKUTSKIY, L. I., Applicant: Kuybyshev Aviation Institute im. Academician S. P. Korolev

"Wave Basin for Investigating the Propagation of Surface Waves in a Liquid"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 1, 1970, p 54, Author Certificate No 258416 Class 21c.

Abstract: This author certificate introduces a wave basin for investigating the propagation of surface waves in a liquid. It contains a reservoir partially filled with a liquid (e.g. water), a surface wave energizer and measuring equipment. To achieve higher accuracy and better reproduceability of measurements, the surface wave energizer consists of a discharge gap between electrodes placed one above the other with one of them located above the liquid surface in the basin and the other below this surface.

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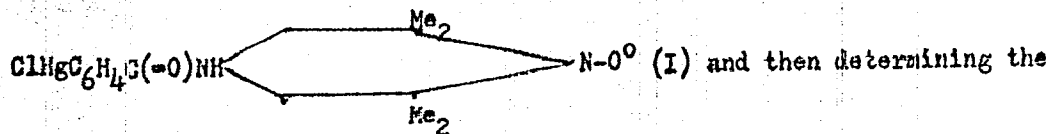
UDC 576.852.15.094.81.088.8

POZHARITSKAYA, L. M., KOL'TOVER, V. K., AGRE, N. S., and KALAKUTSKIY, L. V.,
Institute of Microbiology and Institute of Chemical Physics, Academy of
Sciences USSR

"Activation of Spores of Thermoactinomyces vulgaris 2681 as Indicated by
the Spin Tracer Method"

Moscow, Mikrobiologiya, Vol 40, No 6, Nov/Dec 71, pp 1110-1111

Abstract: Activation of spores of the actinomycete Thermoactinomyces vulgaris
2681, just like that of bacterial spores, is accompanied by the conversion
of disulfide groups into thiol groups. In experiments on a suspension of
nonactivated spores of T. vulgaris 2681 in glycerol with 14% sprouting spores
and one of activated spores of this actinomycete in water with 90% sprouting
spores, the relationship between activation and the formation of thiol groups
was demonstrated by reacting these groups with the stable ininoxyl radical



EPR spectrum of the radical. The methods of cultivation and preparation of
the suspensions have been described. Radical I was introduced into the
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POZHARITSKAYA, L. M., et al., Mikrobiologiya, Vol 40, No 6, Nov/Dec 71, pp 1110-1111

suspension of activated spores from a water-alcohol solution and into that of nonactivated spores from a solvent that inhibits activation (glycerol or octane). The EPR spectrum corresponding to the suspension of activated spores exhibited two signals, one with $\tau \sim 10^{-8}$ sec and another with $\tau = 3 \times 10^{-9}$ sec, that was associated with radicals whose rotary motion was inhibited to a considerably lesser extent. Evidently two types of HS groups with different accessibility to radical I were present in the protein wall of the activated spores. The spectrum for the suspension of non-activated spores consisted of a triplet signal to which corresponded a rotary motion of I with $\tau = 2 \times 10^{-8}$ sec. The intensity of this signal was 5-7 times lower than that of the signal with the more inhibited rotation in the spectrum for the suspension of activated spores. This indicated that activation was accompanied by a considerable increase in the number of HS groups.

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USSR

UDC 576.852.1.094.3/095.1

ASLAN'YAN, R. R., AGRE, N. S., KALAKUTSKIY, L. V., and KIRILLOVA, I. P.,
Institute of Microbiology, Academy of Sciences USSR

"Thermostability of Actinomycetes Spores in Water, Air, and Hydrocarbons"

Moscow, Mikrobiologiya, No 2, 1971, pp 293-296

Abstract: The thermostability of *Thermoactinomyces vulgaris* 136, *Actinomyces streptomycini* B-6, and *Actinomyces thermovulgaris* 1915 spores in air was fairly high (120 to 130°C) regardless of the type of spore or the thermophilic nature of the microorganism. The medium in which the spores were heated markedly affected their thermostability. *A. streptomycini* B-6 spores tolerated a temperature of only 50°C in water, but remained viable in air even when heated to 120°C. *A. thermovulgaris* 1915 and *T. vulgaris* 136 spores were heat resistant in all media tested - water, air, mineral oil, and undecane. A high content of intracellular moisture tended to lower thermostability in *A. streptomycini* B-6 spores. Heating in undecane (but not in octane, pentadecane, or mineral oil) sharply reduced the maximum temperature tolerated by *T. vulgaris* 136 spores. The thermostability of these spores was higher in water than in air; the content of intracellular moisture had little influence in this respect.

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UNCLASSIFIED

PROCESSING DATE--11SEP70

TITLE--A STUDY ON MORPHOLOGY OF TWO CULTURES BELONGING TO THE GENUS MICROPOLYSPORA -U-

AUTHOR--DOROKHOVA, L.A., AGRE, N.S., KALAKUTSKIY, L.V., KRASILNIKOV, N.A.

COUNTRY OF INFO--USSR

R

SOURCE--MIKROBIOLOGIYA, 1970, VOL 39, NR 1, PP 95-100

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MORPHOLOGY, SPOR, FUNGUS, ACTINOMYCETES

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1731

STEP NO--UR/0220/70/039/001/0095/0100

CIRC ACCESSION NO--AP0109692

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UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--16OCT70

TITLE--VARIATIONS IN THE ENZYMIC PROPERTIES OF MUSCLE FIBERS DURING
EXTRACTION WITH GLYCEROL -U-

AUTHOR--(02)-KALAMKAROVA, M.B., VERETENNIKOVA, A.A.

COUNTRY OF INFO--USSR

SOURCE--BIOFIZIKA 1970, 15(1), 184-7

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MUSCLE TISSUE, SOLVENT EXTRACTION, PROTEIN, GLYCEROL, ADENOSINE
TRIPHOSPHATE, ENZYME ACTIVITY, CHOLINESTERASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1996/0627

STEP NO--UR/0217/70/015/001/0184/0197

CIRC ACCESSION NO--AP0117853

UNCLASSIFIED

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CIRC ACCESSION NO--AP0117853
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT. DURING THE EXTN. OF MUSCLE FIBERS WITH GLYCEROL THE REMOVAL OF MUSCLE SARCOPLASMIC PROTEINS TAKES PLACE AND ONLY MYOFIBRILLAR PROTEINS ARE LEFT IN GLYCERINATED MUSCLES. IN THE COURSE OF EXTN. THE ATPASE ACTIVITY OF MUSCLE FIBERS IS INCREASED AND ON THE 8-10TH DAY IT REACHES A CONST. VALUE. THE CHOLINESTERASE ACTIVITY OF THE MUSCLE FIBER REACHES A CONST. VALUE ON THE 16-18TH DAY.

FACILITY: INST. CHEM. PHYS., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 512.25/.26+519.3:530.115

~~KALAMKHATOV, B. V.~~

"The Cyclical Homori Algorithm"

Upravlyayemye Sistemy [Controlled Systems -- Collection of Works], No 6, Novosibirsk, 1970, pp 26-28, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V529 by A. Korbut).

Translation: An example is presented, showing that the application of the first Homori algorithm to a problem clearly not having integer plans can lead to an infinite number of iterations.

USSR

KALANDARISHVILI, N. G.

"Automatic Sets Generated by Automata of One Class"

Tr. Problem. Lab. Avtomatiki i Vychisl. Tekhn. Gruz. Politekhn. In-t [Works of the Problems Laboratory for Automation and Computer Technology of Georgian Polytechnical Institute], 1972, No 3, pp 67-73 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V372)

Translation: Suppose A is a finite, fully defined Mill automaton with input alphabet P and output alphabet Q . Let us assume $\Sigma = P \times Q$. The input-output (i.-o.) sequences realized by automaton A will be represented by words in alphabet Σ . Suppose Σ^* is the set of all words in alphabet Σ . Word s , belonging to Σ^* , will also be written in the form $s = (r, l)$, where r is the projection of s on P and l is the projection of s on Q . The i.-o. sequence $s \in \Sigma^*$ is called accessible in automaton A if there is a state a such that, if it is in state a at the initial moment in time, automaton A converts input word r into word l . The set of all i.-o. sequences accessible in automaton A is called the automatic set and is represented by D_A . The i.-o. sequence $s = (r, l) \in D_A$ is called unambiguously continuable if for any input word r' there is a unique i.-o. sequence $s' = (rr', ll') \in D_A$. Suppose D_A^0 is the set of all unambiguously continuable sequences. The set of all i.-o. sequences

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USSR

KALANDARISHVILI, N. G., Tr. Problem. Lab. Avtomatiki i Vychisl. Tekhn. Gruz. Politekhn. In-t, 1972, No 3, pp 67-73

$s \in D_A^D$ which are not unambiguously continuable will be represented by D_A^H . The i.-o. sequence $s \in D_A^O$ is called simple if no part of it differing from s is unambiguously continuable. Suppose D_A^{OP} is the set of all simple unambiguously continuable i.-o. sequences from D_A . Automaton A is called an automaton with finite memory if there is a number $N > 0$ such that for any i.-o. sequence $s \in D_A^O$ of length no less than N , $s \in D_A^O$. It is easily established that for an automaton with finite memory, sets D_A^{OP} and D_A^H are finite.

The main result of the work is proof of the fact that for automata with finite memory, set D_A is fully defined by the pair of sets D_A^{OP} and D_A^H .

S. Marcheskov

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USSR

Automata

USSR

UDC: 577.4

KALANDARISHVILI, N. G.

"Concerning Automaton Sets Generated by Automata of One Class"

Tr. Problem. lab. avtomatiki i vychisl. tekhn. Gruz. politekhn. in-t (Works of the Problem Laboratory for Automation and Computer Technology. Georgian Polytechnical Institute), 1972, No 3, pp 67-73 (from RZh-Matematika, No 10, Oct 73, abstract No 10V372 by S. Marchenkov)

Translation: Let A be a finite, completely defined Mill automaton with input alphabet P and output alphabet Q . It is assumed that $\Sigma = P \times Q$. The input-output (I/O) sequences realized by automaton A are represented by words in alphabet Σ . Let Σ^* be the set of all words in alphabet Σ . A word s belonging to Σ^* is also recorded in the form $s = (r, l)$, where r is the projection of s on P , and l is the projection of s on Q . The I/O sequence $s \in \Sigma^*$ is called admissible in automaton A if there exists a state a such that the automaton A , being at time zero in state a , transforms input word r to word l . The set of all I/O sequences which are admissible by automaton A is called the automaton set and is denoted by D_A . The I/O sequence $s = (r, l) \in D_A$ is called uniquely continuable if for any input word r' there exists a

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USSR

KALANDARISHVILI, N. G., Tr. Problem. lab. avtomatiki i vychisl. tekhn. Gruz. politekhn. in-t, 1972, No 3, pp 67-73

unique I/O sequence $s' = (rr', ll') \in D_A$. Let D_A^0 be the set of all uniquely continuable sequences. The set of all I/O sequences $s \in D_A$ which are not uniquely continuable is denoted by D_A^1 . The I/O sequence $s \in D_A^1$ is called simple if no part of it distinct from s is uniquely continuable. Let D_A^{01} be the set of all simple, uniquely continuable I/O sequences from D_A . Automaton A is called an automaton with finite memory if there exists a number $N > 0$ such that for any I/O sequence $s \in D_A$ of length no less than N , $s \in D_A^0$. It is easily established that for an automaton with finite memory the sets D_A^{01} and D_A^1 are finite. The basic result of the work is proof that for automata with finite memory the set D_A is completely defined by the pair of sets D_A^{01}, D_A^1 .

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- 1 -

Acc. Nr: AP0040887

Ref. Code:

UR 0103

PRIMARY SOURCE: Avtomatika i Telemekhanika, 1970, Nr 1, pp 112-122

CONCERNING DESCRIPTION OF FINITE AUTOMATON BY MEANS
OF FINITE ENSEMBLE OF INPUT-OUTPUT SEQUENCES. I

V. A. Buyevich, N. G. KALANDARISHVILI, A. A. TAL

It is shown that when using the notion, introduced in the present article, of the equivalent transformations of input-output sequences, the behaviour of any strongly bound finite automaton may be fully defined by the setting of a finite ensemble of input-output sequences of finite length with the marks indicating their initial parts (by the setting of the k -array). The algorithm of making up the k -array for a set finite automaton is presented.

REEL/FRAME

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UZZ UZZ UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--A BLAST HELPS BUILDERS -U-
AUTHOR--KALANDAROV, G. *K*
COUNTRY OF INFO--USSR
SOURCE--PRAVDA, JUNE 23, 1970, P 3, COLS 6-8
DATE PUBLISHED--23JUN70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, ORDNANCE
TOPIC TAGS--SURFACE BLAST, SHOT BLASTING, BLAST WAVE, EXPLOSION, CIVIL
ENGINEERING
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0982 STEP NO--UR/9012/70/000/000/0003/0003
CIRC ACCESSION NO--AN0107503
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AN0107503

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. S. A. POPOV, T. M. MUKHAMEDOV, F. A. AVDEYEV, I. L. BLEYMAN, G. I. POKROVSKIY, T. S. ANTONYAN, L. V. DUNINBARKOVSKIY, A. I. PEVZNER, T. SH. SHARIPOV, V. P. NEDRIGE, YA. A. YULISH, AND B. K. SVENKOVSKIY ARE GIVEN CREDIT FOR CARRYING OUT 2 YEARS AGO THE BAYPAZI BLAST USED TO CONSTRUCT A DAM. IT IS ALSO SAID THAT THE INSTITUTE OF TERRESTRIAL PHYSICS OF THE SOVIET ACADEMY OF SCIENCES, THE SCIENTIFIC RESEARCH INSTITUTE OF HYDROTECHNOLOGY AND AMELIORATION, THE INSTITUTE OF EARTHQUAKE PROOF CONSTRUCTION AND SEISMOLOGY, AND OTHER ORGANIZATIONS CONDUCTED AN EXTENSIVE RESEARCH PROGRAM IN CONJUNCTION WITH THE BLAST.

UNCLASSIFIED

USSR

KALANTAROV, M. I., KELIKOVA, T. A., and RASULOV, N. E., Baku

"Investigation of the Effects of a Magnetic Field on the Quality of Cotton Fibers"

Kishinev, Elektronnaya Obrabotka Materialov, No 2, 1971, pp 68-71

Abstract: Cotton fibers were kept in a rotating magnetic field of 400 to 800 a/cm for 1 to 10 minutes, with relative humidity ranging from 65 to 80%. In all cases, this treatment enhanced the tensile strength of the cotton fibers, with the maximum increase of 0.2-0.3 g observed after 3 minutes of exposure. Follow-up tests demonstrated that this improvement was durable. Infrared spectroscopy of the fibers revealed shifts in maximum absorption bands, and x-ray analysis showed a greater degree of polarization of the polymers (up 2-4%) after the treatment. The feasibility of applying this method in industry is being investigated.

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- 19 -

Instrumentation and Equipment

USSR

UDC 621.793.620.17.05

KOLOMYTSEV, P. T., IVANOV, YE. G., KALAFIROV, P. D., and STREKOPYTOV, S. A.
Air Force Engineering Academy imeni Zhukovskiy

"Installation for the Investigation of the Plasticity of Diffusion Coatings
Applied on Heat-Resistant Alloys"

Moscow, Zavodskaya Laboratoriya, No 5, 1973, pp 618-619

Abstract: The Air Force Engineering Academy imeni Zhukovskiy has developed a unit on which specimens with coatings are tested for bending; after this, the angle of rotation of the section is determined and from its degree the relative elongation at the moment of first crack development is calculated. The plasticity is characterized by the relative elongation $\delta = b \cdot \alpha / 2l$, where b and l are thickness and length of the specimen and α = angle of rotation at first crack development. The unit is used for the investigation of the plasticity of protective coatings produced by calorization in a mix of ferroaluminum and ammonium chloride and by chromocalorization in vacuum on specimens of KhN70VMFTYu and KhN55VMFTKYu alloys. As a result of chromocalorization and calorization, layers with maximum Al-contents of 14-24 and 30-38%, respectively, develop. It is shown that on 1/2

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KOLOMITSEV, P. T., et al., Zavodskaya Laboratoriya, No 5, 1973, pp 618-619

specimens of KhN70VMFTYu alloy the increase of Al-content in coatings reduces its plasticity at room temperature. The plasticity of diffusion coatings on chromocalorized specimens of KhN55VMTFKYu alloy with $\sim 24\%Al$ is considerably higher than on calorized specimens with maximum $38\%Al$ in diffusion layers. Two figures.

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SHLEYNIKOV, V. I., KALASHNIK, B. A.

"Organization of Archives in the OSF-1 Operational System for the M-222 Machine"

Vychisl. Mat. i Vychisl. Tekhn. [Computer Mathematics and Computer Technology -- Collection of Works], No 3, Khar'kov, 1972, pp 136-140 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V644, by the authors).

Translation: The organization of a magnetic tape archive is described within the framework of the OSF-1 operational system, developed at the computer center of the Institute of Physics and Technology, Academy of Sciences, UkSSR. This operational system allows operation from a remote terminal as a batch of jobs runs through the machine. The terminal operations require a simple but effective method of accumulation, storage and calling of large files of information: programs, data, etc. The magnetic tape archive basically satisfies these requirements. The article describes the general organization of the archive and access instructions. Examples of operation with the archive are presented.

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KALASHNIK, B. A.

"Program for Organization of Archives on Magnetic Tape for Texts in ALGOL-60"

Vychisl. mat. i Vychisl. Tekhn [Computer Mathematics and Equipment -- Collection of Works], No 2, Khar'kov, 1971, pp 81-141, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 5 V531 by the author).

Translation: The program suggested allows archives to be ordered on computer magnetic tape for computers with the instruction system of the M-20 machine at the level of ALGOL-60 input language. The program is called ARAP (Automatic ALGOL Program Editor), since it also allows automation of the process of introduction of changes (editing) to texts of programs in input language. ARAP is formulated as two sections and is included in the TA-1M (1) translator. The ARAP program with slight changes can be used independently with any text information. The work presents the text of the program in code, a description of its algorithms and information for users.

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KALASHNIK, B. A.

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UDC: 8.74

~~KALASHNIK~~ B. A., BELOUS, L. F.

"Dialogue Mode for the M-222 with Batch Jobs in Background"

Teoriya Yazykov i Metody Postroyeniya Sistem Programmir. [Theory of Languages and Methods of Construction of Programming Systems--Collection of Works], Kiev-Alushta, 1972, pp 278-286 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V577, by V. Mikheyev)

Translation: The OSF-1 operational system for the M-222 computer is described, providing for an operational mode (on line) utilizing a remote terminal simultaneously with the running of a batch of jobs. The OSF-1 includes: the supervisor, monitor, general purpose magnetic tape storage, ARAP system storage for programs in ALGOL-60, SIRIUS translator, serial software (TA-lm, autocoder, etc.). Two different programs are distinguished in OSF-1: batch programs and foreground programs (from remote terminal). Each of these can be in either of two states--active or passive. The active state of the program refers to the case when the central processor is running the program and servicing slow peripheral devices upon receipt of passive program requests by interruption. In the passive mode, the program is either waiting for completion of data transfer from terminal devices or waiting its turn. The dialogue mode of the OSF-1
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Kalashnik, B. A., Belous, L. F., Teoriya Yazykov i Metody Postroyeniya Sistem Programmir., Kiev-Alushta, 1972, pp 278-286

system with the SIRIUS conversational programming system is described.

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KALASHNIK, V. T.

PATENT RESEARCH

SO: FOREIGN PRESS DIGEST

64. USSR 31 AUG 1971

UDC 608.3.002.66

KALASHNIK, V. T.

"Patent Research in an Enterprise"

Voprosy Izobretatel'stva (Problems of Invention), No 1, 1971, pp 55-57 (from R-Zh -- Informatika, No 4, Apr 71, Abstract No 71.4.9)

Translation: The organization of patent research at the Kremenchug Automobile Plant (in the USSR) is described. Three types of patent research are carried out: a) research for the purpose of determining level of development; b) research for the purpose of selecting a rational trend in designing; c) research for the purpose of determining the expediency of purchasing licenses. The sequence and content of all stages of each type of research are described.

Explosives and Explosions

USSR

UDC 532.525.1

MEL'NIKOV, M. A., GAVRILIN, A. I., DIMOVA, N. I., and KALASHNIKOV, A. I., Tomsk Polytechnical Institute Imeni S. M. Kirov

"Mechanism of the Explosion Initiation of Silver and Thallium Azides by Electrical Discharge"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 9, Sep 70, pp 2321-2325

Abstract: Experimental data are reported on the explosion initiation of silver and thallium azides by means of an electrical discharge. The samples studied were subjected to charge impulses with a front of $\tau_{fr} = 5 \cdot 10^{-6}$ sec and amplitude 4.5 kv. Critical energy of the initiation of AgN_3 and TlN_3 by an electrical discharge was measured by oscillography of the current, charge and the beginning of glow; it was found to be $0.2 \cdot 10^{-3}$ and $0.5 \cdot 10^{-3}$ J respectively. The results support the contention about thermal nature of the initiation of azides by electrical discharge. It was shown experimentally that a spark with an energy below that of the critical one does not cause the explosion of above azides. The spark energy appears to be the determinant initiation parameter.

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