

3/3 021

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0134427

ABSTRACT/EXTRACT--OBJECTIVELY A WELL EXPRESSED TUMESCENCE WAS NOTED, AND A SHARP PAINFULNESS DURING PALPATION OF THE RIGHT RADIOCARPAL JOINT, PAINS DURING MOVEMENTS IN THE OTHER JOINTS OF THE EXTREMITIES, HERPETIC EFFUSIONS IN THE VICINITY OF THE MOUTH AND ON THE ALA NASI. A HIGH TEMPERATURE (39-40DEGREES) PERSISTED FOR TEN DAYS. DURING ALL THAT TIME WELL EXPRESSED MANIFESTATIONS OF POLYARTHRITIS WERE NOTED. IN ANAMNESIS DISEASES OF THE JOINTS WERE NOT NOTED IN THE PATIENT. AFTER PRESCRIPTION OF ACTH AND PREDNISOLONE THE PAINS IN THE JOINTS CEASED, THE TUMESCENCE DISAPPEARED AND CLINICAL RECOVERY SET IN.

UNCLASSIFIED

USSR

UDC 621.762.2:669.22

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CHIZHIK, S. P., SHTAYNBERG, A. N., KAGAN, N. M., KHASIN, E. I., SHELEST, A. YE.,  
DMITRIYENKO, V. YE., and LAYNER, D. I.

"Method of Producing Silver Granules"

USSR Authors' Certificate No 267079, cl. 40b, 1/04; 31 b<sup>3</sup>, 9/00, (B 22f), filed  
27 Apr 67, published 16 Jul 70 (from RZh-Metallurgiya, No 3, Mar 71, Abstract  
No 3C404P by S. Krivonsova)

Translation: An alloy containing up to 50% Ag, the rest Al, is rolled into  
strip and treated in alkali. In order to produce granules with up to 0.5%  
Al content, the initial alloy is rolled into strip up to 0.5-5 mm in thick-  
ness, and before alkali treatment is heated to 540-560°, held for 1.5 hr in  
an inert atmosphere until a solid solution of Ag in Al forms, and is hardened.

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Steels

USSR

UDC 669.18.046.558.7

KALINNIKOV, Ye. S., MOKHIR, Ye. D., SERGEYEV, A. L., KHASIN, G. A. and VOINOV, S. G.

"Quality of Type ShKh15 Open Hearth Steel Refined with Synthetic Slag"

Moscow, Stal', No 1, Jan 73, pp 23-26.

Abstract: The content of nonmetallic inclusions and the macrostructure of type ShKh15 Steel, made according to the usual technology in a 20 ton electric furnace and according to a technology developed earlier in a 60 ton open hearth furnace is studied following treatment of the metal in the ladle with liquid synthetic slag and pouring into 2.7-4.9 t ingots, and also following several experimental treatments with variations of the mode of oxidation and deoxidation in the furnace and in the ladle with ingot weight 2.7 t. All types of SSh open hearth steel (except that poured into the largest ingot molds) satisfied all requirements and was equal in quality to the electric steel. The optimal results were produced using the SSh technology and using an altered version with tapping of the melt without adding the oxidizers (ores) and with the consumption of aluminum decreased to 200 g/t steel.

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USSR

UDC 669.18.046.554

SIDOROV, N. V., GERASIMOV, Yu. V., KHAYRUTDINOV, R. M., ~~KLATOV, S. K.~~  
KHASIN, G. A., BARMOTIN, I. P., KAS'YANOV, A. G., CHEREMNYKH, B. A., and  
ISHMURZIN, M. G., Zlatoust Metallurgical Plant, Scientific Research  
Metallurgical Institute, Chelyabinsk

"Out-of-Furnace Refining of Low-Carbon Corrosion-Resistant Steels"

Moscow, Metallurg, No 12, Dec 70, pp 22-23

Abstract: The smelting technology of low-carbon corrosion-resistant steels in electric arc furnaces with argon scavenging in the foundry ladle has been developed and introduced into production at the Zlatoust Metallurgical Plant. The main principles of the out-of-furnace degassing effectiveness depends on the chemical composition of the steel, the slag, and the scavenging parameters were investigated.

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Physical Properties

USSR

UDC 669.14:669.04

BAUM, B. A., D'YAKONOVA, L. V., YERMANOVICH, N. A., TYAGUNOV, G. V., and KHASIN, G. A., Sverdlovsk, Zlatoust

"Physical Properties of Molten High-Alloy Steels and Special Alloys"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 70, pp 43-48

Abstract: The article determines the kinematic viscosity, electrical resistivity, and density of specimens of more than 20 industrial brands of steels and alloys. The properties were measured after 5-15 minute isothermal holding periods, beginning with a temperature increase to 1700-1800° C and then followed by a temperature decrease down to crystallization of the melt. In some cases this measurement cycle was repeated (reheating and then cooling the specimen) without bringing the specimen to solidification. The specimens studied included NZhVI alloy (99.66 percent Fe), EI435, EI437 nickel-base alloys, alloys Kh28, Kh18N10T, EI811, ShKh15, EI736, 12Kh2N4A, iron-base alloys U10, ShKh15, R18, 9Kh18 high-carbon steels, 4Kh9S2, E4, 1/3

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BAUM, B. A., et al., Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 70, pp 43-48

and 30KhGSNA steels, and alloy 60. The effect of the chemical composition of the specimens, nonmetallic inclusions, and production method on the physical properties was considered.

The results indicate that the kinematic viscosity, electrical resistance, and density of molten steels and special alloys depend mainly on the chemical composition and production method. The phenomenon of hysteresis of properties is observed, indicating differences in the structure of a molten specimen during its heating and cooling. The magnitude of the hysteresis may serve as one of the characteristics of a given specimen along with data on its physical properties. The structure of melts before crystallization (composition and properties of microvolumes, coordination of the atoms in them, etc.) should be regarded as one of the metallurgical heredity factors capable of influencing a number of the service characteristics of the solid metal.

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BAUM, B. A., et al., Fizika i Khimiya Obrabotki Materialov, No 5, Sep-Oct 70, pp 43-48

The authors thank P. V. GEL'D for his advice and interest in the work.

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KHASIN G.A.

USSR

UDC 669.14.018.8:658.562

KAS'YANOV, A. G., GUREVICH, YU. G., MARNELOV, A. I., SIBIRSKII,  
N. V., GERASIMOV, YU. V., KHASIN, G. A., CHISTYAKOV, S. L.,  
POLYAKOV, YU. V., LEBEDEVA, V. N., Chelyabinsk Polytechnical  
Institute and Zlatoust Metallurgical Plant

"Quality of Stainless, Low-Carbon Steel"

Moscow, Metallurg., No 5, May 70, pp 17-19

Abstract: A stainless, low-carbon steel developed at the Zlatoust Metallurgical Plant is described. The carbon content of this steel is less than 0.030%, and the steel is made in open arc furnaces using metal electrodes or by scavenging the liquid steel with argon. Comparisons were made between this steel and a similar metal made in vacuum induction furnaces. A table gives the impurities in the various types of steel produced by the two methods -- the use of metal electrodes and argon scavenging. An analysis of the results of a quantitative estimate of impurities showed that owing to the high degree of deformation, the contamination along the transverse axis of the steel sheet is less than that along the longitudinal axis. The mechanical  
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KAS'YANOV, A. G., et al., Metallurg., No 5, May 70, pp 17-19

characteristics of the steel satisfied all technical requirements.  
A comparison of the mechanical characteristics of this steel  
made by the three processes discussed -- metallic electrodes,  
argon scavenging, and vacuum induction -- is also presented.

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Magnesium

USSR

UDC 669.721.046.4(088.8)

REZNIKOV, I. L., POLYAKOV, Yu. A., KHASIN, L. B., PONYATENKO, V. V.,  
KOROTKOV, Yu. A., RUDAKOV, V. A., and DUNAYEV, D. V.

"Method of Dehydration of Magnesium Chloride"

USSR Author's Certificate No 272569, Filed 30/04/68, Published 27/08/70  
(Translated from Referativnyy Zhurnal-Metallurgiya, No 2, 1971, Abstract  
No 2 G181 P)

Translation: A method is suggested for dehydration of  $MgCl_2$  by fusion. To increase the productivity of the apparatus and improve the sanitary conditions, the initial salt is pressed into a strip under a pressure of over  $600 \text{ kg/cm}^2$ , ground, and classified, then the fraction of ground salt over 1 mm in size is melted. The salt melt thus produced is agitated by air.

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USSR

UDC 621.382.2

BILENKO, D. I., ZHARKOVA, E. A., KHASINA, YE. I., Saratov State University imeni N. G. Chernyshevskiy

"Transmission of Infrared Radiation by Diodes Based on Silicon Alloyed with Gold"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 948-950

Abstract: A study was made of the results observed when passing infrared radiation to diodes manufactured from n-type silicon alloyed with gold with a specific resistance of  $\sim 10^4$  ohms-cm and an au concentration of  $\sim 10^{15}$  cm<sup>-3</sup>. Coherent radiation with a wave length of 1.15, 3.39 and 10.6 microns was used. A study was made of the effect of a magnetic field parallel to the infrared radiation and perpendicular to the current lines on the relative variation of the diode transmission. For currents larger than the cutoff current, the magnetic field essentially changes the nature of transmission of the infrared radiation at each point of the specimen. Therefore, the observed optical inhomogeneity of the diodes can be connected with the effect of the free charge carriers. On the other hand, measurements of the current functions of transmission of the infrared radiation with a decrease in the specimen size in the 1/2

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UDC 621.382.2

BILENKO, D. I., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 5, 1972, pp 948-950

direction of displacement of the light probe demonstrated that the dependence of  $\delta T$  on the position of the infrared probe for identical currents is fully retained for the given section of the specimen. The observed decrease in transmission of the diodes cannot be explained by nonselective absorption by free carriers since the studies performed did not demonstrate the dependence on wavelengths characteristic of this type of infrared absorption. The increase in transmitted power cannot be connected with recombination radiation, for the effect of the latter was entirely excluded under the experimental conditions. The most probable explanation of the observed phenomena can be nonuniform variation of the fraction index of the semiconductor material with deep impurities on passage of the current.

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USSR

UDC 621.376.2

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BILENKO, D. I., ZHARKOVA, E. A., KHASINA, YE. I., Saratov State University  
imeni N. G. Chernyshevskiy

"A Modulator"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzy, Tovarnyye Znaki,  
No 23, Author's Certificate No 276187, Filed 6 Mar 69, p 64

Abstract: This author's certificate introduces a modulator of electromagnetic emission in the millimeter, submillimeter and infrared wavelength ranges. The unit consists of a section of transmission channel and a semiconductor junction diode. As a distinguishing feature of the patent, the device is designed for an extended range of frequencies of reflected electromagnetic emission which can be modulated, a wider band, and the possibility of pure phase control of emission. The plane of the PN junction in the diode is perpendicular to the direction of energy propagation, completely covering the cross section of the transmission channel. The high-resistance side of the diode faces the incident emission.

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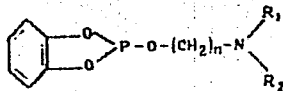
UDC 547.26'118.07

KHASKIN, A. N., SAKISYAN, L. A., KHUDOYAN, K. L., AYRAPETYAN, S. G., and ZAVLIN, P. M., Leningrad Institute of Cinema Engineers

"A Method of Making N-Substituted Aminoalkyl Esters of Pyrocatecholphosphorus Acid"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 25, Soviet Patent No 277781, class 12, filed 4 Apr 69, published 5 Aug 70, p 27

Translation: This Author's Certificate introduces a method of making N-substituted aminoalkyl esters of pyrocatecholphosphorous acid of general formula



where n is 2 or 3, R<sub>1</sub> is C<sub>2</sub>H<sub>4</sub>OH, an alkyl or a phenyl, and R<sub>2</sub> is H or an alkyl. As a distinguishing feature of the patent, the corresponding N-substituted alkanolamines are treated with pyrocatecholchlorophosphite in an organic solvent with subsequent isolation of the product by the action of an alkoxide of an alkali metal.

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USSR

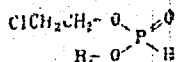
UDC: 547.26'113.07

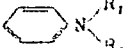
SARKISYAN, L. A., KHASKIN, A. N., ZAVLIN, P. M., AYRAPETYAN, S. G., AYVAZYAN, M. K.,  
Leningrad Institute of Motion Picture Engineers.

"A Method of Producing Acid Esters of  $\beta$ -Chloroethylphosphorous Acid"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki, No 26,  
1970, Soviet Patent No 280474, filed 18 Mar 69, p 25

Abstract: This Author's Certificate introduces: 1. A method of producing acid  
esters of  $\beta$ -chloroethylphosphorous acid of the general formula



where R is naphthyl,  N  $\begin{matrix} \text{R}_1 \\ \text{R}_2 \end{matrix}$ ,  $\text{CH}_2\text{CH}_2\text{N} \begin{matrix} \text{R}_1 \\ \text{R}_2 \end{matrix}$ , R<sub>1</sub> is an alkyl, oxyalkyl, diphenylmethyl,

aryl, R<sub>2</sub> is H, an alkyl, oxyalkyl. As a distinguishing feature of the patent, amino-  
phenyl, alkanolamine or hydroxynaphthaline is interacted with ethyleneglycolphos-  
phorous acid chloride in the presence of hydrogen chloride with subsequent isolation  
of the goal product by conventional methods. 2. A modification of this method in  
which the process is carried out in an organic solvent such as ether. 3. A method  
called the method in which the process is carried out with heating to 140°C.

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1/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--INTERACTION OF PYROCATECHOL PHOSPHORUS ACID CHLORIDE WITH AMINO  
ALCOHOLS AND AMINOPHENOLS -U-  
AUTHGR--(03)-KHASKIN, A.N., ZAVLIN, P.M., IONIN, B.I.  
COUNTRY OF INFO--USSR  
SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 298-300  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--PYROCATECHOL, PHOSPHORUS ACID, CHLORIDE, AMINO ALCOHOL,  
HETEROCYCLIC BASE COMPOUND, ORGANIC PHOSPHORUS COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3006/0817 STEP NO--UR/0079/70/040/002/0298/0300  
CIRC ACCESSION NO--AP0134580



2/2 012 UNCLASSIFIED PROCESSING DATE--27NOV70  
CIRC ACCESSION NO--AP0134550  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MIXING EQUIMOLAR AMTS. OF HOCH  
SUB2 CH SUB2 CH SUB2 NH SUB2, ET SUB3 N, AND CATECHYL  
CYCLOPHOSPHORIC ACID AT 0-5DEGREES IN ET SUB2 O GAVE ET SUB2 N.HCL  
AND 72.3PERCENT I (R EQUALS NHCH SUB2 CH SUB2 OH) (II), M.  
112-14DEGREES. SIMILARLY WAS PREPD. I (R EQUALS P, HOC SUB6 H SUB4 NH),  
M. 126-30DEGREES. HOWEVER, WHEN PREPN. OF II WAS ATTEMPTED WITHOUT THE  
HCL-SCAVENGER THE PRODUCT WAS 81PERCENT 2,AMINOETHYL CATECHYL  
CYCLOPHOSPHITE (I, R EQUALS OCH SUB2 CH SUB2 NH SUB2); HCL SALT M.  
121-2DEGREES. SIMILARLY P,AMINOPHENOL GAVE (I, R EQUALS P, H SUB2 NC  
SUB6 H SUB4 O); HCL SALT M. 208-9DEGREES. FACILITY: LENINGRAD.  
INST. KINOINZH., LENINGRAD, USSR.

Organophosphorus Compounds

USSR

UDC: 547.183

~~KHASKIN~~, A. N., ZAVLIN, P. M., and IONIN, B. I., Leningrad Institute of Cinema Engineers, Leningrad, Ministry of Culture RSFSR

"Interaction of Catecholphosphorous Acid Chloride With Amino Alcohols and Aminophenols"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 298-300

Abstract: The interaction of catecholphosphorous acid chloride with ethanamine and p-aminophenol both in the presence and in the absence of hydrogen chloride acceptors was studied. It was found that dydroxyethyl(phenyl) amides of catecholphosphorous acid are formed in the presence of hydrogen chloride acceptors and hydrochlorides of aminoethyl(phenyl) esters of catecholphosphorous acid in the absence of hydrogen chloride acceptors.

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USSR

UDC 541.127

SHEREMET, N. G., VASIL'YEV, A. F., KHASKIN, B. A., and MEL'NIKOV, N. N.

"Kinetics of the Reaction of 4,4'-Dipyridyl With Trimethyl Phosphate"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 12, Dec 73, pp 2735-2738

Abstract: It was shown that the rate of the reaction of 4,4'-dipyridyl with trimethyl phosphate in presence of water can be described by the kinetic equation for a sequential-parallel two stage reaction. The reaction rate constant depends on the amount of water in the reaction mixture.

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USSR

UDC 547.26'118

KHASKIN, B. A., TORGASHEVA, N. A., and MEL'NIKOV, N. N., All Union Scientific Research Institute of Chemical Plant Protective Agents

"Reactions of Phosphorus Containing Disulfides. Reaction of Bis(dialkoxy- and Diarylhydroxythiophosphoryl)disulfides With Hydrazines"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, p 2083

Abstract: Reaction of bis(dialkoxy- and diarylhydroxythiophosphoryl) disulfides with phenylhydrazine carried out at room temperature in ether or benzene solution yields phenylhydrazinium salts of O,O-dialkyl and O,O-diaryldithiophosphoric acid. In contrast to this, reactions with N,N-dimethylhydrazine yield dimethylammonium salts of O,O-dialkyldithiophosphoric acid.

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USSR

UDC 547.26'118

KHASKIN, B. A., MEL'NIKOV, N. N., and TORGASHEVA, N. A., All Union Scientific Research Institute of Chemical Plant Protective Agents

"Reactions of Phosphorus Containing Disulfides. I. Reaction of Bis-(dialkoxy- and Diaryloxythiophosphoryl)disulfides With Primary Amines"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 1916-1918

Abstract: The reaction of bis(dialkoxy- and bis(diarylhydroxythiophosphoryl)-disulfides with primary aliphatic amines was investigated. It was shown that this reaction is a new method for the synthesis of thiophosphorylsulfene-N-alkylamides. This reaction is relatively fast at room temperature in organic solvents, yielding quantitative amounts of product. The structure of the products was confirmed by independent syntheses and PMR and IR spectroscopy.

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## Nitrogen Compounds

USSR

UDC 632.95

MEL'NIKOV, N. N., KHASKIN, B. A., VORONKOVA, V. V., YAKIMENKO, Ye. F., and SABLINA, I. V.

"Thermal Stability of Quaternary Salts of 4,4'-Dipyridyl"

V sb. Khim. sredstva zashchity rast. (Chemical Protection of Plants -- collection of works), No 2, Moscow, 1972, pp 306-311 (from RZh-Khimiya, No 22, 25 Nov 73, Abstract No 22N572 by V. A. Kozlov)

Translation: A study was made of the thermal stability of compounds with the general formula (I)  $\overline{X} = \text{I, MeOSO}_3, (\text{MeO})_2\text{PO}_2, \text{ and } (\text{MeO})(\text{MeS})\text{-PO}_2$  and II by paper electrophoresis. Examples. (1) 15 ml of MeI is added to 0.02 mole of 4,4'-dipyridyl (III). The mixture is sealed in an ampul and allowed to stand at 20° for 24 hours when the crystals are filtered off and washed with ether to obtain I ( $\overline{X} = \text{I}$ ), yield 72%, melting point 240° (alcohol containing water = 3:7). I  $\overline{X} = (\text{MeO})(\text{MeS})\text{PO}_2$  (Ia) is obtained in a similar manner by heating to 50° for 12 hours. Purification is carried out by reprecipitation, adding an acetonitril solution of I a drop at a time to acetone at -50 to -70° to obtain Ia, yield 34%, melting point 59-61.5°. (2). A mixture of 0.03 mole of III, 0.04 mols of  $(\text{MeO})_3\text{PO}$  and 10 ml of water is heated to 90-100° for 5

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MEL'NIKOV, N. N., et al., Khim. sredstva zashchity rast, No 2, 1972, pp 306-311

hours in the presence of 0.1 g of alkaline activated carbon (A brand). The carbon is filtered off, the filtrate evaporated in a vacuum, the residue kept in a vacuum (40-50°/0.2 mm) and treated with methyl ethyl ketone. The mass crystallizes and purification is carried out by reprecipitation to obtain I  $\overline{X} = (\text{MeO})_2\text{PO}_2^-$  (Ib), yield 90%, melting point 117-20°. 0.03 mole of III is added to 0.06 mole of  $(\text{MeO})_3\text{-PO}$  at 60-65°, heated for 2 hours to 7-80°, left to stand for 7 days at 20° after which the crystals formed are washed with dimethyl formamide, dissolved in MeCN, and poured a drop at a time into AcOEt chilled by dry ice to obtain II  $\overline{X} = (\text{MeO})_2\text{PO}_2^-$ , yield 53%, melting point 95-102°. I is kept at 90, 120, 150, and 200°. I (X = I, MeOSO<sub>3</sub>) when heated for 4 hours to 200° forms a monoquaternary salt and when heated to over 200° it forms the original III. Ib at 90° forms on an electrophoregram the spot of a cation of a monoquaternary salt within 3 hours and at 120 and 150° within 20 to 10 min, respectively. Under these conditions the cation of N-methylpyridinium is formed within 40 and 10 min, respectively. Ia is even less stable at 90, 120, and 150°; the monoquaternary salt is formed within 20 and 5-6 min, respectively, and at 120-150° the cation of N-methylpyridinium is formed within 30 min. II is not broken down at 90° but at 120 and 150° forms

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USSR

MEL'NIKOV, N. N., et al., Khim. sredstva zashchity rast, No 2, 1972,  
pp 306-311

III within 60 and 30 min, respectively. The thermal stability of I was shown  
to depend on the structure of the anion and falls into the following series:  
 $I \sim \text{MeOSO}_3 > (\text{MeO})_2\text{PO}_2 > (\text{MeO})-(\text{Mes})\text{PO}_2$ .

3/3



USSR

UDC 547.26'118

KHASKIN, B. A., RYMAREVA, T. G., MEL'NIKOV, N. N., and BELYKH, L. N., All Union Scientific Research Institute of Chemical Plant Protection Agents

"Reaction of Ester-Amides of Phosphorus Thioacids With Sodium Iodide"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 2, Feb 73, pp 435-436

Abstract: In studying the reactions of amidoesters of phosphorus thioacids with sodium iodide it was found that this reaction may take different routes, depending on the structure of the substituent at the nitrogen atom of the amidoester molecule. With two alkyl substituents at the nitrogen atom the reaction carried out at room temperature in acetone after 3-5 hrs will yield the sodium salt of O-methyl-N,N-dialkylamidothiophosphoric acid and methyl iodide. When a hydrogen atom is attached to the amide, the reaction goes further and after 5 hrs of heating to 120° in acetone in a sealed vial yields methylmercaptan, tetramethylammonium iodide and a polymer.

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USSR

UDC 547.26'11

RYMAREVA, T. G., MEL'NIKOV, N. N., and KHASKIN, B. A., All Union Scientific Research Institute of Chemical Plant Protective Agents

"Reaction of Etheramides of Thiophosphoric Acid With Sodium Methoxide"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 676-677

Abstract: Heating equimolar quantities of an etheramide of thiophosphoric acid and sodium methoxide in methanol at 80° for 8-10 hrs yields initially a trialkylthiophosphate and an aliphatic amine. Then the trialkylthiophosphate reacts further with sodium methoxide yielding a sodium salt of 0,0-dialkylthiophosphoric acid. It also alkylates stepwise the amine obtained all the way to trialkylammonium salt of 0,0-dialkylthiophosphoric acid.

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USSR

UDC 632.95

MEL'NIKOV, N. N., STONOV, I. D., KHASKIN, B. A., GORDON, O. G., USACHEVA, N. M.,  
SABLINA, I. V., GRUZINSKAYA, N. A.

"New Herbicide and Desiccant -- Bipyridyl Phosphate"

V sb. Khim. sredstva zashchity rast. (Chemical Means of Plant Protection --  
collection of works), No 1, Moscow, 1970, pp 167-173 (from RZh-Khimiya, No 12,  
Jun 72, Abstract No 12N492)

Translation: A series of phosphorus-containing salts of 4,4'-bipyridylium  
with the formula  $[NC_5H_4-C_5H_4NCH_3]^+[(RO)OP(=X)YR']^-$  (I) (R, R', X, Y, the yield  
in %, the melting point in °C,  $n_D^{20}$  are presented): Me, Me, 0, 0, 58, 95-102,  
--; Me, Pr, 0, 0, 60, --; 1.4190; Me, Me, S, 0, 59, 21.0 (dil.), --; Me, Me, S,  
S, 51, 106-7.5, --; Me, 2,4,5-Cl<sub>3</sub>C<sub>6</sub>H<sub>2</sub>, S, 0, 67, 84-5, --; Et, 2,4,5-Cl<sub>3</sub>C<sub>6</sub>H<sub>2</sub>,  
S, 0, 44, --, 1.6141 were synthesized. In order to obtain I, equimolecular  
amounts of 4,5-bipyridyl and esters of phosphorus acids were heated for 15-20  
hours in a solvent (C<sub>6</sub>H<sub>6</sub>, alcohol, petroleum ether) at 40-100°. With alkyla-  
tion of the 4,4'-bipyridyl in an excess of esters of phosphorus acids with

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MEL'NIKOV, N. N., et al., Khim. sredstva zashchity rast., No 1, Moscow, 1970, pp 167-173

heating (70-100°) for 10-15 hours in the absence of a solvent or at 20-25° for 2-3 weeks, substances with the formula  $[\text{CH}_2\text{NC}_5\text{H}_4-\text{C}_5\text{H}_4\text{NCH}_3]^{2+}[(\text{RX})\text{OP}(\text{O})\text{YR}']^{2-}$

(II) are obtained (R, R', X, Y, the yield in %, and the melting point in °C are presented): Me, Me, O, O, 63, 117-120 (IIa); Me, Me, S, O, 34, 52-61.5; Me, Et, S, O, 30, 78-80; Me, Me, S, S, 68, 138 (dil.); Me, Et, S, S, 61, 118 (dil.); Me, 2,4,5-Cl<sub>3</sub>C<sub>6</sub>H<sub>2</sub>, S, O, 80, 166 (dil.). The IIa has low toxicity for warm blooded animals, significant herbicidal activity and a high defoliating effect.

2/2

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USSR

UDC 615.777/779

RYHAREVA, T. G., KHASKIN, B. A., MEL'NIKOV, N. N.

"Reaction of Amide Esters of Thiophosphoric Acid with Primary and Secondary Amines"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1473-1477

Abstract: The alkylating capacity of amide esters of thiophosphoric acid was studied. It was found that when equimolecular quantities of primary and secondary aliphatic amines reacted with amide esters of thiophosphoric acid, mono-, bis- and quaternary ammonium salts were produced, depending on the reaction conditions. It was also found that when primary or secondary amines, taken in excess, were alkylated with amide esters of triphosphoric acid, salts of the corresponding amine and amidothiophosphoric acid were formed.

1/1

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USSR

UDC 547.26'118

KHASKIN, B. A., RYKAREVA, T. G., MEL'NIKOV, N. N., All-Union Scientific  
Research Institute of Chemical Agents for Plant Protection

"Concerning a Secondary Reaction in the Synthesis of O-Alkyl O-Arylthio-  
phosphoric Acid Anides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 7, Jul 72, pp 1653-1654

Abstract: When O-alkyl O-arylthiophosphoric acid anides were synthesized by reacting gaseous methylamine or dimethylamine with O-alkyl O-arylthiophosphoryl chlorides in absolute benzene at 40-60°C, products of a secondary reaction were observed -- salts of the corresponding amine and arylenamidothiophosphoric acid. The synthesis of these byproducts is explained as follows. When the primary or secondary amine attacks the phosphorus atom, the O-alkyl O-arylthiophosphoryl halide is dealkylated with formation of the alkyl halide and O-aryl amidothiophosphoric acid. This phosphoric acid then forms the corresponding ammonium salt in the presence of the amine. The proposed reaction is confirmed by data in the literature on reaction of O,O-dialkylphosphoric acid halides with tertiary amines and aniline.

1/1

USSR

UDC 632.95

MEL'NIKOV, N. N., KHASKIN, B. A., and TORGASHEVA, N. A.

"A Method of Synthesizing Phosphates, Thio- and Dithiophosphates of N-Alkoxypyridinium"

USSR Author's Certificate No 262901, filed 30 Jan 69, published 7 Jul 70  
(from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N626 P)

Translation: Active pesticides of the general formula  $(C_5H_5NOR)^+[O(R'X)-P(O)YR']^-$  (I) (R and R' = lower alkyl; R' = alkyl, aryl, carbamoyl or ester group; X and Y = O or S) are synthesized by interacting pentavalent phosphorus acid esters with pyridine N-oxide. 0.02 Mole of  $(MeO)_2PSSPr$  is added to 0.01 mole of pyridine N-oxide and heated for 4 hours at 50-60°C and then for 2 hours at 80-90°C. Upon completion of the reaction, 20 ml of absolute ether are added to the mixture. The resultant oil is repeatedly boiled with ether washed, in  $C_6H_6$  and held in a vacuum at 60°C for 30 minutes. The result is compound I (R = R' = Me, R'' = Pr, X = Y = S), yield 64%,  $n_{20}^D$  1.5480,  $d_4^{40}$  1.3057. The following compounds (I) are analogously produced (given are R, R', R'', X, Y, yield in %,  $n_{20}^D$ ,  $d_4^{40}$ ): Me, Et, 2,4,5-Cl<sub>3</sub>C<sub>6</sub>H<sub>2</sub>, S, O, 42, -, melting point 74-76°C; Me, Me, 4-NO<sub>2</sub>C<sub>6</sub>H<sub>4</sub>, S, O, 67, 1.5850, 1.4250; Me, 1/2

USSR

MEL'NIKOV, N. N., et al., USSR Author's Certificate No 262901, filed 30 Jan 69, published 7 Jul 70 (from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N626 P)

Me,  $\text{CH}_2\text{CONHCH}_3$ , S, S, 71, 1.5650, 1.3500; Me, Me, Et, S, O, 87, 1.5310, 1.2837; Me, Me, 2,4,5- $\text{Cl}_3\text{C}_6\text{H}_2$ , S, O, 60, -, 1.5319; Me, Me, Pr, S, O, 47, 1.5120, 1.2731; Me, Me, O, O, 98, 1.4990, 1.2704.

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USSR

UDC 632.95

MEL'NIKOV, N. N., KHASKIN, B. A., STONOV, L. D., SABLINA, I. V., GORDON, O. G., and GRUZINSKAYA, N. A.

"Desiccant-Defoliant"

USSR Authors' Certificate No 249113, filed 28 Mar 68, published 20 Jan 70  
(from *RZh-Khimiya*, No 20 (II), 25 Oct 70, Abstract No 20 N624P by N. A. GRUZINSKAYA)

Translation: Salts of 4,4'-dipyridylum of general formula  $\left[ (\text{Me})_n \text{NC}_5\text{H}_3\text{C}_5\text{H}_3\text{NMe} \right]^+$   
 $\left[ (\text{MeO})_2\text{P}(\text{X})\text{O} \right]^-_m (\text{I})$ , where X = O or S, n = 1 when m = 2 or n = 0 when m = 1,  
are used as plant desiccant-defoliants. I's can be used for the desiccation  
and defoliation of cotton, potatoes and fruit crops in doses of 0.8-2.5 kg/ha.

1/1

USSR

UDC 547.26'118

KHASKIN, B. A., MEL'NIKOV, N. N., and TORGASHEVA, N. A., All Union Scientific Research Institute of Chemical Plant Protective Agents

"Reaction of Pyridine N-Oxide With Pentavalent Phosphorus Acid Esters"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 3, Mar 71, pp 531-533

Abstract: In contrast to heterocyclic amines, alkylation of pyridine N-oxide with phosphoric acid esters occurs at the oxygen atom yielding corresponding N-alkoxypyridinium salts; alkaline hydrolysis of these salts gives aldehydes and pyridine. 0.02 g-mole of O-methyl-O-2,4,5-trichlorophenylthiophosphate is added to 0.01 g-mole of pyridine N-oxide and the mixture is heated at 50-60° for 4 hrs, followed by 2 hours at 80-90°. The oil obtained is separated, refluxed with ethyl ether, dissolved in benzene and reprecipitated with absolute ethyl ether to give S-ethyl-O-2,4,5-trichlorophenylthiophosphate of N-methoxypyridinium.

1/1

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USSR

UDC: 547.26'118.122.07

MEL'NIKOV, N. N., KHASKIN, B. A., TORGASHEVA, N. A.

"A Method of Producing Phosphates, Thiophosphates and Dithiophosphates of N-Alkoxy pyridinium"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 7, 4 Feb 70, p 28, patent No 262901, filed 30 Jan 69

Translation: This Author's Certificate introduces a method of producing phosphates, thiophosphates and dithiophosphates of N-alkoxy pyridinium of the general formula



where R and R' are a lower alkyl; R' is an alkyl, aryl, carbamoyl or ester group; X, Y are O or S. Pentavalent phosphorus esters are interacted with pyridine N-oxide.

1/1

1/2 008 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--METHOD FOR OBTAINING PHOSPHATES, THIO OR DITHIOPHOSPHATES OF N  
ALKOXYPYRIDINIUM -U-  
AUTHOR--(03)-MALNIKOV, N.N., KHASKIN, B.A., TORGASHEVA, N.A.  
COUNTRY OF INFO--USSR  
SOURCE--AUTHOR CERTIFICATE NR 262901  
REFERENCE--OTKRYTIYA, IZOBRETIENIYA, PROMYSHLENNYYA OBRAZTSY, TOVARNYE  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--ORGANIC PHOSPHATE, PHOSPHORUS SULFIDE, ALKOXIDE, PYRIDINE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3007/1774 STEP NO--UR/0482/T0/000/000/0000/0000  
CIRC ACCESSION NO--AA0137014

UNCLASSIFIED

272 008 UNCLASSIFIED PROCESSING DATE--04DEC70  
CIRC ACCESSION NO--AA0137014  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD IS ANNOUNCED FOR  
OBTAINING THIO OR DITHIOPHOSPHATES OF N ALKOXYPYRIDINIUM OF THE GENERAL  
FORMULA: (FORMULA SHOWN ON MICROFICHE) WHERE R AND R PRIME ARE LOWER  
ALKYLS; R DOUBLE PRIME IS AN ALKYL, ARYL, CARBAMOYL OR ESTER GROUP; AND  
X AND Y ARE O OR S. ACCORDING TO THE METHOD ESTERS OF PENTAVALENT  
PHOSPHORUS ACIDS ARE TREATED WITH PYRIDINE N OXIDE.

UNCLASSIFIED

USSR

UDC 632.95

SMOLINA, A. I., STOLPER, A. L., and ~~XXXXXXXXXXXX~~ KHASHIN, I. G.

"Nematocidal Properties of Several Dichloroacetate Esters"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 10, No 2, (100), 1972, pp 42-44

Abstract: Dichloroacetate esters are of special interest as nematocides because the starting material from which they are made, chloral, is a cheap industrial product. Larvae of the gallic nematode *Meloidogyne* Sp. and in several cases larvae of the stem potato nematode *Dytilenchus* destructor Thorn were used as test objects. Methyl, ethyl, propyl, amyl, allyl, ortho-cresyl, and hexyl esters were effective in the laboratory tests, and the allyl, amyl, and hexyl esters were effective in field experiments.

1/1

Nitrogen Compounds

USSR

UDC 632.95

KONDRATENKO, V. I., and KHASKIN, I. G.

"Method of Production of Isomeric Chloroxyisobutyronitriles"

DSSR Author's Certificate No 309005, filed 14/10/68, published 29/09/71,  
(Translated from Referativnyy Zhurnal, Khimiya, No 9, 1972, Abstract No  
9 N552 P by T. A. Belyayeva).

Translation: When methacrylonitrile (I) reacts with  $Cl_2$  in water, isomeric chloroxyisobutyronitriles (II) are produced, which have fungicidal activity. Twenty-one point six g I is added to 0.4 l water,  $Cl_2$  is passed through at  $12-18^\circ$  at a rate slightly exceeding the rate of its absorption for 8 hours, the substance is kept for 10 hours at  $16-18^\circ$ ,  $N_2$  is blown through, the substance is extracted with ether, dried over  $Na_2SO_4$  and 19.3 g II are separated. NMR spectra indicate that the isomers are present in approximately equal quantities. The absorption bands in the IR area are presented.

1/1

USSR

KONDRATENKO, V. I., KHASKIN, I. G.

"Production of Chloro Derivatives of Propionic Acid from Ethylene Cyanohydrin"

Kim. Tekhnologiya. Nauch-Proizv. Sb., [Chemical Technology, Scientific and Production Collection], 1971, No 4 (58), pp 34-36. (Translated from Referativnyy Zhurnal Khimiya, No 4, Moscow, 1972, Abstract No 4N644 by T. A. Belyaeva).

Translation: A mixture of 388 g ethylene cyanohydrin and 6.6 g PhNMe<sub>2</sub> is blown through with N<sub>2</sub>, chlorinated with Cl<sub>2</sub> for 24-26 hr (until the weight stops increasing) at a temperature rising to 110°; then the HCl gas is blown away with nitrogen, the mixture is filtered and distilled, selecting the fraction with bp 49-61°/10 (ClCH<sub>2</sub>CH<sub>2</sub>CN, ClCH<sub>2</sub>Cl<sub>2</sub>CCN); 62-6°/10 (ClCH<sub>2</sub>CH<sub>2</sub>CN, ClCH<sub>2</sub>Cl<sub>2</sub>CCN); 119-34°/10 (ClCH<sub>2</sub>Cl<sub>2</sub>CCONH<sub>2</sub>); 136 - 46°/10 (ClCH<sub>2</sub>Cl<sub>2</sub>CCONH<sub>2</sub>). The mixture of products produced upon chlorination has almost no herbicidal activity with a dose of 10 kg/ha; in concentrations of 0.01 and 0.001% this mixture shows toxicity for fungus for pure cultures of the phytopathogenic fungus series, but is somewhat weaker than phygome and TMTD.

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USSR

UDC 632.95

SHIRANKOV, D. F., ABRAMOVA, K. A., STOLPER, A. L., and KHASKIN, I. G.

"A Herbicide"

USSR Authors' Certificate No 268798, filed 18 Nov 68, published 16 Jul 70  
(from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N615 P)

Translation: Butyl ester of dichloroacetic acid introduced into the soil before planting in a dose of 10 kg/ha is proposed as a herbicide for controlling monocotyledonous weeds in fields of dicotyledonous plants (sunflowers, radish, buckwheat, mustard, beets). This herbicide reduced the green mass of monocotyledons by 53-100 percent. Although it is not as effective as sodium trichloroacetate, this weed-killer has the advantage of being safe for the crops mentioned above.

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USSR

UDC 632.95

RUDNEV, G. K., and KHASKIN, I. G.

"A Method of Synthesizing Oxime Esters of Chlorocinnamic Acid"

USSR Author's Certificate No 264396, filed 15 Jan 68, published 11 Jun 70  
(from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N598 P)

Translation: Compounds of the general formula  $\text{PhCh}=\text{CClC}(\text{O})\text{ON}=\text{CR},\text{R}'$  (I) (R, R' = alkyl, Ph, R+R' = cycloaliphatic radical) -- intermediate products of organic synthesis and potential insecticides -- are produced by interacting  $\alpha,\beta$ -dichlorocinnamic aldehyde or a mixture of the initial products of synthesis of the aldehyde --  $\alpha,\beta,\beta$ -trichloro- $\beta$ -phenylpropionic aldehyde and the corresponding oxime -- with bases such as tertiary amines in an organic solvent. A mixture of 1.27 g of  $\alpha,\beta,\beta$ -trichloro- $\beta$ -phenylpropionic aldehyde, 0.25 g of  $\text{Me}_2\text{C}=\text{N}-\text{OH}$  and 20 ml of PhMe is agitated for 1 hour at approximately 20°C while simultaneously bubbling  $\text{N}_2$  through the reaction mass, and a solution of 0.51 g of  $\text{Et}_3\text{N}$  in 5 ml of PhMe is then added to the mixture. The reaction mass is agitated for 1 hour at 20-25°C, filtered, the residue is washed in 5 ml of PhMe, the mother liquor is evaporated with isolation of 0.75 g of compound I (R = R' = Me), melting point 70-1°C

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USSR

RUDNEV, G. K., and KHASKIN, I. G., USSR Author's Certificate No 264396, filed 15 Jan 68, published 11 Jun 70 (from RZh-Khimiya, No 3, 10 Feb 71, Abstract No 3N598 P)

(from petroleum ether), yield 94%. The following compounds (I) are analogously produced (given are R, R' or R+R'+C, yield in %, melting point in °C): Ph, Me, 97.9, 89-90; cyclo-C<sub>6</sub>H<sub>10</sub>, 99.6, 97-8.

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USSR

UDC 632.95

SHIRANKOV, D. F., RUDNEV, G. K., and KHASKIN, I. G.

"A Herbicide"

USSR Authors' Certificate No 249845, filed 19 Apr 68, published 4 Jan 70  
(from Referativnyy Zhurnal Khimiya, No 17, 10 Sept 70, Abstract No 17 1641 P)

Translation: As a herbicide for combatting dicotyledonous weeds in cereal crops, use is made of  $\alpha, \alpha', \beta, \beta'$ -tetrachloro- $\beta$ -phenylpropionic aldehyde, which acts in a dose of 10 kg/ha when applied to vegetation.

N. A. Gruzinskaya

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USSR

UDC 632.95

ABRAMOVA, K. A., ~~KHASKIN, I. G.~~, RUDNEV, G. K., SHIRANKOV, D. F.,  
SHOMOVA, YE. A., GRIB, O. K., KUPRINA, ZH. S.

"Pesticide"

USSR Author's Certificate No 252756, filed 10 Jul 68, published  
12 Feb 70 (from RZh-Khimiya, No 18, 25 Sep 70, Abstract No 18N665 P,  
by P. V. Popov)

Translation: Esters of alpha-chlorocinnamic acid with general  
formula  $\text{PhCH=CClC(O)OR}$  (I) (R = Me, Et, or Ph) exhibit fungicidal  
and herbicidal properties. In toxicological experiments I (R = Me  
or Et) suppressed development of colonies of *Alternaria*, *Botrytis*,  
*Cladosporium*, *Penicillium*, *Rhizoctonia*, and *Verticillium* on potato-  
dextrose agar in most cases no less vigorously than did figon and  
TMTD [tetramethylthiuram disulfide]. As herbicides, I (R = Me or  
Ph) act selectively on dicotyledonous plants (beans, sunflower,  
buckwheat, beet, and mustard); winter wheat and oats of the cereal  
crops are resistant, corn is the most sensitive.

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1/2 008 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--OXIMINO ESTERS OF A, CHLOROCINNAMIC ACID -U-  
AUTHOR--(02)--RUDNEV, G.K., KHASKIN, I.G.  
COUNTRY OF INFO--USSR  
SOURCE--U.S.S.R. 264,396  
REFERENCE--OTKRYTIYA, IXOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI, 1970  
DATE PUBLISHED--03MAR70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--OXIME, CHLORINATED ORGANIC COMPOUND, ALDEHYDE, CARBOXYLIC ACID  
ESTER, CHEMICAL PATENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3007/0856 STEP NO--UR/0482/70/000/000/0000/0000  
CIRC ACCESSION NO--AA0136290

2/2 008

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136290

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE COMPODS. ARE PREPD. BY TREATING ALPHA, BETA, DICHLOROCINNAMALDEHYDE OR A MIXT. OF THE STARTING PRODUCTS OF ITS PREPN., ALPHA, BETA, BETA, TRICHLORO, BETA PHENYLOPROIONALDEHYDE AND THE APPROPRIATE OXIME, WITH A BASE, E.G. A TERTIARY AMINE, PREFERABLY IN AN INERT ORG. SOLVENT.

UNCLASSIFIED

USSR

UDC 612.744

KHASKIN, V. V., and SINDAROVSKAYA, I. N., Division of Ecological Physiology, Institute of Cytology and Genetics, Siberian Department of the Academy of Sciences USSR, Novosibirsk

"Effects of Cold Adaptation on the Temperature Coefficients of Oxidation, Phosphorylation, and ATP-ase Activity in Skeletal Muscles of Rats"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenova, Vol 58, No 1, Jan 72, pp 108-113

Abstract: Upon adaptation of male rats to 4-6° during 5 wks, the temperature coefficient  $Q_{10}$  (van't Hoff coefficient) of tissue respiration of skeletal muscles of the animals decreased. This was related to a rise in the level of nonphosphorylating oxidation in the muscle mitochondria, the  $Q_{10}$  for which is much lower than that for the phosphorylation rate. Adaptation changes in the intensity of oxidation, P/O, and the activity of mitochondrial ATP-ase were concentrated mainly in the red (slow) muscle fibers. The thermal regulation response of muscles upon intense cooling of cold-adapted animals were accompanied by a reduction in  $Q_{10}$  of the phosphorylation rate and a decrease in the degree to which P/O depended on the temperature. The activity of myofibril ATP-ase and the  $Q_{10}$  of this activity were not altered by adaptation. The  
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USSR

KHASKIN, V. V., and SINDAROVSKAYA, I. N., *Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenova*, Vol 58, No 1, Jan 72, pp 108-113

results obtained can be interpreted as indicating that upon cold adaptation the energy potential barriers of oxidative reactions in mitochondria are lowered and the relative heat-producing role of ATP breakdown in the functioning of the contractile apparatus of muscles is reduced.

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USSR

UDC 577.42+612.745

KHASKIN, V. V., and SINDAROVSKAYA, I. N., Institute of Physiology, Siberian Department of the Academy of Sciences USSR, Novosibirsk

"Thermokinetic Effects of ATP on Intact Muscle Fibers of Rats Adapted to Different Temperatures"

Moscow, Doklady Akademii Nauk SSSR, Vol 198, No 3, 1971, pp 730-733

Abstract: To investigate some aspects of adaptation to cold, the authors exposed one group of white rats to temperatures of +4 to +6°C for 6 weeks, while a control group was kept at room temperature (20-22°C) for the same period. Upon decapitation, shredded skeletal muscle tissue was suspended in a modified Ringer's solution, and oxygen consumption and heat production were measured before, during, and after (recovery period) addition of ATP. In the cold-adapted tissue, oxygen consumption and heat production were significantly greater than in the controls. Addition of ATP resulted in much greater peaks in both parameters in the first group. During the recovery period, oxygen consumption was approximately equal in both groups, but heat production was significantly greater in the experimental group, indicating that substrates with a greater caloric equivalent (5.1 vs 3.0 cal/ml) were being utilized by the muscle tissue of cold-adapted animals.

1/1

USSR

UDC: 8.74

KHASLAVSKIY, I. L.

"On Approximating Functions Which Approach Zero Asymptotically"

V sb. Mashiny dlya inzh. raschetov (Computers for Engineering Calculations --collection of works), vyp. 4, Kiev, 1971, pp 52-63 (from RZh-Kibernetika, No 1, Jan 72, Abstract No IV1052)

Translation: An approximation of the form  $e^{-x}(a+bx+c^2)$  is constructed for functions  $y(x)$  given on the interval  $[x_0, x_1]$  and approaching zero as  $x \rightarrow \infty$ , where the coefficients  $a$ ,  $b$  and  $c$  are selected by the method of least squares. The paper presents two modifications of programs for calculating the coefficients  $a$ ,  $b$  and  $c$ , and also the values of the function, approximations of the function, and differences between them at given points. The first program relates to the case where the function  $y(x)$  is given analytically, and the second -- to the case where  $y(x)$  is given in the form of a table. The complete text is given for both modifications of the program. S. Raskutin.

1/1

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USSR

NEVEL'SON, M. B., KHAS'MINSKIY, R. Z.

"Stochastic Approximation and Recurrent Estimation"

Stokhasticheskaya Approksimatsiya i Rekurrentnoye Otsenivaniye [English Version Above], Moscow, Nauka Press, 1972, 304 pages (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V361 from the Annotation).

Translation: This book is dedicated to successive methods of solution of a class of problems including, for example, the problem of determination of the points of maximum of a function if each measured value of this function contains a random error. Some of the basic procedures for stochastic approximation are studied from a single point of view -- from the point of view of the theory of Markov processes and martingales. Examples are studied of application of the theorems proven to certain problems of the theory of estimation, the theory of teaching and the theory of control, as well as certain problems of transmission of information when feedback is present.

The book is designed for students, graduate students, engineers and scientific workers specializing in the area of mathematical statistics, the theory of random processes and their applications. 78 Biblio. Refs. 1/1

B. Mathematical Statistics

USSR

IBRAGIMOV, I. A. and KHAS'MINSKIY, R. Z.

"Asymptotic Analysis of Statistical Estimates for the 'Almost Smooth' Case"

Teoriya Veroyatnostey i yeye Primeneniya [The Theory of Probabilities and Its Applications], 1973, Vol 18, No 2, pp 250-260 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V137)

Translation: It is shown in the works of the authors (RZHMat, 1972, 12V93; 1973, 6V113) that in the case of existence of the finite information quantity of Fisher I, estimates  $t_n$  of shift parameter  $\theta$  are,

like the estimate of the maximum likelihood and the generalized base estimates for the loss function  $|x|^a$  ( $a \geq 1$ ) with very general assumptions, asymptotically equivalent to each other and asymptotically normal with parameters  $(\theta, 1/nI)$ . The present work studies the case of disruption of the basic condition of finiteness of the information quantity for which, however, similar results of asymptotic normality of estimates remain in force. Namely, a class of densities is studied having a finite number of singularities at points  $x_k$  ( $k = 1, \dots, 1 + m$ ) in the neighborhood of which

$$f(x) = \begin{cases} a_k |x - x_k|^Y = \psi_k(x), & x < x_k, \\ b_l |x - x_l|^Y + \psi_l(x), & x > x_l, \end{cases}$$

USSR

IBRAGIMOV, I. A. and KHAS'MINSKIY, R. Z., Teoriya Veroyatnostey i yeye  
Primeneniya, 1973, Vol 18, No 2, pp 250-260

where  $\gamma = 1$ ,  $a_k \geq 0$ ,  $b_k \geq 0$  for  $k = 1, 2, \dots, l$ ;  $\gamma = 1/2$  for  $k = l + 1, \dots, l + m$ , while  $\psi_k(x)$  are twice continuously differentiable functions such that

$$\begin{aligned}\psi_k(x_k) &= \psi_k'(x_k) = 0, \quad k = 1, 2, \dots, l, \\ \psi_k(x_k) &> 0, \quad k = l + 1, \dots, l + m.\end{aligned}$$

It is shown that in this case, estimates  $t_n$  are also asymptotically similar and asymptotically normal with parameters  $(\theta, 1/Bn \ln n)$ , where

$$B = \sum_{k=1}^l (a_k + b_k) + \frac{1}{4} \sum_{k=l+1}^{l+m} \frac{a_k^2 + b_k^2}{\psi_k(x_k)},$$

where for all  $p > 0$  as  $n \rightarrow \infty$

$$E_n \{ \sqrt{Bn \ln n} (t_n - \theta) \}^p \rightarrow 2^p \Gamma((p+1)/2) / \sqrt{\pi}.$$

Limit theorems are also produced for the a posteriori density coinciding in formulation with the smooth case with a similar change in normalizing factor by  $c \ln n$  times.

B. Levit

2/2

USSR

IBRAGIMOV, I. A. and KHAS'MINSKIY, R. Z.

"Estimation of the Parameter of a Signal in Gaussian White Noise"

Teoriya Veroyatnostey i yeye Primeneniya [The Theory of Probabilities and Its Applications], 1973, Vol 18, No 2, pp 435-438 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V189)

Trnaslation: The process  $X_\epsilon(t)$ ,  $t \in [0, 1]$  is observed, defined by the stochastic equation  $dX_\epsilon(t) = S_\epsilon(t, \theta)dt + d\xi(t)$ , where  $\xi(t)$  is a standard Wiener process,  $\theta \in \Theta$  is the parameter to be estimated and  $\epsilon \rightarrow 0$ . Assuming that  $\Theta$  is an open set on a straight line, conditions are formulated guaranteeing the existence of consistent and asymptotically effective estimates of  $\theta$ .

D. Chibisov

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USSR

UDC 519.217

KHAS'MINSKIY, R. Z.

"The Averaging Principle For Stochastic Differential Equations of Ito"

Kibernetika, Vol. 4, No. 3, pp. 260-279, 1968, (Translated from Referativnyy Zhurnal Kibernetika, No. 11, November, 1969, Abstract No. 11V68 by M. Nevel'son).

Translation: An analysis of the set  $(X^{(\varepsilon)}(t), Y^{(\varepsilon)}(t))$  of Markov' random processes in an  $l$ -dimensional euclidean space described by a system of ito stochastic differential equations

$$dX^{(s)}(t) = A_s(X^{(s)}, Y^{(s)})dt + \sum_{r=1}^l \sigma_r^{(s)}(X^{(s)}, Y^{(s)})dE_r(t),$$

$$dY^{(s)}(t) = \frac{1}{\varepsilon} B_s(X^{(s)}, Y^{(s)})dt +$$

$$+ \frac{1}{\sqrt{\varepsilon}} \sum_{r=1}^l \sigma_r^{(s)}(X^{(s)}, Y^{(s)})dE_r(t)$$

$$(s=1, \dots, l_1, /s=1, \dots, l_2, l_1+l_2=l).$$

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USSR

UDC 519.217

KHAS'MINSKIY, R. Z., Kibernetika, Vol. 4, No. 3, pp. 260-279, 1968.

It is assumed that the coefficients of this system satisfy the ordinary conditions of existence and unity of the solution. Suppose furthermore for process  $y^{(x,y)}(t)$ , satisfying the equation

$$\frac{dY^{(x,y)}(t)}{dt} = B(x, Y^{(x,y)}(t)) + \sum_{r=1}^l \phi^{(r)}(x, Y^{(x,y)}(t)) dx_r(t), \quad Y^{(x,y)}(0) = y.$$

where  $B = (B_1, \dots, B_{l_2})$ ,  $\phi^{(r)} = (\phi_1^{(r)}, \dots, \phi_{l_2}^{(r)})$ , there exist functions  $\bar{A}(x)$  and  $a_{ij}(x)$  such that for a certain function  $\alpha(\tau)$ , approaching zero as  $\tau \rightarrow \infty$ , the following inequalities are fulfilled:

$$\left| M \frac{1}{\tau} \int_0^{\tau} A(x, Y^{(x,y)}(s)) ds - \bar{A}(x) \right| < \alpha(\tau) (1 + |x|^n), \quad (1)$$

$$\left| M \frac{1}{\tau} \int_0^{\tau} \sum_{r=1}^{l_2} \phi_j^{(r)}(x, Y^{(x,y)}(s)) ds - a_{ij}(x) \right| < \alpha(\tau) (1 + |x|^n),$$

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UDC 519.217

KHAS'MINSKIY, R. Z., Kibernetika, Vol. 4, No. 3, pp. 260-279, 1968.

Where  $A = (A_1, \dots, A_{l_1})$ .

The main purpose of the work consists of proof of the following affirmation: when condition (1) is fulfilled, process  $X^{(\varepsilon)}(t)$  converges weakly as  $\varepsilon \rightarrow 0$  over the sector  $[0, T]$  to the Markov random process  $X^{(0)}(t)$ , which is the solution of the problem

$$dX^{(0)}(t) = \bar{A}(X^{(0)}) + \sum_{r=1}^l \bar{\sigma}^{(r)}(X^{(0)}) dB_r(t),$$

where the vectors  $\bar{\sigma}^{(r)}(x)$  are columns of the matrix  $\sqrt{((a_{ij}(x)))}$ . This result is used for investigation of nonlinear automatic control systems.

3/3

USSR

UDC 519.217

KHAS'MINSKIY, R. Z.

"Principle of Averaging For Stochastic Differential Equations"

Probl. peredachi inform., Vol. 4, No. 2, pp. 86-87, 1968, (Translated from Referativnyy Zhurnal Kibernetika, No. 11, November, 1969, Abstract No. 11V69 by M. Nevel'son).

Translation: Results produced by the author in the work of Abstract No. 11V68 are briefly presented.

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B. Mathematical Statistics

USSR

IBRAGIMOV, I. A., KHAS'MINSKIY, R. Z.

"Asymptotic Behavior of Certain Statistical Estimates. II. Limit Theorems for A Posteriori Density and Bayes Estimates"

Teoriya Veroyatnostey i Ee Primeneniya [Theory of Probability and its Applications], 1973, Vol 18, No 1, pp 78-93 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V113, by D. Chibisov).

Translation: For Part I, see RZhMat, 1972, 12V93. Under the conditions formulated in Part I, the authors prove the convergence of the a posteriori density to a Gaussian process, the asymptotic normality of estimates of maximum likelihood, Bayes estimates  $t_n^{(a)}$  corresponding to loss function

$W(0, d) = |d - 0|^a$ , Pitman estimates for the shift parameter, as well as convergence of the moments of these estimates with corresponding normalization to moments of the normal rule. It is proven that estimates  $t_n^{(a)}$  for

various  $a \geq 1$  are equivalent in the sense that for any  $p > 0$

$$E \{ \sqrt[n]{|t_n^{(a)} - t_n^{(a)}|} \} \rightarrow 0, \quad n \rightarrow \infty.$$

USSR

UDC 621.391.1:519.8

NEVEL'SON, M. B., KHAS'MINSKIY, R. Z.

"Continuous Stochastic Approximation Procedures"

Moscow, Problemy Peredachi Informatsii, Vol 7, No 2, 1971, pp 58-69.

Abstract: In an earlier work, it was demonstrated that a continuous version of the Robbins-Monroe stochastic approximation procedure with "white noise" perturbations can be interpreted from the standpoint of the stability of the solution of a system of ordinary differential equations with attenuating random perturbations. In this work, a similar method is used to study certain other procedures of stochastic approximation for continuous time. The theorem proven in the earlier work concerning stability with attenuating random perturbations is slightly generalized. The conditions of convergence of the procedures are given in terms of the existence of the corresponding stochastic Lyapunov functions.

1/1

1/2 040 UNCLASSIFIED PROCESSING DATE--18SEP70  
TITLE--"STEAM PIPE DEFECTOSCOPY" -U-

AUTHOR--(04)-VINOGRADOV, N.V., KISHINEVSKAYA, Z.M., KHASHNASH, T.V.,  
SHVARTSMAN, V.YA.  
COUNTRY OF INFO--USSR

SOURCE--SVERDLOVSK, DEFEKTOSKOPIYA, NO. 1, 1970, PP 8-10

DATE PUBLISHED-----70

SUBJECT AREAS--METHODS AND EQUIPMENT, ELECTRONICS AND ELECTRICAL ENGR.,  
MATERIALS  
TOPIC TAGS--NONDESTRUCTIVE TEST, ULTRASONIC INSPECTION, QUALITY  
CONTROL, AUTOMATIC CONTROL SYSTEM, TEST INSTRUMENTATION, METAL  
ROLLING, HOT WORKING, METAL PIPE/(U)VINT2 ULTRASONIC TEST INSTRUMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1005/0133

STEP NO--UR/0381/70/000/001/0003/0010

CIRC ACCESSION NO--AP0100669

UNCLASSIFIED

2/2 040

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0100669

ADSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION OF THE VINT 2 DEFECTOSCOPE, DEVELOPED BY THE ALL UNION SCIENTIFIC RESEARCH INSTITUTE. THIS INSTRUMENT WAS DESIGNED FOR SEMI AUTOMATIC ULTRASONIC QUALITY CONTROL OF SEAMLESS HOT ROLLED PIPES 325-560 MM IN DIAMETER, A WALL THICKNESS OF 8-70 MM, AND A LENGTH OF 2.5-12.5 M. THE DEVICE PERMITS THE USE OF THE SAME ROLLER CONVEYORS WITHOUT RECONSTRUCTION, REQUIRES NO ADDITIONAL PRODUCTION SPACE, AND ELIMINATES THE DEFECTS CONNECTED WITH THE PREVIOUSLY USED MANUAL TUBE CONTROL SUCH AS SUBJECTIVE ESTIMATES OF CONTROL RESULTS, INABILITY OF THE OPERATOR TO CATCH DEFECTS, NO AUTOMATIC SIGNALING OF DEFECTS, ETC. THE DEVICE PERFORMS ITS CONTROL FUNCTION BY THE PULSE ECHO METHOD IN THE CONTACT VARIATION, WITH THE INDUSTRIAL WATER SUPPLY AS THE CONTACT FLUID. IT CONSISTS OF ELECTRONIC, MECHANICAL, AND SONIC SECTIONS, EACH OF WHICH IS EXPLAINED IN THE TEXT. THE TECHNICAL SPECIFICATIONS OF THE DEVICE ARE LISTED. IT IS ASSERTED THAT IT CAN ALSO BE USED FOR QUALITY CONTROL OF OTHER GRADES OF PIPE WITH ONLY SLIGHT STRUCTURAL CHANGES.

UNCLASSIFIED

2/2 023

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129280

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIVERTICULOSIS OF THE LARGE INTESTINE IS COMMONLY OBSERVED IN PERSONS OVER 50 YEARS OLD. IN ITS ORIGIN A LEADING ROLE IS PLAYED BY INCREASE OF THE INTRAI NTESTINAL PRESSURE AGAINST THE BACKGROUND OF CONGENITAL OR ACQUIRED WEAKNESS OF THE INTESTINAL MUSCULAR LAYER. THE CLINICAL PICTURE OF THE DISEASE IS NOT CHARACTERISTIC. COMPLICATIONS ARE NUMEROUS AND VARIED. THE AUTHORS COMMIT TO PAPER PERSONAL OBSERVATIONS OF COMPLICATIONS OF DIVERTICULOSIS BY PERFORATION, INTESTINAL OBSTRUCTION, FISTULAS, THE DEVELOPMENT OF MALIGNANT TUMORS. THE PAPER CONTAINS A DETAILED CLINICO ROENTGENOLOGICAL PICTURE OF THE DISEASE AND DISCUSSES PROBLEMS OF THE SURGICAL TREATMENT. FACILITY: RENTGENOLOGICHESKOYE OTDELENIYE TSENTRAL'NOY KLINICHESKOY BOL'NITSY IM SEMASHKO, MINISTERSTVA PUTY SSOBSHCHENIYA SSSR I KURS PROKTOLOGII TSENTRAL'NOGO INSTITUTA USOVERSHENSTVOVANIYA VRACHEY.

UNCLASSIFIED



USSR

UDC: 621.398

KHASPEKOV, N. I.

"Control and Signalling Device"

USSR Author's Certificate No 289047, filed 4 Apr 69, published 8 Feb 71 (from *RZh-Avtomatika, telemekhanika i vychislitel'naya tekhnika*, No 12, 1971, Abstract No 12A226P)

Translation: A device for controlling and signalling, containing a microphone, a telephone, and a low-frequency amplifier is distinguished in that, for the purpose of simplifying the device and improving its reliability of operation, the microphone is connected to the input of the amplifier, the outputs of which are connected to the telephone, through a diode to a polarized relay, and to the controlled mechanism.

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USSR

UDC: 621.396.6.017.72(088.8)

PEL'TSMAN, I. D., NEZHINSKIY, T. I., KHASPEKOVA, Ya. M., AZBIL', Z. A.

"A Drying Installation for Radio Components"

USSR Author's Certificate No 267488, filed 3 Oct 66, published 27 Jul 70  
(from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1V232 P)

Translation: This Author's Certificate introduces a drying installation for radio components such as microelements which have a flat base. The installation contains a rotating disc for moving the components from a batching device to the unloading port, and an infrared heater. To improve drying quality and simplify the design, the heater is made in the form of a flat plate located over the disc, and the disc is equipped with radial chutes so that the components can be moved one step by rakes when the chutes match up with the loading device and the unloading port. On the lateral cylindrical surface of the disc between the grooves are drive pins coupled to a mechanism for turning a system of levers and springs to turn the disc by steps and fix its position.

1/1

USSR

UDC 541.49

KHATAMI, A. I., GINZBURG, A. G., NEFEDOVA, M. N., SETKINA, V. N., and  
KURSANOV, D. N.

"Cyclopentadienylmanganesedicarbonyltriphenylphosphines Substituted in the  
Cyclopentadienyl Ring"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 12, Dec 72, pp 2665-2667

Abstract: Carbonyl ligands in complex transition metal compounds can be easily replaced by PPh<sub>3</sub> group upon irradiation with UV light. This method was used to synthesize derivatives of CpMn(CO)<sub>2</sub>PPh<sub>3</sub>, where Cp = C<sub>5</sub>H<sub>5</sub>, containing Et, PhCH<sub>2</sub>, MeS, Cl, Br, I, and COOMe substituents in the Cp ring, from the respective derivatives of CpMn(CO)<sub>3</sub>. The new products are yellow crystalline compounds with high melting points. In the solid state they are stable in air, dissolve easily in CCl<sub>4</sub>, CHCl<sub>3</sub>, and CS<sub>2</sub>. The structure of these products was confirmed by PMR and IR spectroscopical analysis.

1/1

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USSR

UDC 681.142.33

PUKHOV, G. YE., ~~KHATIASHVILI, TG. S.~~, Order of Lenin Institute of Cybernetics,  
Academy of Sciences URSSR

"Local Mathematical Models of Control Systems"

Kiev, Lokal'nyye matematicheskiye modeli system upravleniya, 200 pp, price  
1 rub, 15 kop, sent to press 21 May 1971

Abstract: It is noted that the development of computer techniques, on the one hand, and methods of applied mechanics, on the other, have made it possible not only to consider as objects of automatic control a class of technological problems with known mathematical descriptions but also to construct automatic control systems for objects the mathematical description of the physical processes of which are either unknown or too complex for their direct use. This book attempts to present certain particular methods for constructing models of objects with incomplete information. Particular attention is given to constructing local mathematical models for self-adjusting control systems. This book consists of seven chapters, each of which in their content is a separate part of the study of various problems of the modeling of objects and may therefore be considered independently.

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USSR

PUKHOV, G. YE., KHATIASHVILI, TS. S., Lokal'nyye matematicheskiye modeli system upravleniya, 200 pp, price 1 rub, 15 kop, sent to press 21 May 1971

The first chapter gives a general formulation of the control problem for objects with incomplete information. Existing definitions of the notions of control, criterion, and object are given.

The second chapter gives a conventional classification of models. So that the reader with little acquaintance with the modeling of objects need not frequently use other material, this chapter is as elementary as possible and presents known material on the description of physical, mathematically determined, and statistical models.

The third chapter is the basic chapter of the book. This chapter gives a general form for the criterion for the approximation of a function, and from this criterion one obtains as a particular case a criterion for the interpolation and approximation of a random function (the Gauss criterion), probably very familiar to the reader, and also the criterion for interpolation of a random function. A detailed description of the computer apparatus for using each of these criteria emphasizes the identical nature of the algorithm for computations and for finite control systems to determine the parameters of a model, which as a rule are linear systems of algebraic equations.

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USSR

PUKHOV, G. YE., KHATIASHVILI, TS. S., Lokal'nyye matematicheskiye modeli system upravleniya, 200 pp, price 1 rub, 15 kop. sent to press 21 May 1971

The fourth chapter discusses principles of constructing control systems on the basis of the inverse Jacobian method for objects with incomplete information, which involves the construction of linear local models in the form of a linear Taylor equation, and by determining the partial derivatives of functions on the basis of data with random disturbances. A practical technique is given for determining the local model of the object.

The fifth chapter concerns the construction of control algorithms on the basis of the inverse Jacobian method for objects with a random vector function and for objects with random arguments. This chapter gives various electrical computational circuits for achieving these algorithms.

The sixth chapter presents studies on the construction of local models of different industrial processes.

The seventh chapter concerns the application of the studies to the construction of local, determined mathematical models for a recognition problem.

The book is intended for those interested in problems of automatic control and computer technology and can be useful to students and graduate students of these disciplines and also to engineers in related fields.

3/3

USSR

UDC: 7.84

PUKHOV, G. Ye., KHAFIASHVILI, Ts. S.

"Localized Mathematical Models of Control Systems"

Lokal'nyye Matematicheskiye modeli sistem upravleniya (cf. English above),  
Kiev, "Nauk. dumka", 1971, 200 pp, ill. 1 r. 15 k. (from RZh-Kibernetika,  
No 1, Jan 72, Abstract No 1V1116 K)

Translation: Some special methods are outlined for constructing models of objects with incomplete information. Particular attention is given to construction of localized mathematical models for adaptive control systems. A general criterion for an approximate function is given which yields criteria for interpolation and approximation of random functions as special cases.

1/1

1/2 007 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--PYROLYTIC DECOMPOSITION OF HYDROLYSIS LIGNIN -U-  
AUTHOR--(03)-MURASHKEVICH, T.V., SKRIGAN, A.I., KHATKO, A.I.  
COUNTRY OF INFO--USSR  
SOURCE--VESTSI AKAD. NAVUK BELARUS, SSR, SER. KHIM. NAVUK 1970, (1), 80-4  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--PYROLYSIS, LIGNIN, PHENOL, WOOD CHEMICAL PRODUCT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1999/1874 STEP NO--UR/0419/70/000/001/0080/0084  
CIRC ACCESSION NO--AP0123662  
UNCLASSIFIED



2/2 007

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123662

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TO INCREASE THE YIELD OF PYROLYSIS PRODUCTS, ESP. PHENOLS AND TAR, ACID LIGNIN CONTG. 65-70PERCENT H SUB2 O WAS TREATED WITH 20-5PERCENT NH SUB4 OH SOLN. AND THEN PRESSED (HOT OR COLD) AT 50 KG PER CM PRIME2. PYROLYSIS WAS CARRIED OUT IN A LAB. AUTOCLAVE AT 300DEGREES BY USE OF SUPERHEATED STEAM IN AN AMT. OF 50-120PERCENT BY WT. BASED ON DRY LIGNIN. FACILITY: INST. FIZ.-ORG. KHIM., MINSK, USSR.

UNCLASSIFIED

172 021 UNCLASSIFIED PROCESSING DATE—30OCT70  
 TITLE—A CAPSULE FOR THE CORNEAL TRANSPLANT MAINTENANCE —U—  
 AUTHOR—KHATMINSKIY, YU.F. *K*  
 COUNTRY OF INFO—USSR  
 SOURCE—VESTNIK OFTAL'MOLOGII, 1970, NR 3, PP 38-39  
 DATE PUBLISHED—70

SUBJECT AREAS—BIOLOGICAL AND MEDICAL SCIENCES  
 TOPIC TAGS—TISSUE TRANSPLANT, CORNEA, PATENT, SURGERY

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED  
 PROXY REEL/FRAME—3001/1933

STEP NO—UR/0357/70/000/003/0038/0039

CIRC ACCESSION NO—AP0127334  
 UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127334

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR PROPOSES A SPECIAL CAPSULE FOR HOLDING IN PLACE AND MAINTENANCE OF THE CORNEAL TRANSPLANT (PATENT NO. 219097). THE CAPSULE CONSISTS OF TWO HEMISPHERES WHOSE FLANGES ARE IN CONTACT ONE WITH THE OTHER. THE FLANGES ARE DISSECTED BY TRIANGULAR SLOTS WHOSE APICES FACE THE HEMISPHERES. THE NUMBER AND LOCATION OF SLOTS CONCORD TO SUTURES FURRING THROUGH THE TRANSPLANT. THE CAPSULES FLANGES ARE HELD TOGETHER BY MEANS OF A CLAMP. THE TRANSPLANT INSERTED IN THE CAPSULE IS KEPT OVERHANGING WITH SUTURES. SUTURES PROJECTING FROM THE SLOTS LEND THEMSELVES READILY TO SEWING. EXPERIENCE GAINED WITH THE CLINICAL USE OF THE CAPSULE IN 40 OPERATIONS OF CORNEAL GRAFTING ENTITLES CONSIDERING THIS PROCEDURE AS USEFULL BOTH IN LAMINAR AND FULL THICKNESS KERATOPLASTY. THE CAPSULE PROTECTS THE TRANSPLANT FROM DAMAGES AND CONTAMINATION. FACILITY: KAFEDRA GLAZNYKH BOLEZNEY KEMEROVSKOGO MEDITSINSKOGO INSTITUTE.

UNCLASSIFIED

172 010 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--REACTION OF HOLMIUM WITH A BOROSULFUALIZARIN COMPLEX AND  
ETHYLENEDIAMINE -U-  
AUTHOR--(03)-SERDYUK, L.S., KHATNYUK, L.I., SAPOZHNIKOVA, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--UKR. KHIM. ZH. 1970, 36(2), 124-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--HOLMIUM, ETHYLENEDIAMINE, COMPLEX COMPOUND, CHEMICAL ANALYSIS,  
CHEMICAL INDICATOR  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3002/1112 STEP NO--UR/0073/70/036/002/0124/0123  
CIRC ACCESSION NO--AP0128539  
UNCLASSIFIED

K

2/2 010

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128539

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HO FORMS AT PH 9.5-10.1 WITH ALIZARINE S AND (CH SUB2 NH SUB2) SUB2 A 1:4:2 COMPLEX ABSORBING AT 540 NM. TO DET. HO, MIX 6 ML 4PERCENT AQ. H SUB3 90 SUB3, 4 ML 0.001M ALIZARINE, S, A KNOWN VOL. OF 5 TIMES 10 PRIME NEGATIVE4 HOCL SUB3, AND 0.9 ML 20PERCENT AQ. (CH SUB2 NH SUB2) SUB2. DIL. TO 25 ML AND MEASURE THE ABSORBANCE AT 540 NM. THE COMPLEX IS QUITE STABLE, SINCE RATHER LARGE EXCESSES OF NA K TARTRATE, NAF, NA SUB2 HPO SUB4, AND ASCORBIC ACID DO NOT INTERFERE. FACILITY: DNEPROPETROVSK. GOS. UNIV., DNEPROPETROVSK, USSR.

UNCLASSIFIED

USSR

UDC 669.295:669.017,3

LASHKO, N. F., KHATSINSKAYA, I. M., and YERMOLOVA, M. I., All-Union Institute of Aviation Materials

"Volume Changes in the Decomposition of Metastable Phases in Titanium Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 2, Feb 72; pp 275--283

Abstract: Results are presented of a dilatometric investigation of a number of alpha-beta titanium alloys with the following chemical compositions (in wt %): OT4--2.5-4.5 Al, 0.8-2.0 Mn; VTZ-1--6.5 Al, 1.5 Cr, 2.5 Mo, 0.4 Fe; Alloy 1--4.0 Al, 2.1 V, 1.2 Cr, 7.65 Mo; and VT22-4.7 Al, 5.0 V, 1.1 Cr, 5.0 Mo, 1.0 Mn. It was found that the formation of a stable beta-phase, enriched with beta-stabilizing elements, is a leading process causing a volume change in the decomposition of the metastable phase. Development of the omega phase, as a result of beta-phase diffusion decomposition, precedes the decrease in volume associated with the formation of an enriched beta-phase. In the first stage of metastable alpha''-phase decomposition in Alloy 1, where the alpha''-phase was fixed by quenching from the single-phase region or from the two-phase region (VTZ-1), the decrease in volume, caused by the enriched beta-phase, prevails over the increase in volume associated with depletion of the alpha''-phase and its conversion to the alpha'-phase.

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USSR

LASHKO, N. F., et al., Fizika Metallov i Metallovedeniye, Vol 33, No 2, Feb 72, pp 275-283

Decomposition of the alpha'-phase occurs with a general decrease in alloy volume which stems from precipitation of the beta-phase, and its enrichment and volume increase during alpha'-phase formation. Ye. V. Znamenskaya, V. N. Moiseyev, and O. P. Solonina participated in this work. Five figures, 7 tables, 10 bibliographic references.

2/2

USSR

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UDC 669.291.549.57:637.311.3

KHATSINSKAYA, T. M., LASHKO, N. F., and YERMOLOVA, M. I., All-Union Scientific-Research Institute of Aviation Materials

"Degree of Stability and Anomaly of Electrical Resistance of Metastable Phases in  $\alpha+\beta$  Titanium Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 30, No 2, Aug 70, pp 336-347

Abstract: Physical methods (electrical resistance and X-ray structural analysis) were used to study the specifics of metastable phase decomposition in  $\alpha+\beta$  titanium alloys. An anomalous change in electrical resistance was noted upon heating of the  $\alpha''$ ,  $\alpha'''$  and  $\beta_{met}$  phases in the temperature interval 20-500° C. The anomalous change of electrical resistance of the metastable phases is reversible within certain temperature intervals, depending on the degree of stability. The anomaly in electrical resistance is related to specific features of the electron structure of the transition metals included in the  $\alpha+\beta$  titanium alloys. It is assumed that the nature of the structural level changes when  $\alpha''$ ,  $\alpha'''$  and  $\beta_{met}$  phases are heated. The temperature coefficient of electrical resistance of all metastable phases formed in  $\alpha+\beta$  titanium alloys decreases with increasing metastability. The change in the temperature

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USSR

KHATSENSKAYA, I. M., et al, Fizika Metallov i Metallovedeniye, Vol 30, No 2, Aug 70, pp 336-347

coefficient of electrical resistance upon heating is apparently related to a redistribution of localized and nonlocalized s- and d-electrons, resulting in a partial change in the nature of the chemical bond in these phases.

2/2

1/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--PRINCIPLE IN THE TEACHING OF CHEMISTRY AS ILLUSTRATED BY A STUDY OF  
THE SUBJECT -U-  
AUTHOR--(02)--EPSHTEYN, D.A., ~~KHATSINSKAYA, YU.D.~~ *K*  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. SHK. 1970, 25(1), 32-9  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, BEHAVIORAL AND SOCIAL SCIENCES  
TOPIC TAGS--SULFURIC ACID, EDUCATION  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--2000/1562 STEP NO--UR/0509/70/025/001/0032/0039  
CIRC ACCESSION NO--AP0125188  
UNCLASSIFIED

2/2 008 UNCLASSIFIED PROCESSING DATE--30OCT70  
CIRC ACCESSION NO--AP0125188  
ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. DIRECTIONS FOR TEACHING CHEMISTRY  
IN RUSSIAN SCHOOLS ARE GIVEN.

UNCLASSIFIED

Acc. Nr:

**AP0048281**

Abstracting Service:  
CHEMICAL ABST. 5170

K

Ref. Code:

4R0191

94653b Magnetic properties of cobalt tungstate. Zvyagin, A. I.; Khats'ko, E. N. (Fiz.-Tekh. Inst. Nizkikh Temp., Kharkov, USSR). *Fiz. Tverd. Tela* 1970, 12(1), 314-18 (Russ). The temp. dependence of magnetic susceptibility of single-crystal Co tungstate and its anisotropy at 4.2-30°K in a magnetic field of 5 kOe was studied by the Faraday method. In the paramagnetic temp. region, anisotropy of the temp. dependence was obsd. The main axes of the magnetic susceptibility tensor, to which correspond extremum values of susceptibility, are oriented relative to the crystal axes of CoWO<sub>4</sub> in such a way that the magnetic axis y coincides with the cryst. axis b, and axes x and z are in the basis plane ac of the crystal at an angle of ~45° to the axes a and c. Above the Neel temp., T<sub>N</sub>, the temp. dependence of susceptibility obeys the Curie-Weiss law. Below T<sub>N</sub>, there are also 3 extremum values of magnetic susceptibility corresponding to the x, y, and z axes. This indicates that CoWO<sub>4</sub> is a biaxial antiferromagnet.

A. Libackyj J

IB

18

REEL/FRAME  
19792003

USSR

UDC:

K  
ZVYAGIN, A. I. and KHATS'KO, YE. N., Physico-Technical Institute of Low Temperatures of the Ukrainian Academy of Sciences, Kharkov (Fiziko-tekhnicheskiy institut nizkikh temperatur AN USSR, Khar'kov)

"Magnetic Properties of Cobalt Tungstenate"

Leningrad, Fizika Tverdogo Tela, Vol 12, No 1, January 1970, pp 314-16

Abstract: The authors study the temperature behavior of the magnetic susceptibility of cobalt tungstenate single crystals and its anisotropy in the 4.2-30°K interval in a  $H \sim 5$  kev magnetic field using the Faraday method. Specimen temperatures were measured by a germanium resistance thermometer in the 4.2-30°K range and with a copper thermocouple above 30°K. A graph is given for the temperature variation of the extremal magnetic susceptibility of cobalt tungstenate. The results show that cobalt tungstenate is a biaxial antiferromagnetic. The main source of anisotropy, comparing  $\text{CoWO}_4$ ,  $\text{CoMoO}_4$ , and  $\text{CoWO}_4$ , is single-axis crystallographic anisotropy. The fact that the main axes of the tensor for the magnetic susceptibility of  $\text{CoWO}_4$  coincide with the axes of the local crystal field and not with the crystallographic axes of cobalt tungstenate validates the above conclusion.

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USSR

UDC 621.375.82

ARSEN'YEV, V. V., DNEPROVSKIY, V. S., KLYSHKO, D. N., KHATTATOV, V. U.

"Semiconducting Correlators for Picosecond Light Pulses"

V sb. Nelineyn. protsessy v optike (Nonlinear Processes in Optics -- collection of works), vyp. 2, Novosibirsk, 1972, pp 291-301 (from RZh-Fizika, No 12, Dec 72, Abstract No 12D994)

Translation: The possibilities of using semiconductors to measure the parameters of picosecond pulses of laser radiation in particular, their intensity and duration are discussed. The parameters of the Nd-glass laser radiation pulses were measured experimentally in the synchronization mode with respect to two-photon absorption in single  $CdSO_{0.6}CdSe_{0.4}$  crystals. The measurement errors were evaluated. The advantages of using semiconductors to measure the pulse durations were noted. The bibliography has 14 entries.

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USSR

UDC 621.373.826:621.317.1

ARSEN'YEV, V. V., DNEPROVSKIY, V. S., KLYSHKO, D. N., and KHATTATOV, V. U.

"Semiconductor Correlators for Micromicrosecond Light Pulses"

V sb. Nelineyn. protsessy v optike (Nonlinear Processes in Optics -- collection of works), Novosibirsk, 1972, vyp.2, pp 291-301 (from RZh-Radiotekhnika, No 11, Nov 72, Abstract No 11 A271)

Translation: The authors present the results of studying the parameters of the femtosecond pulses of laser radiation using semiconductor correlators of light. The use of 2-photon absorbing semiconductors makes it possible to measure the moments of emission (Sn) and evaluate pulse duration and the intensity of radiation. The measurements were carried out both with respect to the direct absorption of radiation by the semiconductor and with respect to the fall in brightness of 2-photon luminescence tracks in the specimens. A.K.

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USSR

UDC: 6S1.142.5

ARSEN'YEV, V. V., DNEPROVSKIY, V. S., KLYSHKO, D. N., and ~~KHATTATOV~~  
V. U.

"A Simple Semiconductor Correlator for Picosecond Light Pulses"

Moscow, Kvantovaya elektronika, No 7, 1972, pp 82-84

Abstract: This brief communication reports the application of two-photon absorbing semiconductors for measuring second radiation moments of ultrashort light pulses of approximately  $10^{-12}$  seconds duration. The moments are designated  $\langle S_0^2 \rangle$ , where  $S_0$  is the intensity of the incident light on the semiconductor, with the angle brackets indicating averaging over time as well as statistical averaging. The schematic for such a semiconductor correlator, involving a laser, three calorimeters, the semiconductor crystal  $\text{CdS}_{0.6}\text{CdSe}_{0.4}$ , is shown. In this schematic, the laser being measured is neodymium, but the same arrangement can be used for measuring a ruby device with a  $\text{CdS}$  crystal used as the semiconductor. The authors thank R. V. Khokhlov for his explanation of the results and V. S. Fokin for his assistance in conducting the experiments.

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USSR

UDC: 621.373.8

STRUKOV, A. Z. and KHATUNTSEV, A. G.

"Independence of Subharmonic Quadrature Components in a Parametron With Balanced Modulation Pumping"

Tr. Mosk. aviats. in-ta (Transactions of the Moscow Aviation Institute) 1970, No. 215, pp 88-99 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3D358)

Translation: An examination is made of small phasing signals of subharmonic frequency in a parametric oscillator with a balanced modulation pumping voltage. The initial differential equation is reduced to a shortened one in terms of the amplitudes of the subharmonic quadrature components. The value of the critical amplitude of the phasing signal as a function of the phase is found. Types of solution for quadrature subharmonic components with increased amplitude of the phasing signal are found. A schematic of the electronic modulating system is given. Five illustrations, bibliography of six. Resume

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USSR

LITVINOV, V. F., MOLOCHEV, V. I., MOROZOV, V. N., ~~NIKITIN, V. V.~~  
SEMEŃOV, A. S., and KHATYREV, N. P.

UDC: 621.375.826+539.219.1

"Light Pulse Transmission Through a Two-Component Semiconductor Medium"

Moscow, Kvantovaya elektronika, No 7, 1972, pp 89-92

Abstract: This brief communication is concerned with the interaction of the radiation from an injection laser and a two-component semiconductor medium. This is defined as a medium which can be used for amplifying or absorbing light, depending on the controlling injection current applied to the semiconductor. The measurements described in the paper were made with a combination light-pulse oscillator and two-component semiconductor made of a single GaAs diode, one of the ends of the planar specimen coinciding with the (110) plane while the opposite end is set at a  $10^{\circ}$  angle with respect to the first to reduce positive light feedback. A diagram of this arrangement is shown. Measurements were conducted at a temperature of  $80^{\circ}$  K on specimens in which the oscillator was 0.8 mm long and the two-component medium 2 mm long. Curves for experimental and computed amplitude characteristics of the two-component medium are plotted, and show close agreement.

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USSR

UDC: 621.317.373

KHAUSTOV, V. V.

"Measuring the Phase Shift of a Phase-Keyed Signal After Passage Through a Filter"

V sb. Raschety radiotekhn. skhem i proyektir. radioapparatury (Calculations of Radio Circuits and Design of Radio Equipment--collection of works), Omsk, 1970, pp 80-82 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6A282)

Translation: The paper points out the peculiarities in measuring the phase shift of phase-keyed signals which are extensively used in modern radio engineering systems; these peculiarities are associated with parasitic phase and amplitude modulation arising at the instant of phase reversal. There are two methods of reducing measurement error: 1) parasitic amplitude modulation is reduced by installing a limiter-amplifier stage with low operating level at the input of the measurement channel of the phase measurement device; 2) a selecting circuit which makes it possible to pass through to the indicator only signals with a strictly defined repetition period is introduced into the measurement channel. A block diagram of the measurement channel is given. Bibliography of three titles. E. L.

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USSR

UDC: 621.317.77

GARTVICH, V. A., KHAUSTOV, V. V., SHATUNOV, Ye. A.

"A Phase Meter Installation for Measuring Phase Shift of Phase-Keyed Signals in the Dynamic Mode"

V sb. Raschety radiotekhn. skhem i proyektir. radioapparatury (Calculations of Radio Circuits and Design of Radio Equipment--collection of works), Omsk, 1970, pp 85-86 (from RZh-Radiotekhnika, No 6, Jun 70, Abstract No 7A281)

Translation: The article presents the technical specifications of a phase meter installation which has been developed. The unit is designed for signals having a sine waveform clipped by straight horizontal lines; the signals are phase keyed at a rate of 1000 bauds and have a frequency in the range of 50-400 kHz. Measurement accuracy is 2-5%. A block diagram of the device and some technical characteristics are given. Bibliography of two titles. E. L.

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USSR

UDC: 621.396.69:621.372.54

ARZHANOV, V. A., KOSTAREV, V. Ye, and KHAUSTOV, V. V.

"Electromechanical Filters and Delay Lines With Torsion Oscillations"

V sb. tr. Nauchno-tekhn. konferentsii prof.-prepodavat. sostava Vses. zaochn. elektrotekhn. in-ta svyazi (Transactions of the Scientific Conference of Professorial-Instructor Staff of the All-Union Correspondence Electrical Engineering Communications Institute) No. 5, Moscow, 1970, pp 83-86 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3V553)

Translation: The advantage of electromechanical over quartz filters is examined. For tuning electromechanical filters, a measurement circuit is recommended with compensation of the d-c component and positive feedback, made up of two transformers, the secondary windings of which are oppositely connected. Such a circuit can be used to measure the resonance frequencies of the mechanical resonators in the range of 90-150 kHz with an error of  $\pm 2$  Hz. Three illustrations, bibliography of one.

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USSR

UDC 620.17.172

BRAUN, M. P., VINOKUR, B. B., KHAUSTOVA, I. V., and GELLER, A. L.,  
Kiyev, Institute of the Problems of Casting of the Academy of  
Sciences of the Ukrainian Soviet Socialist Republic

"On the Tendency to Brittle Failure of Compositely Alloyed Steels"

Kiyev, Problemy Prochnosti, No. 9, Sep 71, pp 79 -83

Abstract : The tendency to brittle failure was experimentally investigated on a great number of compositely alloyed steels which contained Cr, Cr and Mn, Cr and Mn and additional alloying with Ni or Si, and on standard industrial steels 40KhN, 30KhGSA, 35KhNM, and 34KhN3M. A reduced softness coefficient in testing notched specimens is considered a brittleness criterion and the tendency of steel to brittle failure is rated by a coefficient  $\beta$  characterizing the notch effect and determined by a method of Davydenkov-Belyayev. The investigation results are discussed by reference to tabulated data and diagrams showing the character of tested specimens and effects of the notch form and depth on the brittleness of steel. Five illustr., three tables, ten biblio. refs.

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USSR

UDC 577.17.612.4

ANISIMOV, V. N., KHAVINSON, V. Kh., MOROZOV, V. G. and DIL'MAN, V. M.,  
Scientific Research Institute of Experimental Medicine, USSR Academy of  
Medical Sciences, Leningrad

"The Lowering of the Sensitivity Threshold of the Hypothalamic-Hypophysical  
System to the Action of Estrogens Under the Influence of Epiphyseal Extract  
in Old Female Rats"

Moscow, Doklady Akademii Nauk SSSR, Vol 213, No 2, 1973, pp 483-485

Abstract: The effect of an acetic acid extract of bovine epiphysis on the  
pyothalamic threshold to inhibition in systems of reproductive homeostasis  
was studied. In one series of experiments the left ovary was removed from  
young (3-month-old) and mature (17-19-month-old) rats and the extract was  
subsequently administered for 7 days either with or without diethylstilbes-  
terol propionate (DESP). The extract alone was found to have no effect on  
the compensatory hypertrophy of the right ovary, however it lowered the com-  
pensation when given with DESP compared to DESP alone. This is said to show  
that the extract increases the sensitivity of the hypothalamus to the  
inhibitory influence of estrogen, and is observed only in mature rats. In a  
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ANISIMOV, V. N., et al., Doklady Akademii Nauk SSSR, Vol 213, No 2, 1973,  
pp 483-485

second series of experiments young, mature and old (26-28-month-old) rats were given the extract for 2 weeks and then their cycles were studied by vaginal smear for two weeks. It was observed that in old rats the extract caused a manifestation of the diestrus phase previously absent and a reduction of irregular cycles. This effect is proposed to be connected with the increase in hypothalamic sensitivity to estrogen.

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USSR

UDC 662.75:536.46

KHAVKIN, Yu. I. and NEKHAMKIN, Yu. Z.

"Investigation of the Combustion Process of a Polydispersed Liquid Fuel"

Odessa, 11-ya Vses. Konf. po Vopr. Ispareniya, Goreniya i Gaz. Dinamiki Dispersn. Sistem, 1972--Sbornik (11-th All-Union Conference on Problems of the Evaporation, Combustion, and Gas Dynamics of Dispersed Systems, 1972--Collection of Articles), 1972, pp 43-44 (from Referativnyy Zhurnal -- Aviatsionnyye i Raketnyye Dvigateli, No 1, 1973, Abstract No 1.34.14. Resume)

Translation: A qualitative analysis of the process of atomization, evaporation, and combustion of a stream of atomized liquid fuel is given. It is assumed that the combustion process of a liquid fuel can be broken down into three successive stages: a) the evaporation of drops of polydispersed fuel, b) turbulent intermixing of the evaporated liquid fuel, and c) molecular intermixing. Characteristic times for each of these stages are determined for the case of complete burnout. Average time periods for the stay of a drop in the combustion device are determined; these are regarded as the sum of the times of evaporation, turbulent intermixing, and molecular diffusion. The basic parameters determined in the experiments are compared with the computed data.

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USSR

UDC: 533.9.08+533.9.15

PYATNITSKIY, L. N., KOROBKIN, V. V., MUSHINSKIY, A. A., ~~KHANSTOVICH, G. P.~~  
State Scientific Research Institute of Power Engineering imeni G. M.  
Krzhizhanovskiy, Moscow

"Use of the Method of Scattering to Determine the Parameters of a Low-  
-Temperature Plasma"

Moscow, Doklady AN SSSR, Vol 200, No 3, 1971, pp 571-574

Abstract: The paper outlines the difficulties which have stood in the way of application of the scattering method to the study of low-temperature plasmas. The principal obstacle is the difficulty of registering the electron densities and scattering spectrum at low temperatures. It is assumed that limiting conditions are reached when the intensity of the illumination becomes equal to the average intensity of the electron component at a distance of half the width of the electron component from the central line. The authors discuss the results of measurements of the parameters of electrons in a plasma with an electron density of the order of  $10^{15}/\text{cc}$ , and they evaluate the lower relative limit of such measurements. The plasma source was a tungsten-electrode carbon-arc discharge at atmospheric pressure. The source of the

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PYATNITSKIY, L. N., et al., Doklady AN SSSR, Vol 200, No 3, 1971 pp 571-574

radiation probe was a ruby laser. The emission pulse had a duration of 50 ns and an energy of about 1 J. The scattering spectrum was registered from a region with a volume of about 0.01 mm<sup>3</sup>. The scattered light was observed at angles of 45 and 90°. The results of the experiments show that there is a real possibility of using the method of scattering to study a low-temperature plasma down to electron densities of the order of 10<sup>12</sup>/cc. Two figures, one table, bibliography of twelve titles.

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USSR

UDC 533.95:538.4

PYATNITSKIY, L. N., KHAUSTOVICH, G. P., and KOROBKIN, V. A.

"Calculation of Plasma Parameters on the Basis of the Characteristics of the Spectra of Scattered Light"

V sb. Teplofiz. svoystva nizkoterperatur. plazmy (Physical Properties of a Low-Temperature Plasma -- Collection of Works), Moscow, "Nauka", 1970, pp 34-37 (from RZh-Fizika, No 4, Apr 71, Abstract No 4G51)

Translation: A method for determining the parameters of a plasma on the basis of the characteristics of the electron component of the scattering spectrum without requiring knowledge of the absolute values of the intensities of the scattered radiation is discussed. Used as characteristics of the spectrum are the half-width of the satellites of the scattered light and the position of their maxima. The computational method is given for the first approximation of the theory and for the exact solution. Authors abstract.

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