

USSR

UDC 681.0.55

LIRTSMAN, A. A., PETUNIN, V. K.

"Device for Displaying the State of a Magnetic-Transistor Element"

USSR Author's Certificate No 304705, filed 21 Jan 70, published 7 Jul 71 (from RZh--Avtomatika, Telemekhanika i vychislitel'naya tekhnika, No 4, Apr 72, Abstract No 4A478)

Translation: A device is proposed for indicating the state of a magnetic-transistor element containing a gas discharge glow discharge indicator with memory connected to the magnetic-transistor element. In order to simplify the device, the control and auxiliary cathodes of the gas discharge indicator are connected via capacitors and diodes respectively to the resistors in the recording circuit and in the load circuit of the magnetic-transistor element. There is 1 illustration.

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UDC: 681.3.055

LIRTSMAN, A. A., PETUNIN, V. K.

"A Ferrite-Transistor Binary Counter"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 10, Apr 71, Author's Certificate No 298075, Division H, filed 17 Dec 69, published 11 Mar 71, p 194

Translation: This Author's Certificate introduces: 1. A ferrite-transistor binary counter which contains a number storage register connected to a general register for addition, storage, and generation of a carry-one signal based on two-tier inhibit circuits. As a distinguishing feature of the patent, in order to simplify the device and improve reliability, the output of the i -th digital place of the number storage register is connected to the readout winding of the $(i+1)$ -th digital place of this register, and also to the record winding of the $(i+1)$ -th two-tier inhibit circuit and the cancel winding of the lower cell of the i -th two-tier inhibit circuit of the general register. The output of the i -th inhibit circuit is connected to the record winding of the i -th digit of the number storage register. 2. A modification of this ferrite-transistor binary counter distinguished by the fact that the

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LIRISMAN, A. A., PETUNIN, V. K., USSR Author's Certificate No 298075

code recorded in the counter is transferred in parallel form while the counter is simultaneously reset to the initial state and an inverted code is produced. For this purpose, the device contains additional readout windings for all digital places of the number storage register. These readout windings are connected to the number readout line, and the cancel windings of the upper cells of all inhibit circuits of the general register are connected to the cancel line.

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KUK, Yu. V., PETUNIN, Yu. I.

"Asymptote of Dispersion of Best Unbiased Linear Estimate of Unknown Mathematical Expectation of a Stable Random Process Produced with Even Subdivision of the Interval of Observations"

Ukr. mat. zh. [Ukrainian Mathematics Journal], 1973, 25, No 2, pp 214-227 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V213 by the author)

Translation: The stable random process $x(s)$, $t \in [0, T]$ with unknown mathematical expectation m is studied. The asymptote of dispersion D_n of the best linear estimate m_n^* , constructed on the basis of the observations $x(t_0), x(t_1), \dots, x(t_n)$ is studied, where t_0, t_1, \dots, t_n is the even division of the observation interval $[0, T]$.

Suppose D is the dispersion of the best linear estimate of mathematical expectation m of process of $x(t)$. It is shown that for the stable markov process $x(t)$

$$D_n - D = O(n^{-2}).$$

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KUK, Yu. V., PETUNIN, Yu. I., Ukr. mat. zh., 1973, 25, No 2, pp 214-227

If $x(t)$ is an elementary Dub process, the sequence D_n approaches zero no slower than $O(n^{-1})$.

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PETUNIN, Yu. I.

"One Inequality for Martingales"

Teoriya Veroyatiostey i mat. Stat. Mezhd. Nauch. sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], 1972, No 7, pp 97-99 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1.V58 by the author).

Translation: A reinforcement is produced of the inequality of A. N. Kolmogorov for martingales.

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USSR

UDC 513.88:513.88

KREYN, S. G., PETUNIN, YU. I., SEMENOV, YE. M.

"Embedding Theorems and Interpolation of Linear Operators"

Moscow, V sb. Teoremy vlozheniya i ikh prilozh. (Theorems of Embedding and Their Applications -- collection of works), "Nauka," 1970, pp 127-131 (from RZh-Matematika, No 7, Jul 1970, Abstract No 7B633)

Translation: The article contains an exposition of results on interpolation of linear operators in scales of Banach spaces and their relationship to embedding theorems. The concept of an interpolation family of spaces is introduced, and various theorems on interpolation and near-interpolation properties of the scales of Banach spaces are considered. The interpolation of pre-kernel operators is investigated as well as embedding theorems for symmetric Banach spaces. Results are given on the interpolation of linear operators which act in symmetric Banach spaces. Application of the results yields some known and new embedding theorems. Author's abstract.

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USSR

UDC 519.24

KURITSYN, Yu. G., PETUNIN, Yu. R.

"The Theory of Linear Estimates of the Mathematical Expectation of a Random Process"

Teoriya Veroyatnostey i Mat. Statist. Mezhved. Nauch. Sb., [Theory of Probabilities and Mathematical Statistics. Interdepartmental Scientific Collection], 1970, No 3, pp 80-92, (Translated from Referativnyy Zhurnal Kibernetika, No 5, 1971, Abstract No. SV199 by the authors).

Translation: The linear unbiased estimates of mathematical expectation of a random process are studied. The concept of the optimal estimate is introduced, and a criterion for the optimal estimate is produced. It is demonstrated that for Gaussian processes, a linear unbiased estimate with least dispersion is optimal in the class of all linear unbiased estimates. A similar result is produced for a sequence of symmetrically dependent random quantities.

1/2 018 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--MICROBIOLOGICAL PRODUCTION OF CALCIUM GLUCONATE -U-
AUTHOR--SOSHNIKOV, D.YA., PETUNINA, A.G., MALYSHEVA, YE.A.
COUNTRY OF INFO--USSR
SOURCE--PRIKL. BIOKHM. MIKROBIOL. 1970, 6(1), 83-5
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--CALCIUM COMPOUND, GLUCOSE, FERMENTATION, YEAST, CULTURE MEDIUM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REFL/FRAME--1986/1705 STEP NO--UR/0411/70/006/001/0093/0095
CIRC ACCESSION NO--AP0103471
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0103471

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CA GLUCONATE WAS PRODUCED BY OXIDATION OF GLUCOSE WITH GLUCONOBACTER (ACETOBACTER) SUBOXYDANS. THE MEDIUM WAS SUPPLEMENTED WITH A YEAST EXT. AS A STIMULATOR AND CHALK AS A NEUTRALIZING AGENT FOR THE GLUCONIC ACID FORMED. THE FERMENTATION WAS PERFORMED AT 30-32 DEGREES FOR 42-46 HR WITH CONTINUOUS AERATION. DURING THIS PERIOD OVER 95 PERCENT OF THE GLUCOSE WAS OXIDIZED. THE CONTENT OF CA GLUCONATE IN THE CULTURE LIQ. AMOUNTED TO 71 PERCENT OF THE GLUCOSE CONSUMED.

UNCLASSIFIED

USSR

UDC 669.295.053.4.068

PETUNINA, N. I., CHUFAROVA, I. G.

"Extraction of Titanium From Hydrochloric Acid Solutions With Secondary Higher Alcohol"

Tr. In-ta. Khimii. Ural'sk. Fil. AN SSSR [Works of the Institute of Chemistry, Urals Affiliate, Academy of Sciences, USSR], 1970, No. 20, pp. 123-126. (Translated from Referativnyy Zhurnal Metallurgiya, No. 5, 1971, Abstract No. 5 G221 by the authors).

Translation: Results are presented from studies of the extraction of Ti by secondary higher alcohols from hydrochloric acid solutions as a function of the content of HCl (2-12 mol/l) and Ti (5-160 g/l TiO₂) in the initial solutions, and the influence of the salting out effect of H₂SO₄ on the distribution of Ti is studied. The greatest extraction of Ti is achieved by extraction from solutions containing 10-12 mol/l HCl. The presence of H₂SO₄ increases the extraction of Ti chloride in the organic phase. As the concentration of Ti changes in the initial solution, the extraction in the organic phase decreases as a result of formation of non-extractable polymer forms of Ti. 3 figs; 7 biblio refs.

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UDC 581.143 + 547.379.52

PRILEZHAYEVA, YE. N., LUKIN, V. V., SNEGOTSKIY, V. I., NOVITSKAYA, N. N., LABA, V. I., SHMONINA, L. I., PETUNOVA, A. G., and LEBEDEVA, G. F., Institute of Organic Chemistry imeni N. D. Zelinskiy, Academy of Sciences USSR, Moscow

"A New Group of Herbicidal Compounds -- Alkylvinyl Sulfones"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 3, 1970, pp 727-730

Abstract: A systematic study was made of the relation between herbicidal activity and structure for vinyl sulfones and substances similar to them under hothouse conditions on potted plants. It was found that the display of appreciable herbicidal action in these series is due to the presence of a double bond adjoining the sulfonyl group and possessing strong electrophilicity. The highest herbicidal activity was found in vinyl sulfones with normal primary radicals containing 8-10 atoms. These compounds, to which the authors have given the names Alvisone 8, 9, 10 respectively, showed selectivity of action in hothouse experiments. Some properties of Alvisones 8 and 10, obtained

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PRILEZHAYEVA, YE. N., et al., Doklady Akademii Nauk SSSR, Vol 194, No 3, 1970, pp 727-730

from chromatographically pure primary n-octyl and n-decyl mercaptans, were compared with the properties of Alvisone-K, obtained from mercaptan concentrate extracted from polysulfide petroleum of the Ishimbay type, as well as Alvisone 8-10 obtained from a mixture of synthetic alcohols C₈-C₁₀ (supplied by YU. B. KAGAN and S. M. LOKTEV). Alvisone-K was found to be only slightly inferior to Alvisones 8 and 8-10 in herbicidal activity. Data were obtained on the dosage of "Alvisone" herbicides under field conditions, based on three-year field plot tests conducted at the Pushkin base of the All-Union Institute of Plant Protection (Leningradskaya Oblast), as well as by the Chair of Agriculture of the Soil Biology Faculty of Moscow University (Moskovskaya Oblast).

The results indicate that Alvisone-K possesses a number of properties (e. g., low toxicity for warm-blooded animals, stability under storage) which make it promising for the control of annual di-

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PRILEZHAYEVA, YE. N., et al., Doklady Akademii Nauk SSSR, Vol 194, No 3, 1970, pp 727-730

cotyledonous weeds in carrot plantings. Alvisone can be used as a contact herbicide as a supplement to soil preparations (of the propazine type etc.). The most convenient way of preparing these α, β -unsaturated sulfones is three-stage synthesis from mercaptans, either individual ones or mixtures thereof.

The authors thank T. YE. PIVOVAROVA, V. I. ERONOV, V. KH. SYUNDYUKOVA, T. S. PAPKO for taking part in the synthetic portion of the work, P. V. SABUROVA for taking part in the hothouse tests, A. V. ZAKORDONETS and YE. V. ARZAMASTSEV for determining the toxicity for warm-blooded animals, and Professor R. D. OBOLENTSEV and V. S. BURYI for their interest in the study.

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USSR

UDC 632.954

VOYEVODIN, A. V., PETUNOVA, A. A., All-Union Institute of Plant Protection, Leningrad, All Union Academy of Agricultural Sciences imeni V. I. Lenin

"Nature of Herbicide Action"

Moscow, Zashchita Rasteniy, No 5, 1970, pp 29-30

Abstract: The article is a report of a sectional meeting at the Third All-Union Conference on herbicides. The studies of D. I. CHKANIKOV and others were devoted to investigation of the energetics of herbicide treated plants. It was stated that one of the most important functions of the action of 2,4-D is the interference with the phosphorylation processes leading to the formation of halo-phenols. S. M. MASHTAKOV and collaborators worked with various plants and different herbicides and discovered formation of novel phenolic compounds not found in controls. The papers of V. S. RADUYEV, V. P. LOBOV, F. L. KALININ, and V. F. LADONIN were concerned with the effect of herbicides on nucleic acids. L. S. KOZIN, YU. V. KRUGLOV, V. G. MASLENNIKOVA, V. D. GOGUADZE, et al, reported
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VOYEVODIN, A. V., et al, Zashchita Rasteniy, No 5, 1970, pp 29-30

on the action of herbicides on soil microflora and on the role of microorganisms in detoxication of these agents. L. P. POPOVA, and SH. A. ALIYEV reported data on the effect of herbicides on agrochemical properties of the soil. The action of atrazine under different light conditions was discussed by M. I. LUZHNOVA (GAGARINA) and L. M. EYTINGON. K. I. MOCHALKINA, A. I. MOCHALKINA, L. L. ROMAN, A. M. GOLOVAN, and M. S. SOKOLOVA covered the utilization of new physical methods for studying the activity of herbicides. L. D. STONOV and L. A. PODYNYA used IR gas-analyzer to evaluate potential herbicides. Toxicity of atrazine and monurone was reported by V. I. KAMENSKIY, YU. YA. SPIRIDONOV, G. S. SPIRIDONOVA, and A. I. YAKOVLEV. G. S. MUROMTSEV, R. S. MIKHAYLANTS, and V. N. AGNISTIKOVA reported on the use of several fungicides to control dodder and broom rape.

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USSR

VOLKOV, G. A., MISYUK, L. A., and PETRUSHENKO, V. V., Leningrad

"The Bioelectric Reaction of Plant Cells to Light"

Kishinev, Elektronnaya Obrabotka Materialov, No 2, 1971, pp 65-68

Abstract: The mechanism by which a sudden illumination of *Nitella flexilis* increases the resting potential across its plasmalemma by about 60 mV was investigated to link the absorption of light which occurs in chloroplasts and the response which occurs on the external cytoplasmic membrane. By comparing known theories and facts with their own experimental results (recording of resting potentials from *Nitella flexilis* plasmalemma in darkness and light with and without addition of photosynthesis inhibitors and cofactors and of bicarbonates), the authors conclude that bicarbonate is involved in both reactions, those occurring in chloroplasts and those taking place in the plasmalemma. In light, intracellular bicarbonate is drawn (either directly or after being converted into carbonic acid) into the Calvin cycle, its intracellular concentration decreases, its concentration gradient across the plasmalemma changes, and the latter produces the effect of a temporary increase in the plasmalemma's permeability to bicarbonate.

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USSR

PLINER, P. G., PETRUSHKIN, P. S., and KASHCHEGULOV, M. D., Anesthesiology Department, Pavlodar Oblast Hospital

"Chlorophos Poisoning"

Alma-Ata, Zdravookhraneniye Kazakhstana, No 8, 1971, pp 75-76

Abstract: A 32-year-old female was brought to the hospital unconscious 1 1/2 hours after drinking 5 grams of the organophosphorus insecticide chlorophos (Dipterex). Emergency tracheal intubation, artificial respiration, gastric lavage, intravenous injections of calcium chloride, cocarboxylase, prednisolone, and so forth failed to restore natural breathing. Direct blood transfusions and repeated injections of ATP were ineffectual and artificial ventilation with a respirator, injections of atropine, glucose, and vitamins were required before the patient regained consciousness (16 hours after admission to the hospital). Acute chlorophos poisoning is becoming increasingly common. Victims should be brought to a resuscitation center or to a surgical hospital with a resuscitation department and treated by a team headed by an anesthesiologist and a specialist in resuscitation techniques.

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USSR

UDC 620.178.72:534.012

PETUSHKOV, V. G., STEPANOV, G. V., Kiev

"Certain Regularities in the Propagation of Longitudinal Elastic Waves in Rods"

Kiev, Problemy prochnosti, No. 1, 1971, pp 78-81

Abstract: Certain regularities involved in the propagation and interaction of elastic waves in cylindrical rods subjected to tensile impact by a solid body are studied. The dependence of the form and amplitude of waves in a smooth, semi-infinite rod of finite length on velocity of impact is produced with various ratios of rod mass to impacting body mass. The experimental data agree well with calculated data. The conditions at the point where the diameter of a stepped rod changes with a considerable difference in cross-sectional area differ from the theoretical conditions, resulting in stress redistribution in the reflected and transmitted waves. The one-dimensional theory of a longitudinal impact, which does not consider contact effects, allows the form and amplitude of waves excited in rods by a tensile shock to be calculated with accuracy acceptable for practical purposes.

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1/2 024 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SELECTION OF A SAMPLE FOR HIGH SPEED TENSILE TESTING -U-
AUTHOR--PETUSHKOV, V.G. P
COUNTRY OF INFO--USSR
SOURCE--PROBLEMY PROCHNOSTI, VOL 2, APR. 1970, P. 97-99
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, METHODS AND EQUIPMENT
TOPIC TAGS--TEST METHOD, HIGH SPEED STEEL, IRON, TENSILE STRENGTH/(U)ARMCO IRON
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0145 STEP NU--UR/3663/70/002/000/0097/0099
CIRC ACCESSION NO--AP0123917
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123917

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DETERMINATION OF THE SHAPE OF A SAMPLE FOR STUDYING THE RELATIONSHIP BETWEEN THE TENSILE STRENGTH AND TENSION RATE. FOR THIS PURPOSE, THE CHARACTERISTICS OF STRESS WAVE PROPAGATION IN A SAMPLE SUBJECTED TO HIGH SPEED TENSILE TESTS ARE ANALYZED. AN AN EXAMPLE, THE RESULTS OF HIGH SPEED TENSILE TESTS OF ARMCO IRON ARE DESCRIBED. FACILITY: AKADEMIJA NAUK UKRAINSKOI SSR, INSTITUT PROBLEM PROCHNOSTI, KIEV, UKRAINIMA SSR.

UNCLASSIFIED

USSR

UDC 591.1

MEFEDOV, V. P., SAMOYLOV, V. A., KUDYAKOVA, N. N., DUBYNIN, V. N., ~~PETUSHKOV, V. N.~~, YASNIKOV, I. L., NIKHAYLOV, V. I., and KHRUSTALOV, V. F., Institute of Physics imeni L. V. Kirenskiy, Siberian Department USSR Academy of Sciences

"Culturing Bone Marrow in Vitro by the Method of Isolated Organ Perfusion"

Moscow, Izvestiya Akademii Nauk SSSR, No 2, Mar/Apr 71, pp 179-191

Abstract: The role played by the bone marrow in maintaining normal erythron series was studied. Blood was perfused through the isolated sternum by means of a pumping and oxygenating system which automatically regulated the perfusion pressure, pO_2 , HbO_2 , pH, and temperature of the perfused blood, partly in response to the feedback information on pO_2 , temperature, and impedance received from the bone marrow. Best results were obtained when the circulating blood was completely exchanged after 12 hours of perfusion. The maximum duration of perfusion was 20 hours. Histological examination of the sternum performed after 6, 11, and 17 hours of perfusion revealed a shift in the leukoerythroblast ratio toward the red series and a normal maturation of erythrocytes and granulocytes.

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Acc. Nr: **AP0034766**

Ref. Code: UR 0241

PRIMARY SOURCE: Meditsinskaya Radiologiya, 1970, Vol. 15,
Nr 1, pp 53-56

ACUTE RADIATION AFFECTON OF THE HANDS

V. M. Orlov, V. N. Petushkov, L. I. Sych

Summary

The issue contains a detailed description of severe radiation lesion of the hands in a 49-year-old patient occurring as the result of failure to observe the rules of radiation safety resulting in direct contact of unprotected hands with Co⁶⁰ granules with an activity of 51 Ra equiv. The exposure dose of gamma-irradiation at the body surface at the level of the chest comprised 150 r, on the region of the hands not less than 10,000 r. The article carries dynamic clinico-physiological data, as well as the results of pathomorphological investigation of amputated segments.

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REEL/FRAME

02

1077-1476

1/2 032 UNCLASSIFIED PROCESSING DATE--13NOV70
 TITLE--HUMAN EEG DYNAMICS DURING HEART OPERATIONS -U-
 AUTHDR--(02)-PETUSHKOV, YE.P., ZHUKOVSKYA, V.G. P
 COUNTRY OF INFO--USSR
 SOURCE--FIZIOLOGICHESKIY ZHURNAL SSSR IMENI I. M. SECHNOVA, 1970, VOL 56,
 NR 5, PP 681-680.
 DATE PUBLISHED-----70
 SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
 TOPIC TAGS--HEART SURGERY, ELECTROENCEPHALOGRAPHY, HYPOTHERMIA, ARTIFICIAL
 BLOOD CIRCULATION, ORGAN TRANSPLANT
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRADE--3001/1174 STEP NO--UR/0239/70/056/005/0681/0680
 CIRC ACCESSION NO--AP0126776
 UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0126776

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CHANGES WERE OBSERVED IN THE EEG RECORDED DURING RECONSTRUCTIVE HEART OPERATIONS WITH ARTIFICIAL HYPOTHERMY AND ARTIFICIAL CIRCULATION APPLIED. SOME DATA ON THE EEG CHANGES DURING HEART TRANSPLANTATION IN MAN WERE ALSO GATHERED. IMPORTANCE OF THE EEG RECORDING IN A MODERN OPERATING THEATER AND SIGNIFICANCE OF SOME EEG PHENOMENA FOR CERTAIN STAGES OF A HEART OPERATION, WERE EMPHASIZED. EEG RECORDING DURING HEART TRANSPLANTATION IN MAN WAS CONSIDERED TO BE A NECESSARY AND PROGRESSIVE METHOD. SOME EEG EPOCHS AND RESULTS OF MATHEMATICAL EEG DATA PROCESSING WERE DEMONSTRATED. FACILITY: INSTITUTE FOR EXPERIMENTAL MEDICINE ACAD. MED. SCI. USSR, N. I. KALININ'S POLYTECHNICAL INSTITUTE, Leningrad.

UNCLASSIFIED

UDC 669.28.054.2.546.21

USSR

GARAYEVA, A. A., MIKHAYLOV, S. M., PETUSHKOV, Ye. Ye., NAVALIKHIN, L. V.,
and TALANIN, Yu. N.

"Determination of Oxygen in Molybdenum Single Crystals"

Monokristally Tugoplavkikh i Redkikh Metallov [Single Crystals of Refractory
and Rare Metals -- Collection of Works], Nauka Press, 1971, pp 47-49

Translation: Activation analysis using fast neutrons was used to study the
distribution of oxygen in molybdenum single crystals produced by crucibleless
zone melting, allowing the change in concentration of impurities with increas-
ing number of passes of the zone to be determined. The errors in measurement
due to surface oxygen were determined. It was found that purification of the
surface of the specimens can be performed by bombardment with electrons.
Electrolytic etching at low oxygen contents is a less acceptable method of
purification. 1 Figure; 4 Bibliographic References.

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Acc. Nr. **110048294**

Abstracting Service:

CHEMICAL ABST. **5/70**

Ref. Code

410181

105307v Antiferromagnetic resonance in single crystals of $Mn_{1-x}Co_xF_2$ and $Mn_{1-x}Ni_xF_2$ systems. ~~Petutin, A. I.; Zvyagin, A. I. (Fiz.-Tekh. Inst. Nizkikh Temp., Kharkov, USSR). Fiz. Tverd. Tela 1970, 12(2), 623-4 (Russ).~~ Results are given of the investigation of antiferromagnetic resonance in single crystals of mixed fluorides of Mn, Co, and Ni with a large content of MnF_2 . Measurements were carried out at 4.2°K with a radiospectrometer of submm range. In mixed fluorides, even with sufficiently large amt. of impurity ($\leq 20\%$), a homogeneous antiferromagnetic resonance is obsd., the frequency of which depends on the concn. of impurity. In terms of the phenomenological theory, the shift in the resonance frequency from its position in pure MnF_2 , depending on the concn. of impurity, can be qual. explained by the variation of the anisotropy and the exchange energies, the 1st variation being the most important. The curves are given of the dependence of the resonance frequency in mixed fluorides on impurity concn. A. Libackyj

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REEL/FRA
19792016

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USSR

UDC: 533.95

KADOMTSEV, B. B., Academician, and PETVIASHVILI, V. I."Sonic Turbulence"

Moscow, Doklady Akademii Nauk SSSR, 1 February 1973, pp 794-796

Abstract: Sonic turbulence is here defined as the totality of sound waves of finite amplitude in a compressible gas or plasma. The authors show that the relevant equations in ordinary space, as opposed to wave-number space, lead to a conclusion of sound wave amplitude reversal in sonic turbulence and the formation of shock waves. As a result, they find it necessary to modify the Kolmogorov-Obukhov concept of energy transmission over the spectrum in the case of formation of discontinuities -- shock waves, for example. In their analysis, the authors assume that the sound is isothermal -- that the heat conductivity is very high -- and that the gas conducting the sound has low and vanishing viscosity; the analysis begins with the Euler equation and the equation of continuity reflecting that assumption. It is also assumed that the motion of the gas, described by these two equations, is potential; i.e., that $\vec{g} = -\nabla\psi$, where \vec{g} is the acceleration and ψ a potential.

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USSR

UDC: 533.95

KADOMTSEV, B. B., et al, Doklady Akademii Nauk SSSR, No 4, 1973,
pp 794-796

The authors thank Academician R. Z. Sagdeyev for his comments on
the work.

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P Fluid Dynamics

USSR

UDC 533.95

KADOMTSEV, B. B., Corresponding Member of the Academy of Sciences, USSR, PETVIASHVILI, V. I.

"On the Stability of Isolated Waves in Weakly Dispersing Media"

Moscow, Doklady Akademii Nauk SSSR, Vol 192, No 4, 1 Jun 1970, pp 753-756

Abstract: Special solutions of the equation $\partial u / \partial t + u \partial u / \partial x + \partial^3 u / \partial x^3 = 0$ (1)

describing a broad class of one-dimensional nonlinear waves in media with weak dispersion (for example, waves on shallow water, ionic-sonic and magnetosonic waves in a plasma, etc.) are discussed which are of the isolated wave or soliton type:

$$u = u_0(x, t) = a f(\sqrt{a}(x - x_0)) \quad (2)$$

where a is the wave amplitude, $x = at$ is its phase, and the function $f(\xi)$ satisfying the equations from (1)

$$-f' + ff' + f''' = 0; -f + \frac{1}{2}f^2 + f'' = 0 \quad (3)$$

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KADOMTSEV, B. B., et al, Doklady Akademii Nauk SSSR, Vol 192, No 4,
1 Jun 1970, pp 753-756

is equal to

$$r(\xi) = 3(\operatorname{ch} \xi/2)^{-2}. \quad (4)$$

A soliton consists of a one-dimensional nonlinear wave and is a fully stable formation under the assumption of one-dimensionality. The question of whether a soliton is stable under slight curvature, when its amplitude a and phase x_0 are slowly varying functions of the y -coordinate laid off crosswise to the propagation of the soliton, is investigated. It is shown that in the case of negative dispersion (for example, for waves on shallow water) "bending" of the soliton leads to elastic oscillations with weak damping. In the case of positive dispersion the soliton is unstable with respect to two-dimensional perturbations such as bending, and it is doubtful that it can exist for a long time. If the nonlinear term in equation (1) has a negative sign, the situation is the reverse: solitons are stable in the case of positive dispersion and unstable in the case of negative dispersion.

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Petroleum Processing Technology

USSR

UDC 665.921.5:66.002.37:546.47

RAVIKOVICH, A. M., BORSHCHEVSKIY, S. B., BEZYAKINA, YE. I., and SIGOVIN, G. I.,
All Union Scientific Research Institute of Petroleum Industry

"Antiwear Additives for Lubricating Oils Containing Zinc, Nitrogen, and Phosphorus"

Moscow, Khimiya i Tekhnologiya Topliv i Masel, No 2, 1972, pp 47-50

Abstract: AFO -- a new antiwear oil additive containing zinc, nitrogen and phosphorus elements has been produced from the extract of residual oils of sulfurous petroleum, after preliminary purification with propane. AFO has been shown to possess high antiwear and antioxidation properties, better than the commercial KFO. It is soluble in mineral oils of different viscosity, producing no sediments during storage at low temperature. The comparative tests carried out on models showed that the contact strength of drive gear teeth lubricated with TS-14.5 oil containing AFO is greater than the strength of the driving gear treated with TS-14.5 oil containing the KFO additive.

1/1

R Petroleum Processing Technology **P**

UDC: 66.095.132:66.022.38

USSR

KOZHEMYAKINA, N. N., VINOGRADOVA, I. E. and PETYAKINA, YE. I.

"A Study of Phosphorus-Based Adic Esters as Additives for Lubricating Oils"

Moscow, Khimiya i Tekhnologiya Topliv i Masel, No 5, 1970, pp 31-36

Abstract: The value of phosphorus-containing compounds as anti-wear and anti-seizing agents was thoroughly demonstrated in studies during the fifties. The present study was undertaken to place research in this field on a more systematic basis. Experiments were run with 16 esters of phosphorus-containing acids, with the following results: 1) The addition of sulfur to the esters does not secure any perceptible advantage in antiwear or anti-seizing properties; 2) of the esters studied, the acid esters and trialkyltrithiophosphite were superior anti-seizing agents; 3) full esters are good anti-wear additives but poor anti-seizing agents; 4) during oxidation of oils, full esters of phosphorous, and phosphoric and thiophosphorous acids are anti-oxidizers, but their acid esters, and also the full esters of phosphinic acids, are strong oxidizers; 5) acid esters of phosphorous and dithiophosphoric acids, and also the phosphinic esters, are good anti-corrosion agents for light-metal alloys; and 6) in selecting phosphorus-containing additives for oils, anti-wear and anti-seizing properties, thermochemical stability, anti-oxidant properties, and corrosion activity with respect to metals, should all be taken into account.

1/1

1/2 026 UNCLASSIFIED PROCESSING DATE--090CY70
 TITLE--SINGLE BAND MODULATION WITH CONTROLLED CARRIER -U-
 AUTHOR--PETYASHIN, I.B. *P*
 COUNTRY OF INFO--USSR
 SOURCE--KIEV, IZVESTYA VUZOV SSSR RADIOELEKTRONIKA, VOL 13, NO 2, 1970, PP
 235-241
 DATE PUBLISHED-----70
 SUBJECT AREAS--NAVIGATION, ELECTRONICS AND ELECTRICAL ENGR.
 TOPIC TAGS--SIGNAL MODULATION, ELECTROMAGNETIC NOISE, CARRIER FREQUENCY,
 AUTOMATIC FREQUENCY CONTROL
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRA--1991/1458 STEP NU--UR/0452/70/013/002/0235/0241
 CIRC ACCESSION NO--AP0110947
 UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--09OCT70

2/2 026

CIRC ACCESSION NO--AP0110947

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

ABSTRACT. THIS ARTICLE DEALS WITH THE ACTION OF NOISE ON THE SYNCHRONOUS DETECTOR OF A SINGLE BAND RECEIVER IN THE FUNDAMENTAL CHANNEL AS WELL AS IN THE RESTORED CARRIER CHANNEL. THE CARRIER RESTORATION SYSTEM IS ASSUMED TO BE A PHASE AFC. THE LINEAR MODE OF THE RECEIVER, I.E., HIGH SIGNAL TO NOISE RATIOS AT THE RECEIVER INPUT, IS ANALYZED WHEN THE PHASE AFC CHANGES THE SIGNAL TO NOISE RATIO IN THE RESTORATION CHANNEL AND THE TOTAL EFFECT OF THE NOISE ACTION IN BOTH CHANNELS IS ESTIMATED AT THE OUTPUT OF THE SYNCHRONOUS DETECTOR. THE ANALYSIS IS CONDUCTED FOR TWO CASES: THE FIRST, RESTORATION OF THE CARRIER IN THE RECEIVER THROUGH THE REMAINDER OF THE CARRIER, CONTINUOUSLY RADIATED BY THE TRANSMITTER; SECOND, RESTORATION OF THE CARRIER IN THE RECEIVER WITH THE CARRIER RADIATED BY THE TRANSMITTER ONLY DURING THE ABSENCE OF THE MODULATING SIGNAL. A SIMPLIFIED BLOCK DIAGRAM OF THE RECEIVER USED FOR THE ANALYSIS IS SHOWN. THE AUTHOR CONCLUDES THAT THE USE OF STATISTICAL AVERAGING IN SINGLE BAND COMMUNICATION LINES PERMITS MARKED IMPROVEMENT OF THE NOISE IMMUNITY FOR LDW LEVEL NOISE AS WELL AS HIGH LEVEL NOISE.

UNCLASSIFIED

USSR

UDC 621.391

P
PETYASHIN, I. B.

"Single-Band Modulation with Controlled Carrier"

Kiev, Izvestiya VUZov SSSR-Radioelektronika, Vol 13, No 2, 1970, pp 235-241

Abstract: This article deals with the action of noise on the synchronous detector of a single-band receiver in the fundamental channel as well as in the restored carrier channel. The carrier restoration system is assumed to be a phase AFC. The linear mode of the receiver -- i.e., high signal-to-noise ratios at the receiver input -- is analyzed when the phase AFC changes the signal-to-noise ratio in the restoration channel and the total effect of the noise action in both channels is estimated at the output of the synchronous detector. The analysis is conducted for two cases: the first, restoration of the carrier in the receiver through the remainder of the carrier, continuously radiated by the transmitter; second, restoration of the carrier in the receiver with the carrier radiated by the transmitter only during the absence of the modulating signal. A simplified block diagram of the receiver used for the analysis is shown. The author concludes that the use of statistical averaging in single-band communication lines permits marked improvement of the noise immunity for low-level noise as well as high-level noise.

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Pharmacology and Toxicology

USSR

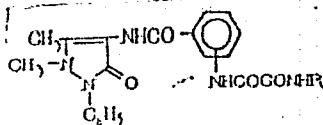
UDC 615.31:547.775

PETYUNIN, G. P., and PASTUKHOVA, T. P., Khar'kov Pharmaceutical Institute

"Synthesis and Biological Activity of 4-Antipyrylamines of N(alkoxamoyl)-aminobenzoic Acids"

Moscow, Khimiko Farmatsevticheshiy Zhurnal, Vol 7, 2, Feb 73, pp 15-17

Abstract: The conversion of the 4-aminoantipyrynes to its N-oxamoyl derivative has been shown to strengthen the medicinal properties and to decrease the toxicity of the drug. Thus a series of 14 compounds were prepared having the form



for the NHCOC₆H₄ group in either the 2 or the 4 position. In comparison to the antipyryne starting material, the derivatives generally have similar activity in doses of 10-200 mg/kg and a toxic dose (determined by the ID₅₀) of 725-1450 mg/kg making the latter 2-3 times less toxic than the antipyrynes. Individual compounds are discussed briefly. Chemical composition, physical data, and preparations are given.

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1/2 007

UNCLASSIFIED

PROCESSING DATE--20NOV70

TITLE--AMIDES AND HYDRAZIDES OF OXALIC ACID. XVII. CONDENSATION OF
ARENESULFAMIDES WITH ARYLAMINOETHYLOXAMIC ACID ESTERS -U-

AUTHOR-(C3)-PETYUNIN, P.A., CHERNYKH, V.P., BANNYY, I.P.

COUNTRY OF INFO--USSR

P

SOURCE--ZH. ORG. KHIM. 1970, 6(5), 1015-19.

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CONDENSATION REACTION, OXALIC ACID, AZIDE, ESTER, AMIDE,
ORGANIC SULFUR COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1354

STEP NO--UR/0366/70/006/005/1015/1019

CIRC ACCESSION NO--AP013502#

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--20NOV70

272 007

CIRC ACCESSION NO--AP0135028
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE REACTION OF (CO SUB2 ET) SUB2 WITH RC SUB6 H SUB4 NHCH SUB2 CH SUB2 NH SUB2 GAVE RC SUB6 H SUB4 WHICH SUB2) SUB2 NHCOCO SUB2 ET (I) (R IS H, 4 ME, OR 3 ME). THE REACTION OF I WITH R PRIME1 COCL (R PRIME1 IS PH, ME, OR CH SUB2 CL) GAVE RC SUB6 H SUB4 N(COR PRIME1)(CH SUB2) SUB2NEGATIVE NHCOCO SUB2 ET (II). TREATMENT OF II WITH MECNA AND R PRIME2 C SUB6 H SUB4 SO SUB2 NH SUB2 GAVE RC SUB6 H SUB4 N(COR PRIME1) (CH SUB2) SUB2 NHCOCONHSO SUB2NEGATIVE C SUB6 H SUB4 R PRIME2 (III) R PRIME2 IS H, 4 ME, R CL, OR 4 NH SUB2). III WAS ALSO PREPD. BY TREATING I WITH R PRIME2 C SUB6 H SUB4 SO SUB2 NHNA TO OBTAIN RC SUB6 H SUB4 NH SUB2 NEGATIVE (CH SUB2) SUB2 NHCOCONHSO SUB2 C SUB6 H SUB4 R PRIME2, WHICH WAS THEN TREATED WITH R PRIME1 COCL.

FACILITY: KHARKOV. FARM. INST., KHARKOV, USSR.

UNCLASSIFIED

USSR

UDC 77.01:772.933

PEVCHEV, YU. F., KALASHNIKOVA, V. I., KONKOVALOVA, L. P.

"Concerning the Mechanism of the Effect of a Pulsed Electrical Field Upon the Photographic Process"

Moscow, Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii, Vol 15, No 4, 1970, pp 250-256

Abstract: It is shown that the positive as well as the negative effect of the action of a pulsed electrical field, determined through the ratio of the difference in the density of blackening with the field and without the field to the density of blackening without the field, first increases linearly with an increase in the intensity of the field, and then passes into saturation. Decreasing the illumination of the photographic layer brings about a sharp increase of the effect, when the light flash is delayed with respect to the front of the voltage pulse, the effect decreases roughly exponentially with a characteristic time of about 30 microseconds. The action of the electrical field is regarded as a sequence of processes taking place in an individual emulsion microcrystal. Since the photoelectrons are displaced by the electrical field to the surface of the microcrystal, their behavior is essentially determined by the number and character of the electron traps located on a small sector of surface. The

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USSR

PEVCHER, YU. F., et al., Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii, Vol 15, No 4, 1970, pp 250-256

absence of a sensitivity center in the region of the accumulation of photoelectrons brings about the formation of a dispersed latent image and, in the final count, to a negative effect; the presence of a sensitivity center creates conditions for concentration of the silver of the latent image at this center, which brings about a positive effect of the action of the field. The value of the effect is determined by the relationship between the intensity of the exposure, which determines the total number of photoelectrons, and the intensity of the electrical fields, which determines the number of electrical-charge carriers required for compensation of the field in the microcrystal. The sign of the effect of the action of the electrical field is tied to the average number of sensitivity centers per microcrystal. These considerations provide an explanation for the most characteristic feature of the effect of the action of the field -- its ambiguity. They are based upon the assumption that the sign of the field action effect is determined by the probability of there being at least one sensitivity center on a comparatively small random sector of the surface of an emulsion microcrystal. It can be easily seen that this probability depends only on the average number of sensitivity centers per microcrystal of the emulsion. If the average number of sensitivity centers per microcrystal is small (of the order of 1), the

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USSR

PEVCHEV, YU. F., et al., Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii, Vol 15, No 4, 1970, pp 250-256

probability that there will be a sensitivity center on a small sector of the surface of a microcrystal is obviously small, and the field action effect will be negative in the overwhelming majority of microcrystals. And on the contrary, with a comparatively large number of sensitivity centers per microcrystal, the probability that a sensitivity center will randomly occur in the region of the accumulation of electrons under the action of the electrical field will be of the order of unity, and for the majority of the microcrystals of the emulsion the effect will be positive. On the other hand, it can be shown that equisensitivity of the emulsion microcrystals, and, consequently, also high contrast of the photographic emulsion, may be provided only with a comparatively large average number of centers per microcrystal. From this point of view, the mechanism of the action of the electrical field upon the structure of the latent photographic image makes it possible to understand the basic experimental fact that the investigated photographic films, being divided into two groups on the basis of the sign of the observed effect, are also divided rather clearly on the basis of their parametric properties, the positive effect being, as a rule, linked to high contrast. Moreover, it has been, shown on experimental film specimens that the positive effect of the action of the field is due to the introduction of rhodium chloride into

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USSR

PEVCHEV, YU. F., et al., Zhurnal Nauchnoy i Prikladnoy Fotografii i Kinematografii,
Vol 15, No 4, 1970, pp 250-256

the emulsion in the process of its ripening, which considerably increases the contrast of the emulsion. These considerations concerning the behavior of the possible mechanism of the action of an electrical field upon the structure of the latent photographic image are basically qualitative, and explain only the general tendencies in the behavior of the observed effects.

4/4

1/2 - 026 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SOME FEATURES OF ESR AND SPIN LATTICE RELAXATION OF ELECTRONS IN GE
AND INSB WITH DIFFERENT DONOR CONCENTRATIONS -U-
AUTHOR-(03)-GERSHENZON, E.M., PEVIN, N.M., FOGELSON, M.S.
COUNTRY OF INFO--USSR **P**
SOURCE--PHYSICA STATUS SOLIDI, 1970, VOL 38, NR 2, PP 865-870
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--SPIN LATTICE RELAXATION, ELECTRON, GERMANIUM, INDIUM ARSENIDE,
WAVE FUNCTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1989/0949 STEP NO--GE/0030/70/038/002/0865/0870
CIRC ACCESSION NO--AP0107478
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0107478

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CONCENTRATION AND TEMPERATURE DEPENDENCE OF THE ESR LINEWIDTH IN N-GE AND N-INSB AND SPIN LATTICE RELAXATION TIMES IN GE:AS HAVE BEEN INVESTIGATED IN THE X BAND. ESR LINE NARROWING AND THE INCREASE OF THE SPIN LATTICE RELAXATION RATE WITH CONCENTRATION IN THE LOW CONCENTRATION RANGE ARE EXPLAINED BY OVERLAP OF THE DONOR ELECTRON WAVE FUNCTIONS. IN THE HIGH CONCENTRATION RANGE THE ESR DATA ARE COMPARED WITH THE THEORIES OF THE SPIN RELAXATION OF CONDUCTION ELECTRONS. FACILITY: LENIN STATE PEDAGOGICAL INSTITUTE, MOSCOW.

UNCLASSIFIED

1/2 018 UNCLASSIFIED PROCESSING DATE--11SEP70
 TITLE--KROCK RATING OF LIQUEFIED GASES ON THE IT9 APPARATUS -U-
 AUTHOR--GNATYUK, YE.V., PEVNEV, N.G. P
 COUNTRY OF INFO--USSR
 SOURCE--KHIM. TEKHNOL. TOPL. MASEL 1970, 15(3), 46-9
 DATE PUBLISHED-----70
 SUBJECT AREAS--PROPULSION AND FUELS, MATERIALS
 TOPIC TAGS--MOLECULAR WEIGHT, HEPTANE, PENTANE, BUTANE, ETHANE, METHANE,
 LIQUID GAS PROCESSING, TEST METHOD, FUEL OCTANE RATING, FUEL TEST,
 PHYSICS LABORATORY INSTRUMENT/(U)IT9 OCTANE TEST APPARATUS
 CONTROL MARKING--NO RESTRICTIONS
 DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAE--1990/2057 STEP NO--UR/0065/70/015/003/0046/0049
 CIRC ACCESSION NO--AP0109989
 E???????????? UNCLASSIFIED

2/2 018.

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0109989

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE KNOCK RATING OF LIQUEFIED GASES CONTG. C SUB1-C SUB5 HYDROCARBONS WAS DETD. ON THE OCTANE HEPTANE SCALE. THE OCTANE NO. OF THE GASEOUS MIXT. WAS EQUAL TO THE SUM OF OCTANE NOS. OF ITS N AND ISOPAR-AFFINIC AND OLEFINIC HYDROCARBON COMPONENTS MULTIPLIED BY THEIR VOL. CONCNS. THE SENSITIVITY OF THE PARAFFINIC COMPONENTS INCREASES WITH THEIR DECREASING MOL. WT.

UNCLASSIFIED

USSR

. UDC 615.837.3.015.45:612.112

ZHURAVLEV, A. I., and PEVNEVA, R. F., Biophysics Laboratory, Experimental Department, Central Institute for Health Resorts and Physiotherapy, Moscow

"The Efficacy of the Physico-Chemical Action of Continuous and Pulsed (Generator YTC-1) Ultrasound on the Blood Serum of Man"

Moscow, Voprosy Kurortologii Fizioterapii i Lechebnoy Fizicheskoy Kul'tury, No 3, 1972, pp 202-207

Abstract: The intensity of luminescence (electron excitation) of human serum samples during irradiation with ultrasound waves was used as an index of the amount of acoustic energy absorbed. According to the results, irradiation intensity is divided into three ranges: 1) 0.1-0.4 watts/cm², a range in which the cumulative luminescence and the unit effect increase with increasing irradiation; 2) 0.5-0.7 watts/cm², in which the cumulative effect increases but the unit effect decreases with increasing irradiation; 3) 0.8 watts/cm² and more, in which both the cumulative and unit effects decrease with increasing irradiation. It is believed that the first range induces mainly reversible changes and the third range mainly destructive changes. Pulsed irradiation is less destructive than continuous irradiation. The intensity range of 0.2-0.3 watts/cm² is recommended as the best for therapeutic purposes.

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Ion Exchange

USSR

UDC 541.183.123 + 541.133

VARENTSOV, V. K., and PEVNITSKAYA, M. V., Institute of Physico-Chemical Principles for Reprocessing of Mineral Raw Material, Siberian Branch Academy of Sciences USSR, Novosibirsk

"Electroconductivity of Ion-Exchange Membranes and Nonhomogeneity of Their Structures"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR, Seriya Khimicheskikh Nauk, No 2 (214), Mar 73, pp 3-8

Abstract: Electroconductivity of a series of ion exchange membranes has been studied in relationship to the nature of ionogenic groups, the technology of preparation (homogeneous and heterogeneous), and complete exchange capacity, as well as the nature, concentration and temperature of the solution. It has been established that the conductivity of ion exchange resin is affected principally by the spacial distribution of fixed ionogenic groups and not so much by their quantity. The nature of the nonhomogeneity of the ion exchange resin appears to have no effect on the conductivity.

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Ion Exchange

USSR

UDC 543.544

PEVNITSKAYA, M. V., LAVRENT'YEV, YU. G., and VARENTSOV, V. I.,
Institute of the Physicochemical Principles of Mineral Raw Mate-
rial Processing of the Siberian Department of the Academy of
Sciences USSR, Institute of Geology and Geophysics of the Sibe-
rian Department of the Academy of Sciences USSR

"Experimental Study of Concentration Profiles in Ion Exchange
Membranes"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 11, Nov 70, pp
2952-2954

Abstract: The article demonstrates the possibility of using
x-ray spectrum local analysis with the aid of an electron probe
for the study of concentration profiles in ion exchange mem-
branes. The distribution of Cu^{+2} , Ca^{+2} , Na^{+} ions in a hetero-
geneous (MK-40) and homogeneous (MK-100) membrane was studied.
Concentration profiles were obtained during ion transfer in a
constant electric field. Stationary profiles are given for Cu^{+2}
ions in an MK-40 membrane and Ca^{+2} ions in an MK-100 membrane.

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USSR

UDC: 541.135-145:541.183.12

PEVNITSKAYA, M. V., VARENTSOV, V. K., Institute of Physical and Chemical Bases of Processing Raw Materials, Novosibirsk

"Concentration Polarization on Strongly Ionized Ion-Exchange Membranes in Dilute Electrolyte Solutions"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya AN SSSR, Seriya Khimicheskikh Nauk, Vyp. 6, No 14 (179), Nov 70, pp 8-13

Abstract: The authors study polarization on strongly ionized cation-exchange and anion-exchange membranes in solutions with various characteristics at concentrations of less than 0.1 N. The cation-exchange specimens were heterogeneous membranes based on KU-2 and various binders (polyethylene, polyvinyl chloride, polyfluoroethylene copolymer 42 L), and also homogeneous membranes produced by both chemical and radiation grafting of sulfogroups (MK-100, FK_3, MPFK-26). The anion-exchange membranes were based on strongly basic AV-17 resin and polyethylene binder. Polarization of these membranes was studied in NaCl, NaOH and HCl solutions. It was found that polarization characteristics for all investigated membranes are analogous regardless of the nature of the solution. The limiting currents on cation-exchange membranes in HCl

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USSR

PEVNITSKAYA, M. V., et al, Izvestiya Sibirskogo Otdeleniya AN SSSR, Seriya Khimicheskikh Nauk, Vyp. 6, No 14 (179), Nov 70, pp 8-13

and on anion-exchange membranes in NaOH are lower than the theoretically calculated values by a factor of 2-3. The schlieren method is used to show that intense agitation of the solution takes place at the surface of the membrane with currents greater than the limiting value, this action being more pronounced for cation-exchange membranes.

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Ion Exchange

USSR

UDC: 541.135-145:541.183.12

PEVNITSKAYA, M. V., VARENTSOV, V. K., Institute of Physical and Chemical
Bases of Processing Raw Materials, Novosibirsk

"A Study of Polarization at Anion-Exchange Membranes in Dilute Solutions of
Electrolytes"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya AN SSSR, Seriya Khimicheskikh
Nauk, Vyp. 6, No 14 (179), Nov 70, pp 13-18

Abstract: The behavior of anion-exchange membranes during passage of direct current is studied as a basis for improving the process of electro dialysis. The study was based on heterogeneous and homogeneous ion-exchange films with various concentrations of strongly basic and weakly basic groups. The behavior of the ion-exchange membrane during passage of current was determined from the change in resistance of the membrane-solution system and from polarization measurements. For some membranes, a study was made of the change of pH of the solution as a function of the distance to the diaphragm at currents larger than the limiting value. The hydrodynamic conditions in the layer near the membrane were also studied as a function of the nature of the anion-exchange membranes. The schlieren method was used for this purpose. Polarization of the membranes was studied in sodium chloride and hydrochloric acid
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USSR

PEVNITSKAYA, K. V., et al, Izvestiya Sibirskogo Otdeleniya AN SSSR, Seriya Khimicheskikh Nauk, Vyp. 6, No 14 (179), Nov 70, pp 13-18

solutions. It was found that the experimentally determined limiting currents for weakly basic membranes agree with theoretical calculations only for acids. In neutral solutions, the experimental values are lower than those calculated. Regardless of the type of membrane in NaOH solutions, the experimentally found currents are generally lower than the theoretical values by a factor of 2-3. The over-voltage at twice the limiting current is 2-5 volts higher than for cation-exchange membranes. This is apparently due to interaction between the membrane material and the electrolyte. If the logarithm of limiting current is plotted against the logarithm of concentration, the resultant graphs can be divided into two segments with slopes of 1.31-1.33 and 0.9 respectively. The values of the limiting current in the first region agree with theoretical data, while those in the second region are too high.

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USSR

UDC 612.017.1.014.46:615.277.3+612.017.1.014.482

KAZARYAN, K. A., FONTALIN, L. N., PEVNITSKIY, L. A., and SOLOV'YEV, V. V.,
Institute of Epidemiology and Microbiology imeni N. F. Gamaleya, Academy of
Medical Sciences USSR, Moscow, and Institute of Experimental Biology, Academy
of Sciences Armenian SSR, Yerevan

"Effects of Some Alkylating Agents and of Whole-Body Gamma-Irradiation on the
Formation and Realization of Immunological Memory"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 72, No 11,
Nov 71, pp 58-61

Abstract: Mice were immunized twice with 1×10^6 sheep erythrocytes at an
interval of 27-44 days. They were subjected to the action of an alkylating
agent (sarcolysin, degranol, thioTEP, cyclophosphamide) or gamma-irradiation
in a dose of 500 R either at the time of the first immunization, in the in-
terval between immunizations, or at the time of the second immunization, where-
upon the secondary response was determined by the method of N. K. Jerne and
A. A. Nordin (Science, Vol 140, p*405, 1963) on the basis of the amount of
antibody-forming cells in the spleen on the 4th day after the second immuni-
zation. As shown by this response, all the agents blocked the realization
of immunological memory and weakened its formation. The alkylating compounds
had a stronger effect on the process of memory formation than on the already
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USSR

KAZARYAN, K. A., et al., Byulleten' Eksperimental'noy Biologii i Meditsiny, Vol 72, No 11, Nov 71, pp 58-61

formed memory (the secondary response was weaker when agents were applied at the time of the first immunization than between immunizations), whereas the inverse relationship applied to irradiation. The observed phenomena can be explained on the basis of different sensitivities of resting and proliferating lymphoid cells to irradiation as compared with alkylating agents.

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Acc. Nr: **AP0051919**

Ref. Code: **DR 0219**

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i Meditsiny, 1970, Vol **69**, Nr **2**, pp **56-60**

SOME CONDITIONS ATTENDING DEVELOPMENT AND PROLONGATION OF IMMUNOLOGICAL TOLERANCE INDUCED IN ADULT ANIMALS BY COMBINED INJECTIONS OF ANTIGEN AND CYCLOPHOSPHAN

L. A. Pevnitskiy, V. V. Solov'ev, L. N. Fontalin

N. F. Gamalei Institute of Epidemiology and Microbiology of the Academy of Medical Sciences of the USSR, Moscow

Conditions attending development of tolerance in combined injections of an antigen (sheep erythrocytes) and cyclophosphan are analyzed. Injection of cyclophosphan 1-2 days after that of the antigen is shown to be more effective. The use of cyclophosphan 4 days after administration of antigen yielded a reverse effect (increased immunoreactivity to the antigen). High antigen doses are needed to develop the tolerance. The state of tolerance can be prolonged through additional injections of the antigen. Preliminary sensitization of the animals with small antigen doses prevents development of tolerance. The results obtained are interpreted from the standpoint of the clonal-selection theory.

REEL/FRAME
19820402

2 pc

USSR

UDC: 518

PEVNYY, A. B.

"Some Iterative Processes for Solving Convex Games"

Leningrad, Vestnik Leningradskogo Universiteta; Matematika-Mekhanika, Astronomiya, No 13, Jul-Sept 1973, pp 64-68

Abstract: Convex games involving N players with zero sum are examined in this article, and two methods of their solution are given. The first of these is the method of gradient projection; the second, the method of the fastest start. It is shown that for strongly convex games, these methods converge with the speed of a geometric progression to an equilibrium position. The first method is the generalization of the method of gradient projection for minimization, as discussed in an earlier paper (Levitin, Ye. S., et al, Metody minimizatsii pri nalichii ogranicheniy -- Minimization Methods With Limits -- Zhurn. vychisl. mat. i mat. fiz., vol 6, 1966, No 5, pp 787-823); the second was proposed by V. F. Dem'yanov (e.g., Nakhozhdeniye sedlovykh tochek na mnogogrannnikakh -- Finding Saddle Points in Polygons -- DAN, SSSR, 1970, vol 192, No 1, pp 13-16).

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USSR

UDC 51:621.391

PEVNY, A. B.

"Finding the Minimax with Related Constraints"

Sb. tr. in-t mat. Sib. otd. AN SSSR (Collected Proceedings of the Institute of Mathematics, Siberian Branch of the USSR Academy of Sciences), No 10(27), 1973, pp 22-29 (RZh Matematika, No 11, Nov 73, abstract 11 V643)

Translation: By using penalty functions, the problem under consideration is approximately reduced to a discrete minimax or minimaximin problem. It is shown that under some conditions it is possible to obtain an exact solution to the original problem with a finite number of penalty coefficients. Under other conditions an evaluation of the error is given.

Abstract by the author.

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USSR

UDC: 51

PEVNYI, A. B.

"An Iterative Method of Solving Matrix Games"

Sb. tr. In-t mat. Sib. otd. AN SSSR (Collected Works. Institute of Mathematics, Siberian Department of the Academy of Sciences of the USSR), 1971, vyp. 4(21), pp 61-64 (from RZh-Kibernetika, No 8, Aug 72, Abstract No 8V514)

Translation: In place of a matrix game, the author considers a game with quadratic advantage function $(Ax, y) - \varepsilon \|x\|^2 + \varepsilon \|y\|^2$ (A is the matrix of advantages, x and y are the strategies of the first and second players respectively). This game, which is symmetricized in the standard way, becomes a problem of quadratic programming. An iterative algorithm is presented for this problem which converges at the rate of a geometric progression. G. Dyubin.

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USSR

UDC: 518:62-50

PEVNYI, A. V., Leningrad

"Minimization of a Maxmin Functions"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, Vol 12, No 1, Jan/Feb 72, pp 227-230

Abstract: The author considers the problem of minimization of a function of the form

$$\varphi(z) = \max_{(x_1, \dots, x_n) \in E^n} \min_{z \in E^m} f_i(x, z)$$

throughout the entire space E^n . The concept of an ϵ -stationary point for $\phi(x)$ is introduced. Two iteration methods for the solution are proposed, and their convergence is proved. The proposed methods can be generalized to the case where the minimum with respect to x is taken over part of the space E^n , and the minimum with respect to z is taken over part of E^m . Bibliography of six titles.

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PEVNOY, S.A.

*Public
U.S. Navy*

STUDY OF SOME INDICES OF THE HIGHER NEURONS ACTIVITY OF MEN
SUBMITTED TO UNDERWATER ENVIRONMENT FOR PART MEN
VIZ 612.521.7-5-22

Article by S. O. Polyn, Ye. A. Kislavich, S. A. Pevnoy, and S. S. Stepanov,
Donsk State University Kiev, *Prilozheniya Zhurnal Akademicheskoy
Ukrainskoy Vozdushnoy Armii*, Vol 16, No 6, 1972, pp 7-12.

A long confinement of men to underwater laboratories of an open type with an inside pressure equalling that of the surrounding environment in one of the most promising methods for the study of oceanic environment. An effective way of the underwater dwelling depends on the ability of aquanauts to perform accurate physical and scientific tasks directly in the water for long time intervals.

Little is known about the mental activity of aquanauts in an underwater environment. In fact, only initial attempts were made to evaluate the activity of men at great ocean depths (1000 m). A positive correlation was established between alpha rhythm on EEG and underwater swimming. There are literature data indicating that the ability to perform physical work and that work output decrease with increasing water depth (1000 m). Established during the Sestab II expedition that motion coordination (as well as other functions) deteriorate under water. Lack of a uniform acceleration pattern, the multifaceted approach to the problem, and environmental variation were it impossible to establish the functional state of the nervous system activity of aquanauts. Furthermore, a short underwater stay of aquanauts cannot be extrapolated for much longer time intervals.

The aim of this work was to study some indicators of the higher nervous activity of aquanauts subjected to an underwater environment for many hours.

Experimental Methods

Two types of experiments were carried out with 10 divers (aged 20-30 years old) performing periodically a definite kind of physical work while under water for 2-4 hours and with aquanauts subjected to relative hyperbarism for 26 (1 equanaut) and for 36 hours (2 equanauts). In order to determine

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(1 - FORM - C)

1/2 017 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--AN AUTOMOTIVE DYNAMOMETRIC MACHINE WITH A TRACTIVE FORCE OF UP TO
10 TONS -U-
AUTHOR--(03)-KRESTOVNIKOV, G.A., PEVUNCHIKOV, V.I., SHCHUKLIN, S.A.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, AVTOMOBIL'NAYA PROMYSHELENNOST', NO 2, 1970, PP 14-16
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--DYNAMOMETER, AUTOMOBILE, HYDRODYNAMICS/(U)MAZ501 AUTOMOBILE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1599/1221 STEP NO--UR/0113/70/000/002/0014/0016
CIRC ACCESSION NO--AP0123185
UNCLASSIFIED

2/2 017

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123185

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN AUTOMOTIVE DYNAMOMETRIC MACHINE HAS BEEN PRODUCED WITH A HYDRODYNAMIC BRAKING UNIT BASED ON THE MAZ-501 AUTOMOBILE. THE MACHINE IS DISTINGUISHED BY THE HIGH STABILITY OF ITS BRAKING REGIMES, RELIABILITY, AND OPERATION.

UNCLASSIFIED

1/2 012 UNCLASSIFIED PROCESSING DATE--20NOV70
 TITLE--SPECTROGRAPHIC DETERMINATION OF IMPURITIES IN TITANIUM IV CHLORIDE
 USING A HOLLOW CATHODE DISCHARGE -U-
 AUTHOR-(03)-PEVTSOV, G.A., KRASILSHCHIK, V.Z., YAKOVLEVA, A.F.
 COUNTRY OF INFO--USSR
 SOURCE--ZH. ANAL. KHIM. 1970, 25(3), 580-1
 DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
 TOPIC TAGS--SPECTROGRAPHIC ANALYSIS, TITANIUM CHLORIDE, CATHODE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
 PROXY REEL/FRAME--3001/0471

STEP NO--UR/C075/70/025/003/0580/0581

CIRC ACCESSION NO--AP0126223

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIAC ACCESSION NO--AP0126223

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SPECTROGRAPHIC METHOD IS SUGGESTED FOR THE DETN. OF IMPURITIES IN TiCl₄ SUB₄. THE IMPURITIES ARE CONCD. ON A C COLLECTOR BY DISTG. OFF TiCl₄ SUB₄ AND THE CONCD. IS ANALYZED, AFTER ADDING ASCL, IN A HOLLOW CATHODE IN WHICH THE EVAPN. ZONE IS SEPD. FROM THE EXCITATION ZONE. SI IS DETD. WITHOUT CONCN. ANAL. LINES USED ARE CA 4226.7, MG 2802.7, MN 4030.7, NA 3302.3, PB 2833.1, FE 3719.9, NI 3414.6, CO 3453.5, CR 3605.3, K 4044.1, AL 3944.0, CU 3274.0, SI 2516.1 ANGSTROM. THE SENSITIVITY OF THE DETNS. RANGES FROM 1 TIMES 10 PRIME NEGATIVE 7 MINUS 1 TIMES 10 PRIME NEGATIVE 5 PERCENT WITH THE EXCEPTION OF SI, WHERE THE DETERMINABLE CONCN. IS 1 TIMES 10 PRIME NEGATIVE 3 PERCENT. THE REPRODUCIBILITY IS 20-5 PERCENT. FACILITY: ALL-UNION SCI.-RES. INST. CHEM. REAGENTS SPEC. PURE CHEM., MOSCOW, USSR.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--18SEP70
TITLE--COMPARATIVE EVALUATION OF TREATMENT IN SOME FORMS OF GASTRIC
HEMORRHAGES BY USING ARTIFICIALLY INDUCED HYPOTENSION WITH MASSIVE BLOOD
AUTHOR--PEVTSOV, I.L.
COUNTRY OF INFO--USSR
SOURCE--KHIRURGIYA, 1970, NR 3, PP 64-69
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--HEMORRAGE, DIGESTIVE SYSTEM DISEASE, BLOOD TRANSFUSION,
DUODENUM, BLOOD PRESSURE, ANTIHYPERSENSITIVE AGENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/1321 STEP NO--UR/0531/70/000/003/0064/0069
CIRC ACCESSION NO--AP0054205
UNCLASSIFIED

272 027

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0054205

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR HAD IN HIS CHARGE 286 PATIENTS WITH BLEEDING GASTRIC AND DUODENAL ULCERS, 14 OTHERS WITH HEMORRHAGES LATE AFTER GASTRIC RESECTION AND 72 PERSONS SUFFERING FROM HEMORRHAGIC GASTRITIS. INDUCED HYPOTENSION, INTRAVENOUS ADMINISTRATION OF HEXAMETHON IN COMBINATION WITH A SINGLE STAGE MASSIVE JET TRANSFUSION OF THE BLOOD WERE USED IN TREATING 76 OF THESE CASES. THESE MEASURES HELPED TO CURTAIL THE AVERAGE PERIOD OF NORMALIZING THE HEMOGLOBIN LEVEL. THANKS TO THE USE OF ARTIFICIAL HYPOTENSION IN THE TREATMENT OF PATIENTS WITH GASTRIC HEMORRHAGES IT BECAME POSSIBLE TO SHARPLY REDUCE THE LETHALITY RATE.

UNCLASSIFIED

USSR

UDC 669.14.018.584.001.6

BABAKOV, A. A., LEVIN, F. L., KONDRAT'YEV, A. I., GOLOVIN, A. I., KUL'KOVA, M. N., DANILYUK, YE. B., PEVZNER, A. YE., OPANEVICH, G. A., and KRAVCHENKO, I. D.

"Experience in Production of Sheet From 25Kh17N4G15AF2 Steel"

Spetsial'nyye Stali i Splavy [Special Steels and Alloys--Collection of Works], No 77, Metallurgiya Press, 1970, pp 124-131

Translation: The first experimental group of 40-mm sheets of type 25Kh17N4G15AF2 high-strength nonmagnetic steel has been manufactured. Based on studies of the specifics of the production of the steel during various stages of the technological process and study of the properties of the metal produced, practical recommendations are given for the production of sheet. 3 figures; 3 tables.

1/1

USSR

UDC: 550.831

~~PEVZNER, B. N.~~, ROMANYUK, V. A., Institute of Physics of the Earth imeni
O. Yu. Shmidt

"A Device for Absolute Measurements of the Acceleration Due to Gravity"

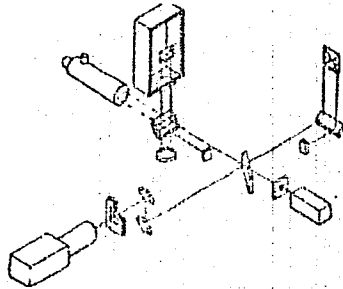
Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obratzsy, Tovarnyye Znaki,
No 7, Mar 72, Author's Certificate No 329496, Division G, filed 28 Jul 70,
published 9 Sep 72, p 184

Translation: This Author's Certificate introduces a device for absolute measurements of the acceleration due to gravity. The device contains a movable reflector, a light source, a semitransparent mirror, a horizontal mirror such as a mercury mirror, and systems for measuring path length and time. As a distinguishing feature of the patent, measurement accuracy is improved by adding an autocollimator and a mirror placed between the semitransparent mirror and the movable reflector.

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USSR

PEVZNER, B. N., ROMANYUK, V. A., USSR Author's Certificate No 329496



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USSR

UDC: 51.801

PEVZNER, B. R.

"Comparative Evaluation of the Operation of Russian and English Versions of the 'Pusto-Nepusto-2' System"

Nauch.-tekhn. Inform. Sb. Vses. In-t Nauch. i Tekhn. Inform. [Scientific and Technical Information, Collection of All-union Institute of Scientific and Technical Information], 1972, Ser. 2, No 6, pp 31-33, (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V622, by the author)

Translation: A comparative evaluation is presented of the operating quality of the system "Pusto-Nepusto-2" [Empty-Not empty-2], operating with Russian and English documents. The sign criterion is used as the statistical criterion for evaluation. It is concluded that the English version of the system operates as well as the Russian.

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USSR

UDC: 621.372.061

PEVZNER, F. A.

~~"Phase~~ Automatic Frequency Control System With Rectangular Phase Detector Characteristic"

V sb. Radioelektron. v nar. kh-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2) Kuybyshev, 1970, pp 153-158 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A130)

Translation: An analysis is made of the operation of a phase AFC system with a rectangular phase detector characteristic in phase difference intervals corresponding to parts of zero slope of the characteristic. A differential equation for the system is derived to investigate its transient processes. N. S.

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USSR

UDC: 621.317.44

GUTOVSKIY, I. G., ZHITSKOVA, Z. A., LAVROV, V. P., PRUZHNER, G. S., SAVVIN,
A. N., KELEBNIKOV, S. P.

"A Device for Determining the Magnetization Curve and Hysteresis Loops of
Magnetic Materials"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 7, Mar 72, Author's Certificate No 329486, Division G, filed 8 Apr 68,
published 9 Feb 72, p 182

Translation: This Author's Certificate introduces a device for determining
the magnetization curve and hysteresis loops of magnetic materials. The
device contains a measurement and a magnetizing coil for the specimen to be
studied, a fluxmeter (in the form of an integrating amplifier), an adder,
an integrating amplifier for the magnetization circuit, a power amplifier,
a calibrated resistor, and a registration instrument. As a distinguishing
feature of the patent, the device is designed for increased precision and
speed, and for automation and programming of the measurement process. For
this purpose it is equipped with a program input controller of the change
in magnetic flux in the form of a time-variable voltage controller. The

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USSR.

GUTOVSKIY, I. G. et al., USSR Author's Certificate No 329486

device also includes a switch. One input of the adder is connected to the voltage controller, and the other adder input is connected to the output of the magnetic fluxmeter. The output of the adder is connected to the integrating amplifier of the magnetization circuit through the switch. The controlling input of the switch is connected to the output of the adder and to the controlling input of the voltage controller through a logic circuit of the "exclusive OR" or "equivalence" type.

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USSR

UDC 669.712.5

PEVZNER, I. Z., and LAYNER, A. I.,

"On the Theory of the Thorough Desiliconization of Aluminate Solutions"

Moscow, Tzvetnyye Metally, No 9, Sep 70, pp 26-30

Abstract: A study of the system $\text{Na}_2\text{O}-\text{Al}_2\text{O}_3-\text{CaO}-\text{SiO}_2-\text{H}_2\text{O}$ has shown the existence of two domains. In domain 1 the precipitates are $\text{Ca}(\text{OH})_2$ and calcium hydrosilicates of the composition $m\text{CaO}\cdot n\text{SiO}_2\cdot c\text{H}_2\text{O}$. In domain 2 there were $3\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot 6\text{H}_2\text{O}$ and calcium hydrosilicates of the composition $3\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot m\text{SiO}_2\cdot n\text{H}_2\text{O}$ ($\text{C}_3\text{AS H}_n$). The obtained data made possible a new approach to explaining the mechanism of the process of thorough desiliconization. The study shows that with an increase of Al_2O_3 concentration in the solution, the proportion of CaO and Na_2O and SiO_2 being constant, the degree of desiliconization decreases. Correlation of results show that this regularity appears the stronger the further the composition of the solution from an equilibrium curve. It is suggested that in domain 2

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USSR

PEVZNER, I. Z., and LAYNER, A. I., Tsvetnyye Metally, No 9,
Sep 70, pp 26-30

silica appears in two compounds: sodium silicate and aluminosilicate complex
which react as follows: $2\text{SiO}_3^{2-} + 2\text{Al}(\text{OH})_6^{3-} \rightarrow [\text{Al}_2\text{Si}_2\text{O}_8(\text{H}_2\text{O})_2]^{2-} + 8\text{OH}^-$.

Five reactions describe the chemism of desiliconization in domain
2. Reaction rate constants are computed for various temperatures and the
activation energy is given as 23000 cal/mole. The effect of temperature
on desiliconization rate is expressed as follows:

$$K = 2.5 \cdot 10^{15} e^{-\frac{23000}{RT}}$$

2/2

Mechanical Properties

UDC 669.14.013.2

USSR

TARANTOVA, A. S., PEVZNER, L. M., LOMBERG, B. S., SOLOV'YEVA, G. G., and ZASLAVSKAYA, L. V.

"Martensite-Aged Steels with High Durability and Plasticity"

Moscow, Metallobeveniye i Termicheskaya Obrabotka Metallov, No 8, 1970, pp 70-74

Abstract: The purpose of the research described by this paper was to obtain martensite-aged steels based on the Fe-Ni-Co-Mo system with a durability of 240-280 kg/cm², and to study their structure, phase state, and mechanical characteristics. Alloys with 12-15% Ni, 13-17% Co, and 5-11% Mo with C 0.03% were checked. A more detailed study of these alloys was made on two levels of durability values. The chemical compositions and durabilities of the two are given in a table along with a third, the so-called Vascomax-350, for the sake of comparison.

The first two alloys have no added titanium or aluminum, as opposed to ordinary martensite-aged alloys, to avoid the formation of embrittling carbonitrides; the third contains 1.6-2% titanium. To obtain high durability with maximum plasticity, the steels had to be made with pure furnace charges. Vacuum induction melting

USSR

TARANTOVA, A. S., et al., Metallobeveniye Termicheskaya
Obrabotka Metallov, No 8, 1970, pp 70-74

in laboratory furnaces with reduction through cerium and calcium were used. The weight of the melt was 50 kg. A second table gives details of the thermal processing applied to the castings after forging and water-cooling. In addition to this, the castings were analyzed chemically and by X-ray analysis. The results of the tests for the three melts as well as for standard brands ON18K9M5T and EI643 are given in a third table.

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USSR

UDC 678.072.01:53

PEVZNER, L. V.

"New Modified Reactive Plastics"

Moscow, Plasticheskiye Massy, No 4, 1973, pp 31-33

Abstract: It is possible, by modifying different phenol-formaldehyde resins with thermoplastics and other resins, to prepare composite polymer materials having various properties valuable in different industries. The preparation and characterization of several such new materials including some material for cold-molding are described. Behavior as a function of temperature, stress, corrosive solvents, and the application of electrical currents is described.

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USSR

UDC 547.963.3:616.853:611.8.131

TENCHEVA, Ts. S. and PEVZNER, L. Z., Institute of Physiology, Academy of Sciences USSR, Leningrad

"Effect of Mescaline on the RNA and Protein Content of Cortical Neurons and Their Glial Satellite Cells"

Leningrad, Tsitologiya, No 6, 1973, pp 783-787

Abstract: Topical application of a 3% solution of mescaline sulfate to the cat cerebral cortex (suprasylvian gyrus) produced within 10 minutes a distinct increase in the amount of cytoplasmatic RNA in the neurons of layer II. No significant changes were noted in the surrounding glial cells. After 25 minutes the RNA content was virtually normal. Total protein remained unchanged in the cytoplasm of the cortical neurons 10 minutes after the application of mescaline but increased slightly in the glial satellite cells. After 25 minutes total protein returned to normal in the glial cells but decreased sharply in the neurons. These changes were paralleled by changes in the optical density (concentration) of the substances in the cells, but the size of the latter was virtually unaffected.

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USSR

UDC 612.826+612.58

PIVEN', N. V., and PEVZNER, L. Z., Laboratory of Functional Neurochemistry,
Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"The Effect of Acute Hypothermia on RNA Concentration in Neurons and Neuroglia
of the Hypothalamic Supraoptic Nucleus"

Leningrad, Fiziologicheskiy Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 2,
1973, pp 237-241

Abstract: By means of cytospectrophotometry, the neuronal RNA concentration was estimated in three regions of the brain of white rats cooled for 1 hr at an ambient temperature of 0-1°C until their body temperature fell to 24°C, and during subsequent spontaneous recovery. The results indicate that during hypothermia, cytoplasmic RNA concentration does not change significantly in the neurons of the hypothalamic supraoptic nucleus, decreases in the neuroglia of that nucleus, and increases in the neurons of the inferior colliculi. During recovery, supraoptic neuronal RNA decreases at the 2d hr, rapidly increases, returns to normal at the 7th hr, and increases again to 30% above normal at the 17th hr. RNA concentration in supraoptic neuroglia remains reduced, while that in the inferior colliculi rises 100% at the 7th hr and then falls again, but is still 60% above normal at the 17th hr. Considering the fact that the balance is a function of synthesis and destruction and that the secretory
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USSR

PIVEN', N. V. and PEVZNER, L. Z., Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, Vol 59, No 2, 1973, pp 237-241

supraoptic neurons are active periodically, it is suggested that the changes are determined not only by hypothermia but also by the cellular metabolic rate. The residual increase in RNA concentration may represent adaptation to cold.

2/2

USSR

VORONKA, G. Sh., DEMIN, N. N., and PEVZNER, I. Z., Institute of Physiology
imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"Total Proteins and Content of Simple Proteins in the Neurons and Neuroglia
of the Supraoptic and Red Nuclei in Rats During Natural Sleep and After
Deprivation of the Paradoxical Phase of Sleep"

Moscow, Doklady Akademii Nauk SSSR, Vol 198, No 4, 1971, pp 974-977

Abstract: In rats, natural sleep resulted in the accumulation of total pro-
teins and especially of simple proteins in the neuroglial cells of the supra-
optic nucleus of the hypothalamus and of simple proteins in the neurons of
this nucleus. In the red nucleus, however, total proteins decreased both in
the neuroglia and especially in the neurons, while the content of simple
proteins increased only slightly in the glial cells but remained virtually
unchanged in the neurons. Insomnia for 24 hours resulted in a sharp decrease
in total proteins in the neurons followed by a slight increase, while total
proteins in the neuroglia decreased slightly. The simple proteins decreased
only in the neurons of this nucleus but remained unchanged in the glial cells.
Deprivation of the paradoxical phase of sleep caused a rapid decrease in total
proteins in the red nucleus, but the decrease was smaller in the neurons of
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USSR

VORONKA, G. Sh., et al., Doklady Akademii Nauk SSSR, Vol 198, No 4, 1971, pp 974-977

this nucleus than in the supraoptic nucleus and there was no subsequent increase. Thus, natural sleep as well as the paradoxical phase of sleep stimulate protein synthesis, whereas deprivation of paradoxical sleep (insomnia), a stress factor, reduces the protein content of the supraoptic nucleus, chiefly in the neurons, although some adaptation takes place.

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USSR

UDC 612.018+612.273

PEVZNER, L. Z., Institute of Physiology imeni I. P. Pavlov, Academy of Sciences USSR, Leningrad

"RNA Content of Ependymal Cells and Changes Therein After Treatment With Hormones and Exposure to Hypoxia"

Leningrad, Fiziologicheskii Zhurnal SSSR imeni I. M. Sechenov, No 8, 1972, pp 1275-1280

Abstract: The average concentration of cytoplasmatic RNA in rat spinal canal ependymal cells was found to be higher than in other types of neuroglia cells. Daily subcutaneous injection of 30 mg of epinephrine for 2 weeks increased the RNA content, whereas an adrenalectomy decreased it. A sham operation decreased it even more in animals that received hydrocortisone. Acute hypoxic hypoxia (the rats were kept in a pressure chamber for 2 hours at an "altitude" of 8700) had no effect on the RNA content of the ependymal cells. However, the amount of RNA in the cytoplasm clearly increased 6 hours after the animals were removed from the pressure chamber. It gradually returned to the baseline level after 48 hours. A comparison is made between the above phenomena and the changes that take place in the RNA content of the glia satellite cells (oligodendroglia) surrounding the spinal motor neurons under the influence of hormones and hypoxic hypoxia.

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1/2 026 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--IONIZATION OF MOTT EXCITONS IN PARALLEL ELECTRIC AND STRONG
MAGNETIC FIELDS -U-
AUTHOR--(02)-MONOZON, B.S., PEVZNER, M.B. *P*
COUNTRY OF INFO--USSR
SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(3), 466-71
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--IONIZATION, EXCITON, ELECTRIC FIELD, STRONG MAGNETIC FIELD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1997/1715 STEP NO--UR/0449/70/004/003/0466/0471
CIRC ACCESSION NO--AP0120427
UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--A0120427

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INFLUENCE IS STUDIED OF PARALLEL ELEC. AND MAGNETIC FIELDS ON THE LOWEST COULOMB STATE, N EQUALS 0. A STRONG MAGNETIC FIELD IS CONSIDERED; I.E., THE WHOLE COULOMB SERIES (INCLUDING N EQUALS 0) SHOULD BE NARROWER THAN THE INTERVAL BETWEEN NEIGHBORING LANDAU LEVELS; THE ELEC. FIELD IS LOW IN COMPARISON WITH THE COULOMB FIELD. THE WAVE FUNCTION IS CALCD. AND THE SHIFT IN THE 2ND APPROXN. OF THE PERTURBATION THEORY, AS WELL AS THE PROBABILITY OF IONIZATION OF THE COULOMB STATES (N EQUALS 0, 1, 2,) IN THE ELEC. FIELD, IS GIVEN. THE INFLUENCE IS DISCUSSED OF THE ELEC. FIELD ON THE INTENSITY, SHIFT, AND WIDTH OF EXCITON PEAKS IN THE MAGNETOOPTICAL ABSORPTION SPECTRUM. THE FORMULAS DERIVED MAKE IT POSSIBLE TO TAKE INTO ACCOUNT A WEAK SCREENING EFFECT OF IMPURITIES ON THE EXCITON LEVELS. FACILITY: LENINGRAD. GOS. UNIV. IM. ZHDANOVA, LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 621.352.1.035.151(088.8)

PEVZNER, M. G., GRIGOR'YEV, V. V., LEONOV, O. V., KOCHERGINSKIY, M. D., CHUVPILO,
~~A. V.~~

"[Small Battery]. Galvanic Battery"

USSR Author's Certificate No 276191, filed 16 Dec 66, published 29 Sep 70 (from
RZh-Elektrotehnika i Energetika, No 5, May 1971, Abstract No 5A251P)

Translation: In order to simplify the assembly and improve the voltage of a
small battery one end of the case, for example, the bottom is made concave
and is supported on the open surface of the electrode with the current
tap of the outside element. There is 1 illustration.

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USSR

UDC 547.792.3:541.127.1

PEVZNER, M. S., SAMARENKO, V. YA., and BAGAL, L. I., Leningrad Technological Institute imeni Lensovet, Leningrad

"Heterocyclic Nitro Compounds. XV. Kinetics of the Reaction of 1-Methyl-3-nitro-5-halo-1,2,4-triazoles with Hydroxyl Anions"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 72, pp 843-851

Abstract: The kinetics of the reaction of 1-methyl-3-nitro-5-chloro- and 1-methyl-3-nitro-5-bromo-1,2,4-triazole with hydroxyl ions were studied. The reactivity of the substituents increased from NO₂ to Cl and Br, both of which reacted at approximately the same rate. The ratio of the rate constant of substitution of the halogen atom to that of the NO₂ group was equal to 30:1.

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172 015 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--HETEROCYCLIC NITRO COMPOUNDS. V. 1, METHYL, 3, NITRO, 5, ALKOXY AND
PHENGY, 1, 2, 4, TRIAZOLES -U-
AUTHOR--(04)--BAGAL, L.I., PEVZNER, M.S., SAMARENKO, V.YA., YEGOROV, A.P.
COUNTRY OF INFO--USSR
SOURCE--KHM. GETEROTSKI KL. SOEDIN. 1970, (5), 702-4
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--HETEROCYCLIC NITROGEN COMPOUND, ORGANIC NITRO COMPOUND,
ORGANIC AZOLE COMPOUND, KETONE, ORGANIC SYNTHESIS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3006/1027 STEP NO--UR/0409/70/000/005/0702/0704
CIRC ACCESSION NO--AP0134739
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134739

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ET SUB3 N (1.6 ML) WAS ADDED TO 2 G 1, METHYL, 3, 5, DINITRO, 1, 2, 4, TRIAZOLE (I) IN 50 ML MEQH AT 50DEGREES AND THE MIXT. HEATED 2 HR AT 60-70DEGREES TO GIVE 71PERCENT 1, METHYL, 3, NITRO, 5, ALKOXY, 1, 2, 4, TRIAZOLE (II) (ALKYL EQUALS ME) (III), M. 146DEGREES (ETOH). SIMILARLY, II (ALKYL EQUALS ET AND PR), M. 75DEGREES (ETOH), AND 88DEGREES (PETROLEUM ETHER), RESP., WERE PREPD. I (2 G) IN 15 ML DIOXANE AND 3 ML H SUB2 O AND 1.09 G PHOH IN 4 ML DIOXANE WAS HEATED 3 HR AT 65-70DEGREES TO GIVE 51PERCENT II (ALKYL EQUALS PH), M. 124.5DEGREES (CCL SUB4 PETROLEUM ETHER). SIMILARLY, 72PERCENT II (ALKYL EQUALS M AND P, J SUB2 NC SUB6 H SUB4), M. 154.5DEGREES AND 173DEGREES (BOTH FROM C SUB2 H SUB4 CL SUB2 ET SUB2 G), RESP., WERE PREPD. III TREATED WITH HBR IN ACOH GAVE 25PERCENT 1, METHYL, 3, BRONO, 1, 2, 4, TRIAZOL, 5, ONE, M. 225DEGREES (C SUB2 H SUB4 CL SUB2).

FACILITY: LENINGRAD. TEKHNOL. INST. IM. LENSOVETA, LENINGRAD, USSR.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SYNTHESIS AND STRUCTURE OF SOME DIAZONIUM SALTS OF THE
1,2,4, TRIAZOLE SERIES -U-
AUTHOR--(05)-FRBLOV, A.K., PEVZNER, M.S., SHOKHUR, I.N., GALKOVSKAYA, A.G.,
BAGAL, L.I.
COUNTRY OF INFO--USSR
SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (5), 705-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ORGANIC-SYNTHESIS, MOLECULAR STRUCTURE, DIAZONIUM SALT,
ORGANIC AZOLE COMPOUND, PERCHLORATE, NITRATE, CARBOXYL RADICAL,
ELECTRONEGATIVITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY KEHL/FNAME--3008/1023 STEP NO--UR/0409/70/000/005/0705/0709
CIRC ACCESSION NO--AP0134740
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2/2 021

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0134740

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

3, DIAZO, 1, 2, 4, TRIAZOLE, 5, CARBOXYLATE,

3, DIAZONIUM, 5, PHENYL, 1, 2, 4, TRIAZOLE FLUOBORATE, PERCHLORATE, AND

NITRATE, 3, DIAZONIUM, 5, (P, NITROPHENYL), 1, 2, 4, TRIAZOLE, AND THE M, NITRO

ANALOG WERE PREPD. THE H ON THE N ATOM IN

3, DIAZONIUM, 5, CARBOXY, 1, 2, 4, TRIAZOLE WAS MORE ACIDIC THAN THE ONE IN THE

CARBOXYL GROUP. THE STRUCTURE OF A CRYST. DIAZONIUM SALT OF THE

TRIAZOLE SERIES DEPENDS ON THE ELECTRONEGATIVITY OF THE SUBSTITUENT IN

POSITION 5 OF THE RING. FACILITY: LENINGRAD. TEKHNOL. INST. IM.

LENSOVETA, LENINGRAD, USSR.

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--17JUL70

TITLE--HETEROCYCLIC NITRO COMPOUNDS. II. ALKYLATION OF NITRO DERIVATIVES
OF 1,2,4,TRIAZOLE -U-

AUTHOR--BAGAL, L.I., BEVZNER, M.S., SHELUDYAKOVA, N.I., KERUSOV, V.M.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SCEDIN. 1970, (2), 265-8

DATE PUBLISHED--70

13/20

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--HETEROCYCLIC NITROGEN COMPOUND, ALKYLATION, ORGANIC AZOLE
COMPOUND, ORGANIC SULFUR COMPOUND, SULFATE, METHOXY COMPOUND, AROMATIC
NITRO COMPOUND, THIN LAYER CHROMATOGRAPHY, CHROMATOGRAPHIC SEPARATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAE--1984/1793

STEP NO--UR/0409/70/000/002/0265/0268

CIRC ACCESSION NO--AP0100369

UNCLASSIFIED

ACC. NO:

AP0100369

ADSTRACTING Service:
CHEMICAL ABST.

5/70

Ref. Code:

4R0409

111384; Heterocyclic nitro compounds. II. Alkylation of nitro derivatives of 1,2,4-triazole. Bagal, L. I.; Pevzner, M. S.; Sheludyakova, N. I.; Kerusov, V. M. (Leningrad. Tekhn. Inst. im. Lensovet, Leningrad, USSR). *Khim. Geterotsikl. Soedin.* 1970, (2), 265-8 (Russ). Methylation of 3-nitro-1,2,4-triazole (I) and its analogs with Me₂SO, in alkali occurs at the 1- and 2-positions. I (2 g) in Me₂CO treated with 6 ml 10% NaOH and 2.2 g Me₂SO, and the mixt. kept 8 hr gave 66% 1-Me deriv. (II) of I, m. 63-4°. Similarly prepd. was the 1,5-di-Me deriv. (III) of I, 55%, m. 89-90°, while the 5-carbomethoxy deriv. of I gave its 1-Me deriv., 51%, m. 120-1°. Treating, in dioxane, the appropriate I analog with 50% excess CH₃N₂ in Et₂O gave: from I, 76% II and 24% 1-methyl-5-nitro-1,2,4-triazole; from the 5-Me deriv. of I, 64% III and 36% 1,3-dimethyl-5-nitro-1,2,4-triazole. No N¹-substitution was found. Adding 6.5 g 1,3-dimethyl-5-amino-1,2,4-triazole-H₂SO₄ in 5% H₂SO₄ at 0° to 30 g NaNO₂ in H₂O and keeping the mixt. 0.5 hr gave 22% 1,3-dimethyl-5-nitro-1,2,4-triazole, m. 55-6°; similarly was prepd. 3-nitro-4,5-dimethyl-1,2,4-triazole, m. 66-7°. CH₃N₂ and 1-

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methyl-3-carboxy-5-nitro-1,2,4-triazole gave 69% Me ester, m. 84°. The 1-methyl-5-carbomethoxy deriv. of I heated with 15% H₂SO₄ 12 hr gave 67% II. 3,5-Dinitro-1,2,4-triazole converted to its Na salt and this treated with Me₂SO₄ in Me₂CO gave 64% 1-Me deriv., m. 96-7°, also formed exclusively from the Ag salt and MeI in the dark in MeCN; or from the dinitrotriazole and CH₃N₂ in Et₂O; or finally from 1-methyl-3,5-diamino-1,2,4-triazole-H₂SO₄ heated with aq. NaNO₂ and Cu(NO₃)₂ 2 hr at 50-60°. The mixed triazoles were readily sepd. by thin layer chromatog. on Al₂O₃.

G. M. Kosolapoff

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NPO100368

CHEMICAL ABST.

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REF. CODE:

UR 6409

111380e Heterocyclic nitro compounds. III. Interaction of nitro derivatives of 1,2,4-triazole with aliphatic amines. Bagal, L. I.; Pevzner, M. S.; Samarenko, V. Ya. (Leningrad. Tekhnol. Inst. im. Leningra. Leningrad, USSR). *Khim. Geterotsikl. Soedin.* 1970, (2), 269-74 (Russ). 1-Methyl-3,5-dinitro-1,2,4-triazole (I) reacts with aliphatic amines by replacement of the NO₂ group in the 5-position by the amine residue. I (4 g) heated with 100 ml 25% NH₄OH in an autoclave 4 hr at 70-80° gave 5-amino-1-methyl-3-nitro-1,2,4-triazole (II), m. 254-6°; N-Ac deriv. m. 172-3°. II treated with 10% H₂SO₄ at 0°, followed by aq. NaNO₂ gave 1-methyl-3-nitro-5-nitrosamino-1,2,4-triazole, m. 78°. To 70 ml concd. H₂SO₄ was added at 0° 3 g NaNO₂ followed by 29 g NaH₂PO₄ in 50 ml 30% H₂SO₄, and 3 g II in 200 ml AcOH, and the mixt. held 1 day at 0° to yield 22% 1-methyl-3-nitro-1,2,4-triazole, m. 62-3°. I in dioxane heated with 20% aq. MeNH₂ 1 hr at 80° gave 1-methyl-3-nitro-5-methylamino-1,2,4-triazole (III), m. 207-8°; similarly were prepd. the following analogs (5-amino groups shown): -CH₂:CHNH, m. 68-9°; Me₂N, m. 109°; Et₂N, m. 47.5-8°; aziridino, m. 114-15°; and piperidino, m. 120-1.5°. Hydrogenation of III in EtOH over Pd-C gave 1-methyl-5-methylamino-3-amino-1,2,4-triazole (IV).

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m. 170°; similarly was prepd. the 5-dimethylamino analog, m. 136.5°. IV and NaH₂PO₂ treated with aq. HCl and NaNO₂ overnight gave 1-methyl-5-methylamino-1,2,4-triazole, isolated as the picrate, m. 211-12°, also formed from 1-methyl-5-nitro-1,2,4-triazole and aq. MeNH₂ in aq. dioxane in 10 hr at 75°; similarly was prepd. 1-methyl-5-dimethylamino-1,2,4-triazole (V) picrate, m. 152-3°. Heating Me₂NCSNH₂ in EtOH with MeI 2 hr, gave 89% Me₂NC(NH₂):SMe.I, m. 97-8°, which heated 16 hr in EtOH with MeNHNH₂ gave 1,1,3-trimethyl-3-amino-guanidine-HI, which with 88% HCO₂H heated 40 hr at 110° gave 79% V, isolated as the picrate. Holding 1-methyl-3-nitro-5-aziridino-1,2,4-triazole with concd. HCl in dioxane 1 hr. gave 1-methyl-3-nitro-5-(2-chloroethylamino)-1,2,4-triazole, m. 130°. Heating I with Et₃N in aq. dioxane 4 hr gave 1-methyl-3-nitro-1,2,4-triazol-5-one, decompd. 229°, also obtained from the aq. filtrate in the prepn. of II after treatment with 5% H₂SO₄. The purification of the products was best done on a thin layer of Al₂O₃.

G. M. Kosolapoff

19841792

Acc. No.

APC100367

Abstracting Service:

CHEMICAL ABST.

Ref. Code:

UR 0409

111383h Heterocyclic nitro compounds. I. Synthesis of nitro derivatives of 1,2,4-triazole, 1,3,4-thiadiazole, tetrazole, 1,3,4-oxadiazole and pyrazole by the noncatalytic substitution of a diazo group for a nitro group. Bagal, L. I.; Pevzner, M. S.; Frolov, A. N.; Shelud'yakova, N. I. (Leningrad Tekhnol. Inst. im. Lensoveta, Leningrad, USSR). *Khim. Geterotsikl. Soedin.* 1970, (2), 259-64 (Russ). Treating 1.68 g 3-amino-1,2,4-triazole in AcOH with 1.8 g NaNO₂ in 7 ml concd. H₂SO₄ at -5 to 0° 5 min., followed by diln., <0°, and addn. of the soln. to 200 ml 10% NaNO₂ at 45-50°, and the mixt. heated 1 hr at 45° gave 57% 3-nitro-1,2,4-triazole, m. 210°. Alternatively, the amino-triazole in 10% H₂SO₄ was added to 10% NaNO₂ at 45°. Similarly were prepd. the following 5-substituted derivs. (5-substituent shown): Me, m. 194°; Et, m. 121°; Pr, m. 92°; Ph, m. 222-3°; *p*-O₂NC₆H₄, m. 274-5°; *m*-isomer, m. 189°; CO₂H, m. 102°; CO₂Me, m. 134°; also the following 3-nitro-2-methyl-5-(R-substituted)-1,2,4-triazoles: H, m. 83°; CO₂H, m. 106°; and 3-nitro-4-methyl-1,2,4-triazole, m. 100°. Similar reaction with 3,5-diamino-1,2,4-triazole and NaNO₂ in aq. H₂SO₄ gave 80% 3,5-dinitro-1,2,4-triazole, m. 135°, which was very hygroscopic. The following were prepd. similarly: 1-methyl-5-nitro-tetrazole, m. 55-6°; and the 2-Me analog, m. 86-7°. A suspension of 2.1 g. 2-amino-5-methyl-1,3,4-oxadiazole in 20% NaNO₂ at -5° treated over 3 hr with 100 ml 7% H₂SO₄ at <0°,

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